

LETTER

FROM

THE SECRETARY OF THE SMITHSONIAN INSTITUTION,

COMMUNICATING

THE ANNUAL REPORT OF THE BOARD OF REGENTS.

AUGUST 20, 1852.

Ordered to lie on the table and be printed.

AUGUST 26, 1852.

Ordered, That 5000 additional copies be printed—2000 of which for the use of the Smithsonian Institute.

SMITHSONIAN INSTITUTION,
August 20, 1852.

SIR: I have the honor herewith to transmit to you the annual report of the Board of Regents of the Smithsonian Institution, and beg leave to request that you will present the same to the Congress of the United States.

I am, sir, very respectfully, your obedient servant,

JOSEPH HENRY, *Secretary.*

HON. WILLIAM R. KING,
President of the Senate.

OFFICERS OF THE SMITHSONIAN INSTITUTION.

MILLARD FILLMORE, *Ex-officio* Presiding Officer of the Institution.

ROGER B. TANEY, Chancellor of the Institution.

JOSEPH HENRY, Secretary of the Institution.

CHARLES C. JEWETT, Assistant Secretary in charge of the Library.

SPENCER F. BAIRD, Assistant Secretary in charge of the Museum.

EDWARD FOREMAN, General Assistant.

ALEXANDER D. BACHE,

JAMES A. PEARCE,

JOSEPH G. TOTTEN,

} Executive Committee.

RICHARD RUSH,

GRAHAM N. FITCH,

WALTER LENOX,

JOSEPH HENRY,

} Building Committee.

W. W. SEATON, Treasurer.

JAMES RENWICK, Jr., Architect.

GILBERT CAMERON, Contractor.

 REGENTS OF THE INSTITUTION.

————— Vice President of the United States.

ROGER B. TANEY, Chief Justice of the United States.

WALTER LENOX, Mayor of the City of Washington.

JAMES A. PEARCE, Member of the Senate of the United States.

JAMES M. MASON, Member of the Senate of the United States.

————— Member of the Senate of the United States.

GRAHAM N. FITCH, Member of the House of Representatives of the United States.

WILLIAM F. COLCOCK, Member of the House of Representatives of the United States.

JAMES MEACHAM, Member of the House of Representatives of the United States.

RUFUS CHOATE, Citizen of Massachusetts.

GIDEON HAWLEY, Citizen of New York.

WILLIAM C. PRESTON, Citizen of South Carolina.

RICHARD RUSH, Citizen of Pennsylvania.

ALEXANDER D. BACHE, Member of the National Institute, Washington.

JOSEPH G. TOTTEN, Member of the National Institute, Washington.

MEMBERS EX-OFFICIO OF THE INSTITUTION.

MILLARD FILLMORE, President of the United States.

————— Vice President of the United States.

DANIEL WEBSTER, Secretary of State.

THOMAS CORWIN, Secretary of the Treasury.

CHARLES M. CONRAD, Secretary of War.

WILLIAM A. GRAHAM, Secretary of the Navy.

NATHAN K. HALL, Postmaster General.

JOHN J. CRITTENDEN, Attorney General.

ROGER B. TANEY, Chief Justice United States.

THOMAS EWBANK, Commissioner of Patents.

WALTER LENOX, Mayor of the City of Washington.

—————
HONORARY MEMBERS.

ROBERT HARE,

BENJAMIN SILLIMAN,

WASHINGTON IRVING.

SIXTH ANNUAL REPORT OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION, SHOWING THE OPERATIONS, EXPENDITURES AND CONDITION OF THE INSTITUTION UP TO JANUARY 1, 1852.

To the Senate and House of Representatives :

In obedience to the act of Congress of August 10, 1846, establishing the Smithsonian Institution, the undersigned, in behalf of the Regents, submit to Congress, as a report of the operations, expenditures and condition of the institution, the following documents:

1. The Annual report of the Secretary, giving an account of the operations of the Institution during the year 1851, including reports from the Assistant Secretaries, relative to the library, museum, &c.

2. Report of the Executive Committee, giving a general statement of the proceeds and disposition of the Smithsonian fund, and also an account of the expenditures for the year 1851.

3. Report of the Building Committee relative to the progress made in 1851, in the erection of the Smithsonian edifice.

4. Proceedings of the Board of Regents.

5. Appendix.

Respectfully submitted,

ROGER B. TANEY, *Chancellor.*

JOSEPH HENRY, *Secretary.*

REPORT OF THE SECRETARY.

To the Board of Regents of the Smithsonian Institution :

GENTLEMEN: Besides the care of all the property of the Institution, and the responsibility of the direction of its operations, under the control of the Regents, the secretary is required to give an account, at their annual session, of the condition of the Institution, and of its transactions during the preceding year.

In the discharge of this duty on the present occasion, I am happy to inform the Regents that the Institution under their care is still in a prosperous condition, and that since their last meeting, it has continued silently, but effectually, to enlarge the sphere of its influence and usefulness, and to elicit from every part of the civilized world commendations, not only of the plan of organization it has adopted, but also of the results it has produced.

In my last report I gave a brief account of the means employed to increase the income, so that in addition to the requirements of Congress in regard to the formation of a library and a museum, and the erection of a building on a liberal scale, operations of a more active character could be incorporated into the plan of organization.

During the past year the same policy has been observed; and though the officers of the Institution have been subjected to the inconvenience of transacting business in an unfinished building, and in rooms not intended for the purpose, yet this has been considered of minor importance in comparison with the saving of the funds. Every dollar now expended on the building lessens the amount of accruing interest, and diminishes the means of producing results which are to affect the world at large; hence the importance of an adherence to the plan of finishing it by degrees. Since the last session of the board, it has, therefore, not been thought advisable to urge the contractor to a rapid completion of his work, and all the expenditures on account of the building have been made from the accrued interest of the current year, and from a portion of that of the year preceding. There is consequently still on hand the two hundred thousand dollars of accumulated interest mentioned in the last and preceding reports. Of this, it will be recollected, \$50,000 are to be applied towards finishing the building, and the remainder to be invested as part of the principal.

The importance of increasing the funds and of gradually developing the operations embraced in the programme, was set forth in the last report. The Institution, it is to be hoped, is not one of a day, but is to endure as long as our government shall last; it is therefore necessary, in the beginning, that we should constantly look to the future, and guard against the temptation, to which we are continually exposed, of expanding too rapidly.

By a resolution of the board, at their session in 1849, the secretary was directed to petition Congress to take from the Institution \$150,000, and such other sums, not exceeding in all \$200,000, as may have been, or shall

be received in accruing interest or otherwise, upon the same terms as those on which the original bequest had been accepted. This petition was referred to a committee and favorably reported upon, but unfortunately the press of business prevented Congress from acting upon it at their last session. The petition will again be renewed, and it is believed that so reasonable a request will meet with a favorable reception. It is, however, thought important that the amount should be increased, and that the sum of \$250,000 be inserted in the petition, instead of that named in the resolution.

In addition to the \$150,000 which the regents thus seek to invest, there is still a portion of the original legacy remaining in England as the principal of an annuity settled upon Madame De la Batut, the mother of the nephew of Smithson, to whom his property was originally bequeathed. Besides this, I am informed, upon good authority, that the Institution is the contingent legatee of an estate of considerable magnitude, depending on the demise without issue of a single individual. We may also reasonably expect that if the affairs of the Institution are properly conducted, and its funds judiciously husbanded or properly expended on the legitimate objects of the bequest, other trusts will be committed to its care. It therefore becomes important that the limit should be at least \$250,000, so that the whole sum, including the original bequest, shall amount to a little more than \$750,000. There can surely be no just grounds of fear that the income of this sum will be devoted to improper uses, so long as it is an essential part of the plan, to produce fruits the value of which can be judged by all who are capable of appreciating the advance of knowledge. This request is also in accordance with the policy adopted by the Institution of asking nothing from Congress but the safekeeping of its funds, and the appointment to its board of regents of gentlemen of intelligence and high moral principles.

The government has thus far liberally fulfilled the obligations which it imposed upon itself in accepting the trust. Not only has the original sum been permanently invested in the treasury of the United States, but interest has been allowed from the time of receiving the funds. Congress has also made several donations to the Institution, which, though they will not prove as valuable to us as could be wished, indicate a liberal intention. The first gift was the great museum of the Exploring Expedition, for the accommodation of which the larger portion of the present building was originally intended; the second was a grant of nineteen acres of land surrounding the building of the Institution; the third, a copy of every book published in the United States for which a copyright might be granted; the fourth and last gift was that of all the plates, manuscripts, &c., of the Exploring Expedition, for the purpose of publishing a new edition for distribution.

These donations, though made with kindly feelings and in a spirit of liberality, have proved singularly unprofitable. The maintenance of the museum of the Exploring Expedition would subject the Institution to an annual expense which would materially interfere with more important operations. After expending several thousand dollars on the improvement of the grounds, it has been deemed best to return them to the charge of the general government. Were the copyright act fully complied with, perhaps some benefit might accrue from it to the Institution; but in the manner in which it is at present observed, the expense of postage and of

clerk hire in recording the titles and furnishing the certificates of deposit, has more than equalled the value to us of all the books received. Lastly, it has been estimated that the publication of a new edition of the expensive volumes of the results of the Exploring Expedition would cost at least fifty thousand dollars. Fortunately, it has not been considered obligatory on the Institution, except in the case of the copyright law, to accept these gifts.

Publication of memoirs.—Since the adoption of the plan of organization, nearly fifty original memoirs, purporting to be additions to the sum of human knowledge, have been presented to the Institution for publication. Though a number of these have been returned to their authors, principally on account of not falling within the restricted class of communications accepted for publication, yet they have generally been productions of much merit, and have evinced a surprising activity of mind, and manifest a growing attention in this country to original research. The probable success of this part of the plan of organization was not overrated; for, were the whole income of the institution devoted alone to publishing the results of the labors of men of literature and of science, which otherwise would never see the light, it could be profitably expended. In this respect, the Smithsonian bequest supplies the wants which in Europe are met by richly endowed academies and national societies.

It will be recollected that each memoir is printed separately, and with a separate title and paging, so that it can be distributed to persons most interested in its perusal as soon as it comes from the press, without waiting for the completion of the volume to which it belongs. In this way, the author is enabled to present a full account of his discoveries to the world with the least possible delay, while, by the rules of the Institution, he is allowed to publish an abstract of his paper in the proceedings of the American Association for the advancement of science, or in those of any other properly organized society.

The number of copies of the Smithsonian Contributions distributed is greater than that of the transactions of any scientific or literary society, and therefore the Institution offers the best medium to be found for diffusing a knowledge of scientific discoveries.

Every memoir published by the Institution is issued with the stamp of approval of a commission of competent judges, and in order to secure a cautious and candid opinion, the name of the author, and those of the examiners, are not made known to each other unless a favorable report is given, and, in this case, the names of the commission are printed, as vouchers for the character of the memoir, on the reverse of the title-page.

This plan secures an untrammelled expression of opinion, while it induces caution on account of the responsibility which it involves.

Besides deciding on the fitness of original memoirs for publication, the Institution is continually applied to for information relative to almost every department of literature and science. Respectful attention is always given to these applications, and when the desired answer does not fall within the line of study of any officer of the Institution, it is sought for from those in whose knowledge and judgment we have full confidence. No inconsiderable portion of time is occupied in giving the information involved in the answer to these inquiries; but I am happy to inform the board that in this service, as well as in that of examining memoirs, we have received the co-operation of a considerable number of the most

distinguished individuals in our country, and in scarcely a single case has application for assistance in this way been refused. By the operation of the plan adopted, the Institution can command the talents and learning of the world, and with a small corps of permanent officers, or a sufficient clerical force, can discharge the duty of an association to which subjects, relative to all branches of knowledge, can be referred.

There is one class of requests which, by a resolution of the Board of Regents, we are directed to refuse, viz: those for the examination and approval of the innumerable inventions by which the ingenious and enterprising seek to better their own condition and that of the public. Were it not for this resolution, originally proposed by Governor Cass, we would be overwhelmed with applications of this kind, and have forced upon us the business of the Patent Office. Besides this, the principal object of the organization is the discovery of new truths, rather than the application of known principles to useful purposes. Not that we would undervalue the labors of the inventor; but because practical knowledge has a marketable value which always insures its cultivation, provided the higher philosophical truths on which it is founded are sufficiently developed and made known.

The idea is still very generally entertained that Smithson bequeathed his property to this country for the diffusion of useful knowledge among the people, and that his intention would be best consulted by the expenditure of all the income in the publication and general distribution of tracts on practical subjects. The adoption of this plan would be to dissipate the funds without beneficial effect. A single report of the Patent Office costs, in some instances, more than three times the income of the Smithsonian fund, which itself would be insufficient for the general diffusion of a single octavo page of printed matter. The property, however, was not left to the inhabitants of the United States, but to the government, in trust for the good of man; and not merely for the dissemination or diffusion of knowledge, but, first of all; for creating, originating, increasing it. Furthermore, Smithson does not confine his bequest to the promotion of *useful* knowledge alone, in the lower sense of the term, but includes all knowledge in his liberal and philosophical design. The true, the beautiful, as well as the immediately practical, are all entitled to a share of attention. All knowledge is profitable; profitable in its ennobling effect on the character, in the pleasure it imparts in its acquisition, as well as in the power it gives over the operations of mind and of matter. All knowledge is useful; every part of this complex system of nature is connected with every other. Nothing is isolated. The discovery of to day, which appears unconnected with any useful process, may, in the course of a few years, become the fruitful source of a thousand inventions.

That the encouragement of the discovery of new truths, the publication of original memoirs, and the establishment of new researches, are in conformity with the design of Smithson, is not only manifest from the terms of his will, but also from the fact, which has lately come to our knowledge, that he at first left his property to the Royal Society of London, for the very object embraced in this part of the plan. And what prouder monument could any man desire than the perpetual association of his name with a series of new truths! This building and all its contents may be destroyed, but the volumes of the Smithsonian Contributions,

distributed as they are among a thousand libraries, are as wide-spread and lasting as civilization itself.

During the past year a number of memoirs have been accepted for publication, and are either in the press, or are waiting the drawings to illustrate them, now in the hands of the engraver. It is the duty of the secretary, in accordance with the original plan of the Institution, to give a popular account of these memoirs in his annual report.

The first is a memoir by Dr. Asa Gray, professor of botany in Harvard University, consisting of an account of a collection of plants made by Mr. Charles Wright, in an expedition from Texas to El Paso, in the summer and autumn of 1849.

It was stated in my report for that year, that one hundred and fifty dollars had been subscribed on the part of the Institution towards the outfit of Mr. Wright, and that the plants collected by him would be submitted to Dr. Gray for examination and description. The memoir now mentioned is the result of this arrangement, though it also contains notices of plants gathered by other collectors in adjacent regions, especially by Dr. Wislizenus in the valley of the Rio Grande and Chihuahua; and by the lamented Dr. Gregg in the same district, and in the northern part of Mexico. This memoir is a good exposition of the character of the vegetation, and consequently of the climate, of the region traversed.

Specimens of all the plants obtained by Mr. Wright belong to this Institution; and these, with sets collected by Fendler and Lindheimer, form the nucleus of an important and authentic North American herbarium.

Another paper on botany is by Dr. John Torrey, of the college of New Jersey, Princeton. It gives illustrations of the botany of California, and describes a number of new and interesting plants discovered by Colonel Frémont in his different explorations in that country.

Some of the plants collected by this intrepid traveller have been described in the appendix to his first and second report; but many are still unpublished. Of the collections made during his third expedition, no descriptions have been given, except that two or three of the new plants were briefly characterized by Dr. Gray, in order to secure priority of discovery.

In the memoir presented to the Institution, Dr. Torrey has given description of a number of genera of new and remarkable plants, all collected by Col. Frémont in the passes and on the sides of the Serra Nevada. With regard to this publication Dr. Torrey remarks, that he had hoped that arrangements would have been made by the Government of the United States for the publication of a general account of the botany of California; but as there is no immediate prospect of such a work being undertaken, this memoir, on some of the most interesting genera discovered by Col. Frémont, has been prepared for the Smithsonian Institution.

The drawings to illustrate this paper have been made, at the expense of the Institution, by Mr. Isaac Sprague, of Cambridge, who, in the opinion of Dr. Torrey, ranks among the best botanical draughtsmen of our day.

The next paper presents the results of a series of observations made in the years 1845-6-7, to determine the dip, inclination and intensity of

the magnetic force in several parts of the United States, by John Locke, M. D., professor of chemistry in the medical college of Ohio. The results presented in this paper are a continuation of a series derived from observations begun in 1837, and prosecuted annually for ten years. The first parts of the series have been published in the transactions of the American Philosophical Society, and have been incorporated by Col. Sabine, in his contributions to Terrestrial Magnetism. A part of the observations given in this memoir were made at the expense and under the direction of the United States Coast Survey. Another portion was made in accordance with the direction of the Hon. Robert J. Walker, late Secretary of the Treasury, as a part of the investigations instituted for the exploration of the mineral lands belonging to the General Government. This paper has been examined by competent judges, and recommended for publication in the Smithsonian Contributions, as an important addition to knowledge.

A paper has also been presented for publication by the executors of the late Dr. Troost, of Nashville. It consists of descriptions and drawings of a very numerous family of extinct zoophytes, to which the organic remain called the stone lily belongs. The vicinity of Nashville appears to be a remarkable locality for these remains, and the paper of Professor Troost describes several hundred species, of which two only have living representatives.

The memoir, however, is not in a condition to be published without revision, and additions to bring it up to the state of knowledge at the present time. This labor has been gratuitously undertaken by Professor Agassiz, of Cambridge, and Professor James Hall, of Albany. The collection of specimens, from which the drawings were made, is now in the possession of these gentlemen, and the memoir will be published as soon as the corrections and additions are made.

The next memoir is on the winds of the northern hemisphere, by Professor James Coffin. The design of this communication, in the words of the author, is "to answer the following questions, viz:

"1. What is the average direction in which the lower strata of the air moves over different regions of the northern hemisphere?

"2. What is the rate of progress in the mean direction as compared with the total distance travelled by the wind?

"3. What modifications do the mean direction and rate of progress undergo in the different months of the year?

"4. What is the direction of the deflecting forces that cause these modifications?

"5. What is the average relative force and velocity of winds from several points of the compass?

"6. How will the introduction or omission of the latter element affect the answer of the preceding questions?"

The data used in answering these questions have been collected with great labor, and consist of observations made at no less than five hundred and seventy-six different stations on land, and a large number taken during numerous voyages at sea. The field of observation includes a zone which extends from the equator to nearly the parallel of 85° of north latitude, and occupies a period, taken in the aggregate, of 2,800 years.

Several of the foregoing questions have been answered approximately

by other writers, but never, it is believed, from as extensive an induction as is presented in this memoir.

This paper is illustrated by a number of maps and diagrams, which render its publication very expensive. It was presented to the Institution more than a year ago, but the appropriation for printing was not sufficient to allow of its publication at that time.

The Institution has also commenced the publication of an extended memoir, consisting of a grammar and lexicon of the Dakota language, the results of the joint labors, during eighteen years, of the Dakota mission, assisted by the most intelligent natives of this tribe of Indians. The whole has been arranged, and placed in its present form, by the Rev. S. R. Riggs, of the American Board.

This work was prepared under the auspices of the Historical Society of Minnesota, and recommended by this association to the favorable attention of the Smithsonian Institution. It is designed to meet the requirements of the missionary in his labor of diffusing the light of religion and civilization among one of the most numerous and important tribes of Indians in the country. It also forms an interesting addition to ethnology, which will be highly prized by all devoted to this branch of knowledge.

A language is not originally a thing of man's device, or the result of conventional art, but the spontaneous production of human instinct, modified by the mental character, the physical conditions, and other peculiarities of the people or tribe among which it had its origin, or by whom it is used. It is subject to definite laws of formation and development, and is intimately connected with the history of the migrations and affiliations of the people by whom it is spoken, and hence becomes an object of interest to the student of the natural history of man.

In accordance with the policy of not expending the Smithsonian fund in doing with it what could be equally well done by other means, this memoir was first referred to the Bureau of Indian Affairs, with the hope that it might be adopted as a part of the materials of the volumes published under the direction of that bureau; but this was not found practicable, and the task was therefore undertaken by the Institution.

The memoir will occupy an entire volume, and would have been too much for our present income, had not about one-third of the whole cost of publication been promised by subscription from the members of the Historical Society of Minnesota and the American Board of Missions. The latter institution defrays the expenses of Mr. Riggs while he is engaged in superintending the passage of the work through the press. It is a pleasant circumstance that in this instance, as well as in many others, the organization of the Institution enables it to co-operate with other institutions, and to assist them in their labors of promoting knowledge.

This memoir, which is now in the press, was referred for critical examination to Professor Felton, of Cambridge, Massachusetts, and to Professor Turner, of New York. The latter has furnished us with a report on the importance of collecting information relative to the different dialects now in use among the Indians.

Dr. Joseph Leidy, of Philadelphia, has prepared a memoir for the Institution, accompanied by numerous illustrations, entitled "A Flora and Fauna of Animals." It is an elaborate history of a most remarkable

series of plants, in many cases accompanied by parasitic animals, found growing, as an ordinary or natural condition, within the interior of the bodies of living animals. In some of the latter, it is stated, growing plants are never absent; and in a species of insects, viz: *Papulus Cornutus*, a forest of vegetation is always found covering the inner surface of the *ventriculus* or second stomach.

The plants of course are Cryptogamic, and are algoid in their character. Some are as long as half an inch, but usually they are very much smaller. They grow attached to the mucous membrane of the cavities in which they are found, and occasionally from the exterior covering of worms infesting the same cavities. Several genera and species of these plants are characterized under the names of *Euterobryus Elegans*, *E. attenuatus*, *Arthromitus cristatus*, *Cladophytum comatum* and *Corynocladus radiatus*.

The mode of growth and reproduction of several of the species has been carefully traced and fully illustrated by figures.

The researches are prefaced by some observations on the laws of parasitic life in general, which are presented in a highly philosophical manner, and entirely free from hypothesis—the whole forming one of the most remarkable papers on physiology which has ever been produced by our countrymen.

Lieutenant Charles Henry Davis, United States Navy, Superintendent of the American Nautical Almanac, has presented a memoir on the dynamic effects of the tides.

This memoir is a continuation of one presented by the author to the American Academy a few years ago, and is of much interest, not only in a scientific point of view, as connected with important geological changes, but also on account of the practical bearings upon the transformations which are constantly going on at the entrance of rivers, channels, and in the formation of headlands and promontories. Were our globe a perfect spheroid of revolution, surrounded by water of uniform depth, the tides of the ocean would consist of nearly perpendicular undulations of the particles of the liquid, and a mere translation of form, without a transference of matter. But, in the case of a globe of irregular surface, covered with water of varying depth, the oscillations of the ocean must constantly produce currents in definite directions which tend continually to change the position of the movable materials which are found at the bottom of the sea, particularly as we approach land. A part of the force of the particles of water forming the sinking swell of the wave, in the case of an obstruction to their free descent by a diminished depth, is expended in producing a current along the inclined plane of the surface leading to the shore.

Lieutenant Davis has entered with much ardor upon the new field of research, and after an examination of various parts of the shore of the United States, through a series of years, in which he was engaged on the coast survey, has succeeded in developing the laws of action which give rise to the changes before mentioned.

He finds that the tendency of the flood-tide is to transport the matter from the bottom of the ocean and deposit it on land. He is enabled to explain the character of the alluvial formations, to account for their peculiar shape, their comparative sizes, their accumulation, and to predict the results of certain combinations of circumstances on their future changes.

The particular object of this memoir is to inquire into the mechanical operations of the tides, and the uses they may have served in the general economy of the globe in directing the loose materials of the earth's crust.

Smithsonian reports and other publications.—Since the last meeting of the Board of Regents, the report of Professor Jewett on the public libraries of the United States has been published and widely distributed. It is impossible to collect at once full and reliable accounts of all the libraries of the country, and this report is intended merely as a beginning, to be followed by others on the same subject. It has been sent to all the libraries of the United States, with the request that its deficiencies may be pointed out and additional materials furnished to render it more perfect. The great interest which is felt in this work is manifested by the amount of statistical information which has already been received in return for this volume.

A report has also been published on the recent improvements in the chemical arts. It is compiled from articles which have appeared during the last ten years in the various journals of science and the arts in the English, French, and German languages. Though this report is chiefly intended to benefit the practical man, yet it will be found interesting to the general reader, as exhibiting the cotemporaneous advance of science and art, and the dependence of the latter on the former for the improvement of its most important processes.

The accounts given in the report alluded to do not consist of descriptions of methods which have been merely proposed and published without practical verification. On the contrary, care has been taken to select such as have been actually tried, or such as offer great probability of success from the well-established principles on which they are based.

The preparation of this report was entrusted to Professor James C. Booth, assayer of the United States mint at Philadelphia, who associated with himself Mr. Cambell Morfit, of Baltimore. The work has been executed in a manner highly creditable to the authors, and will, I doubt not, prove very acceptable to the public. Notes will be made of the new inventions of the same class, as they appear in the journals, so that in the course of a few years another report of a similar kind, or one which may be considered a continuation of this, can be published.

Copies, at the mere cost of printing, paper and commission, are offered for sale. The matter has been stereotyped, in order to supply all the demand, and to reproduce this member of the series, should the subject be continued.

The progress of the elaborate report on the forest trees of North America, mentioned in the last two reports, was for some time arrested by the absence of the author, Dr. Gray, in Europe. He has now, however, returned, and will resume the preparation of the drawings, as soon as the funds of the Institution will admit of the expenditure. This work has proved a more expensive undertaking than was at first anticipated, and can only be finished on the original plan, by extending the time of its publication over several years. It will form a valuable contribution to the botany and economical and ornamental arts of our country.

Dr. F. G. Melsheimer, of Dover, Pennsylvania, has presented to the Institution a catalogue of the Coleopterous insects of North America, with references to the principal places of description. This has been put to press, but progresses slowly on account of the great care necessary

in correcting the proofs. When printed, it will be of great service to the cause of American entomology.

Besides the reports, other works are in progress, among which may be mentioned a small volume by Professor Baird, consisting of practical directions for the collection and preservation of specimens of Natural History. This will be illustrated with numerous figures, and issued as soon as the engravings can be procured. A part of the letter-press has been finished. It is especially designed for the use of travellers and officers of the Army and Navy who may be inclined to make collections for the Smithsonian Institution, but will be of general interest to the cultivators of Natural History.

A volume of tables of use in Meteorology and other branches of scientific observations, has been prepared, under the direction and at the expense of the Institution, by Professor Arnold Guyot. The following are the contents of this volume, viz :

1. Thermometrical tables for the conversion of the scales of different thermometers into each other.
2. Hygrometrical tables giving the elastic force of vapor, the relative humidity, &c.
3. Barometrical tables for the comparisons of different scales, reduction of observations to the freezing point, and correction for capillary action.
4. Hypsometrical tables for calculating altitudes by the barometer, and by the difference of the boiling point.
5. Tables of the corrections to be applied to the monthly means to obtain the true mean.
6. A set of miscellaneous tables frequently required in physical investigations.

These tables supply a desideratum in the English language, and will doubtless be highly prized by all engaged in physical research. It is proposed to extend their number so as to include a wider range of objects, and to publish them in parts to suit different purposes. Copies will be distributed with the quarto volumes of our publications, and sent to meteorological observers. The tables have been stereotyped and may therefore be offered for sale at a low rate.

Since the date of the last report, a number of separate memoirs have been bound together so as to form the second volume of the series of Smithsonian Contributions. The memoirs, an account of which has just been given, will be ready for distribution during 1852.

The second volume has been forwarded to all the colleges and other institutions specified in the rules adopted for the distribution of the Smithsonian publications in this country, and to all the first class libraries and principal literary and scientific societies abroad. Through the liberality of the members of the Senate of the United States and its officers, we have been enabled to send to our foreign correspondents, in addition to our own publications, copies of reports to Congress, and other works published at the expense of government. In return, the Institution has received a series of flattering acknowledgements and valuable presents, not only of the current numbers of transactions, but in several instances, of entire sets of all the volumes.

The promotion of knowledge is much retarded by the difficulties experienced in the way of a free intercourse between scientific and literary societies in different parts of the world. In carrying on the exchange

of the Smithsonian volumes, it was necessary to appoint a number of agents. Some of these are American consuls, and other respectable individuals, who have undertaken in most cases to transact the business free of all charge, and in others for but little more than the actual expense incurred. These agencies being established, other exchanges could be carried on through them, and our means of conveyance, at the slight additional expense owing to the small increase of weight; and we have accordingly offered the privilege of sending and receiving small packages through our agency to institutions of learning, and in some cases to individuals who choose to avail themselves of it. The offer has been accepted by a number of institutions, and the result cannot fail to prove highly beneficial, by promoting a more ready communion between the literature and science of this country and the world abroad.

As a part of the same system, application was made through Sir Henry Bulwer, the British minister, at Washington, for a remission of duties on packages intended for Great Britain, and we are informed that a permanent arrangement will probably be made, through the agency of the Royal Society, for the free passage through the English custom-house of all packages from this Institution.

The Smithsonian exchanges are under the special charge of Professor Baird, who has been unwearied in his exertions to collect proper materials, and to reduce the whole to such order as will combine security with rapidity of transmission.

The system of exchange here described has no connexion with that established between national governments by Mr. Vattemare. It is merely an extension of one which has been in operation on a small scale for nearly half a century between the American Philosophical Society and the American Academy on this side of the Atlantic, and the several scientific societies on the other.

Ancient Monuments.—The success of the first memoir published by the Smithsonian Institution has awakened much attention to American antiquities, and a number of communications have been submitted on this subject. Among these is one by Mr. William Pidgeon, of Virginia, who has spent a number of years in the exploration of mounds, and other ancient remains, on the upper branches of the Mississippi.

The results of his labors are of a very interesting character, though the facts contained in his memoir are too much mingled with the traditions received by him from the Indians, and with his own hypotheses, to be accepted as a part of the Smithsonian Contributions. After repeated conversations with Mr. Pidgeon, I was clearly of opinion that his researches ought to be given to the public in some way, in order that his statements might receive due attention, and be corroborated or disproved by other explorers; and I am pleased to be able to state that a gentleman of Washington has undertaken to arrange and edit these researches, and that they will be published in a separate volume for the benefit of the authors.

We have also received communications relative to mounds from Mr. Charles Whittlesey, of Ohio, from Mr. Titian R. Peale, of Washington, and Mr. William E. Guest, of Ogdensburg, New York. The first of these may be considered as supplementary to the memoir of Messrs. Squier and Davis, describing works omitted in their survey. The second gives a plan and description of the mounds which formerly existed on the present

site of St. Louis, Missouri, made during the visit of Major Long's party in 1849 to that country, on their way to the Rocky mountains. This sketch is now interesting on account of the fact that, in the rapid progress of improvement, these mounds have been nearly obliterated, and that they can only be preserved to science, as they existed more than thirty years ago, by this publication.

The third is an account, with drawings, of ancient works at Prescott, in Canada West. The great size of the remains of trees which occupy the ground, evince the long time which must have elapsed since these works were constructed, and the entire absence of stone pipes and arrow heads has induced the belief that they are of a higher antiquity than those in the Ohio valley.

The last two contributions will form a single memoir, the plates for which are partially completed.

But the most interesting circumstance connected with the study of the ancient remains of this country is a recent action of the American Antiquarian Society of Worcester, Massachusetts. This institution was founded in 1812 by the zeal and liberality of Isaiah Thomas, for the purpose of collecting and preserving such manuscripts, pamphlets, and other articles as relate to the history of this country, and for the exploration and publication of its antiquities. It was at the expense of this society that the original researches of Mr. Atwater, on the mounds of the Ohio valley, were first published, and during the last two years the condition of its funds has again enabled it to take the field, and to direct its attention to the remarkable antiquities in the State of Wisconsin.

These antiquities, it is well known, consist of representations, on a gigantic scale, of birds, beasts, and fishes, and though many of them have been surveyed, and accounts of them given in the memoir of Messrs. Squier and Davis, comparatively few of those which are said to exist have been explored or delineated. For this reason, the council of the society have engaged Mr. I. A. Lapham, an experienced engineer, to make explorations and surveys, and drawings of these mounds. He had been engaged in these operations for two seasons, and is now employed in making up an account of his labors.

To insure harmony of action in the cultivation of the wide field of research offered in the investigations of the ancient monuments of this country, the Antiquarian Society has agreed to present to the Smithsonian Institution the results of the explorations of Mr. Lapham for publication, and to reserve its limited funds for further explorations. The memoirs will be examined and revised by the society, and will be published under its auspices in the Smithsonian Contributions.

This arrangement is another pleasing evidence of the feeling with which the efforts of this Institution are regarded, and the willingness with which other institutions co-operate with it in the important work of promoting original knowledge.

Explorations, Researches, &c.—During the last year several minor explorations have been made in the line of natural history, partly at the expense of the Institution. The sum of fifty dollars was appropriated to Professor C. B. Adams, of Amherst College, to pay in part his expenses while making collections in the West Indies and Panama. For the sum advanced, an ample return has been made in new and rare specimens. Professor Baird and Mr. Charles Girard have also made explorations

which have added to the collections of the Institution at a cost little beyond that of the expense of transportation.

In this connexion I may mention that Professor Baird has contributed the report on the vertebrate animals collected by Captain Stansbury in his expedition to the Salt Lake region, and facilities have been given at the Institution to a number of persons in making scientific reports to Congress.

A series of experiments also have been made in our laboratory by a commission appointed by government to examine the stone proposed for the extension of the Capitol. It is believed that the Institution may, in the aid it affords the government in scientific operations, more than repay all the obligation imposed by the acceptance of the Smithsonian trust.

It was mentioned in the last report that the specimens which were procured by Mr. Culbertson from the Upper Mississippi, had been referred to Dr. Joseph Leidy, of Philadelphia, for examination. He has since made a report (see Appendix) giving a brief statement of the results of his investigation. From this report it appears that the specimens are of much scientific interest, showing as they do, for the first time, the existence in this country of an eocene deposit, rivaling in the number of its species of extinct animals the celebrated basin of Paris.

Occultations.—It has been mentioned in the preceding reports, that lists of occultations, and tables of reductions, have been published, from 1848 to 1851, inclusive. The cost of the computation of these tables, as well as that of their publication for the past two years, was borne by the Institution, but since then Congress has ordered the establishment of an American Nautical Almanac; and as these tables will form a part of this ephemeris, Mr. Preston, the late Secretary of the Navy, directed that the expense of the computation should be defrayed from the appropriation for the Almanac, the printing and distribution to be at the charge of the Institution. A similar order has been given by the Hon. Wm. A. Graham, the present Secretary of the Navy, relative to the tables for 1851 and 1852.

The tables for 1852 are much extended by the introduction of occultations visible in every part of the earth. The form is also somewhat altered in order better to adapt it to the arrangement to be adopted by the Nautical Almanac.

The primary object of these tables is to facilitate the accurate determination of the longitude of places within the territory of the United States, and in this respect they have done good service, especially in the hands of the officers of the coast survey, and the explorers and surveyors of our new possessions on the coast of the Pacific. Their extension will render them useful to geographers in every part of the world. They have been computed, for the present and the last two years, under the direction of Lieut. Davis, the accomplished superintendent of the American Nautical Almanac. As soon as this work, which will be an honor to the country, is ready to be issued, the publication will be relinquished by the Smithsonian Institution.

We observe again, in this case, the policy of not expending the funds of the Institution, in doing what other means can accomplish.

It will be recollected that Mr. Sears C. Walker, astronomical assistant of the United States coast survey, prepared for the Smithsonian *Transac-*

tions a memoir containing a determination of the true orbit of the planet Neptune, and that from this orbit, and the mathematical investigations of Professor Pierce, an ephemeris of Neptune was compiled. The ephemeris was prepared for the years 1848 and 1849, under the direction and at the expense of this Institution, but for the years 1850-'51-'52, it was computed under the superintendence of Lieutenant Davis, and at the expense of the appropriation for the Nautical Almanac, while the cost of printing and of the distribution has been defrayed by the Institution.

The ephemeris has been generally adopted by the principal astronomers of the world, and Professor Airy, the astronomer royal of Great Britain, has undertaken the labor, in his last volume of Greenwich Observations, of critically comparing his observations on the planet in the heavens with the predictions of the Smithsonian ephemeris. From these comparisons it is found that the ephemeris gives the position of the planet with a degree of precision not inferior to that with which the places of the planets longest known are calculated. The labors, therefore, of Mr. Walker on the elements, and Professor Pierce on the theory of the planet Neptune, have been crowned with complete success. It is proposed hereafter to collect all the observations which may have been made on the planet, and compare them with the ephemeris, in order, if necessary, still further to correct the orbit.

Meteorology.—The general system of meteorology now in operation in this country, and described in the last report, has during the past year been continued and gradually extended. The instruments constructed under the direction of the Institution, with the aid of Professor Guyot, have been further improved, and some slight changes, indicated by experience, have been made to render them more convenient to the practical observer, and they may now be considered not only equal in accuracy to the instruments of the best construction from abroad, but in some respects superior. They are furnished with the means of ready adjustment to the standard instruments, and being in every instance accurately compared before they are used, and the error corrected, the labor of inserting a correction in the journal is avoided. New efforts have also been made to obtain a still more accurate comparison between the standard barometer of this country and those of the more important European observatories. For this purpose a second standard barometer by Newman, compared with the standard of the Royal Society, and a barometer by Ernst, compared with the standard of the Paris observatory, were ordered at the expense of the Institution. By a long series of comparisons between these two instruments and others at Cambridge, (Massachusetts,) Toronto, (Canada West,) and Washington city, the object sought has, it is believed, been obtained. The thermometers, also, constructed by Mr. Green, of New York, for the Institution, have been compared with European standards, and an important step has thus been made towards obtaining reliable results as to the absolute meteorological elements of the different parts of this continent.

It was stated in the last report that the regents of the University of New York had made an appropriation for supplying thirty-three academies in that State with instruments, and had given the establishment of the whole system in charge to this Institution. The State of Massachusetts has also made a similar appropriation and arrangement. During

the past year the instruments for this State have been constructed, and a part of the stations established under the care of Professor Guyot.

At the last meeting of the American association, a report was made, and a series of resolutions adopted, (see appendix,) for extending the system of observations with the same instruments to other parts of this continent. These resolutions directed the committee to memorialize Congress for aid in extending the system under the direction of this Institution; to request the Secretary of the Treasury to provide for making observations at the several light-houses to be established on the coast of California; to ask the surgeon-general to establish new stations at important points; to memorialize the other States of the Union to follow the example of New York and Massachusetts, and also the Canadian government to co-operate in the same enterprise.

What may be the result of the labors of the members of the committee to which this duty is entrusted, it is impossible to say. They can scarcely fail, however, to awaken a more general interest in the enterprise, and to receive a favorable response to some of the requests.

Since the date of the last report, the system particularly intended to investigate the nature of American storms, immediately under the care of this Institution, has been continued and improved, both in the number of the stations, and, in some degree, in the character of the instruments. An appropriation was made to furnish a larger number of stations than previously with barometers and thermometers, by distributing these instruments in some cases entirely at the expense of the Institution, and in others by selling them to the observers at half their original cost; but the demand was so great, and the loss by breakage in transmitting the instrument so frequent, that the appropriations were soon exhausted, and until we can afford to devote a large sum to the object, and employ a special agent to transport the articles to their destination, it will be inadvisable to attempt anything more in this way.

Though the instruments employed by these observers in some cases can not be relied on for giving absolute results, yet they serve a good purpose in determining changes of pressure and temperature, and the returns give all the varying phrases of the sky.

Thus far, the returns which have been received from this system have been arranged in folio volumes, and a beginning has been made in the way of deducing general conclusions from them, which may test the value of the observations and lead to their improvement by suggesting other objects of inquiry. The results already obtained give promise of interesting and valuable additions to our knowledge of the nature of the storms which traverse this continent during the winter seasons, and will probably serve to settle definitely several theoretical questions of much interest to the meteorologist.

The meteorological correspondence of the Institution is principally attended to by Professor Foreman, and the labor which this involves is sufficient to occupy the greater portion of his time. The letters received from this class of co-operators are not confined to the subject of meteorology, but include the whole domain of physical science. We consider it, as before observed, a duty in all such cases to give the information required; and if this is not in the possession of the officers connected with the Institution, it is procured from other sources.

For the details as to the management of the meteorological affairs of the Institution, see Professor Foreman's report on this subject.

Library and Collections.—It will be recollected that the income of the Institution was, by a compromise alluded to in a former report, to be divided into two equal parts, one part to be devoted to the formation of a museum, a library, and a gallery of art, and the other to publications, researches, and other active operations. The terms of this compromise have been rigidly adhered to, as will be seen by a reference to the general statement of accounts given in the last report. Up to the date of the appointment of Professor Baird, in July, 1850, the part of the income devoted to the collections was expended on the library, or on objects pertaining to it. Since that time, a portion has been devoted to the museum.

It is proper to remark that this compromise was founded upon another, namely, that the cost of the building and furniture should be limited to two hundred and fifty thousand dollars. But in order to the better security of the collections, the regents have since found it necessary to add, in round numbers, fifty thousand dollars to this sum, which must of course diminish the income which would otherwise have been devoted to the active operations.

It is evident that one spirit, if possible, should pervade the whole organization, and that the same policy should be adopted with reference to all parts of the plan. Among the maxims which have been acted upon, that of occupying ground untenanted by other institutions, and of doing nothing with the funds which can be equally well accomplished by other means, has commended itself to the intelligent and reflecting portion of the public; and it has always appeared to me that this is as applicable to the formation of collections of books and specimens, as to the publications and other operations of the Institution.

With reference to the library, the idea ought never be entertained that the portion of the limited income of the Smithsonian fund which can be devoted to the purchase of books, will ever be sufficient to meet the wants of the American scholar. On the contrary, it is the duty of this Institution to increase those wants by pointing out new fields of exploration, and by stimulating other researches than those which are now cultivated. It is a part of that duty to make the value of libraries more generally known, and their want in this country more generally felt; to show in what branches of knowledge our libraries are more deficient; to point out the means by which those deficiencies can be supplied; to instruct the public in the best methods of procuring, arranging, cataloguing, and preserving books; to give information as to the best form and construction of library buildings; in short, to do all which was originally intended in the plan of rendering the Institution a centre of bibliographical knowledge, to which the American scholar can refer for all information relative to books in general, and particularly to those in our own country. The libraries of the country must be supplied by the country itself; by the General Government; by the State governments; by cities, towns, and villages; and by wealthy and liberal individuals. It is to be hoped that in the restoration of the library of Congress, a foundation will be laid for a collection of books worthy of a government whose perpetuity principally depends on the intelligence of the people.

The proper management of books, and general instruction as to their use, are matters perhaps of more importance than their accumulation in any one place. It is estimated that about twenty thousand volumes, including pamphlets, purporting to be additions to the sum of human knowledge, are published annually; and unless this mass be properly arranged, and the means furnished by which its contents may be ascertained, literature and science will be overwhelmed by their own unwieldy bulk. The pile will begin to totter under its own weight, and all the additions we may heap upon it will tend to add to the extension of the base, without increasing the elevation and dignity of the edifice.

One of the most important means of facilitating the use of libraries, particularly with reference to science, is well digested indexes of subjects, not merely referring to volumes or books, but to memoirs, papers, and parts of scientific transactions and systematic works. As an example of this, I would refer to the admirably arranged and valuable index to natural philosophy and the mechanical arts by Dr. Young. "If my library were on fire," said a celebrated author, "and I could save but one scientific book, it would be Dr. Young's index." This work comes down to 1807; and I know of no richer gift which could be bestowed upon the science of our own day than the continuation of this index to the present time. Every one who is desirous of enlarging the bounds of human knowledge should, in justice to himself, as well as to the public, be acquainted with what has previously been done in the same line, and this he will only be enabled to accomplish by the use of indexes of the kind above mentioned.

The most important operation during the past year relative to the library, is the progress made by Professor Jewett in completing his plan of stereotyping catalogues with separate titles, described in the last report.

To reduce this plan to practice a series of original experiments were required, involving the expenditure of much time and labor. For this purpose, in preference to the usual method of stereotyping, a new one, invented by Mr. Josiah Warren, of Indiana, has been adopted on the recommendation of a committee to whom it was referred for examination. It is a fact well known to inventors, that however simple the theoretical plan of effecting a desired object may appear, a series of unforeseen difficulties must be encountered in the details, before the idea can be realized in actual results. These difficulties, in the present case, it is believed, have been overcome, and the plan is now ready to be applied to the formation of a general and uniform catalogue of the libraries of the country. The course proposed is first to proceed with the catalogues of the library of the Institution in accordance with the rules recommended by the commission appointed to report on this subject. This, stereotyped by the new process, may be distributed as a model for the other libraries which may adopt the plan. After all parts of the plan have thus been thoroughly tried, it will be desirable to commence on some large collection. The late accident which has happened to the library of Congress will induce the necessity of a new catalogue, and it is hoped that a liberal and enlightened policy will lead to the adoption of the Smithsonian plan. This will not only enable the government to issue, at a trifling expense, a new catalogue every year, with all the additions in their proper place, but also to assist in giving to the country an improved system

of cataloguing, and facilitate the production of a general catalogue of all the libraries of the country.

Since the publication of the account of Mr. Jewett's plan of forming general catalogues, the invention has been claimed separately by two individuals in Europe. It is true, the want of such a plan has long been felt, and a general idea may have been conceived as to how it might be accomplished, but no attempts have been made to reduce it to practice, and indeed had they been made, they could not have succeeded, and would have done injury to the cause. The conditions necessary to success never before existed, and a premature attempt always tends to lessen public confidence in an enterprise, when the proper time for its actual accomplishment arrives. Besides this, there is a wide difference between the mere suggesting the probability of a plan, and actually overcoming the difficulties which arise at every step in reducing it to practice.

With reference to the copyright law, something ought to be done to put the whole matter on a better footing. I repeat the assertion before made, that this law, as it now exists, imposes a tax on the Institution, without an adequate return. The great majority of the books received are such as are found in almost every public and private library; but very few of them would ever be purchased by the Institution, and are consequently dear at any price, even that of shelf-room and attendance, not to mention cost of transportation and of furnishing the certificates.

Granting the proposition that it is important a copy of every book originally published in this country should be somewhere preserved, it does not follow that the Smithsonian fund ought to be burdened with the expense of this charge.

If they should be preserved, it becomes the duty of Congress to provide for their care, as much as it does for that of the models of the Patent Office, and no good reason can be assigned why the one should not be imposed upon the Institution as well as the other. Indeed, models are a species of books intended to convey ideas which printing cannot impart.

The objection to the present arrangement may be obviated by adopting the suggestion of Professor Jewett, that but one copy, instead of three, of each book, be sent to Washington for deposit, and that in place of the other two copies, a small fee be paid to the Institution, sufficient to defray all expenses; the maxim again being applied of not expending the funds in doing that which can and ought to be done by other means.

By reference to the report of the Librarian, it will be seen that the collection of books has continued to be increased by purchase, by copyright, and by exchange. From the last mentioned source the Institution is obtaining a most valuable series of books of the highest interest to the scientific student, consisting principally of the transactions and proceedings of learned societies. In a few years, it is believed, as complete a collection of these will be gathered as it is possible to obtain.

The museum is to consist, according to the law of Congress, and the terms of the compromise, of "objects of art, of foreign and curious research and of natural history, of plants and geological and mineralogical specimens." It would, however, be unwise in the Institution to attempt the formation of full collections of all these objects, or, in other words, to form an establishment similar to that of the British museum. The whole income devoted to this object would be entirely inadequate. The

portion of the main building appropriated to the museum consists of a single room two hundred feet long by fifty feet wide. This space may be entirely filled in the course of three years, without the purchase of a single article, if the means be adopted which present themselves at the seat of government for making collections. But when this space is filled the accumulation of specimens must cease, or an addition be made to the building, which, to harmonize with the present edifice, would involve a large expenditure. The question then arises, from what source is this money to be obtained? It cannot be derived from the annual income of the capital, for this would cripple the more important operations. It may be said that Congress will furnish the means; but this is relying on a very uncertain source, and the policy of applying to Congress for any aid is doubtful.

Furthermore, a promiscuous collection, embracing full sets of the objects above specified, is unnecessary in carrying out the plan of organization of the Institution.

For example, the organic remains brought from the upper Missouri by Culbertson, have been examined and reported on by Dr. Leidy, of Philadelphia, in that city; and the plants from California and Mexico have been referred to Dr. Torrey, at Princeton, and to Dr. Gray, at Cambridge. In this way, not only has the learning of these gentlemen been brought into requisition, but also their special cabinets rendered subservient to our use. The co-operation of the learning and talent, as well as the use of the libraries and collections of the whole country, is an essential feature of the plan, and ought not to be lost sight of.

I would, however, distinctly disavow the intention of underrating the importance of collections in themselves. On the contrary, it ought to be the duty of the Smithsonian Institution to point out the means by which they may be made, and to aid in the work, to the extent of its ability, by embracing all opportunities which may offer for procuring specimens for distribution, and by facilitating exchange and assisting explorations.

Though the formation of a general collection is neither within the means nor the province of the Institution, it is an object which ought to engage the attention of Congress. A general museum appears to be a necessary establishment at the seat of government of every civilized nation. The navy, the army, and the whole corps of commercial and diplomatic agents in foreign countries, all consider it their duty to send to the seat of government of their own nation every object which may serve to improve or to interest the people. Indeed, the government of the United States has already formed the nucleus of such a museum in the collections now in the Patent Office. An establishment of this kind can only be supported by government, and the proposition ought never to be encouraged of putting this duty on the limited though liberal bequest of a foreigner. The Smithsonian Institution will readily take the mental direction of an establishment of this kind, give plans for its organization and arrangement, provided it be requested to do so, and the means for effecting the object be liberally supplied.

I make these remarks with reference to the collections, because I am fully impressed with the fact that the tendency of the Institution will be to a statical condition, in which the income will be absorbed in the support and accommodation of objects of a doubtful or contingent value.

There is even danger in receiving donations from individuals. The articles may be valuable in part, but may consist also of much which the Institution cannot well afford to keep. Besides this, it is extremely difficult to discharge, acceptably, the duty of the curator of property thus acquired. Since the house-room and the income of the Institution for the accommodation and support of collections are limited, great care must be exercised in the choice of the articles, and preference given to those which are of importance in determining problems of interest, and which give promise of the ready production of new and interesting results.

For a detailed account of the additions to the museum during the past year, and the present state of the collections, I must refer to Professor Baird's report herewith presented.

In an appendix to this will be found a list of the donations, with the names of the donors alphabetically arranged. These consist principally of specimens not generally found in other collections, and though they may not be very attractive to ordinary visitors, the student of natural history will find in them much of interest.

The circular prepared by Professor Baird, describing the method of collecting and preparing specimens, and indicating objects especially desirable, has proved effective in procuring important contributions.

Among the objects which should be collected and preserved with care, are the remains of the specimens of the arts of the aboriginal inhabitants of this country, the contents of mounds, and the stone implements found on the surface of the earth. The implements and industrial products of the present tribes of Indians should also be gathered as the materials for the advance of the new and interesting science of ethnology. Of the contents of mounds, but a limited amount of specimens exist, and as these are not, like the spontaneous productions of nature, constantly in the process of reproduction, every article should be diligently sought for, and carefully preserved. Some additions have been made to the collections in this line.

The museum of natural history, besides plants and minerals, numbers eighteen hundred and fifty jars, containing specimens in spirits of mammalia, reptiles, fishes, articulata, mollusca, and radiata, amounting in all to twenty-five hundred species. Besides these, there are about nine hundred specimens of skulls and skeletons, and three thousand of skins of European and American birds.

Lectures.—In accordance with the suggestion contained in the act of incorporation of the Institution, courses of lectures have been given during the past year in the lecture-room of the Smithsonian building, and the reports of these lectures are generally copied in the public papers throughout the Union. Though the plan of diffusing knowledge by means of lectures is too restricted in its influence to meet fully the liberal views of the Smithsonian bequest, yet there is no place in the United States where such means will have a tendency to affect more minds and do more good than in the city of Washington, where persons from all parts of the country assemble during the sessions of Congress. It was supposed, at first, that the interest in these lectures would soon die away; but the experience of three years has indicated no tendency of this kind. This is in part owing to the constant influx of strangers

and change of inhabitants. Besides this, there is in this city, in proportion to the whole number of inhabitants, a large number of intelligent persons with moderate salaries, who gladly avail themselves of the means of improvement offered by the gratuitous lectures of the Institution.

As an evidence of the high appreciation of the advantages which these lectures afford the citizens of Washington, I may mention that the corporation of the city has ordered, since the last meeting of the board, a bridge to be constructed over the canal at Tenth street, for the special accommodation of those who attend the evening instruction given at the Institution. This bridge, with a well-drained and well-lighted path across the public grounds, will afford a direct and comfortable approach to the building from a central point on Pennsylvania avenue.

In my last report I mentioned the fact that much complaint had been made through the public papers on account of the size of the lecture-room. It was the original intention of the regents to construct a lecture-room in the main building, though, according to the plan proposed, the number of persons it would hold would scarcely have been greater than that now accommodated. This plan, however, was thought to be unsafe, because it was at first not proposed to fire-proof the interior; but since an opposite course has been resolved upon, a large lecture-room may with safety be constructed in the main building, and the present lecture-room, having temporarily served the purpose, may be applied to other uses.

The proper construction of a lecture-room is, however, a problem of great difficulty, which in the present instance will be much enhanced by the form and peculiarities of the building. It must be well-adapted to sight, to sound, to ventilation and warming. A room might be constructed which would seat five thousand persons; but we know of none such, in every part of which an ordinary speaker can be distinctly heard. Too much must therefore not be expected with reference to the new lecture-room, though every endeavor will be made to render it as perfect as the conditions to which it is unavoidably subjected will allow.

The selection of the lectures, and the arrangement of the courses, have been found, in some cases, an unpleasant and perplexing duty. The gentlemen invited, as a general rule, have been men of high standing, and have been chosen on account of their reputation and moral worth, rather than with reference to their proficiency in the art of rhetoric. It is not the aim of the Institution in these lectures merely to please the ear, but to impart important truths which may be valued for their own sake.

Many applications have been made for the use of the lecture-room of the Institution for pay lectures and exhibitions of a private character, but these have in all cases been refused. The use of the room has, however, on several occasions, been given to the faculty of Columbian College, and also for the meetings of the Teacher's Association of the District of Columbia. The organization of this association took place in the Smithsonian building in 1850, and its meetings have been regularly held in the lecture-room from that time to the present. It is believed that the spirit of the will of Smithson is properly consulted, in giving encouragement and rendering facilities to these meetings. The association has been kept up with much spirit, and I am sure that much good has resulted from the organization. It has served to cherish a feeling of harmony among the teachers, and to awaken a spirit of improvement relative to education and general knowledge.

The following is a list of the titles of lectures given before the Institution during the last session of Congress, with the names of the gentlemen by whom they were delivered :

A course of six lectures on History as a science, and a single one on Poetry, by Dr. Samuel H. Cox, of Brooklyn, New York.

Two lectures on Induction and Association, by Dr. John Ludlow, Provost of the University of Pennsylvania.

A course of five lectures on Entomology, and one on the Alps, by Rev. Dr. John G. Morris, of Baltimore, Maryland.

Two lectures on the History and the Forms of the English Language, by Professor W. C. Fowler, of Amherst, Massachusetts.

One lecture on the Architecture of the Middle Ages, by Dr. A. H. Vinton, of Boston.

Two lectures by Professor S. S. Haldeman, of Columbia, Pennsylvania, on the Mechanism of Speech, and its bearing upon the natural history of the human race.

Two lectures on Geology, by Dr. Benjamin Silliman, Sr., of Yale College, New Haven.

REPORT

OF

THE ASSISTANT SECRETARY

IN

CHARGE OF THE LIBRARY.

PRESENTED DECEMBER, 1861.

To the Secretary of the Smithsonian Institution :

SIR: In compliance with my official duty, I present to you, at this time, a report upon the affairs of the library during the year 1851.

The following table shows the number of books and other articles which have been received since the last annual report :

Sources.	Books.	Pamphlets.	Engravings.	Maps.	Music.	Drawings.	Other articles.	Totals.
Purchases.....	414	5	.....	.....	.....	.....	.....	419
Donations.....	549	618	.....	.....	.....	.....	.....	1,167
Copyrights.....	489	47	.....	9	573	.....	21	1,139
Total.....	1,452	670	.....	9	573	.....	21	2,725

Adding these sums to the aggregates of the last year, we obtain the following table, exhibiting the whole number of books and other articles at present belonging to the library, and the sources from which they have been received.

Sources.	Books.	Pamphlets.	Engravings.	Maps.	Music.	Drawings.	Other articles.	Totals.
Purchases.....	3,232	39	1,335	2	.....	.....	.....	4,608
Donations.....	1,176	1,937	48	27	.....	30	.....	3,218
Copyrights.....	1,828	117	9	41	1,134	.....	.....	3,196
Deposites.....	873	.....	.....	.....	.....	.....	.....	873
Total.....	7,109	2,093	1,392	70	1,134	30	67	11,8

The *purchases* have been few, and limited to works required for immediate use. Until the completion of our building and the appropriation of all the funds of the Institution to their permanent objects, the increase of the library from this source must continue to be small. The books which are needed for immediate use must of course be procured, if possible, at whatever cost; but with respect to all other works, it will doubtless be well to allow our funds to accumulate, in order to make a more considerate purchase when more favorable opportunities may occur.

The manner of buying books, a few at a time, in this country, is inordinately expensive. The saving by purchases through a competent agent at the book auctions and antiquarian shops of Europe; should not be reckoned by a *per centage*; it is rather the obtaining of books for a half or a quarter of the price which they would cost through the regular channels of the importation trade.

The number of books received by *exchange* has been considerably larger than it was during the preceding year. The books are, too, of a valuable class, consisting mostly of the current publications of learned societies in Europe and America. In some cases, complete sets of these publications have been received. Doubtless, many more would be obtained, could more direct application be made for them.

The number of books received under the *copyright* law has gradually

increased each year, but does not yet include more than half for which copyrights are secured in the United States. In my previous reports I have repeatedly alluded to this subject. It seems to me very important that it should receive the particular attention of the Board of Regents at the present time. Existing laws respecting the deposit of copies of books and other articles for which copyrights are secured, have failed almost entirely to fulfil the intentions of Congress. Authors and publishers complain of injustice. The demands of literature are not answered. The institutions intended to be benefited find the boon to be of very doubtful value. In short, no one of the parties interested is satisfied with the law in its present condition. The committee of the board, to whom was referred a special report upon this subject, presented by myself three years ago, was prevented, by the pressure of other business upon its members, from entering into an examination of the matter. I beg leave, therefore, to repeat at this time the recommendations of that report, with the grounds upon which they were founded.

The copyright laws of most nations require the delivery to the government, or to libraries designated by it, of a copy, or of several copies, of every work for which copyright is claimed. As far as I have been able to ascertain, in Saxony and in Portugal only one copy is demanded; in France, Austria, Russia, Bavaria, Denmark, and Prussia two copies are required; in the Italian States generally, Holland, Belgium, and the United States, three copies; in England, five copies; in Sweden, four or five copies. The number in several of these countries has varied at different periods.

This requirement had its origin in France, as far back as 1537. Its object is two-fold.

First, the deposit is considered necessary to the *complete protection of the author*. If his copyright be infringed, it may be important for him to be able to produce a certified copy of his work in order that it may be compared with the alleged counterfeit. In no other way can he be sure of finding such a copy than by making the deposit a condition of the copyright laws. It is like the model of a machine deposited in the Patent Office. Judge McLean, in delivering the opinion of the Supreme Court of the United States, in the case of *Wheaton versus Peters*, says: "The deposit of the book in the Department of State may be important to identify it at any future period, should the copyright be disputed, or an unfounded claim of authorship asserted."

The second reason for the requirement is the *public benefit*. The right of the government to demand copies of the work for this purpose, is a necessary consequence of the established theory of the copyright law.

The English and American courts agree in resisting the right of an author to the exclusive privilege of printing and selling his book, upon the statute, and not upon the common law. "Congress," says Judge McLean, in delivering the opinion of the Supreme Court in the case of *Wheaton vs. Peters*, "instead of sanctioning an existing right, created it." He says, further, with respect to the right of the government to demand copies, "No one can deny that when the legislature are about to vest an exclusive right in the author or inventor, they have the power to prescribe the condition on which such right should be enjoyed."

It is manifest, however, that inasmuch as the law is intended to encourage the production of books, no conditions should be annexed to it

which would be onerous to publishers; for such conditions would tend to defeat the very end proposed to be answered by the statute. Too many copies should not therefore be required. In England at one time eleven copies were demanded. It was made to appear that the law, with such conditions, operated as a discouragement to the publication of expensive works; it was, in consequence, changed. Five copies are now required, and a sum of money amounting to £2,800 a year is paid by the government to the other six libraries, in compensation for the loss of the privilege which they previously enjoyed.

The benefit of the deposit to the public is very great. It is universally allowed to be important for the interests of learning that in every country there should be at least one library where every book, pamphlet, or literary production of any kind, issued in the country, should be carefully preserved. Now, it is utterly impossible to collect the whole in any other way than by making the deposit a condition to the vesting of the right of copy.*

The advantage of the deposit to learning seems to have been the sole motive for its first introduction, and not, as is sometimes supposed, the censorship. Francis the First, of France, in 1537, gives as the ground for requiring a copy for the royal library at Blois, that these books "will be veritable proofs of that praiseworthy restoration of letters occurring in our time through our diligence, care, and labor, * * * and that recourse may be had to them if perchance the books should perish from the memory of man, or be varied from the true and original publication." (See Renouard, *Traité des Droits d'Auteurs*, T. i, p. 42.) No mention is made of their use for the purposes of the censorship, which, indeed, must be exercised before the printing of the book, and not afterwards. In another ordinance of the same year, explanatory to the one above cited, the king expressly declares, that it was not intended to affect the censorship in any way; and again, in an ordinance of 1538, appointing Nicobar, Greek printer, it is ordered that "a copy of every book printed shall be deposited in the royal library, to the end that should any calamities befall literature, posterity might there find a resource for repairing, in part, the loss of books." (Renouard *ut sup.*) The legal deposit, it is manifest, had its origin in an enlightened regard for learning, and not in any odious restrictions upon the liberty of the press.

* This point is discussed with great ability by Professor Libri in a letter to the chairman of the committee of the House of Commons on public libraries, dated May, 1849. The following extracts deserve particular attention. They occur in a work but rarely to be found in this country, and are strikingly appropriate and convincing. I hope, therefore, that I shall be excused for inserting them, notwithstanding their great length. (See report of the House of Commons on public libraries, for 1849, page 118 to 120.) "As I have already stated in my evidence, in my opinion, and as all educated men agree, it is necessary that in a great country there should be at least one library in which one may expect to find, as far as it is possible, all books which learned men, men who occupy themselves upon any subject whatever, and who cultivate one of the branches of human knowledge, may require to consult. Of these there is nothing useless, nothing ought to be neglected; the most insignificant in appearance, those which on their publication have attracted the least attention, sometimes become the source of valuable and unexpected information.

"You know better than me, sir, that it is in the fragments, now so rare and precious, of some alphabets, of some small grammars published for the use of schools about the middle of the fifteenth century, or in the letters distributed in Germany by the religious bodies commissioned to collect alms, that bibliographers now seek to discover the first process employed by the inventors of xylography and of typography. It is in a forgotten collection

It follows, then, from the facts and considerations which have been presented, that one copy of every book should be demanded of its author to be preserved in some public national library, both for his own sake and for that of the public. The legislature have the undoubted right to demand several copies as a condition to the granting of an exclusive right to the publication and sale of the book, provided that they do not demand so many as to impose a burden upon the publisher, and thus discourage instead of encourage the publication of books. The interest of the author and of the public (which when rightly understood can never be at variance) may alike require that more than one copy should be thus deposited; for if but one be deposited, and that be destroyed by fire or other casualty, the benefit of the deposit would be lost.

It ought to be remarked further, that the exacting of copies by the government implies an *obligation to preserve* them carefully, and to make them subservient to the purposes, both public and private, for which the deposit is made.

In this respect our own copyright law is defective. It requires the book to be deposited within three months after its publication, in the office of the clerk of the district in which the author resides. It also directs the clerk to transmit the copy to the State Department at Washington. It makes, however, no provision for the transmission, and it establishes no supervision. The consequence is, that not more than one half of the books for which copyrights are secured in the country ever reach the State Department, and no record is transmitted when the books are not sent.

Those books which are received are now kept in a room by themselves. They are, however, lent out to persons connected with the department; they are not properly recorded; no stamp is placed upon them for their identification; no catalogue is kept of them; they are not accessible for general use. Thus the benefit to the public is almost entirely lost.

The supreme court has decided that the deposit of the copy in the State Department is essential to a valid title; but in case of the loss of the certificate, the author has no certain means of establishing his claims. The benefit to the author is therefore lost (as in the case of Wheaton) or liable to be lost, though he may have fulfilled all the conditions of the law.

The requirement of a copy of every book and other article for which a copyright is secured, for the Smithsonian Institution, and also for the library of Congress, is made in the tenth section of the act of Congress establish-

of indifferent plates published at Venice, by Fausto Verantio, towards the end of the sixteenth century, that an engineer who interests himself in the history of the mechanical arts, might find the first diagram of iron suspension bridges.

“Nothing should be neglected; nothing is useless to whoever wishes thoroughly to study a subject. An astronomer who desires to study the motions peculiar to certain stars, requires to consult all the old books of astronomy, and even of astrology which appear the most replete with error. A chemist, a man who is engaged in the industrial arts, may still consult with profit certain works on alchemy, and even on magic. A legislator, a juriconsult needs sometimes to be acquainted with the laws, the ordinances which derive their origin from the most barbarous ages. But it is particularly for the biographer, for the historian, that it is necessary to prepare the largest field of inquiry, to amass the greatest quantity of materials. That is not only true as regards past times, but we ought to prepare the material for future students. Historical facts which appear the least important, the most insignificant anecdotes registered in a pamphlet, mentioned in a placard or in a song, may be connected, at a later period in an unforeseen manner, with events which acquire great importance, or with men who are distinguished in history by their genius, by their sudden elevation, or even by their crimes. We are not born celebrated; men become so; and when we desire to trace the history of those who have attained it, the inquirer is often obliged to

ing the Smithsonian Institution. No penalty is attached to a neglect of the requirement. It has therefore been generally held to be merely directory. In the case of *Jollie vs. Jaques*, (Southern District New York,) it was held that the delivery of copies to the two libraries was not a prerequisite to a title to copyright. By many also it is doubted whether, inasmuch as this enactment does not purport to be an amendment to the copyright law, a demand for the copy, in case it were refused, would be enforced by the courts.

Many publishers are not aware of the law; others regard it as unjust, and refuse to comply with it on that account; others, again, find compliance inconvenient, and, not considering it essential, neglect it. The consequence is, that not half the books to which we are entitled are received by us. Music being issued by fewer publishers, and being more easily sent, has generally been deposited; so also have labels of patent medicines. The labor of issuing certificates for these and recording them, is as great as for the books, whilst they have scarcely any appreciable and permanent value.

The books are frequently sent by mail, sometimes sealed, thus subjecting the Institution to letter postage upon them. The postmaster is directed to open such packages; but not unfrequently sealed letters are found within them, and thus the whole package is chargeable with letter rates. This indeed is the case not only with respect to books received under the copyright law, but also with respect to those received by donation. We have taken every means to make known the fact that we do not possess the franking privilege. We have invariably written to the publishers or donors of works who have made to us these expensive presents, and have several times received for reply that they were misinformed by the local postmaster, who had stated to them that the Smithsonian Institution was entitled to receive letters and packages without the payment of postage. It would seem to be inferred from the connection of the Smithsonian Institution with the government, that it of necessity possesses the franking privilege. We are thus subjected to great expense, which it is impossible for us to avoid, or materially to diminish.

The whole value of the books received during the year 1851 by the copyright clause of our charter has been estimated at four hundred and fifty dollars, which is perhaps a low estimate, taking no account of maps, music and other articles. The expenditure for postage and transportation of these, together with the time and labor spent in issuing certificates, may

pursue his researches in their most humble beginnings. Who would have imagined that the obscure author of a small pamphlet, 'Le Souper de Beaucaire,' would subsequently become the Emperor Napoleon, and to write fully the life of the execrable Marat, one ought to have the very insignificant essays on physics that he published before the revolution. Nothing is too unimportant for whoever wishes thoroughly to study the literary or scientific history of a country, or for one who undertakes to trace the intellectual progress of eminent minds, or to inform himself in detail of the changes which have taken place in the institutions and in the manners of a nation. Without speaking of the commentaries or considerable additions which have been introduced in the various reprints of an author, the successive editions of the same work, which appear to resemble each other the most, are often distinguished from each other by peculiarities worthy of much attention.

"Amateurs of Italian literature seek with avidity for the various editions of the 'Orlando Furioso,' and of the 'Jerusalemme Liberata,' published in the lifetime of Ariosto and Tasso, at the present day; for these editions, generally rather imperfect, exhibit the labors of the authors, and the changes of style and composition, as well as the ameliorations of every kind, introduced by these two great poets in their works. It is by comparing these different editions that we learn how those great masters worked. In the same way, in the first successive editions published of those famous 'Lettres Provinciales' of Pascal, which

be estimated at two hundred and twenty-five dollars. It will thus be seen that the privilege is, in its present condition, far from being so important as it was intended and supposed to be.

The same remarks apply probably with equal force to the subject as it concerns the library of Congress. It would seem, therefore, from this statement, that the law is *not* satisfactory to any of the parties affected by it! A thorough change of system, so far as the deposit of copies is concerned, seems to be required in order to give the security promised to authors, to relieve publishers from the trouble, expense and uncertainty attending their efforts to comply with the conditions of the present law, and to provide for the public benefit and the transmission to posterity of materials for the history of our own times.

The interests of all parties may be secured by a much simpler method than the present. After much consultation with those more particularly concerned, I have been led to believe that the following plan would prove generally acceptable:

1. To require a claim of copyright under the name of the proprietor, (to which should be subjoined his residence, with the date of the commencement of such claim, to be printed upon the title-page or the reverse of the title of every copy of his work, as follows:

“Copyright in this work is claimed from and after the 6th of August, 1852, by me, as author, [or proprietor.]”

A ——— B ———,
Of Boston, Massachusetts.

2. To require the deposit of one or more copies of the book within one month after the date of the claim, (if the book be published in any of the States east of the Mississippi river,) and within three months if published west of the same. The books to be transmitted by mail or otherwise, at the risk and cost of the claimant of the copyright.

The person depositing the book should be entitled to a certificate of deposit, on the payment of a small fee, which certificate should be made receivable in all courts of justice as *prima facie* evidence of compliance with the conditions of the law.

The omission to deposit within the time specified should not invalidate the copyright, but every proprietor of copyright should be allowed to

in the seventeenth century struck so severe a blow at the society of the Jesuits, are to be met with when examined with care, remarkable differences in language and style, which reveal to us in some measure the secret of the composition of that illustrious writer.

“Only to borrow one single fact of this kind from the scientific history of England, it will suffice to recall to memory all the discussions which a slight alteration introduced in the lifetime of the author, in one of the editions of the admirable ‘Principia’ of Newton, has occasioned. Of many books published, more or less recently, the particulars are known, and the manager of a large library ought particularly to apply himself to procure those works, which, sooner or later, will be asked for and consulted with profit by men who desire to examine things thoroughly. This takes for granted that a man entrusted with the direction of such an undertaking, possesses a very extensive and profound science; it assumes also that he has at his disposition sufficient money to obtain, when the opportunity offers, all those books which are usually rare and expensive. He requires also sufficient room to place and arrange them in the best possible manner, in order that studious men may derive from them easily all desirable advantage. To a large library, to a metropolitan library, intended to supply all the intellectual requirements of a nation, certainly no limits can be assigned.

* * * * *

“Without stopping here to name the rare books, the valuable editions, the typographical monuments of all kinds that a large library ought necessarily to contain to be complete, I

deposit the copy, or copies, at any time afterward, and previous to the commencement of an action for infringement of copyright, by paying the value of the book and — dollars. But if the book be demanded and refused, the copyright should be thereby forfeited.

It should be made obligatory that records be kept in the place of deposit; that the books be stamped so as to be easily and with certainty identified; and that they be restricted to the depository, unless required by a court of law.

The law would apply not only to books, but to maps and charts, music, engravings, &c., and should require that every copy so sent for security of copyright, should be perfect, and, if a book, well bound.

A monthly list of books thus deposited should be printed and distributed to booksellers and others. There are other details which would be necessary to be considered in preparing such a law, but they are easily adjusted after establishing the principles upon which the enactment is to be founded.

A law with the provisions above stated, would be much more satisfactory to publishers, because it would require less of them, and subject them to much less expense, and, more than all, would effect what the present law does not—security of copyright.

The question next arises, "Where shall the deposit of the book be made?" If but one copy be required, I beg leave to suggest that it could be most properly placed in the library of the Smithsonian Institution. The connexion of this establishment with the government is such as to render the deposit here peculiarly appropriate. We believe that it would be permanently more useful here, and better protected than in any other establishment. The rooms in the State Department appropriated to the purpose are now crowded to excess, and are, besides, needed for other purposes. The care of them occupies much of the time of a clerk, whose services can ill be spared. The clerks are continually changing, and hence it is impossible that any proper system for the care and usefulness of the books can be carried out. The business is entirely foreign to the department, and has, I am told, generally been considered as an incumbrance. It belongs more properly to a public library, and to one maintaining just the relation to the general government which the Smithsonian Institution does. This is the

shall ask your permission, sir, to point out, that if there are few old books, and even few editions already published of the same work, which ought not to find a place in a large metropolitan library, there are still fewer which are published at the present day, or which will be published within a certain period. The history of the past is nearly known, or at least will be, sooner or later, as far as the monuments and documents of every kind which have survived to the present day will allow. It is not the same thing for the history of the future; there every thing is vague, every thing is unknown, and we are absolutely ignorant, if, in the most insignificant book, in a pamphlet, in a song sold in the street, in a placard intended to announce the most common events, is to be found a fact, a circumstance, a name, a date, which one hundred years hence may excite interest by its connection in any manner, and which it is now impossible to foresee, with some singular event, or with some man become celebrated. It would be, however, impossible to exact from the manager of a library, that with the view of preparing himself for all the circumstances of the future, he should apply the funds at his command for the purchase of all books which appear annually in his country; besides, unless he devoted himself entirely to that, he could never know all the large and small books in published volumes, in livraisons (parts) or even in detached sheets, which might be published, not only in the capital, but in the most distant and obscure places in the provinces. It is this which, independently of any other consideration, renders the legal deposit so necessary; it is advisable, also, that whilst rendering it the least onerous possible to the publishers, by exacting only the number of copies strictly necessary for the object in view, all the measures which can render it really useful and of general application should be taken."

view taken of the matter in other countries. In England, the copy is required for the British Museum, (which sustains a relation to the British government similar to that which the Smithsonian Institution does to our own,) and not for the library of the House of Commons, or any library of the executive departments.

I am unable to say whether or not the deposit is desired by the guardians of the library of Congress. There is no doubt, however, that two or even three copies would be cheerfully granted by all publishers in this country, if they could be *sure that the purposes of the deposit would be answered*. The dissatisfaction which has hitherto been expressed has arisen entirely from the indefiniteness of the law, the difficulty of complying with it, and the doubt whether the deposit would be safely guarded, and rendered available for the object for which it is made.

Statistics of Libraries.—During the year, the report which I had the honor to present in January, 1850, upon the public libraries of the United States, has been printed. I continued to add to it, up to the time of its going to press, such new information as I was able to collect upon the various libraries; and the report constitutes a volume of more than two hundred pages. It has been widely distributed throughout the country. During the last three or four months we have received statements from upwards of a hundred libraries, more full and accurate than those which had before been presented. I hope to be able within a year or two to prepare a full account of these institutions.

The stereotyped Catalogue.—In my last report I presented, at considerable length, a plan for the stereotyping of catalogues by separate, movable titles, with a statement of the advantages which it was supposed would result from the system. The plan was referred to a commission of librarians and literary gentlemen, for the purpose of obtaining their opinion as to its value and feasibility. Their report was in all respects favorable, and I was authorized to proceed with the work. During the year I have bestowed much attention to the carrying out of the project.

Three methods of stereotyping had been devised, and it remained to be decided which of the three offered the greatest advantages. The first was by the electrotype process; the second by a modification of the common method of stereotyping; the third by a new process, patented by Mr. Josiah Warren, of Indiana. The last seemed to offer peculiar facilities, and promised to be much more economical than either of the other methods; but its applicability to our purposes had not been sufficiently tested. With the assistance of the patentee, I instituted a series of experiments in order to satisfy ourselves upon this point. The results were submitted to the judgment of a commission, who, after witnessing the process for manufacturing titles upon separate blocks, and carefully examining the work executed, recommended the adoption of this process in preference to the others.

These experiments were of course made with imperfect instruments. It was necessary before commencing the work in earnest to devise the best form of apparatus to be used. This required another extended series of experiments. These were completed as early as the month of April, but it was impossible to obtain the apparatus, ready for use, until the month of October. Everything connected with typography requires a great deal of exactness. It is very difficult to find workmen sufficiently skilful and careful to manufacture the machinery and apparatus. It was necessary also to instruct a workman in the manipulations of the art. Owing to delays from

these causes, it was not until the month of December that our office was in working order.

I present to you herewith a sheet printed from these titles, with some of the blocks. It will be seen from these specimens that the work, although executed by hands not well skilled in such employment, will compare not unfavorably with that produced by other stereotyping offices. Practice will give greater perfection. We can see no reason to doubt the mechanical practicability of the plan; it is now thought to be fully established. We may therefore direct attention to plans for carrying it practically and speedily into effect.

The course which I would propose for this purpose is, first to proceed with the catalogue of our own library, preparing it in accordance with the rules recommended by the commission, and stereotyping it as rapidly as is consistent with the perfection of the work. The first part of so extensive an undertaking should be done with great care; it will furnish a model for all subsequent labors. We cannot, therefore, at first advance with the same rapidity as will be practicable at a later period. Cataloguers must be trained; workmen must acquire skill; apparatus must be perfected.

After our own catalogue is completed, or nearly so, we may commence upon the catalogue of any other library which may be offered to us. The commissioners upon the catalogue suggested the importance of having the library of Congress first catalogued upon this plan. Since their report was written, the larger part of this collection has been lost by fire. Some considerable portion is, however, left, and undoubtedly measures will immediately be taken for replenishing the library. This would seem, then, to be a peculiarly appropriate time for presenting this matter formally to the proper authorities. It is extremely desirable that the catalogue of the new library should be constructed on a different plan from that heretofore followed—a plan which, however popular it may have been when it was adopted, has long since been generally abandoned. By entering into the system which we propose, Congress can save large sums of money in the reprinting of the catalogue, and can, at the same time, promote a great national work.

Respectfully submitted,

C. C. JEWETT, *Librarian.*

REPORT
OF
THE ASSISTANT SECRETARY
IN
CHARGE OF THE MUSEUM, &c.

To Joseph Henry, Esq., LL.D., Secretary of the Smithsonian Institution :

SIR: I herewith present to you the report of operations during the year 1851, in the departments severally assigned to my charge. These consist mainly of three: 1st, of publications; 2d, of distribution of volumes and exchanges; and 3d, of natural history; and I propose to take them up in the order here named.

1. PUBLICATIONS.

During the year 1851 the second volume of Smithsonian Contributions to Knowledge was published, containing four hundred and sixty-four pages of text, twenty-four plates, and eighty-two wood cuts. The printing was commenced in 1850 and completed in 1851; only a few, however, of the thirteen papers embraced in the volume had left the press before the commencement of the year, while more than one half the matter was not put into the printer's hands until after this period. The following list contains an enumeration of the individual memoirs of the volume, with the number of pages and illustrations to each. It will be remembered that each memoir is separately paged and indexed, and is thus distinct in itself, and that the volume is an aggregate of individual papers, with, however, a general introduction and title, as well as a general alphabetical index to all, in addition to the special index to each memoir. In order to facilitate the application of this general index, the plan used for congressional documents has been adopted for the third volume—namely, to assign beforehand to each paper its place in the series, and to have this number, in Roman letter, printed inside of the running head of each page.

List of Memoirs in Vol. II. Smithsonian Contributions to Knowledge.

1. Researches relative to the planet Neptune. By Sears C. Walker, Esq.; pp. 65.
2. On the Vocal Sounds of Laura Bridgeman, the blind deaf Mute at Boston, compared with the Elements of Phonetic Language. By Dr. Francis Lieber; pp. 32 and one plate.
- 3.* Microscopical Examination of Soundings made by the United States Coast Survey, off the Atlantic coast of the United States. By Professor J. W. Bailey; pp. 16 and one plate.
- 4.* Contributions to the Physical Geography of the United States. By Charles Ellet, Jr.; pp. 64, one plate and two wood cuts.
5. Mosasaurus, and the three allied new Genera, Holcodus, Conosaurus, and Amphoroosteus. By Robert W. Gibbes, M. D.; pp. 14 and three plates.
6. The Classification of Insects from embryological Data. By Professor L. Agassiz; pp. 28, one plate and eight wood cuts.
7. On the explosiveness of Nitre, with a view to elucidate its Agency in the explosion of July, 1845, in New York. By Dr. Robert Hare; pp. 20.
- 8.* Microscopical Observations made in South Carolina, Georgia, and Florida. By Professor J. W. Bailey; pp. 48 and three plates.
- 9.* Aboriginal Monuments of the State of New York, comprising the results of original surveys and explorations, with an illustrative appendix. By E. G. Squier; pp. 188, fourteen plates and seventy-two wood cuts.

* The asterisk added to the number indicates that the memoir was first issued in 1851.

10. Ephemeris of the planet Neptune for the date of the Lalande Observations of May 8 and 10, 1795, and for the oppositions of 1847, '48 and '49. By Sears C. Walker, Esq.; pp. 32.

11. Ephemeris of the planet Neptune for the year 1850. By Sears C. Walker, Esq.; pp. 10.

12.* Ephemeris of the planet Neptune for the year 1851. By Sears C. Walker, Esq.; pp. 10.

13.* Occultations visible in the United States during the year 1851. Computed by John Downes, Esq.; pp. 26.

The usual edition of each memoir consists of fifteen hundred copies, of which one thousand are retained for binding into volumes, and the remaining five hundred are distributed separately. Of papers printed in 1850 only twelve hundred and fifty copies were published, but the demand has become so great as to render it expedient to increase the number to fifteen hundred. In a single instance (that of Mr. Ellet's memoir) even five hundred extras were found inadequate, and an additional edition of one thousand was printed to meet the demand. The average number of copies, however, of the memoirs of the second volume is about fifteen hundred.

Several memoirs of the third volume of Smithsonian Contributions to Knowledge have been finished, and others are in so great a state of forwardness as to render its issue early in the year 1852 more than probable. The papers already completed, and partly distributed in a separate form, are:

1. Ephemeris of the planet Neptune for 1852. By Sears C. Walker, Esq.; pp. 10.

2. Occultations visible in the United States and other parts of the World in 1852. Computed by John Downes; pp. 34.

3. Monograph of the Fresh Water Cottoids of North America. By Charles Girard; pp. 80 and three plates.

The work of Professor Harvey, entitled *Nereis Boreali Americana*, or *History of the Marine Algæ of North America*, part i., *Melanospermeæ*, consisting of one hundred and fifty-two pages and twelve colored plates, is also completed, and only waiting for cases from the binder to be published.

The quarto memoirs for this third volume, now in press, are the following:

1. Description of Ancient Works in Ohio. By Charles Whittlesey.

2. Researches in Electrical Rheometry. By Professor A. Secchi.

3. *Plantæ Wrightianæ*. By Dr. Asa Gray.]

4. *Plantæ Fremontianæ*. By Dr. John Torrey.

These will, it is hoped, all be completed in a short time. The six plates of corals to accompany Professor Agassiz's paper for the volume are also now ready.

The fourth volume of the fourth series is also in press, and will probably be issued simultaneously with the third, in the coming spring. It will consist entirely of a grammar and dictionary of the Dakota language, prepared by Rev. S. R. Riggs, and will occupy about four hundred pages.

Several plates for vol. 5 of Smithsonian Contributions are also finished.

Besides these works in quarto, several reports in octavo have been printed. The first is the report on public libraries, by Professor C. C. Jewett. This was printed by order of Congress, as an appendix to the annual report of the Smithsonian Institution. It contains two hundred and eight pages. The second report is by Messrs. Booth and Morfit, "on recent improvements

* The asterisk added to the number indicates that the memoir was first issued in 1851.

in the chemical arts." This embraces two hundred and twelve pages, and has been stereotyped.

The fifth annual report of the Smithsonian Institution (for 1850) did not appear until December, 1851. This consists of three hundred and twenty-five pages with, and one hundred and forty-four pages without the list of copyright books received by the Institution up to 1851.

The report of Dr. F. E. Melsheimer, on the Coleoptera of the United States, is in press and will appear some time in the course of 1852.

The collection of Barometrical, Thermometrical, Hypsometrical and other tables, by Professor Guyot, has been stereotyped, with the exception of a few pages, and will be ready in a few weeks. It will embrace about two hundred pages.

A small pamphlet of directions for making collections of Natural History has been printed and is nearly ready. This will serve as a substitute for the larger work on the same subject which is now ready for the press. A circular sheet of similar character has also been published and extensively distributed, as also a sheet of directions and lists for the observation and registry of periodical phenomena of animal and vegetable life.

2. DISTRIBUTION OF VOLUMES AND EXCHANGE.

During the past year the second volume of the Smithsonian Contributions to Knowledge issued from the press, after having been subjected to many unforeseen delays. The first copies received from the binder were sent to such domestic institutions as were on the list. Their distribution was effected very rapidly by forwarding those for each district to some central bookseller, and mailing letters of advice to each institution or library to be supplied, informing it of the fact. The distribution was accomplished with such promptness in this way, that in the course of a month or six weeks all the copies, with few exceptions, reached their destination. Acknowledgments have already been received for nearly all. The gentlemen to whom the Institution is mainly indebted for this service, performed gratuitously in all cases, are Messrs. J. P. Jewett & Co., Boston; Geo. P. Putnam, esq., New York; Lippincott, Grambo & Co., Philadelphia; John Russel, esq., Charleston; and H. W. Derby & Co., Cincinnati.

Nearly all the packages sent out, included copies of the History of the Indian tribes, by Messrs. Schoolcraft and Eastman, and presented by the Honorable Luke Lea, Commissioner of Indian Affairs, to such institutions, selected from the list of the Smithsonian Institution, as were judged entitled to them. A special acknowledgment direct to the Indian Bureau was requested.

The parcels for a few institutions in the South and West are still on hand, no favorable mode of transmission having yet presented itself. Most of these, however, will be taken charge of by members of Congress, and by them conveyed to their destination.

It was not until the beginning of July that copies enough were received to supply the foreign lists. By the 21st, however, all the parcels were in readiness, catalogued and boxed up for sending, and invoices of the contents of each prepared for transmission by mail direct. The lists used in the distribution of the first volume, considerably enlarged, and subjected to various corrections, will be found in the appendix.

Many of the scientific bodies of this country embraced the opportunity offered to them of sending their memoirs to European societies. The difficulties of scientific intercourse between the Institutions of Europe and America have in many instances been very great, resulting either in great delay in exchanging publications, or in an utter failure of the latter to reach their destination. The system adopted by the Smithsonian Institution is liable to no such objections, and the offer of its benefits to other institutions was gladly accepted. The principal bodies accepting the invitation were the American Academy of Arts and Sciences, Boston; the Boston Natural History Society; the Philadelphia Academy of Natural Sciences; the United States Coast Survey; the Washington Observatory, and others. The Commissioner of Indian Affairs, at the instance of the authors and of the Smithsonian Institution, took the same occasion to send copies of the History of the Indian tribes to about one hundred and fifty institutions in Europe, taken from the Smithsonian list. Numerous documents of scientific interest published by Congress were procured through the Senate document room, from members of Congress who relinquished their claim to extra copies, and in other ways. The Senate also assigned to the Institution three hundred copies of Foster and Whitney's report on the Copper lands of Lake Superior for foreign distribution. It is to be hoped that this act of liberality to scientific institutions abroad may be repeated in the case of all public documents of general interest.

The entire number of different addresses borne by the packages, five hundred in number, amounted to two hundred and ninety-one, of which two hundred and one were of institutions in correspondence with the Smithsonian Institution. The packages for France, Italy, Spain and Portugal, were sent for distribution to Hector Bossange, of Paris, and amounted to eighty-five. The remainder of continental Europe, except Greece and Turkey, was supplied with three hundred and thirteen packages, through Dr. John G. Flügel, United States consul, Leipsic; England, Scotland and Ireland, eighty-four packages, through Henry Stevens, London. Hon. George P. Marsh, minister resident at Constantinople, took charge of the copies for Greece, Turkey and Northern Africa. The parcels for the rest of Africa and for Asia were forwarded through the American Board of Foreign Missions, Boston, the Presbyterian Board of Foreign Missions, New York, and the American Colonization Society, Washington.

The whole mass occupied forty boxes of about six cubic feet capacity each, besides several separate bundles, and weighed 7920 pounds. These were distributed as follows:

To whom sent.	Institutions.	No. of parcels.	No. of boxes.	Cubic capacity.	Weight.
				<i>Feet.</i>	<i>Lbs.</i>
Dr. Flügel.....	81	313	20	120	3,960
H. Bossange.....	55	85	10	52 $\frac{3}{4}$	1,738
Mr. Stevens.....	47	84	8	42	1,336
Others.....	18	18	2	25 $\frac{1}{2}$	836
Total.....	201	500	40	240	7,920

The numbers of institutions refer only to those to which the Smithsonian publications were sent. The remaining ninety have not been classified for the present.

In addition to the parcels themselves, circulars (two hundred and ninety-one in number) were prepared for each address, and forwarded by mail. These contained a full statement of the purposes and wishes of the Institution. In each was a full invoice of everything sent, whether by the Institution or by others, with information of the circumstances connected with the transmission of the parcels. Although much of the matter of the circulars was printed, still the labor of making out the invoices was very great, involving, as it did in some instances, the writing of fifty, or even more, titles of books in a single letter.

As the import duty on books is much greater in England than on the Continent, application was made by yourself to the British government, through Sir Henry Bulwer, the British minister in Washington, for a remission of duty on packages directed to such Institutions in England as were embraced in the list of distribution which was enclosed to him. The ready assent to the request, and order of free admission was of essential service, as permitting the addition of much more matter to these packages than would have been possible had the duty of twelve shillings and six pence sterling per hundred weight been exacted. The parcels sent abroad have all reached their respective agents of distribution, and the great majority already arrived at their final places of destination. Every foreign mail brings letters of acknowledgement from institutions abroad for the donation, with expressions of admiration for what they are pleased to term the unexampled liberality and magnificence of the enterprise. In this connexion it may be proper to add that this Institution, as far as possible, transmits its packages, with their accompanying letters, free of any cost to the recipient.

The receipts of volumes from foreign institutions, in exchange for Smithsonian publications, have continued to be of great value. The report of last year mentioned the following as the entire amount up to January 1, 1852 :

Folio and quarto volumes-----	132	
Octavo "-----	138	
		270
Parts of volumes and tracts-----		608
		<u>878</u>

From January, 1851, to January, 1852 :

Folio and quarto volumes-----	96	
Octavo-----	172	
		267
Parts of volumes and tracts-----		342
		<u>609</u>

It may be well to mention that this does not include any returns made for the volumes sent last summer, none having yet arrived on the 31st of December, 1851. Nearly all those institutions which are mentioned in the last report as having failed to make returns or acknowledgments, have since done both.

An almost unique feature in the exchanges of the Institution consists in the number of academical publications received from almost all the universities of Europe. The series from many are very full, particularly for later years; and very few are to be found in any other American library. These works are generally of great value to the student.

In conclusion, I would remark that the Institution is greatly indebted to the gentlemen acting as agents in Europe for the efficiency of its system of foreign exchange. Its thanks are especially due to Dr. Flügel for his close and untiring attention in promoting the interests, not only of this Institution, but of American science and literature in general.

3. REPORT OF OPERATIONS IN NATURAL HISTORY.

This report I propose to present under the following subdivisions:

1. COLLECTIONS.
2. EXPLORATIONS.
3. REPORTS.
4. REGISTRY OF PERIODICAL PHENOMENA.
5. EXCHANGES.

In obedience to your suggestion, I have added to the details of operations in the line of Natural History of the Smithsonian Institution, such facts in regard to those of government, societies, and individuals in North America, as I deem to be of most importance. It must not, however, be considered as a complete exposition of the subject; still, imperfect as the sketch may be, it will, I hope, be acceptable to those who may not have at their command the information in possession of the Smithsonian Institution. In the March number of Silliman's Journal will be found a list of all works and articles relating to the natural history of North America, published during 1851, which will relieve the necessity of here going into the same detail.

1. COLLECTIONS.

Additions.—The additions to the Museum of the Smithsonian Institution during the year 1851, have been varied and valuable. They include numerous species which are entirely new to science, thus affording copious material for original investigation; while in those already described are the means of important comparisons. It is not in the more showy departments of Natural History that this growth is marked, but in the less conspicuous classes, orders and families, which from their comparative obscurity, have experienced unmerited neglect. It is well understood that the Smithsonian Institution does not enter upon ground already occupied, but endeavors to remedy the omissions of others. Hence it is that the collections of this Institution are not very attractive to the general visitor, in the absence of cases of mounted birds, mammalia, shells, &c., but the student of Natural History will find much that will be sought in vain elsewhere.

The circulars issued early in last spring, mentioning especial desiderata of the Institution, and giving brief hints for the preservation of specimens, have proved highly effectual in procuring many important contributions. A small pamphlet is now in press, shortly to be published, which will express more in detail the matter of the circular above referred to. The

more elaborate report on making collections and observations in natural history and geology is also ready for the press, and only waits the completion of some wood cuts.

In an appendix will be found the list of additions to the collection of the Institution, with the names of the donors, arranged alphabetically. The entire number of parcels received amounts to sixty-three, while that of individual specimens is very great. I propose in a few words to mention the points of especial interest in these collections, classifying the more prominent specimens according to the usual system.

Mammals.—Of North American species, the most conspicuous are two specimens of the big horn or Rocky Mountain sheep, *Ovis montana*, the one presented by Captain S. Van Vliet, the other by the Hon. J. Butterfield, commissioner of the General Land Office. The first one has been sent to the Academy of Natural Sciences of Philadelphia, to supply a desideratum there; and the two, with one brought in by Captain Stansbury and deposited in the national gallery, are the only specimens in public collections in the country. Various horns and skulls of American reindeer or caraboo, black tail deer, antelope, elk, &c., have been received, as also skulls of wolves, foxes, bears, &c. Some very valuable European mammalia have also been received from Mr. Steenberg, of Elsinore, including skins of wolves, seals, arctic foxes, &c., and several skulls of the reindeer of Greenland. A magnificent collection of Scandinavian mammalia, sent last year by the Swedish Academy, at Stockholm, had not arrived at the end of the year, though daily expected. Numerous specimens of American rats, spermophiles, &c., have been received.

Birds.—A few birds only have been added to the American series, these consisting mainly of specimens procured in the Washington market, and prepared at the Institution. A beautiful series, however, of the nests and eggs of European species, with many skins, has been forwarded by Mr. Sturm.

Reptiles and fishes.—It is among these classes that the additions have been most numerous. The collections are principally from the great lakes, the Alleghany river, the southern coast, as well as from California, Oregon and New Mexico. It will be useless to mention any specially interesting objects, where so many exist. The classified lists in the appendix, however, will give a general idea of the extent and variety of this portion of the cabinet.

Invertebrates.—The donations of Mr. Pourtales and of Mr. Marsh, with the collections made by Mr. Girard, at Charleston, constitute the principal additions in the department of invertebrate zoology. Here, as among the vertebrata, are several rare and new species.

Plants.—An extensive series of the plants of Hungary, embracing many hundred species, was presented by Mr. Arthur Schott. This gentleman subsequently added a number of American species, like the former, gathered by himself.

Fossil remains.—A number of specimens of the fossil vertebrata from the Mauvaises Terrès were presented by Captain Stewart Van Vliet. Dr. H. A. Prout, of St. Louis, has also enriched the collection. Remains of a mastodon, from Gloucester county, Virginia, have been received from Rev. Charles Mann and Captain Marchant. Some interesting specimens of fossil woods were presented by Major O. Cross.

Minerals and Geological specimens.—These have consisted of coals from the Island of Formosa, a slab of itacolumite from Brazil, gold quartz from California, &c. The Commissioner of the General Land Office has transferred to the Institution the valuable collection of minerals and fossils made by Dr. D. D. Owen in his survey of the northwest.

Ethnology.—J. W. Foster, Esq., has given to the Institution specimens of cloth found in an Indian mound; and the Hon. J. B. Balestier various articles of dress worn by native tribes in Borneo. Specimens of Indian pottery have also been presented by Mr. William E. Guest.

Present state of the collections.—During the past year the collections of specimens in alcohol have all been carefully assorted, separated and labelled as far as this could be done under a press of other duties. A large number of kegs have been emptied of their contents, and placed in jars. Other portions of the collections, the skins and skeletons of vertebrata and invertebrata have been kept in order, although little can be done for their arrangement and exhibition, until the completion of the museum room. At present it is considered best to keep the specimens boxed up, as far as can be done with safety. When the large room is finished but little time will be required to arrange and expose the specimens to the best advantage.

The following enumeration of the alcoholic preparations will convey some idea of the richness of this branch of the Smithsonian collections.

	No. of jars.	Total.
<i>Mammalia.</i>		
From various regions.....	36	36
<i>Reptiles.</i>		
From Jamaica	100	554
Bonaparte collection (European).....	57	
Other European specimens.....	53	
North American.....	332	
<i>Fishes.</i>		
From Jamaica.....	54	1,082
Constantinople and Egypt.....	31	
Germany	31	
Bonaparte collection (Europe).....	216	
North American.....	750	
<i>Articulata.</i>		
Crustacea.....	61	114
Apterous insects and larvæ	20	
Insects to be pinned hereafter.....	18	
Entozoa and Annelids.....	15	
<i>Mollusca.</i>		
Miscellaneous	20	20
<i>Radiata.</i>		
Medusæ.....	1	16
Holothuriæ.....	4	
Miscellaneous	11	
<i>Miscellaneous.</i>		
Embryos	35	65
Small skeletons	30	

The entire number of jars, therefore, varying in size from two gallons to one ounce, and now actually filled, exceeds 1850. But many of these contain more than one species, so that when all now on hand are properly assorted the number will amount nearly to 2,500. There are besides nearly twenty kegs and large vessels filled with duplicate specimens, for exchange, or with species too large for jars, together with several not yet assorted.

Besides the above there are about one hundred and sixty jars filled with new species of American fishes and reptiles, which are here temporarily for description.

Of the other collections, I will only mention in conclusion, that of skulls and skeletons of vertebrate animals, which embraces about nine hundred specimens, as also that of European and American birds in about three thousand specimens. Full lists of these, as of other portions of the museum, will be hereafter published.

2. EXPLORATIONS.

Explorations under patronage of the Smithsonian Institution.—The first of these is that of Professor C. B. Adams, of Amherst. This gentleman returned in the spring, from an excursion to Jamaica, and other places of the West Indies, and to Panama. He made very extensive collections in many departments of natural history, especially in conchology, herpetology and ichthyology. A very interesting collection in the two last mentioned divisions has been received from him, in return for an appropriation of fifty dollars towards defraying his expenses. The series contains many highly interesting species, some of them new to science.

Mr. Charles Girard, in May last, visited Charleston, and made various zoological collections of much interest, aided by facilities furnished by Dr. J. E. Holbrook, Dr. St. Julian Ravenel, and others. This collection, although not as extensive as might have been made at a more favorable season of the year, is still very important, not only on account of the known vertebrata and invertebrata, but also for embracing some undescribed species of fishes.

During a visit to Cincinnati in May, I embraced the opportunity to make a collection of the fishes of the Ohio river. In this I was fortunate to have the assistance of Dr. J. P. Kirtland, the eminent author of the "fishes of the Ohio river and its tributaries," who had there procured most of his species. Nearly all he had ever found in this locality, with few exceptions, were again obtained and identified by him. In August, again, I explored the tributaries of the Hudson below Albany, and subsequently Otsego lake, in each case richly rewarded by the result, and especially by learning of the existence in the latter lake of a *Lota*, the usual hydrographical associate of the *Coregonus*, or white fish.

3. REPORTS ON EXPLORATIONS.

To the Smithsonian Institution :

In the report presented to you by Dr. Joseph Leidy, upon the fossil remains submitted to him for examination, you will find a short statement of the character of these fossil vertebrata. The scientific interest attaching to these specimens is very great, as showing for the first time the existence in this country of an extensive eocene deposit, rivalling in the variety of its species of extinct animals the celebrated beds of the Paris basin. The discovery of an entirely new family of mammalia, embracing eight new genera, is one result of the examinations by Dr. Leidy. It will be remembered that these specimens were collected by Thaddeus Culbertson, Esq., in the summer of 1850. Since then an additional collection has been presented by Captain Stewart Van Vliet of the army, and several specimens kindly loaned by Dr. H. A. Prout, of St. Louis, all from the same locality. Some of the same genera and species, with a few not hitherto received by the Smithsonian Institution, were collected by Dr. Evans under the direction of Dr. David D. Owen, and will soon be published by the latter gentleman in his account of the geology of the northwest.

It is much to be desired that government may fit out an expedition for the complete exploration of this region, so interesting to the geologist and naturalist. Without some such aid it will be impossible to hope for a full development of these treasures for years to come. Besides the vertebrate

deposits on White river, there are others known in various parts of the basin of the upper Missouri, some belonging to the eocene and others to the cretaceous formations.

The species of cottoids belonging to the collection of the Smithsonian Institution have been worked up by Mr. Charles Girard in his memoir recently published in the third volume of Smithsonian Contributions to Knowledge. With but few exceptions, specimens of all the species described are now in the collection, several being entirely unique.

An account of the collection of plants made by Charles Wright in Texas and New Mexico is now in course of publication by the Institution, in a paper written by Dr. Asa Gray, entitled "*Plantæ Wrightianæ.*" Dr. Torrey has also a paper on the new plants collected in California, by Col. J. C. Fremont. This, with the preceding, will appear in the third volume of Smithsonian Contributions to Knowledge.

To government.—The letter-press of the conchology of the United States Exploring Expedition, by Dr. A. A. Gould, has been printed during the past year under direction of Captain Wilkes and the Joint Library committee of Congress, although not yet issued. The atlas of plates is in an advanced state of forwardness. The volume on Meteorology, by Captain Wilkes, has also been published. The series of published results of the Expedition is as follows:

1. Narrative of the Expedition. By Captain Wilkes. 5 vols. 4to, and folio atlas.
2. Zoophytes. By Professor J. D. Dana. 1 vol. 4to, and atlas.
3. Philology. By Mr. Hale. 1 vol. 4to.
4. Races of Man. By Dr. C. Pickering. 1 vol. 4to.
5. Mammals and Birds. By Titian R. Peale. 1 vol. 4to.
6. Geology and Mineralogy. By Professor J. D. Dana. 1 vol. 4to, and atlas.
7. Meteorology. By Captain Wilkes. 1 vol. 4to.
8. Charts. 1 vol. folio.

Making eleven volumes quarto, and four folio volumes of plates.

Those still to appear are:

1. Conchology. By Dr. A. A. Gould.
2. Herpetology. By S. F. Baird and C. Girard.
3. Ichthyology. By Prof. L. Agassiz.
4. Crustacea. By Prof. J. D. Dana.
5. Medusæ. By Prof. J. D. Dana.
6. Echinoderms. By Prof. L. Agassiz.
7. Annelids.
8. Insects.
9. Ferns. By Mr. Breckenridge.
10. Fungi. By Messrs. Berkeley and Curtis.
11. Algæ. By Prof. J. W. Bailey.
12. Botany (Phanerogams.) By Drs. Torrey and Gray.
13. Mosses. By Mr. Sullivant.
14. Geographical Distribution of Species. By Dr. Charles Pickering.
15. Hydrography, Magnetism, Astronomy and Physics. By Capt. Wilkes.
16. Charts, vol. 2.

Several of the above titles may, however, be united into one volume.

Naturalists, generally, who have been watching the progress of this great national work, will learn with deep regret that all the undistributed copies

of the first seven volumes already published were destroyed in the same fire which consumed the library of Congress in December, 1851. This is the more melancholy, since but seventy copies were distributed. The issue of a second and enlarged edition is still more imperatively called for than before. This might be published at a moderate cost, by using less expensive paper and doing without colored plates. It is believed that one thousand copies each of the entire series of volumes of text already issued could be republished for less than fifteen thousand dollars.

The first volume of the History of the Indian Tribes of the United States, by Henry R. Schoolcraft, with illustrations by Captain S. Eastman, was published last winter. It contains a vast body of information useful to the historian, the ethnologist and the philologist, and is profusely illustrated with plates, forming the most magnificent work, with the exception of the reports of the Exploring Expedition, ever issued by our government. Several additional volumes, it is understood, will be published at short intervals.

The report of Lieutenant Simpson's expedition into the Navajo country, in New Mexico, published last summer, contains much matter of great interest to the ethnologist. Some interesting observations were also made on the natural history of the country, and specimens of a new species of *axolotl* procured, shortly to be described by myself, under the name of *Siredon lichenigerus*. This has erroneously been considered as a fish with legs. The report is accompanied by seventy-two plates. So great was the interest excited by this work, that it has been reprinted as a bookseller's speculation.

The valuable report of Messrs. Foster and Whitney, on the copper lands of Lake Superior, was also published last summer. The portion in relation to the iron lands and the country generally is now in press, and will shortly appear as a congressional document. It will be accompanied by numerous plates, and will contain palæontological matter of the highest interest.

4. REGISTRY OF PERIODICAL PHENOMENA.

In the spring of 1851, with the assistance of Dr. Torrey and Dr. Foreman, a list of plants to be observed for the period of flowering and fruiting was prepared. This was not issued until a comparatively late period of the season, when too late to be of much use to more southern observers. Copies were sent to all the meteorological observers reporting to the Institution, and to such other individuals as were supposed to be interested in the matter. From many of these returns have been received which have been embodied in your report; and it is hoped that by renewing the circular earlier in the season, a much fuller series of observations will be obtained in regard to the periodical phenomena of animals and plants, which will permit of many interesting generalizations in a natural history, as well as meteorological point of view. It is proposed to modify the first list by the omission of some species not of general distribution, and the addition of others, as well as by calling attention more particularly than before to the phenomena of animal life.

5. INTERNATIONAL SCIENTIFIC EXCHANGES.

The Smithsonian Institution may do great service to the cause of science, by serving as the medium through which applications for exchange or purchase of specimens of natural history between American and European collections may be interchanged. This does not necessarily involve an active part in regard to the specimens themselves, although in some instances such agency may be undertaken. There are many individuals in this country who have it in their power to procure duplicates of objects of natural history in their immediate vicinity, which they would gladly exchange for those from other localities, at home or abroad. By encouraging such to make known their desiderata and duplicates, and registering these systematically, information might be immediately returned as to the best mode of procuring the one and disposing of the other, as well as of sending and receiving the parcels involved. In fact, numerous applications of the kind have been already received from individuals both in Europe and America, and an exchange satisfactory to both parties instituted. Lists of persons making such applications might be published in the annual reports, and thus brought within the cognizance of all.

Very respectfully, your obedient servant,
SPENCER F. BAIRD.

APPENDIX A.

AN ACCOUNT OF NATURAL HISTORY EXPLORATIONS IN THE UNITED STATES,
DURING 1851.

By Prof. SPENCER F. BAIRD.

Explorations under direction of the Topographical Bureau.—Natural science in America, almost equally with geographical, is under the greatest obligations to the Topographical Bureau, now under direction of Col. J. J. Abert, for additions to her domain. I need only mention in former years, the travels of Long, Nicollet, Emory, Fremont, Abert, Simpson, &c. The expeditions returned or commenced in 1851, will, when their results are published to the world, bear ample witness of even an increasing zeal of the officers of this bureau for the furtherance of natural science.

The first to be noticed is the expedition of Captain Howard Stansbury to the unknown region of the Great Salt lake. This talented officer, assisted by Lieutenant Gunnison, of the same corps, and Albert Carrington, esq., Salt Lake city, after having spent many months in their explorations, returned last winter with a rich stock of material. Highly interesting collections of animals and plants, many of them quite new were obtained, and much light thrown upon the subject of geographical distribution. Collections of fossils and rocks were also made, sufficient to cast a ray of light upon the geology of this remote region. The entire results of the expedition will be published during the present session of Congress, and will be accompanied by numerous plates of new animals, plants and fossil remains, as well as by maps and sketches of scenery. The report on the geology

and palæontology will be presented by Professor Hall; on the plants by Dr. Torrey; on the invertebrata by Professor S. S. Haldeman, and on the vertebrates by Mr. Girard and myself.

The survey of the Canadian fork of the Arkansas, under Lieutenant Woodruff and Captain Sitgreaves, was completed in the autumn of 1850, the party returning to Washington in the winter. Dr. Woodhouse, the surgeon of the expedition, and a naturalist of great ability, made many interesting collections; among them a new species of wolf, since characterized under the name of *Canis frustror*. Shortly after their return, Captain Sitgreaves and Dr. Woodhouse were again sent into the field to explore the Zuni river in California. This region, entirely unknown to naturalists, will no doubt afford to Dr. Woodhouse a rich harvest.

Department of the Interior.—The most important scientific exploration under the care of this department is connected with the survey of the boundary between the United States and Mexico. The western part of the survey across the peninsula of California was conducted by Major Emory, of the corps of topographical engineers. Officially connected with him, as surgeon and naturalist, was Dr. Parry, who made very extensive collections of plants, now in the hands of Dr. Torrey, and including many new species. Informally attached to Major Emory's party, for a considerable length of time, was Dr. John le Conte, the distinguished entomologist, who spent eighteen months in California, and made extensive zoological collections. The collections of Dr. Le Conte consist mainly of Coleopterous insects, of which at least one thousand species are new to science. All the other departments of zoology were, however, attended to, especially of herpetology, of which he procured the largest collection ever made on the Pacific coast. These are now in my hands for description.

The eastern part of the line of the Mexican boundary survey has also been zealously explored. The naturalists accompanying Col. J. D. Graham, chief of the scientific corps, Mr. J. H. Clark and Charles Wright, in their journey from Indianola to El Paso, and thence to the copper mines of the Gila, made very extensive collections, the former in zoology, the latter in botany, affording an excellent idea of the natural history of this region over a line of a thousand miles, and greatly exceeding in amount any ever made there before. The naturalists immediately connected with the party of Mr. Bartlett, the commissioner, (Messrs. Thurber and Bigelow, and others,) have also been active, especially in the field of botany and mineralogy, although but little beyond a small collection of plants has been sent in. Major Emory, on being assigned to this survey last summer, took with him Dr. Parry and Mr. Schott, both of whom will, no doubt, manifest afresh their zeal for natural history.

Land Office.—The explorations under the direction of the land office have mainly been in the departments of zoology and palæontology, although the others have not been neglected. Dr. D. D. Owen has completed the geological survey of Minnesota, Iowa and Wisconsin, and his report is now ready to be published. It includes many new and interesting fossils; among them several vertebrata from the Mauvais Terres, and will constitute the most elaborate government report of the kind ever presented.

Messrs. Foster and Whitney have also completed their geological survey of Northern Michigan, and have the final results now in press. In working up the palæontology, they have had the able assistance of Professor James Hall. The plates and cuts to the report are all finished, and

nearly all the text has been set up, so that the whole will appear at no distant period.

Dr. Evans, formerly associated with Dr. Owen, has also been sent out by the land office on a geological examination of Oregon. During his passage out, he obtained and sent to the Land Office a magnificent specimen of the big horn, or Rocky Mountain sheep, (*Ovis montana*,) which has been kindly presented to the Smithsonian Institution by the Commissioner of the General Land Office, Hon. J. Butterfield.

State Explorations.—The legislature of Pennsylvania, at its last session, appropriated forty thousand dollars for the completion of the geological survey of the State, commenced many years ago, but allowed to remain for a long time without any further appropriation. The sum above mentioned includes the cost of publishing the results in two quarto volumes, with a large map. Among the points of especial interest in this report will be a monograph of the coal plants of the United States, by Mr. Leo Lesquereaux.

North Carolina, almost the first in the field of geological exploration, has again authorized a general geological and natural history survey of the State, by Dr. E. Emmons, of Albany, well known for his services in a similar survey of the State of New York.

The State of Mississippi has also authorized a survey under direction of Colonel B. L. C. Wailes, of Washington, Mississippi, and Professor Millington, of Oxford, Mississippi. The appropriation for the survey consists of six thousand dollars per annum, one half devoted to the actual survey, the other towards maintaining the professorship of geology in the State university, of which Professor Millington is incumbent.

Illinois, too, has followed the example of her sister States, and commenced a survey under Dr. Norwood.

The survey of Alabama under Professor Tuomey is still in progress, as is also that of Canada under Mr. Logan.

The following is a list of the States, as nearly as can be ascertained, which have commenced geological surveys, with the names of the persons engaged. Most of these have been commenced long since, and appropriations for their final completion not granted. Several States have, however, shown their willingness to resume the surveys. Only a few final reports have, however, been published. The States of Missouri and Florida, it is believed, are the only ones which have not yet authorized surveys.

States.	Names.
New Brunswick.....	Mr. Gesner.....
Nova Scotia.....	Dr. C. T. Jackson and Francis Alger.....
Canada.....	Mr. Logan.....
Maine.....	Dr. Jackson.....
Rhode Island.....	Dr. Jackson.....
New Hampshire.....	Dr. Jackson.....
Vermont.....	Prof. C. B. Adams.....
Massachusetts.....	Pres. Hitchcock.....
New York.....	Profs. Hall, Emmons, Mather, Vanuxem, Beck and Dr. De Kay.....
New Jersey.....	Prof. H. D. Rogers.....
Pennsylvania.....	Prof. H. D. Rogers.....
Delaware.....	Prof. J. C. Booth.....
Maryland.....	Dr. Ducatel.....
Virginia.....	Prof. Wm. B. Rogers.....
North Carolina.....	Profs. D. Olmsted and E. Emmons.....
South Carolina.....	Prof. Tuomey.....
Alabama.....	Prof. Tuomey.....
Georgia.....	Profs. Olmsted and Cotting.....
Florida.....	Col. B. L. C. Wailes and Prof. Millington.....
Mississippi.....	Dr. Troost.....
Tennessee.....	Prof. Forshey.....
Louisiana.....	Prof. Mather (reconnaissance only).....
Kentucky.....	Prof. Mather.....
Ohio.....	Dr. D. D. Owen (reconnaissance).....
Indiana.....	
Missouri.....	Drs. Houghton and Jackson; Messrs. Foster and Whitney.....
Michigan.....	Dr. Norwood.....
Illinois.....	Dr. D. D. Owen.....
Wisconsin.....	Dr. D. D. Owen.....
Minnesota.....	Dr. D. D. Owen.....
Iowa.....	Dr. D. D. Owen.....
Texas.....	Dr. F. Roemer.....

Explorations by individuals.—At the request of the superintendent of the coast survey, Professor Agassiz last winter visited the reefs of Florida, for the purpose of making such examinations of the coral formations as might furnish information of use to the survey. In this he was highly successful, as well as in the secondary object of making collections of natural history. Many new species of animals were added to the American fauna, especially of invertebrata, as annelida, &c. Numerous fishes were also obtained, including several undescribed, and in a species of *Sperodactylus* the presence of the reptilian family of geckotydeæ was for the first time determined in the United States. The geological results will be published as an appendix to the report of the superintendent of the coast survey for 1851.

Mr. L. F. Pourtales, while engaged on coast survey duty in Florida, paid especial attention to the radiata, and procured many species, some of which he has kindly presented to the Institution. Among them are *Holothuria*, *Synapta*, &c.

Mr. W. Stimpson, of Boston, last summer visited the coast of Maine, and made important collections in zoology. Many new species of molusca, radiata and annelida were obtained, and the existence of *Myzine* substantiated for the first time in North America, by the acquisition of sev-

eral species of this remarkable genus of fishes. Mr. Stimpson has since published some of his results in a special work. This gentleman is now with Professor Agassiz in Charleston, actively engaged in developing the natural history of the southern coast.

Lieutenant J. D. Kurtz, of the engineer corps, has also been active in procuring specimens of the recent and fossil shells of the coast of South Carolina. To him the institution is indebted for a fine collection, embracing most of the recent species, one hundred and ninety-four in number.

Dr. T. M. Brewer and Horace Storer, esq., of Boston, spent some weeks in New Brunswick last spring, engaged in collecting the birds with their eggs, as well as other animals of that region. The geographical distribution and habits of many of the former were finally settled by these gentlemen.

Colonel McCall, inspector general United States army, while on duty in New Mexico and Texas, made important additions to our knowledge of North American birds. He has since published a valuable report on the subject, in the Proceedings of the Academy of Natural Sciences. Captain McCown also procured many species of birds additional to our fauna, which have been described by Mr. Lawrence.

Mr. J. A. Lapham, of Milwaukee, Dr. De Haas, of Wheeling, and Wm. Pidgeon, of Iowa, have all been successfully engaged in exploring the mounds of the west.

I do not, of course, pretend here to give a complete record of all explorations, either by individuals or governments. Many others, no doubt, have been made, which have not come to the knowledge of the Institution. Still, if future reports of this kind be desired, pains will be taken to render them much fuller and more accurate than the present.

APPENDIX B.

LIST OF FOREIGN INSTITUTIONS TO WHICH VOLUME TWO OF SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE HAS BEEN SENT.

SWEDEN.

Lund—University Library.

Stockholm—Kongliga Svenska Vetenskaps Akademien.

Vitterhets Historie och Antiquitets Akademien.

Upsala—University Library.

Société Royale des Sciences à Upsal.

NORWAY.

Bergen—Bergen's Museum.

Christiania—The University Library.

ICELAND.

Reykjavik—Islands Stifisbókasafn.

DENMARK.

- Copenhagen*—Kongelige Nordiske Oldskrift Selskab.
Kongelige Danske Videnskabernes Selskab.
Kongelige Bibliothek.

RUSSIA.

- Dorpat*—Observatoire Impérial.
Moscow—Société Impériale des Naturalistes de Moscou.
St. Petersburg—Académie Impériale des Sciences.
Imperial Public Library.
Administration Impériale des Mines.
Pulkowa—Observatoire Impérial.

HOLLAND.

- Amsterdam*—Académie des Sciences.
Haarlem—Hollandsche Maatschappij der Wetenschappen.
Leyden—University Library.
Musée d'Histoire Naturelle.
Middleburg—Zeeuwsche Genootschap der Wetenschappen.
Rotterdam—Bataafsch Genootschap der proefondervindelijke Wijsbegeerte.
Utrecht—Utregtsch Genootschap van Kunsten en Wetenschappen.

GERMANY.

- Berlin*—Königlich-Preussische Akademie der Wissenschaften.
Königliche Bibliothek.
Königliches Museum.
Gesellschaft Naturforschender Freunde.
Bonn—University Library.
Bremen—Stadt-Bibliothek.
Bonn—K. L. C. Akademie der Naturforscher.
Dresden—Königliche Bibliothek.
Erlangen—University Library.
Frankfurt am Main—Senckenbergische Naturforschende Gesellschaft.
Freiberg—Königliche-Sächsische Bergakademie.
Freiburg—University Library.
Giessen—University Library.
Greifswald—University Library.
Goettingen—Königliche Gesellschaft der Wissenschaften.
University Library.
Halle—University Library.
Hamburg—Stadt-Bibliothek.
University Library.
Hanover—Royal Library.
Heidelberg—University Library.
Jena—University Library.
Karlsruhe—Grossherzogliche Hofbibliothek.
Koenigsberg—University Library.
Leipzig—Stadt-Bibliothek.
University Library.
Königliche Sächsische Gesellschaft.
Fürstliche Jablonowski'sche Gesellschaft.

Marburg—Gesellschaft zur Beförderung der Gesammten Naturwissenschaften.

University Library.

Munich—Königlich Bayerische Akademie der Wissenschaften.
Königliche Hof-und Staatsbibliothek.

Prague—University Library.

Königliche Böhmishe Gesellschaft der Wissenschaften.
Böhmisches Museum.

Pesth—University Library.

Ungarische Gelehrte Gesellschaft.

Stuttgart—Königliche Oeffentliche Bibliothek.

Verein für Vaterländische Naturkunde.

Tübingen—University Library.

Vienna—K. K. Akademie der Orientalischen Sprachen.

Kaiserliche Hofbibliothek.

University Library.

Kaiserliche Akademie der Wissenschaften.

K. K. Naturalien Kabinet.

Würzburg—University Library.

BELGIUM.

Bruges—Société des Sciences Naturelles.

Bruzelles—Académie Royale des Sciences, des Lettres et des Beaux-Arts.
Observatoire Royal.

Gand—University Library.

Liege—Société Royale des Sciences.

Louvain—Université Catholique.

FRANCE.

Angers—Société d'Agriculture, Sciences et Arts.

Bordeaux—Académie des Sciences, Belles-Lettres et Arts.
Société Linnéenne.

Caen—Académie des Sciences, Arts et Belles-Lettres.
Société Linnéenne de Normandie.

Dijon—Académie des Sciences, Arts et Belles-Lettres.

Lille—Société des Sciences, de l'Agriculture et des Arts.

Mende—Société d'Agriculture, Commerce, Sciences et Arts.

Lyon—Société d'Agriculture, d'Histoire Naturelle et des Arts Utiles.
Académie des Sciences, Belles-Lettres et Arts.

Société Linnéenne.

Marseilles—Académie des Sciences, Lettres et Arts.

Metz—Académie Nationale.

Montpellier—Société Archéologique.

Orleans—Société des Sciences, Belles-Lettres et Arts.

Paris—L'Institut de France.

Société des Antiquaires.

“ Asiaticque.

“ de Géographie.

“ Géologique de France.

“ Française de Statistique Universelle.

Société Philomatique.
 “ de l'École des Chartes.
 Bibliothèque Nationale.
 Bibliothèque du Jardin des Plantes.
 L'Institut Historique.
 L'École des Mines.
 Société Ethnologique.
 Bibliothèque de la Ville de Paris.
 Société Nationale et Centrale d'Agriculture.
 Ministère de la Marine.

Strasbourg—Société des Sciences, Agriculture et Arts, du Bas Rhin.

Académie des Sciences Naturelles.

Toulouse—Académie des Sciences, Inscriptions et Belles-Lettres.

SWITZERLAND.

Basel—Naturforschende Gesellschaft.

Antiquarische Gesellschaft.

Bern—Schweizerische Gesellschaft für die Gesammten Naturwissenschaften.

Naturforschende Gesellschaft.

Geneve—Société de Physique et d'Histoire Naturelle.

Neuchatel—Société des Sciences Naturelles.

Zurich—Naturforschende Gesellschaft.

Gesellschaft für Vaterländische Alterthümer in Zurich.

ITALY.

Bologna—Istituto delle Scienze ed Arti Liberali.

Catania—Accademia Gioenia di Scienze Naturali.

Florence—Accademia del Cimento.

Biblioteca Magliabecchiana.

Lucca—Reale Accademia Lucchese di Scienze, Lettere ed Arti.

Milan—Biblioteca Brera, Imperiale Regio Istituto Lombardo di Scienze,
 Lettere ed Arti.

Modena—Società Italiana delle Scienze.

Naples—Reale Accademia delle Scienze, e Belle Lettere.

Padua—Imperiale Regia Accademia di Scienze, Lettere ed Arti.

Pisa—University Library.

Palermo—Royal Academy of Sciences.

Rome—Accademia Romana di Archeologia.

Biblioteca Vaticana.

Accademia Pontifica dei Nuovi Lincei.

Turin—Accademia Reale delle Scienze.

Venice.—Biblioteca Marciana.

PORTUGAL.

Lisbon—Academia Real dos Sciencias.

SPAIN.

Madrid—Real Academia Espanola.

“ “ de la Historia.

Academia Real de Ciencias.

GREAT BRITAIN AND IRELAND.

- Belfast*—Natural History and Philosophical Society.
- Cambridge*—Cambridge Philosophical Society.
University Library.
Observatory.
- Penzance*—Royal Geological Society of Cornwall.
- Dublin*—Dublin University Philosophical Society.
Royal Irish Academy.
Library of Trinity College.
- Edinburg*—Royal Society.
Royal Scottish Society of Arts.
Royal Observatory.
Library of Faculty of Advocates.
Society of Antiquaries of Scotland.
University Library.
Wernerian Society of Natural History.
- Glasgow*—University Library.
- Greenwich*—Royal Observatory.
- London*—Royal Society.
“ Astronomical Society.
“ Asiatic Society.
“ Geographical Society.
“ Institution.
Society of Antiquaries.
Society for the Encouragement of Arts, Manufactures and Commerce.
Linnean Society.
Geological Society.
Institution of Civil Engineers.
Zoological Society.
Entomological Society.
Statistical Society.
Microscopical Society.
Ethnological Society.
British Archæological Association.
British Museum.
Library of the House of Commons.
Horticultural Society.
Chemical Society.
Archæological Institute of Great Britain and Ireland.
Board of Admiralty.
Library of the Hon. the East India Company.
College of Physicians and Surgeons.
British Association.
- Leeds*—Philosophical and Literary Society.
- Manchester*—Literary and Philosophical Society.
- Oxford*—Bodleian Library.
Radcliffe Observatory.
- St. Andrews*—University Library.

GREECE.

Athens—University Library.

TURKEY.

Constantinople—Library of the Sultan.

AFRICA.

Grand Cairo—The Egyptian Society.

Liberia—Government Library.

ASIA.

Allahabad—Mission College.

Batavia—Bataviaasche Genootschap van Konsten en Wetenschappen.

Bombay—Royal Asiatic Society.

Geographical Society.

Calcutta—Asiatic Society.

Ceylon—Asiatic Society.

Hong Kong—Asiatic Society of China.

Madras—Literary Society.

Manilla—Royal Economical Society of the Phillipine Islands.

WEST INDIES AND SOUTH AMERICA.

Bogota—Sociedad Economica de Amigos del Pais.

Caracas—Sociedad Economica de Amigos del Pais.

Habana—Real Sociedad Economica.

Rio Janeiro—Imperial Brazilian Historical Society.

Chili—Government Library.

APPENDIX C.

LIST OF ADDITIONS TO THE MUSEUM OF THE SMITHSONIAN INSTITUTION
DURING THE YEAR 1851.

1. Box of Coals from the Island of Formosa. *From the State Department.*
2. Slab of Itacolumite or flexible sandstone, from the province of Minas Geraes, Brazil. *From Charles De Selding, Esq.*
3. Two boxes containing specimens of European birds, reptiles, fishes, &c. *From F. Sturm, Esq.*
4. Skull and horns of Elk (*Elaphus canadensis*) from Bear river, Utah. Saddle used by Columbia river Indian women. *From Major O. Cross, U. S. A.*
5. Keg of fishes from Constantinople. *From Hon. Geo. P. Marsh.*
6. Fossil wood from great falls of the Columbia. Sedimentary deposits from Mineral Springs in Utah. *From Major O. Cross, U. S. A.*
7. Reptiles from California and Oregon. *From Dr. A. J. Skilton.*
8. Tooth of Fossil horse, from Ohio. Fossil *Cyathophyllum*, Dover, Tenn. *From Leo Lesquereaux, Esq.*
9. Cast of *Palæotherium Prouti*. *From Dr. H. A. Prout.*
10. Skull of Chamois, (*Capella rupicapra*) and of Roebuck, (*Cervus capreola*.) *From Wilhelm Heine, Esq.*

11. Dress and equipment of an Oorang Kayah or Bornese Warrior. *From Hon. J. B. Balestier.*
12. Specimens of Otsego Bass, (*Coregonus Otsego.*) *From Daniel B. Boden, Esq.*
13. Collection of plants from Hungary. Specimens of *Oestrus Columbacensis.* *From Arthur Schott, Esq.*
14. Five skulls and horns of deer, (*Cervus virginianus.*) *From J. S. Bowman, Esq.*
15. Gold and cinnabar ores from California. *From ———.*
- 16, 17. Two kegs of fishes from the Ohio river at Cincinnati, Ohio. *From S. F. Baird, Esq.*
- 18, 19. Two kegs of fishes, reptiles, &c., from Racine, Ohio. *From Dr. P. R. Hoy.*
20. Fossil bones from cave near Danville, Ky. *From Prof. G. C. Schaeffer.*
21. Fossil wood, from Lebanon, Ky. *From Prof. G. C. Schaeffer.*
22. Skeletons of elk (*Cervus canadensis*) and of fallow deer (*Cervus dama*) from Colonel Tuley's park, Clark Co., Va. *From Dr. C. B. R. Kennerly.*
23. Collection of fish, reptiles, invertebrata, &c., from near Charleston, S. C. *From Chas. Girard, Esq.*
24. Fishes and reptiles from French Creek, Pa. *From Prof. L. D. Williams.*
25. Fishes and reptiles from Jamaica. *From Prof. C. B. Adams.*
26. Reptiles collected in California. *From Dr. J. L. Le Conte.*
27. Skeleton of California vulture (*Cathartes Californianus.*) *From Dr. J. L. Le Conte.*
28. Fishes from river St. Lawrence. *From Dr. F. B. Hough.*
29. Eggs of guillemot. *From W. B. Blaney, Esq.*
30. Specimens of *Menobranchus*, &c., from Lake Erie. *From R. K. Winslow, Esq.*
31. Skin of bighorn (*Ovis montana*) male, and skull of female, from the Upper Missouri. *From the Hon. J. Butterfield.*
32. Fishes, &c., collected at Cooperstown, N. Y., Coxsackie, &c. *From S. F. Baird, Esq.*
33. Fossil vertebrata from the Mauvais Terres; skulls of wolves; skin of bighorn, (*Ovis montana.*) *From Capt. S. Von Vliet, U. S. A.*
34. Fossil infusoria from Bermuda, &c. *From Professor J. W. Bailey.*
35. Jaws of *Scarus.* *From Fletcher Stayman, Esq.*
36. Cast of bones of fossil seal, from Richmond, Va. *From Dr. J. Wyman.*
37. Antlers of reindeer, (*Tarandus hastalis,*) from Isle Royal. *From Col. J. W. Foster.*
38. Fishes from the vicinity of Reading, Pa. *From S. F. Baird, Esq.*
39. Specimen of "fish with legs," (*Siredon lichenoides,*) from near Santa Fé. *From Dr. J. Leidy.*
40. Reptiles collected in Florida. *From Prof. J. W. Bailey.*
41. Fossil specimen of capelin, (*Mallotus,*) in clay nodule, from the Ottawa river. *From W. E. Guest, Esq.*
42. Fishes from Ogdensburg, N. Y. *From W. E. Guest, Esq.*
43. Specimens of reptiles. *From Prof. E. Emmons.*
44. Keg of fishes from Florida. *From Prof. L. Agassiz.*
45. Specimen of Spanish mackarel, (*Cybium maculatum,*) from the Potomac river.
46. Horns of Elk, (*Cervus canadensis,*) from Clearfield co., Pa. *From Prof. S. S. Haldeman.*
47. Keg of reptiles, fishes, &c., collected along the Nile. *From the Hon. Geo. P. Marsh.*
48. Specimen of Indian cloth from a mound in Ohio. *From Col. J. W. Foster.*

49. Specimen of horned frog, (*Phrynosoma carnutum*) from Arkansas. From Colonel Swords, U. S. A.
50. Four cases of reptiles, fishes, mammals, &c., from Greenland and Denmark. From Schach Steenberg, Esq.
51. Two kegs of fishes from Racine, Wisconsin. From Dr. P. R. Hoy.
52. Indian pottery from near Ogdensburg, N. Y. From Wm. E. Guest, Esq.
53. Remains of *Mastodon*, from Gloucester, Va. From Rev. Chas. Mann.
54. Remains of *Mastodon*, from Gloucester, Va. From Capt. Marchant.
55. Specimen of *Pelamis* from Siam. From Hon. J. B. Bales-tier.
56. Specimens of fishes from Moosehead Lake, Me. From Chas. Girard, Esq.
57. Duplicates of the Bonaparte collection of European reptiles and fishes. From the Academy of Natural Sciences.
58. Reptiles and fishes from Madrid, N. Y. From E. O. Dayton, Esq.
59. Minerals from New Brunswick. From Prof. Chipman.
60. Specimens of "*Leuciscus pygmaeus*" DeKay, from Rockland co., N. Y. From Jno. G. Bell, Esq.
61. Specimens of *Hippocampus* from Norfolk, Va. From Charles Lanman, Esq.
62. Keg of fishes and invertebrata from Key West, Florida. From L. F. Pourtales, Esq.
63. Three boxes Geological specimens, collected by Dr. D. D. Owen. From the Hon. J. Butterfield.

APPENDIX E.

REPORT UPON SOME FOSSIL MAMMALIA AND CHELONIA, FROM NEBRASKA.

By JOSEPH LEIDY, M. D.

Professor HENRY, *Secretary Smithsonian Institution* :

DEAR SIR: At your request I have prepared the following brief report upon the fossil remains of remarkable Mammalia and Chelonia of Nebraska Territory, a collection of which was transmitted to me by the Smithsonian Institution for investigation and the preparation of a special memoir.

The fossils were obtained in that portion of country known to the hunters and trappers under the name of "Manvaisés Terres," or "Bad Lands." They were collected principally by Mr. Thaddeus Culbertson and Captain Stewart Van Vliet, U. S. A., and were procured for the cabinet of the Smithsonian Institution through the untiring zeal of Prof. Baird.

The characters of the remains indicate the locality from which they were derived to be an extensive lacustrine deposit of the eocene period.

The Mammalian remains consist of one existing genus, *Rhinoceros*; one genus known only as extinct, *Palæotherium*; and seven genera, *Archæotherium*, *Palæotherium*, *Oreodon*, *Merycoidodon*, *Eucrotaphus*, *Agriochærus* and *Arctodon*, which are new to Palæontology.

The Chelonian remains consist of the two existing genera *Testudo* and *Emys*.

Of *Rhinoceros* there are two species:

1. RHINOCEROS NEBRASKENSIS, *Leidy*: Proc. Acad. Nat. Sciences of Philadelphia, vol. v. p. 121. A species about the size of the *R. minutus*,

Cuvier. Established upon the greater portion of a face and lower jaw containing all the molares. There were also in the collection several fragments of jaws with teeth, and an entire tibia, of several other individuals of the same species.

2. RHINOCEROS OCCIDENTALIS, *Leidy: ib.* 119, 276. A species little more than half the size of *R. indicus*. Founded upon a fragment of the lower jaw with the posterior molar tooth, fragments of nine superior molares, two entire inferior molares, and fragments of several others.

Of Palæotherium three species are indicated:

1. PALÆOTHERIUM PROUTII, *Owen, Norwood and Evans: ib.* 66; *Leidy: ib.* 122. This is an enormous species of Palæotherium far surpassing any previously described, and approaching the elephant or mastodon in size. It was first discovered and described* by Dr. Hiram A. Prout of St. Louis. The specific name was incidentally given as above referred.

2. PALÆOTHERIUM BAIRDII, *Leidy: Proc. Acad. Nat. Sciences, vol. v. p.* 122. A species about two-thirds the size of Palæotherium crassum, *Cuvier*, established upon a cranium with a portion of the face containing the true molares; and all the superior and inferior molares with portions of the jaws of a second individual; and several fragments of a lower jaw of a younger individual. The species is named in honor of Prof. S. F. Baird, of the Smithsonian Institution.

ARCHÆOTHERIUM is a remarkable genus of Pachydermata, which, as since ascertained by the inspection of a fragment of a face containing several true molares, in the possession of Dr. David D. Owen, of Indiana, is closely allied to Hyracotherium, *Owen*.

ARCHÆOTHERIUM MORTONI, *Leidy: ib.* 92. This species was founded on a fragment of a face containing the third and fourth premolar and the alveolus for the first true molar of the left side.

It is named in honor of Dr. S. G. Morton, late President of the Academy of Natural Sciences of Philadelphia.

PÆLUOTHERIUM, is a genus of Ruminantia allied to Dorcatherium, *Kaup*.

PÆLUOTHERIUM WILSONI, *Leidy: ib.* iii, 322. Established upon nearly the whole anterior portion of a cranium with the lower jaw, containing all the molares.

The species is named in honor of Dr. T. B. Wilson, of Philadelphia.

The genera Oreodon, Merycoidodon, Eucrotaphus, and probably Agriochœrus, form members of a family of Ruminant Pachyderms, characterized by the teeth forming a closed arch in both jaws with the following formula:

inc. $\frac{3}{4}$ can. $\frac{1}{1}$ pre mol. $\frac{4}{4}$ mol. $\frac{3}{3}$.

1. OREODON PRISCUM, *Leidy: ib.* v, 238; *ib.* 276. A species about the size of a common sheep, founded upon the greater portions of six crania, one of which upon one side contains all the teeth of both jaws in a perfectly entire condition. There are also in the collection fifteen fragments of jaws with teeth of several other individuals.

2. OREODON GRACILE, *Leidy: ib.* 239. A much smaller species than the preceding, founded upon the greater part of the superior and inferior maxillæ, containing the molares.

* Fragments of both sides of a lower jaw containing the posterior three molares, an entire superior molar and several fragments of others of one individual, and the posterior inferior molar (mutilated) of a second, have been kindly loaned by Dr. Prout for further description.

MERYCOIDODON CULBERTSONI, *Leidy: ib.* iv, 47. Closely allied to *Oreodon priscum* and about the same size, based upon a fragment of the lower jaw containing the true molares, and a fragment of the upper jaw with the posterior two molares.

EUCROTAPHUS JACKSONI, *Leidy: ib.* 92. Founded upon the posterior portion of a cranium about the size of that of *Oreodon priscum*, but differing from it in a remarkable degree in the very large size of the squamous portion of the temporal bones.

The species is named in honor of Dr. Samuel Jackson, Professor of the Institute of Medicine in the University of Pennsylvania.

AGRIOCHERUS ANTIQUUS, *Leidy: ib.* 121. Established upon a large portion of the face and inferior maxilla; containing nearly all the molares, and four superior and two inferior molares of a second individual.

The remaining new genus is a carnivorous animal, closely allied to the existing genus *Ursus*. It is characterized from fragments of three teeth, under the name of *AUTODON*. *Pro. Acad. Nat. Sciences*, vol. v., p. 278. The species may be named *AUTODON VETUSTUM*, *Leidy*.

The Chelonian remains consist of three species of the genera *Testudo* and *Emys*.

1. *TESTUDO LATA*, *Leidy: Pro. Acad. Nat. Sciences*, vol. v., p. 173. A large species, founded upon a specimen consisting of a great portion of the carapace and sternum, broken into two pieces. In its perfect condition, its length has been about two feet, and its breadth about twenty inches.

1. *EMYS HEMISPHERICA*, *Leidy: Pro. Acad. Nat. Sciences*, vol. v., p. 173. Established upon a specimen consisting of about one-third of the carapace and four-fifths of the sternum. When perfect, it has been about nine and a half inches in length, and seven and a half in breadth.

2. *EMYS NEBRASCENSIS*, *Leidy: ib.* 172. *STYLEMYS NEBRASCENSIS*, *ib.* 172. A species established upon the greater portions of two individuals. In the entire condition, it has been about seven inches long, and five and three-fourths broad.

JOSEPH LEIDY.

1897

The first of these is the fact that the
Government has not yet decided
whether it will issue a new
series of notes. It is
generally expected that
the Government will issue
a new series of notes
in the near future. This
is because the present
series of notes is
becoming obsolete and
the Government wishes
to issue a new series
of notes which will
be more convenient
and more durable.

The second of these is the fact that
the Government has not yet
decided whether it will
issue a new series of
notes. It is generally
expected that the
Government will issue
a new series of notes
in the near future.

The third of these is the fact that
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REPORT
OF
THE GENERAL ASSISTANT,
WITH REFERENCE TO THE
METEOROLOGICAL CORRESPONDENCE.

To JOSEPH HENRY, LL.D.,

Secretary of the Smithsonian Institution :

SIR : I herewith present to you the report of operations during the year 1851, relative to the meteorological correspondence entrusted to my charge as General Assistant.

Very respectfully, your obedient servant,

E. FOREMAN.

METEOROLOGICAL CORRESPONDENCE.

The plan adopted for obtaining a corps of meteorological observers for the Smithsonian Institution consisted in issuing a circular letter of date November 1, 1848, which was signed by the Secretary and Prof. Espy, requesting the co-operation of those interested in the subject. This was distributed by members of Congress during the winter of 1848-9, to such of their constituents as were judged by them to be favorable to the undertaking.

A large number of communications in reply accumulated during the winter, and in February, 1849, the correspondence was arranged, the necessary answers prepared and sent with blank forms for the registers of the weather, and a copy of the annual report of 1849, which contained communications on meteorology. An address book for this special correspondence was also prepared.

The number of persons who offered their assistance at that time, or from whom we were informed that co-operation might be expected, may be stated as follows :

Maine	23	Alabama	14
New Hampshire	8	Mississippi	17
Vermont	7	Louisiana	4
Massachusetts	18	Texas	3
Rhode Island	5	Arkansas	1
Connecticut	10	Missouri	5
New York	56	Tennessee	11
New Jersey	12	Kentucky	12
Pennsylvania	55	Ohio	27
Delaware	2	Michigan	10
Maryland	11	Indiana	16
Virginia	22	Illinois	11
North Carolina	8	Iowa	4
South Carolina	4	Wisconsin	14
Georgia	7		
Florida	5	Total	412

Of this number, one hundred and forty-three were correspondents of Prof. Espy, who had been previously engaged in collecting observations under the direction of the Navy Department. To these also a circular and documents were sent, as it was desirable to retain the assistance of practiced observers. From nineteen of this number we have received records of observations, and ten of them still continue to make monthly returns to the Institution.

Offers of service are continually made, and in accordance with our plan and at the request of the applicant, meteorological blank forms and directions are invariably sent. The regular conduct of a journal, however, re-

quiring more perseverance and punctuality than most persons are willing to bestow, we have a very large number of applications of this kind which have proved barren of any results. The whole number of the present corps of observers to the end of December, 1851, is 155, the larger part of whom have contributed their observations from March, 1849, when the system commenced, a period of nearly three years. They are distributed over the various States as follows :

Maine	8	Mississippi.....	2
New Hampshire.....	4	Louisiana.....	1
Vermont.....	3	Texas.....	3
Massachusetts.....	7	Arkansas.....	0
Rhode Island.....	1	Missouri.....	1
Connecticut.....	3	Tennessee.....	4
New York.....	19	Kentucky.....	4
Pennsylvania.....	15	Ohio.....	10
Delaware.....	1	Michigan.....	6
New Jersey.....	3	Indiana.....	4
Maryland.....	5	Illinois.....	2
Virginia.....	11	Iowa.....	3
North Carolina.....	2	Wisconsin.....	19
South Carolina.....	3	Minnesota.....	2
Georgia.....	2	Oregon.....	1
Florida.....	3		
Alabama.....	5	Total.....	155

This list is increasing partly by voluntary offers and partly from a request made to the observers in the Southern and Western States to enlist others in the work, in their respective districts. The number is not permitted to diminish, if it can be avoided, by the discontinuance of an observer. When such is reported to us as probable, the retiring observer is uniformly requested to place the register in the hands of a suitable successor, and keep the chain of observations unbroken. The increase has been marked within a few months past, and it is satisfactory to note that the greater number come from the Southern and Western States, in which our observers have heretofore been but comparatively few. From the occasional discontinuance of some, and the frequent additions of others, our list is constantly fluctuating in effective strength; the numerical force can be known, however, at any time.

It is proper to state that for extra limital stations we have an observer each in Nova Scotia, Canada West, New Grenada and Bermuda, from all of which manuscript registers are received, except from the last. His excellency Charles Elliot, governor of Bermuda, has ordered that the Royal Gazette, containing a weekly register of the weather in Bermuda, be regularly sent to this Institution.

Observations have been received at the Smithsonian Institution, during the year 1851, from the following persons :

List of persons from whom meteorological observations have been received at the Smithsonian Institution, during the year 1851.

State.	Name.	Residence.
MAINE -----	Rev. Samuel H. Merrill----	Old Town.
	George B. Barrows-----	Fryeburg.
	James G. Garland-----	Biddeford.
	Rufus Buck -----	Bucksport.
	S. A. Eveleth-----	Windham.
	Joshua Bartlett -----	Whitehead.
	J. D. Parker-----	Steuben.
	Christopher Prince-----	Thomaston.
	Dr. Joseph L. Stevens-----	Castine.
NEW HAMPSHIRE ---	Dr. William Prescott-----	Concord.
	Robert C. Mack-----	Londonderry.
	Rev. Levi W. Leonard----	Dublin.
VERMONT -----	Rev. Zadock Thompson---	Burlington.
	Charles C. Frost-----	Brattleboro.
	D. P. Thompson-----	Montpelier.
	Prof. W. H. Parker-----	Middlebury.
	R. M. Manley-----	Randolph.
MASSACHUSETTS----	Jacob Batchelder-----	Lynn.
	Charles J. Gilliss-----	Lowell.
	Samuel F. Haven-----	Worcester.
	William Bacon-----	Richmond.
	Prof. E. S. Snell-----	Amherst.
	Amasa Holcomb-----	Southwick.
	John G. Metcalf-----	Mendon.
	Thomas Bailey-----	New Bedford.
	Henry Rice-----	N. Attleboro.
	Martin N. Root-----	Byfield.
C. M. Freeman-----	Williamstown.	
RHODE ISLAND-----	Prof. A. Caswell-----	Providence.
CONNECTICUT -----	Rev. T. L. Edwards-----	New London.
	Prof. Aug. W. Smith-----	Middletown.
	Prof. E. Cutler-----	New Haven.
	M. H. Cobb-----	North Colebrook.
	Dr. Ovid Plumb-----	Salisbury.
	R. H. Phelps-----	Windsor.
	Chas. H. Hoadley-----	Hartford.
NEW YORK-----	L. F. Munger-----	Albion.
	C. F. Maurice-----	Sing Sing.
	E. A. Dayton-----	Madrid.

List—Continued.

State.	Name:	Residence.
NEW YORK—Cont'd.	Dr. F. B. Hough-----	Somerville.
	John Bowman-----	Van Buren.
	Walter D. Yale-----	Honesville.
	J. E. Breed-----	Smithville.
	E. N. Byram-----	Sag Harbor.
	John Lefferts-----	Lodi.
	James M. Tower-----	Waterville.
	Prof. O. W. Morris-----	New York.
	John P. Fairchild-----	Seneca Falls.
	John F. Jenkins-----	Salem Centre.
	Albert Hosmer-----	Buffalo.
	Moses Lane-----	Springville.
	J. W. Hart-----	Oswego.
	Mandren Linus-----	Sackett's Harbor.
	James N. Ball-----	North Nassau.
	James B. Trevor-----	Lockport.
	L. A. Beardsley-----	South Edmeston.
	William E. Guest-----	Ogdensburg.
	Henry L. Dinmore-----	Syracuse.
	Thomas B. Arden-----	Phillipstown.
Cornelius Chase-----	Chatham.	
NEW JERSEY-----	Prof. A. D. Frost-----	Burlington.
	R. L. Cooke-----	Bloomfield.
	W. A. Whitehead-----	Newark.
PENNSYLVANIA-----	Lorin Blodget-----	Sugar Grove.
	Prof. J. H. Coffin-----	Easton.
	Edward Fenderich-----	Pittsburg.
	Prof. M. Jacobs-----	Gettysburg.
	Joseph Edwards }-----	Lima.
	J. L. Miller }	
	Rev. J. G. Ralston-----	Norristown.
	John Wise-----	Lancaster.
	John Jackson-----	Darby.
	Andrew Roulston-----	Freeport.
	David Peelor-----	Indiana.
	Corydon Marks-----	Manchester.
	Dr. R. P. Stevens-----	Ceres.
	Dr. Paul Swift-----	Philadelphia.
	Ebenezer Hance-----	Morrisville.
	E. T. Kluger-----	Nazareth.
	Prof. L. D. Williams-----	Meadville.
Dr. J. Heiseley-----	Harrisburg.	
Orrin T. Hobbs-----	Randolph.	
E. L. Dodder-----	Easton.	

List—Continued.

State.	Name.	Residence.
MARYLAND-----	Prof. W. F. Hopkins----- Dr. Lewis F. Steiner----- Dr. William Baer----- Josiah Jones-----	Annapolis. Frederick. Sykesville. Walkersville.
VIRGINIA-----	Dr. F. J. Mettaner----- Wm. Skeen----- Lieut. R. F. Astrop----- Charles Meriwether----- Dr. Wm. N. Patton----- David Turner----- William C. Hagan----- Dr. A. M. Grinnan----- Prof. G. R. Rosseter-----	Prince Edward C. H. Huntersville. Diamond Grove. Charlottesville. Lewisburg. Richmond. Christiansburg. Madison. Buffalo.
NORTH CAROLINA---	D. Morrell----- Prof. Jas. Phillips-----	Lake Scuppernong. Chapel Hill.
SOUTH CAROLINA---	Dr. John P. Barratt----- Prof. Lewis R. Gibbes----- Dr. J. A. Young----- H. W. Ravenel----- T. Carpenter----- Col. W. Wallace-----	Barrattsville. Charleston. Camden. St. Johns, Berkeley. Camden. Columbia.
GEORGIA-----	Richard T. Gibson----- Dr. George F. Cooper-----	Whitemarsh Island. Perry.
FLORIDA-----	John Newton----- John Pearson----- Judge Augustus Steele---	Chesnut Hill. Pensacola. Cedar Keys.
ALABAMA-----	S. J. Cumming----- Benj. F. Holby----- Dr. Charles F. Percival--- A. Winchell----- Dr. T. C. Osborne-----	Monroeville. Weokaville. Benton. Eutaw. Erie.
MISSISSIPPI-----	Geo. L. C. Davis----- Thomas Oakley-----	Natches. Jackson.
LOUISIANA-----	Dr. E. H. Barton-----	New Orleans.
TEXAS-----	Col. H. Yoakum----- Prof. T. C. Ervendberg---	Huntsville. New Wied.

List—Continued.

State.	Name:	Residence.
TEXAS (continued)---	James Henderson-----	San Antonio.
	Dr. Samuel K. Jennings---	Austin.
TENNESSEE-----	Dr. W. W. McNelly-----	Fayetteville.
	Prof. A. P. Stewart-----	Lebanon.
	W. M. Stewart-----	Clarksville.
	R. Harris-----	Memphis.
	O. W. Morris-----	Knoxville.
KENTUCKY-----	John E. Younglove-----	Bowling Green.
	A. Beatty-----	Prospect Hill.
	Laurence Young-----	Springdale.
	Prof. S. Y. McMasters---	Drennon Spring.
OHIO-----	Prof. G. N. Allen-----	Oberlin.
	Prof. W. W. Mather-----	Athens.
	Dr. E. C. Bidwell-----	Keene.
	George L. Crookham-----	Jackson.
	S. N. Sanford-----	Granville.
	Gustavus A. Hyde-----	Cleveland.
	J. D. McMathews-----	Hillsboro.
	Theo. G. Wormley-----	Columbus.
F. A. Benton-----	Mansfield.	
Stephen S. Dorsey-----	Republic.	
MICHIGAN-----	Rev. Geo. Duffield-----	Detroit.
	Dr. W. M. Campbell-----	Battle Creek.
	Thomas Whelpley-----	Brest.
	Dr. J. Hollister-----	Grand Rapids.
	Dr. H. R. Schetterly-----	Howell.
	Charles Betts-----	Burr Oak.
Elmore Wainwright-----	Clinton.	
INDIANA-----	W. W. Austin-----	Richmond.
	Dr. John T. Plummer-----	Richmond.
	Prof. J. Tingley-----	Greencastle.
	Dr. D. D. Owen-----	New Harmony.
	Prof. Gardner Jones-----	South Bend.
Daniel H. Roberts-----	Newport.	
ILLINOIS-----	Prof. P. P. Brown-----	Upper Alton.
	Dr. S. B. Mead-----	Augusta.
	Henry Talcott-----	Chicago.
	Prof. Joel Hall-----	Athens.
MISSOURI-----	Rev. N. Scarritt-----	Westport.

List—Continued.

State.	Name.	Residence.
IOWA-----	T. S. Parvin----- Dr. Asa Horr----- I. E. Ball-----	Muscatine. Dubuque. Keokuk.
WISCONSIN-----	I. A. Lapham----- Rev. John Gridley----- Orrin Dinsmore----- Edward Spencer----- Prof. S. P. Lathrop----- Dr. F. B. Mills----- James C. Brayton----- Thomas Gay----- C. F. Pomeroy----- J. L. Pickard-----	Milwaukie. Kenosha. Emerald Grove. Summit. Beloit. Baraboo. Aztalan. Belle Fontaine. Green Lake. Platteville.
MINNESOTA TER.----	Rev. Jos. W. Holt, per J. B. Culver----- Robert Hopkins-----	Sandy Lake. Travers des Sioux.
OREGON - - - - -	George A. Atkinson-----	Oregon City.
BRITISH POSSESSIONS-	Capt. J. H. Lefroy----- Henry Poole-----	Toronto, Canada W. Pictou, Nova Scotia.

Distribution of Instruments.

According to the terms of the circular letter of November, 1849, the use of instruments for observation were promised to those persons who should prove most capable and who occupied the most important places. This has been complied with to the greatest limit permitted by the means of the Institution applicable to meteorology. It was early seen, however, that the applications were so numerous, the country so extensive, and the number of sets which could be furnished so few, that it was determined to modify the plan. All applicants for instruments were accordingly notified that they could be obtained by themselves defraying half the cost; the other half being charged to the Institution. Many have availed themselves of this provision—being more willing to accept these terms in consequence of the superior construction of the articles, all of them comparable with each other and the best standards at home and abroad.

The Institution has adopted the policy of favoring the more distant places in the distribution of instruments, when furnished at its own expense—including distant settlements in the new States, or on the extreme frontiers, such as would not likely be otherwise provided for, and from whom observations would not otherwise be obtained. It also avoids furnishing them to colleges, or other institutions of learning, it being presumed that such

articles are or should be a part of their establishment. Nor could they be supplied to the older and more thickly settled States, where a number of good instruments already exist.

The following tables exhibit the instruments distributed and the places supplied, also the terms upon which they were furnished to the observer :

EXPLANATIONS OF ABBREVIATIONS.—Ps. Psychrometer; Br. Barometer; Tr. Thermometer; Wv. Wind Vane; Rg. Rain Gauge.

Instruments deposited with observers and in part paid for by them.

Names.	Places.	Instruments.
L. F. Munger	Albion, N. Y.	Br. Tr.
G. L. C. Davis	Natchez, Miss.	Br.
W. W. Wilson	Pittsburg, Penna.	Br.
N. Scholfield	San Francisco, Cal.	Br. (Reported broken.)
James M. Tower.	Waterville, N. Y.	Br.
J. Stickney	Evansville, Ind.	Br.
S. N. Sanford	Granville, O.	Br.
E. H. Barton	New Orleans, La.	Br. Rg.
John Newton	Chesnut Hill, Fla.	Br.
David Peelor	Indiana, Penna.	Br. Tr.
J. B. Trevor.	Lockport, N. Y.	Br. Tr.
E. A. Dayton	Madrid, N. Y.	Tr. Rg. Ps.
G. F. Cooper	Perry, Geo.	Br. Tr. Rg.
J. G. Ralston	Norristown, Penna.	Br. Tr.
A. P. Stewart	Lebanon, Tenn.	Br. Tr.
Asa Horr	Dubuque, Iowa.	Br. Tr. Ps. Rg. Max. T.
S. P. Lathrop	Beloit, Wis.	Br. Tr. Ps. Tr. 2 Reg.
Dr. E. C. Bidwell	Keene, Coshocton county, O.	Br.
B. F. Mills	Baraboo, Wis.	Tr.
P. P. Brown	Upper Alton, Ill.	Br.
D. Turner	Richmond, Va.	Br.
W. Wallace	Columbia, S. C.	Br. Tr. Ps.

Total—20 Brs., 22 Trs., 5 Rgs.

Instruments deposited with observers entirely at the cost of the Institution.

Names.	Places.	Instruments.
To each of the Telegraph offices at	N. Y., Albany, Utica & Buffalo.	Br. Tr. Rg. and Wv.
Rev. N. Scarritt	Westport, Mo	Tr.
E. G. Squier	Leon, Nicaragua	Br. 2, Tr. 2.
J. Carrington	Salt Lake, Utah	Br. Tr. Rg. Wv.
J. R. Hammond	Booneville, Mo.	•Tr. (Returned broken.)
Rev. Jos. Holt, missionary.	Travers des Sioux	Tr.
J. W. Hopkins	Stations in Sandy Lake	Tr.
Dr. J. Vaughan	Minnesota, Fort Des Moines, Iowa, and Iowa	Tr.
G. P. Marsh.	Constantinople	Tr.
L. J. Blodget	Sugar Grove, Penna.	Tr.
W. B. Knox	Ontonagon, Lake Superior.	Br. Tr.
L. W. Conkey	Syracuse, N. Y.	Ps.
J. Bell	Detroit, Michigan	Ps.
Doaksville Academy ...	Choctaw Nation	Br. Tr.
Dr. Edw. Hitchcock	Amherst, Mass	Br.
Rev. John Gridley	Kenosha, Wis	Br. Tr.
T. S. Parvin	Muscatine, Iowa	Br.
I. A. Lapham	Milwaukee, Wis.	Br. 2, Tr. 2.
Rev. Mr. Beckwith.	Sandwich Islands.	Br. Tr. Ps. Tr. 2.
Dr. J. Posey	Savannah, Geo.	Br. Tr. Ps. Rg. 2 Reg. Tr.
O. W. Morris	Knoxville, Tenn.	Br. Tr. Ps.

Total — 15 Brs., 31 Trs., 6 Rgs.

Smithsonian Observers who have paid the entire cost of their instruments.

Names.	Places.
W. M. Stewart	Clarksville, Tenn.
Dr. J. Ray	Cincinnati, O.
Dr. Lewis J. Steiner.	Frederick, Md.
Professor W. F. Hopkins.	Annapolis, Md.
Dr. J. P. Barratt.	New Market, S. C.

And five others not reporting their observations to this institution.

Reduction of Observations.

The results of this undertaking consist of a series of thirty-five volumes of monthly returns. As the blank forms for each month are received, they are filed away in one volume in the order of the States of the Union enumerated above. Manuscript and newspaper notices of storms, or other atmospheric phenomena, are also inserted in their respective places, according to their geographical arrangement.

During the last summer this collection of meteorological data was made use of by Professor Espy for the preparation of a forthcoming report.

Abstracts of all the notices of the aurora borealis have been made and incorporated into a volume containing other observations of this meteor, for which blank forms and directions were issued and returns received, the whole of which has been placed in the hands of Captain J. H. Lefroy, R. A., for reduction.

All the notices of periodical phenomena of animals and plants have been extracted, and in connection with other observations, for which blank forms and directions were issued and returns received, have been tabulated with a view to generalization hereafter.

The principal storms of last and the preceding year are now undergoing reduction, including the preparation of a series of charts, showing the lines of temperature, the winds, fall of rain, snow, &c., &c., all of which will serve to illustrate the formation and progress of American storms.

Method of conducting the Correspondence.

When the observations for one month are completed, the observer forwards the register by mail addressed to the Navy Department, having the word "Meteorology" endorsed on the envelope; an arrangement having been entered into with a previous Secretary of the Navy to admit the passage of these documents through his office, and thus relieve the Institution of a heavy charge for postage. For each sheet filled, others in blank are at once sent off, sufficient to enable the observer to keep a copy, which is almost universally done. If a letter accompanies the return sheet, it is immediately answered, and the request contained in it attended to. The tenor of these communications is very various, involving the solution of questions not only in meteorology, but in general physics, chemistry, mineralogy, natural history, botany, applications for public documents, and a number of minor subjects. This part of our plan is always cheerfully performed, inasmuch as it may be regarded as a part of the remuneration which the observer has a right to expect in return for the time and labor expended by him on the observations. It is believed also that the prompt attention given to this part of the plan has tended greatly to keep the corps of observers together. The only remuneration bestowed, consists of various publications of the Institution, which are from time to time sent free of postage. Among those which have been distributed during the year may be enumerated, the Annual Report of the Smithsonian Institution, Dr. Gould's History of the Discovery of Neptune, Professor Jewett's Notices of Public Libraries in the United States, Booth and Morfit's Improvement in Chemical Arts, the Occultation lists and the Ephemeris of Neptune, Ellett's Memoir on the Physical Geography of the Mississippi Valley, a map of the great annular eclipse of July 28, 1851, an engraving of the Smithsonian building, directions for making meteorological observations, accompanied with tables for calculating barometric pressure, dew-point, &c., a map of the stars in the northern heavens for delineating auroral phenomena, and other occasional documents of minor importance.

The observers are generally persons engaged in occupations which admit to some extent of their being present at the place of observation at the required hours of the day all the year round. The services of an intelli-

gent substitute is sometimes made available. The classes to which the observers belong, are professors in colleges, principals or teachers of academies, farmers, physicians, members of the legal and clerical profession, and a few engaged in mechanical and mercantile pursuits.

Respectfully submitted,

E. FOREMAN.

General Assistant.

REPORT

OF THE

EXECUTIVE COMMITTEE,

AND OF THE

BUILDING COMMITTEE.

REPORT OF THE EXECUTIVE COMMITTEE.

By the act of Congress incorporating the Institution, and a resolution of the Board of Regents, it becomes the duty of the Executive Committee to examine and certify the accounts, and to advise with the secretary with reference to the operations which may be undertaken in accordance with the plan of organization. The committee, during the past year, have attended to these duties and beg leave to submit the following report relative to the same :

The operations of the Institution now follow a regular course, and therefore as frequent meetings of the committee are not required as at the beginning. Indeed, they prefer to leave the principal direction of the affairs of the Institution to the secretary, believing that individual responsibility is the safe ground for confidence in the proper administration of a trust of this kind.

The active operations being of a public character, there is full opportunity of judging of their value, and whether they are in accordance with the will of the testator. It is, however, of the first importance that the financial condition of the Institution should be frequently and critically examined, and that it should be seen that every account paid has a proper voucher, and that all money has been properly expended in accordance with the appropriations of the board.

A new system of accounts was introduced in July, 1850, in accordance with which, all bills presented for payment are audited and certified by the secretary, on whose order they are paid by the treasurer, and all the accounts are revised by the Executive Committee. The Executive Committee have examined every account paid since the date mentioned, and find that each is attended with the proper voucher, and that the expenditures have been judiciously and economically made.

They are happy to inform the Board that the financial affairs of the Institution are still in a very favorable condition, as will be seen by the following statement :

The whole amount of the Smithsonian bequest received into the Treasury of the United States, was-----	\$515,169 00
The annual interest on the same at 6 per cent, is \$30,910 04;	
the interest which had accrued up to July, 1846, when the trust was placed under the care of the Regents, was-----	242,129 00
Total-----	<u>757,298 00</u>

Out of this sum the Regents were authorized to expend on the building \$242,129, which had accrued in interest, together with such portions of interest on the original bequest as might remain unexpended in any year.

The Regents, however, thought it advisable to increase the principal, and in order to do this, resolved that the erection of the building should be spread over a number of years, and that the sum authorized to be used for this purpose should be put at interest, so that the income from this source might in part defray the expense of the edifice. To carry out this plan, \$250,000 of accrued interest were drawn from the treasury and invested in

United States securities. This plan of finance has been rigidly adhered to, and it now appears from the account books of the Institution that after all the expenditures on the building and grounds, on researches, publications and lectures, on the library, museum and gallery of art, there is on hand government security valued, at the present rate of premium, at \$209,700, so that the original amount and interest which had accrued previous to the time at which the Institution came into the charge of the Regents, has only been diminished by about \$33,000.

In accordance with a part of this plan, Congress has been requested to take from the Institution \$150,000, to be placed with the original bequest as a part of the principal, the interest of which alone can be expended, and it is hoped that an act to this effect will be passed during the present session.

The committee have also examined the various and multiplied operations of the institution as set forth in the report of the secretary, and they are happy to assure the board and the public that, in their opinion, the benevolent designs of the donor are faithfully and efficiently executed in accordance with his injunction, to "*increase and diffuse knowledge among men.*"

The following is an abstract of the expenditures during the past year, ranged according to the programme of accounts, which was submitted by the executive committee at the last meeting of the board :

Expenditures of the Smithsonian Institution during the year 1851.

Pay on contracts.	\$22,000 00	
Pay of architects, &c.....	2,214 45	
Expenses of building committee, &c.....	43 53	
Miscellaneous to building.....	62 07	
Furniture, &c., in common.....	657 06	
Do.....for publications.....	21 00	
Do.....lectures.....	149 99	
Do.....library.....	255 22	
Do.....museum.....	52 65	
Grounds.....	515 64	
		25,971 54
Expenses of Board of Regents.....	291 20	
Lighting and heating.....	486 35	
Postage.....	370 78	
Transportation.....	851 43	
Stationery.....	419 96	
General printing.....	1,159 06	
Apparatus.....	148 69	
Incidentals general.....	1,878 43	
Salaries general.....	3,799 92	
		9,405 82
Smithsonian contributions.....	3,211 76	
Reports on progress of knowledge.....	473 82	
Other publications.....	100 00	
Meteorology.....	394 50	
Computations.....	300 00	
Investigations.....	110 00	
Pay of lecturers.....	635 00	
Illustrations &c., for lectures.....	316 49	
Attendance, &c., for lectures.....	36 75	
Salaries, publications.....	900 00	
		6,478 32
Cost of books.....	2,016 90	
General catalogue.....	174 88	
Incidentals to library.....	1,402 01	
Salaries to library.....	1,999 92	
Explorations—museum.....	50 00	
Expenses of collections—museum.....	183 03	
Incidentals.....do.....	512 06	
Salaries.....do.....	1,500 00	
Gallery of art, purchases.....	10 00	
Incidentals, gallery of art.....	6 00	
		7,854 80
Total.....		49,710 48
On the building in whole up to end of last year.....		174,982 00
		25,971 00
		200,953 00

Respectfully submitted by

A. D. BACHE,
 J. A. PEARCE,¹
 JOS. G. TOTTEN.
Executive Committee.

REPORT OF THE BUILDING COMMITTEE.

The Building Committee of the Smithsonian Institution beg leave to submit the following report of the progress of the building during the year 1851, and of the expenditures which have been made under their direction during the same time.

By the resolution of the board, at their session in 1847, the whole expenditure of the building, grounds and furniture, was limited to \$250,000; and for the purpose of meeting this expense, without encroaching too much on the accruing and accrued interest, the building was not to be finished under five years from the time of its commencement.

On account of the giving way of a part of the interior, the Regents, at their meeting in 1849, ordered a survey of the whole work by a commission of architects. This commission reported that the exterior of the building was well constructed of good materials; that the interior, consisting of wood and plaster, was not proper for a depository of valuable property, much of which will be donations, presented with the implied condition that it would be properly secured against danger from fire.

In accordance with this report, the Regents found it necessary to deviate from their original intention, and to order the removal of the wood work which had been erected in the interior of the main building, and to direct that its place should be supplied by fire-proof materials.

This change in the materials of construction, according to the estimate of the architect, James Renwick, Jr., will require an additional outlay of about \$44,000. In round numbers we may therefore estimate the entire cost of the building and furniture at \$300,000. To meet the additional expense, the Regents have directed an extension of the time of completing the building.

The contract of Mr. Cameron includes the finishing the whole of the exterior of the edifice, of the interior of the two wings, of the two connecting ranges, and of all the towers. This contract must be finished before the 19th of March of the present year; or, in other words, within the period of five years from the date of the contract.

During the past year, all the exterior of the building, including all the towers, has been completed, and the public have now an opportunity of judging of the architectural effect, relative to which much discrepancy of opinion has existed. The majority of strangers who visit the city, consider it a very beautiful edifice, of which the effect will be heightened by the improvement of the grounds and the planting of the trees.

The committee, since the last meeting of the board, have thought it advisable to order some changes and additions for the better security and use of the building. They have directed that the spiral stairs, leading from the bottom to the top of the octagonal tower, shall be constructed in iron, and that the groined arch, which forms the ceiling of the space between the front towers over the main entrance, shall be constructed in brick instead of wood and plaster; also, that the floor of the second story of the vestibule of the southern tower shall be laid with tile instead of wood. Besides these changes, intended to render the building more secure from fire, the committee have authorized the fitting up of three rooms in the basement of the west connecting range, for printing and stereotyping uses.

In view of appropriating a portion of the main building to the purposes of a large lecture room, the committee have directed that the large doors of the main entrance shall be made to open outward, in order to avoid the fatal consequences sometimes occasioned by the rushing out in a panic of a large crowd of individuals.

To facilitate the approach to the Institution from Pennsylvania avenue, the corporation of the city have appropriated \$2,500 to the construction of an iron foot bridge across the canal at Tenth street, and the necessary footways. This bridge but for an accident would have been finished before this time and will probably be completed in the course of a few weeks. To connect this bridge with the centre of the Smithsonian building, Mr. Downing has constructed a gravel walk underlaid with coarse stone to serve as a drain. Across the bridge and along this path a series of iron pipes have been laid for conveying gas to the Smithsonian Institution from the main pipe along Pennsylvania avenue.

The plan of the improvement of the public grounds mentioned in the last report of the committee has been adopted by the President, and is now in the process of rapid execution under the direction of Mr. Downing. When it is completed, the whole of the area known as the mall, extending from the foot of Capitol hill to the Potomac river, will be converted into a beautiful park adorned with evergreen and other ornamental trees, and traversed with carriage drives and gravel walks. In the midst of this variegated landscape the Smithsonian building will occupy a prominent position, and with its picturesque architecture will produce a harmonious effect.

The President of the United States in 1847 appropriated to the use of the Institution nineteen acres of land, in the middle of which the building has been erected. This space was enclosed with a fence and planted with trees at the expense of the Smithsonian fund. The whole amount of expenditure for these objects was about four thousand dollars, but the execution of the plan before mentioned, at the expense of the general government, will render unnecessary any farther disbursements on this account.

Without surrendering the right of use of the ground appropriated to the Institution, the partition fence between it and the other part of the mall has been removed and the whole given in charge to Mr. Downing, and his able assistant Mr. Breckenridge.

The committee recommend that the interior of the north and south towers, which connect with the rooms hereafter to be used for the library and museum, shall be made as far as possible fire-proof. It is also suggested that the gas and water-pipes be laid in the building as it progresses.

The attention of the Board is invited to the consideration of such measures as may be deemed preparatory to proceeding with the completion of the centre building, such as plans and estimates.

The following is submitted as an account of the expenditures of the Smithsonian Institution relative to the building during the year 1851.

Pay on contracts.....	\$22,000 00
Pay of architect, &c.....	2,214 45
Expenses of building committee, &c.....	48 58
Miscellaneous to building.....	62 07
Furniture, &c....do.....	1,135 95
Grounds.....	515 54
	25,971 54

Respectfully submitted:

WALTER LENOX,
GRAHAM N. FITCH,

The following is extracted from an account of the proceedings of the
General Assembly of the Church of Scotland, 1881.

At the meeting of the General Assembly of the Church of Scotland, held at Glasgow, on the 10th of May, 1881, the following resolution was adopted:—
That the General Assembly do hereby express their sympathy with the
people of the South African Republic, and their confidence in the
ability of the Government of that Republic to maintain the
independence and integrity of that Republic.

The following is extracted from an account of the proceedings of the
General Assembly of the Church of Scotland, 1881.

At the meeting of the General Assembly of the Church of Scotland, held at Glasgow, on the 10th of May, 1881, the following resolution was adopted:—
That the General Assembly do hereby express their sympathy with the
people of the South African Republic, and their confidence in the
ability of the Government of that Republic to maintain the
independence and integrity of that Republic.

The following is extracted from an account of the proceedings of the
General Assembly of the Church of Scotland, 1881.

At the meeting of the General Assembly of the Church of Scotland, held at Glasgow, on the 10th of May, 1881, the following resolution was adopted:—
That the General Assembly do hereby express their sympathy with the
people of the South African Republic, and their confidence in the
ability of the Government of that Republic to maintain the
independence and integrity of that Republic.

PROCEEDINGS
OF THE
SIXTH ANNUAL MEETING
OF
THE BOARD OF REGENTS
OF THE
SMITHSONIAN INSTITUTION.

SIXTH ANNUAL MEETING OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION.

WASHINGTON, *January 7, 1852.*

In accordance with the resolution of the Board of Regents of the Smithsonian Institution, fixing the time of the beginning of their annual meeting on the first Wednesday of January of each year, the Board met this day in the Smithsonian building, at 12 o'clock noon.

A quorum not being present, the Board adjourned to Saturday the 10th inst.

WASHINGTON, *Saturday, January 10, 1852.*

Agreeably to adjournment the Board of Regents met this day at noon. Present—Messrs. Bache, Fitch, Lenox, Mason, Pearce and Rush, of the Board; and Mr. Seaton, treasurer.

The secretary informed the Board of the re-appointment of Mr. Fitch of Indiana, and Mr. Colcock of Georgia, and the appointment of Mr. Meacham of Vermont, as Regents on the part of the House of Representatives of the present Congress.

The secretary also stated that the accounts and reports of the Institution would be ready for presentation at the next meeting; whereupon, the Regents, after examining the several parts of the establishment, adjourned to meet on Saturday next at 10 o'clock.

WASHINGTON, *January 17, 1852.*

The Board met this day agreeably to adjournment. Present—Mr. Taney, chancellor; Messrs. Bache, Fitch, Lenox, Pearce, Rush and Totten, of the Board; and Mr. Seaton, treasurer.

The report of the Executive Committee was presented by the chairman, (Mr. Bache,) was read, and ordered to lie on the table.

The report of the Building Committee was presented by Mr. Lenox, chairman, and was read.

On motion, the above reports were adopted.

The annual report of the secretary, giving an account of the condition of the Institution and of the operations of the past year, was presented, and a part of the same read.

Copies of the Memoirs and Reports published by the Institution during the past year were placed on the table for the inspection of the Board.

A letter from Gilbert Cameron, contractor for the building, asking for an advance of money from the fund withheld as security for the proper performance of his contract, and a letter from James Renwick, jr., architect, approving of the part payment of the same, were read, whereupon—

On motion of Mr. Pearce, it was

Resolved, That the chancellor fill the places in the Building Committee which were occupied by Messrs. Davis and Hilliard.

The chancellor appointed Messrs. Rush and Fitch, who signified their acceptance.

On motion of Mr. Totten, it was

Resolved, That the secretary be added as a member of the Building Committee.

The letters of Messrs. Cameron and Renwick were then referred to the Building Committee to be reported on at the next meeting.

On motion, the Board adjourned to Saturday, 24th instant, at 11 o'clock, a. m.

WASHINGTON, January 24, 1852.

The Board met at 11 o'clock, a. m. Present—Mr. Taney, chancellor; Messrs. Bache, Colcock, Fitch, Lenox, Meacham, Pearce, Rush and Totten, of the Board; and Mr. Seaton, treasurer.

The Building Committee, to whom were referred the letter of Gilbert Cameron, making application for an advance of \$10,000 from the amount of per centage retained as security for the completion of his contract, and also the letter of James Renwick, jr., architect, reported that they had examined the subject, and requested to submit the following resolution, which, on motion, was adopted :

Resolved, That in accordance with the recommendation of the architect, the Executive Committee be authorized to advance to the contractor the sum of \$6,000 from the amount retained as security for the completion of his contract.

The secretary brought before the Board the subject of the disposition of the accrued interest. He stated, that since the last meeting of the Regents he had conferred with Mr. Corcoran on the subject, and had received from him the following proposition, viz: Messrs. Corcoran & Riggs will give sixteen per cent. premium on the stock belonging to the Institution, will allow five per cent. interest on the whole sum, including the premium, until an investment can be made, and make a deposite of government stocks as security for the safe keeping of the money. Whereupon—

Mr. Pearce offered the following resolution, which was adopted :

Resolved, That the chancellor and secretary be requested to sell \$180,000 of stock of accrued interest upon the terms stated in the resolution of June 1st, 1850, and to deposite the proceeds of such sale with Corcoran & Riggs for the purposes, and on the security therein mentioned.

Mr. Fitch offered the following resolution, which was adopted :

Resolved, That Mr. Pearce be requested to have the memorial relative to the reception of the accrued interest by Congress taken from the files of the Senate and referred to the Committee of Finance.

The reading of the secretary's annual report was then continued, including the report from Professor Jewett, in charge of the Library, giving the details of the operations in this department during the past year. Specimens of titles for catalogues, separately stereotyped and printed, were laid before the Board.

Mr. Rush offered the following resolution, which was adopted :

Resolved, That a copy of the special report of the secretary be furnished for publication to the National Intelligencer immediately after it shall be sent to Congress.

The Board then adjourned to meet on Saturday, 31st instant, at 10 o'clock.

WASHINGTON, *January 31, 1852.*

The Board this day met at 11 o'clock, a. m. Present—Mr. Taney, chancellor; Messrs. Colcock, Mason, Meacham and Totten.

The secretary communicated to the Board a copy of the will of Thomas Wynn, late of Brooklyn, New York, deceased, which contains a contingent devise or legacy to the Smithsonian Institution.

Extract from the will of Thomas Wynn, of Brooklyn, New York:

“Upon the decease of my said daughter the said real and personal estate, or the proceeds and accumulations thereof, shall be equally divided between or among her issue, share and share alike, the issue of children to stand in place of their parent; or if she should die without issue, ten thousand dollars shall be paid to my friend John Anderson, of Florida, and the residue to the Smithsonian Institution at Washington, as I know no benevolent institution more useful or appropriate. A sufficient and ample fund shall, however, be always reserved to secure the annuity to my wife.”

On motion of Mr. Colcock, it was

Resolved, That the said will be referred to Mr. Mason, with a request that he would correspond with an agent in New York, to ascertain the value of the estate so devised, and whether any and what measures may be necessary to preserve and secure the interests of the Institution under the said will.

The secretary informed the Board that since the last meeting he had taken the certificates of the stock belonging to the Institution, amounting to \$180,000, from the safety vault of the Secretary of the Senate, and had given them in charge to Messrs. Corcoran & Riggs on the terms prescribed by the Board at their last meeting. He also stated that the certificates were not yet finally transferred to the bankers, but stand in the name of the chancellor and secretary as security for the stock itself. On the proceeds of this stock, which at sixteen per cent. premium amounts to \$208,000, the Institution is to receive interest at the rate of five per cent. per annum.

The secretary was requested to obtain from Messrs. Corcoran & Riggs a written account of his agreement with reference to the aforementioned transaction.

The Board then adjourned to Saturday the 14th of February next.

WASHINGTON, *Saturday, February 14, 1852.*

The Board met this day at 11 o'clock, a. m. Present—Mr. Taney, chancellor; Messrs. Colcock, Fitch, Lenox, Mason, Meacham and Totten, of the Regents; and Mr. Seaton, treasurer.

The secretary presented a written statement from Messrs. Corcoran & Riggs relative to the sale of stock belonging to the Institution, and the deposit of the certificates of United States stock as security therefor.

A proposition was submitted from Dr. H. Stone, of New York, to furnish designs for a monument in commemoration of James Smithson. An explanation of the designs exhibited was read.

On motion of Mr. Mason, it was

Resolved, That Dr. Stone's proposition lie on the table.

The secretary communicated a proposition from Henry Stevens, of London, to obtain facts relative to the life of James Smithson.

The following preamble and resolution, submitted by Mr. Mason, was adopted :

It being represented to the Board that Mr. Henry Stevens, now of London, has proposed to collect certain authentic materials in Europe, which may be useful for a future memoir of the life and character of James Smithson, the founder of the Institution, and without compensation for such services ;

Resolved, That the secretary be authorized to accept the offer of Mr. Stevens, and to appropriate a sum not exceeding fifty dollars for this object.

The secretary laid before the Board a communication from Joseph Bradley relative to claims of John Sniffin, sub-contractor, against Gilbert Cameron, contractor for the Smithsonian building.

On motion of Mr. Fitch, the letter was referred to the Building Committee.

The conclusion of the secretary's annual report was read, containing a report by Professor Baird of the details of the statistics of the museum, of the printing of the publications, and of the exchanges ; also an account of the operations relative to Meteorology, the statistics of which are given in a report by Professor Foreman.

On motion of Mr. Fitch, it was

Ordered, That a vote of thanks be presented to Sir Henry Bulwer, for his co-operation in facilitating the transmission of the Smithsonian publications into Great Britain, duty free. The same to be signed by the chancellor and secretary.

The Board then adjourned to Saturday, 21st instant.

WASHINGTON, *Saturday, February 21, 1853.*

The Board of Regents met this day, at 11 o'clock a. m. Present—Mr. Taney, chancellor ; Messrs. Fitch, Lenox, Mason and Totten, of the Board ; and Mr. Seaton, treasurer.

Mr. Mason, to whom was referred the will of the late Thomas Wynn, of Brooklyn, reported that he had written to Mr. J. H. Patten, of New York, relative to the matter, and had received a communication, which he presented to the Board. It furnished a statement of facts relative to the will, with suggestions as to the course to be pursued by the Board with reference to the bequest.

The subject was again referred to Mr. Mason for further investigation.

Mr. Lenox presented a report from the Building Committee on the letter of J. H. Bradley, Esq., relative to the unsettled claims of John Sniffin against Gilbert Cameron, contractor, with the accompanying resolution, which was adopted :

Resolved, That the secretary be authorized to inform Joseph Bradley, Esq., that although the Board of Regents cannot grant the application made in his letter of 10th February last, in behalf of John Sniffin, as in their opinion it would be an interference with the rights of the contractor, G. Cameron, yet that the Board will readily unite in any arrangement between the parties which will facilitate the settlement of the controversy between the said Sniffin and Cameron, not inconsistent with its own rights and duties in the business.

The secretary stated to the Board that the contract of Mr. Cameron would expire on the 19th of March, and suggested that the Board ought to determine whether the fireproofing of the centre building should be immediately proceeded with ; and also whether it be advisable to provide a

larger lecture-room, and make other changes for the better adaptation and security of the building.

All of which was referred to the Building Committee.

The Board then adjourned to Saturday, 28th inst., at 10 o'clock a. m.

WASHINGTON, *Saturday, February 28, 1852.*

The Board of Regents met this day, agreeably to adjournment.

A quorum for the transaction of business not being present, the meeting adjourned to Saturday, the 1st of May next.

WASHINGTON, *Saturday, May 1, 1852.*

The Board met this day, at 10 o'clock a. m. Present—Mr. Taney, chancellor; Messrs. Bache, Fitch, Lenox, Meacham, Pearce, Totten, of the Board; and Mr. Seaton, treasurer.

Mr. Lenox, from the Building Committee, to whom was referred the subject of the completion of the building, reported as follows:

That in the opinion of this committee it is advisable to proceed with the completion of the building as far as the funds will allow, and as rapidly as is consistent with good workmanship; and in accordance with this opinion they offer the following resolution:

Resolved, That the Building Committee be authorized to contract for the finishing of the building, or so much of it as they may think at present necessary; and that they be allowed to make such changes in the interior as they may think best suited to the wants of the Institution: *Provided*, They report the terms of any contract or contracts they may make, and the character of the changes which they may contemplate in the interior of the building, to the Board of Regents, before operations are commenced under their contract.

Mr. Bache, from the Executive Committee, presented the following resolution:

Resolved, That during the year 1852, the sum of thirty thousand dollars out of the Smithsonian income be and is hereby appropriated to be expended under the direction of the secretary, and with the advice of the Executive Committee, to defray the expenses of the Institution, and to carry out the several parts of the programme.

Mr. Meacham presented the following resolution, which was adopted:

Resolved, That the chancellor and secretary be authorized to make the annual report of the Regents to Congress.

Parts of the third and fourth volume of Smithsonian Contributions, so far as printed, were laid on the table for the examination of the Board; also a printed list of foreign correspondents.

On motion of ———, the thanks of the Board were presented to Dr. Charles G. Page for donations of apparatus.

The secretary laid before the Board the memorial of Josiah Holbrook, requesting the publication of tracts by himself on agricultural geology and chemistry for general distribution. Referred to the secretary and Executive Committee. Also, a petition from Miss Gilpin, relative to the establishment of a Normal school for female teachers. Referred to the secretary and Executive Committee.

The secretary stated that since the most important part of the operations of the Institution were transacted by letters, it became highly important that all correspondence, however trifling it might appear, should be care-

fully preserved, and in order to enforce this upon himself and upon all the assistants, he requested a specific resolution of the Board with reference to it; whereupon, on motion of Mr. Totten, it was

Resolved, That all correspondence relative to the business of the Institution be carefully preserved in bound volumes, and that all such correspondence be open at the call of the Regents or of the Executive Committee through the secretary.

The secretary brought before the Board the subject of copyright books. He stated that the system adopted was defective that according to the present arrangement, while all the most worthless publications were sent and the Institution put to the expense of furnishing certificates for those, many of the best works published in the country were not deposited. He further stated that Professor Jewett had proposed a plan for remedying the evil, to which he would ask the attention of the Board.

On motion of Mr. Pearce, it was

Resolved, That the subject of depositing copyright books in the Smithsonian Institution be referred to the committee formerly appointed on that subject.

On motion of Mr. Fitch, Mr. Meacham was appointed, in place of Hon. Jefferson Davis, on the committee relative to copyright books.

The secretary brought before the Board the subject of additional compensation to Dr. J. G. Flügel, of Leipsic. He stated that this gentleman had acted as the agent of the Institution for all the libraries and learned institutions of central and northern Europe, and that about two hundred letters and copies of letters had been received from him.

On motion of Mr. Pearce, it was

Resolved, That one hundred and fifty dollars be added to the sum allowed to Dr. Flügel for the present year.

The secretary placed before the Board a letter from Lieutenant Colonel Edward Sabine, R. A., Corresponding Secretary Royal Society of London, of which the following is a copy:

ROYAL SOCIETY'S APARTMENTS, SOMERSET HOUSE,
LONDON, March 19, 1852.

MY DEAR SIR: I duly communicated to the Earl of Rosse, President of the Royal Society, your letter to me on the subject of the interchange of scientific publications between the United States and this country, and the admission into England, duty free, of scientific books and memoirs presented to institutions or to individuals here, either by or through the Smithsonian Institution. I accompanied this communication by a letter addressed to the president, which you will read in the enclosed printed minutes of the council of the Royal Society of January 15, 1852. The subject has since been brought by the Earl of Rosse under the consideration of her Majesty's government, who have shown, as might be expected, much readiness to meet, in the same spirit, the liberal example which has been set by the United States, in exempting from duty scientific books sent as presents from this country to the Smithsonian Institution, and through that Institution to other institutions, and to individuals, cultivating science in the United States. The mode which has been suggested by our Board of Customs, for admitting duty free scientific publications designed for this country, and which, we hope, will receive the approval of the treasury, is, that a list should be furnished by the Royal Society of the names of all institutions and individuals to whom such works may be expected to be addressed, when the custom-house officers will have directions to pass without duty all such publications having the names of such institutions or persons inscribed either on the cover or on the title page, which are sent to this country in packages directed to the Royal Society—the list to be amended or extended from time to time. The Royal Society will gladly take charge of and distribute under these regulations the books which the Smithsonian Institution may send for institutions and individuals in this country, receiving them from the agent in London appointed by the Smithsonian Institution; and I shall be obliged by your furnishing me, at your earliest convenience, with a list, as complete as you may be able to make it, of the names of the institutions and persons to whom books or memoirs are likely to be sent.

The Royal Society will also gladly receive and forward to their ultimate destination (where such assistance may be useful) packages containing publications of a similar description, designed for institutions and individuals on the continent of Europe; such packages being directed to the Royal Society, and stated on the outside of the case or package to be *from the Smithsonian Institution*. The customs' duties will, in such cases, be either altogether remitted or returned on re-exportation.

If it be a convenience to the cultivators of science in the United States, that publications presented to them by institutions or individuals on the continent of Europe, or elsewhere, should be addressed to the Royal Society as a channel of communication, the same facilities will be given by the Board of Customs, and the Royal Society will, with pleasure, make the required arrangements. It will be necessary, in such cases, that packages arriving from the continent of Europe or elsewhere should be marked on the outside, "*for the Smithsonian Institution*," and the foreign secretary of the Royal Society should be apprised of their being sent. Expenses of freight would of course be defrayed by the agent of the Smithsonian Institution.

I remain, my dear sir, with great respect and regard, very sincerely yours,
EDWARD SABINE,
Vice President and Treasurer of the Royal Society.

The Executive Committee presented the following report and resolutions:

The Executive Committee, to whom was referred the subject of inquiring into the expediency of providing buildings for the officers of the Institution, report:

That after due reflection they have come to the conclusion that it would conduce very much to the interests of the Institution if the officers were provided with houses on the Smithsonian grounds, so that they might be present on all occasions, and be as much as possible at all times identified with the operations of the Institution; yet at present while the main edifice is unfinished, they do not consider it advisable to incur the expense of additional buildings, and would therefore recommend that in lieu of the rent of a house, five hundred dollars be added to the salaries of Professors Jewett and Baird, to be paid from the beginning of the present year.

The committee has learned with regret that by the construction given by the secretary to the resolution of the Board of Regents of December 4, 1846, an allowance less than was intended by that resolution has been received by him for house-rent, and offer a resolution to meet the case.

A. D. BACHE,	} <i>Executive Committee.</i>
J. A. PEARCE,	
J. G. TOTTEN.	

The following resolutions were accordingly, on motion, adopted:

Resolved, That in the opinion of the Board of Regents, the resolution of December 4, 1846, was intended to make an allowance to the secretary of five hundred dollars per annum, in lieu of a residence.

Resolved, That in lieu of the rent of a house there be added to the salaries of Professors Jewett and Baird, each, five hundred dollars per annum, from the beginning of the present year.

The secretary stated that he wished to be on the safe side, and that he had no intention at present of claiming anything on account of previous house-rent.

The Board then adjourned to Saturday, 22d instant.

WASHINGTON, *Saturday, March 22, 1852.*

The Board met this day, at 11 o'clock a. m. Present—Messrs. Bache, Fitch, Lenox, Meacham, Pearce, Totten, of the Board; and Mr. Seaton, treasurer.

In the absence of the chancellor, on motion, Mr. Pearce took the chair.

Mr. Lenox, from the Building Committee, informed the Board that the work on the building by the present contractor was not quite completed, but might be expected to be so in about ten days. He also remarked upon

the condition of a suit pending between Cameron and Sniffin, and its bearing upon the action of the Board.

A bill of extra work by G. Cameron for flagging, &c., was presented and referred to the Building Committee, to be audited and settled.

The secretary stated that Mr. Stanley, the artist, had deposited a gallery of Indian portraits in the west wing of the building, which had attracted many visitors.

The Board then adjourned to Saturday, June 5.

the question of a suit pending before Congress and the
 the view of the Board
 A bill was introduced by Mr. C. C. Chapman for the purpose of
 referred to the Finance Committee in its amended and revised
 The committee stated that Mr. C. C. Chapman had a copy
 of the bill pending in the way of the bill which had already
 been introduced.

The Board has examined the bill and has
 found it to be in accordance with the
 provisions of the act of March 3, 1879,
 and has recommended that it be
 passed with amendments. The
 amendments proposed are as follows:
 1. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the first section.
 2. To insert the words "and the
 same shall be subject to the
 provisions of the act of March 3,
 1879," in the second section.
 3. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the third section.
 4. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the fourth section.
 5. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the fifth section.
 6. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the sixth section.
 7. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the seventh section.
 8. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the eighth section.
 9. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the ninth section.
 10. To strike out the words "and
 the same shall be subject to the
 provisions of the act of March 3,
 1879," in the tenth section.

APPENDIX.

PROFESSOR TURNER'S LETTER ON INDIAN PHILOLOGY.

NEW YORK, *December 16, 1851.*

DEAR SIR: In reply to my letter stating that I had examined the Dakota Dictionary and Grammar prepared by members of the mission to that tribe, and recommending the publication of the same, you say: "Give me your reasons for thinking it an interesting addition to knowledge and worthy of publication in the Smithsonian Contributions; also any remarks you may think of importance with reference to the compilation and publication of works of this kind."

My reasons for recommending the publication in the terms alluded to, have reference partly to the character and merits of the works under consideration, and partly to the value of such works in general, as furnishing materials for the study of the philology and ethnology of this continent, and thus "promoting the increase of knowledge among men."

The Grammar and Dictionary of the Dakota language, now presented in manuscript for publication by your Institution, are the result of the joint labors of the members of the Dakota mission, assisted by the most intelligent natives, for the last eighteen years, brought together and placed in their present form by the Rev. S. R. Riggs, and are designed to meet the requirements both of the practical linguist and the comparative philologist. An examination of the MSS. show that they are drawn up with ability and conscientious care. The Grammar is simple and brief. The Dictionary consists of two parts, Dakota-English and English-Dakota. The Dakota-English part contains upwards of 15,000 words. Their division into syllables is marked, and also the place of the accent. Besides the definition or English rendering of each word, the part of speech to which it belongs is noted, its etymology explained, and the changes of form exhibited which are produced by the introduction of pronouns and particles. The English-Dakota part is briefer and has more of the character of a simple vocabulary. There are some changes and additions which it would be desirable to make, particularly in the Grammar. I have had the pleasure of seeing and consulting with Mr. Riggs, who has expressed his readiness to introduce any practicable improvements that may be suggested.

The languages of the aborigines of North America are worthy of attention in a scientific point of view on two accounts; and first for their own sake, as constituting an important branch of philological investigation. These languages display many interesting analogies to those of other parts of the globe, and many equally interesting peculiarities of their own. Most of those we are acquainted with are of a highly complicated and ingenious construction; and the study of them enlarges the views of the comparative philologist by disclosing to him new and curious phases of the human mind as manifested in these new modes of communicating ideas. For to the scientific philologist—who regards each language, not as something elaborated by art or design, but as a true organism, the spontaneous growth, as it were, of the mind of the nation that uses it, and as more or less intimately connected by virtue of its origin with other organisms of the same nature—the study of a language simply, irrespective of the literature it may or may not contain, affords the same species of instruction and delight

which the examination of a new production of the animal, vegetable, or mineral kingdom does to the student of natural history. The phenomena exhibited by the rudest form of speech furnish matter for admiring the wisdom of the Great Fashioner of man and all his faculties.

Secondly, a knowledge of these languages is desirable in view of their bearings on the great ethnological question of the origin, affiliations, and migration of the tribes that inhabited this continent prior to its discovery by Columbus. The Smithsonian Institution early gave evidence that it appreciated the importance of these questions, by announcing among the departments of knowledge to which it proposed to lend its aid, "ethnological researches, particularly with reference to the different races of men in North America." This purpose has already begun to be carried into effect by the publication of the "Ancient Monuments of the Mississippi Valley" and the "Aboriginal Monuments of the State of New York," works which have received the meed of the heartiest approbation of ethnologists, both in this country and in Europe.

If asked in what manner do philological studies bear upon the ethnology of North America, we reply: It is true none of the numerous peoples of this continent ever arrived at the grand and fruitful idea of an alphabet in which to record their deeds for the instruction of posterity. The traditions which we find among them are of a vague and trivial character, and contain in general no information that can lay claim to any thing like antiquity excepting the bare fact that a given tribe at a period more or less remote migrated from a certain direction north, south, east, or west. Hence it is neither by perusing ancient records nor by conversing with individuals now living, that a knowledge of the language of our aborigines can be made to furnish us with true and reliable information on the topics alluded to; this can be done only by comparing together and analyzing the structure of these languages themselves. There are various means for determining the character and relationship of tribes of men who are without a history, such as their physical conformation, character, habits, and manners, their implements for procuring and preparing food, their clothing, weapons, dwellings, their arts of various kinds, their marriage, funeral, and other rites, &c.; but of all means the structure of their languages is one of the most certain and satisfactory. When the testimony of language can be adduced in corroboration of that obtained from these other sources, the proof is considered to be as perfect as the nature of the case admits; but so long as that is wanting, the argument is felt to be insecure and incomplete.

We are already in possession of many printed vocabularies of Indian languages of greater or less extent and accuracy, and of a very few grammars, mostly meagre and imperfect. These have been studied and compared by scholars with eager assiduity, and the interesting discoveries to which they have led have created a demand for a body of materials more copious and exact than has hitherto existed. In order that the philology and ethnology of this continent may receive thorough elucidation, it is necessary that there should be given to the learned world a complete dictionary of each language containing, as far as is practicable, all the words of the language accurately analyzed and defined, and also a grammar in which all its forms, inflexions, and constructions are fully exhibited. The publication of works of this nature is too expensive an undertaking for individuals, pecuniary profit being altogether out of the question; nor is there any public institution to which the duty of initiating and carrying out a

comprehensive scheme for effecting this great object could be assigned so appropriately as to your own.

The source to which we must mainly look for contributions to our stores of American philology are the members of the various missions to the Indians. These are the only large class of men, qualified by education and sustained by motives of benevolence, whom we can expect to spend long years in studying the mental idiosyncrasies of our rude red brethren, and in mastering the formidable difficulties of their complicated unwritten languages. There is also another class of men whose position would enable them to do much in aid of the cause, if they could be induced to interest themselves in it, I mean the superintendents and agents of Indian affairs. I would respectfully suggest, then, that, in the first place, the Institution address the Board of Missions and the Indian Office, requesting that means be taken to ascertain from the gentlemen under their control what grammars and dictionaries already exist in manuscript, the extent and nature of the same, by whom compiled, what steps if any have been taken towards their publication, &c. When this preliminary information shall have been obtained, it will be time to set about filling up the lacunæ. If the bureaux above mentioned enter heartily into the project, which they may be well expected to do, much can soon be effected in this behalf by pressing the subject upon the attention of those most competent to undertake the work in each particular instance, assuring them that their labors will be duly appreciated and that measures will be taken for laying them in a proper manner before the world. There are many persons, missionaries and others, who have the requisite knowledge and ability to produce works of this kind, but who do not undertake the labor for the simple reason that they have never had any inducement to do so.

The *means* by which these works are to be published, and the *mode* in which it should be effected, are matters worthy of consideration.

First as to the means. Although this subject of Indian philology is one of exceeding interest, the funds of the Smithsonian Institution have their limit, and there are many other important departments of knowledge which claim attention at its fostering hands. The publication of anything like a complete series of works for the elucidation of the languages of the whole continent of North America will demand a very great outlay of labor and money—far more indeed than the Smithsonian can be justly expected to furnish alone. Its exertions therefore should be chiefly directed to collecting, suggesting to be written, and superintending the uniform and accurate publication of such works; and it should furnish only such part of the pecuniary means as cannot be obtained from other sources. The quarters to which the Institution, as it would seem, may confidently look for aid, in addition to that furnished by liberal and public spirited individuals, are the Board of Missions and the Office of Indian Affairs, both of which are directly interested in the matter, as the proper discharge of the duties of the individuals under their supervision would be greatly facilitated by a competent knowledge of the Indian languages. The government of the State or Territory in which a tribe is situated may likewise be confidently appealed to for aid. Lastly, assistance, pecuniary or literary, will no doubt be gladly furnished by our ethnological, historical, and antiquarian societies, according to the nature of each case and to their respective abilities.

As to the proper mode of compiling and printing these works, a little practice will be necessary for settling all the details. Of course both the

grammars and dictionaries should be made as perfect as the opportunities and abilities of the authors will allow. These should be reminded that accuracy, perspicuity, and fullness of illustration by means of examples, are the great desiderata; and that as these books are designed for the use of educated persons, it is unnecessary to occupy space with ordinary definitions of the terms, article, noun, &c. Let the writer take it for granted that the reader is already acquainted with the common terms and rules of grammar, and proceed at once to describe the particular language under consideration; let all fanciful comparisons with Hebrew, Greek, &c., be excluded. Each grammar should note the dialectical peculiarities of the language of which it treats, and also the changes that may be taking place in it, that is to say, such as have been observed by the whites since they have been familiar with it, and especially such as are indicated by differences in the speech of old and young persons. To each grammar should be appended one or more specimens of composition in the language, with an interlinear English translation. For the purpose of comparison, the parable of the Prodigal Son is superior on many accounts to the Lord's Prayer, although it would be well to give both. But it is very desirable, that to these should be added some original production of the native mind—some speech, fable, legend, or song, that may afford samples of aboriginal modes of thought as well as of expression. It seems strange, that so apparently obvious and easy a means of obtaining an insight into the workings of the minds of rude nations, which would prove of the highest interest to the philosophical inquirer, should have been hitherto almost entirely overlooked. There should also be prefixed to each work of the kind, an introduction giving the name of the tribe and its subdivisions, the territory it occupies, its numbers, a sketch of its past history as far as known, and present condition, and any peculiarities of its language, for which a proper place cannot elsewhere be found. In the dictionary it is necessary that, besides the definitions of the meaning of words, their etymology, *i. e.* the elements of which they are composed, should be exhibited in all cases where it can be ascertained. The want of this has been a serious defect in all the vocabularies of Indian languages hitherto compiled. In the proposed series of works some uniform and comprehensive system of noting sounds should be adopted, based on the principle of representing each articulation by a single character; and in all cases the accented syllable should be marked. A full set of rules and hints, together with a copy of a grammar and dictionary published on the plan of the Institution, might be sent to each person or body of persons who engage to prepare a similar work to be published under its auspices. Although the Institution cannot be expected to defray the whole expense of publishing these works, it should offer to include in its "Contributions" all such as are properly prepared. The size of the page is well adapted to exhibit the inflexion of verbs, &c., in tabular forms, by studying which a general view of a subject can be gained much more easily than when the several parts are scattered over a number of small pages. The types, too, which are cut to represent certain sounds in one language, can be used for the same sounds in other languages. It would immensely facilitate the comparative study of these languages, if the works describing them were all compiled on the same principle, written according to the same system of notation, and embraced in the same collection.

What has been said relates only to the Indians within the United States, to which, of course, the operations of the Institution should, for a consider-

able time at least, be principally directed. Still something might soon be done towards extending the good work over the rest of the continent. As soon as the first grammar and dictionary have been published, I would suggest that a copy be sent to the University of Toronto, together with a letter explaining the object and plan of the Institution, and asking its co-operation. It could doubtless accomplish much, if so inclined, by the aid of the missionaries scattered through the British possessions and of the gentlemen in the employ of the Hudson's Bay Company, some of whom have paid a good deal of attention to the Indian languages. A similar communication might be opened with the University of Mexico, which would probably prove very advantageous, as in Mexico many valuable MS. grammars and dictionaries, prepared by the Jesuit and Franciscan missionaries, are believed to exist. A descriptive catalogue of these works, and also of rare printed works of the kind, noting their place of deposit, would be of great interest and utility.

I now conclude, sir, these remarks and suggestions, which it would have been presumptuous in me to offer except in obedience to your own request—with the expression of my sincere satisfaction at the broad and enlightened views which have prompted your Institution to engage in this noble undertaking. It is one whose results will interest literary, scientific, and philanthropic men in all parts of the world, and which it is incumbent on Americans to perform. It has long been expected and demanded at our hands, and it is time it were earnestly begun.

With great respect, I am your very obedient servant,

WM. W. TURNER.

JOSEPH HENRY, Esq.,

Secretary of the Smithsonian Institution.

REPORT ON METEOROLOGY.

Report of the Committee on Meteorology of the American Association for the Promotion of Science, on the arrangement of a System of Combined Meteorological Observations for North America. Adopted August 1851.

The Committee on Meteorology, to whom was referred by the Association the "Proposition for extending the system of meteorological observations now in operation under the direction of the Smithsonian Institution," respectfully present their report, and ask of the Standing Committee their consideration of it, and of the resolutions appended to it, so that they may be presented, if approved, to the Association at the present meeting.

It is not necessary, at the present day, to go into any argument on the importance of such observations. Wherever civilization extends, their value is recognized, and they are sustained by private and public exertions. At different times systems of observations have been organized by different governments and societies of the Old World, for determining the general and particular questions which occur; and in our country, the General government, and several of the State governments, as New York, Pennsylvania, Massachusetts, have kept up, for a limited time, several series of meteorological observations, from which results of high importance have been derived.

Recently the British government have determined to maintain the Magnetical and Meteorological Observatory at Toronto, where full observations are made with instruments registering by photographic methods. Our own government still keeps up the observations at the military posts, under the enlightened supervision of the surgeon general of the army. The Treasury Department has, not long since, expressed the opinion that the keepers of light-houses should be sufficiently well instructed to make such observations. The Navy Department fosters the meteorological observations under the direction of the Smithsonian Institution. The Hudson's Bay Company have recently consented, on application of the Association, to establish observations at such of their posts as might seem desirable to the Association. The States of New York and of Massachusetts have renewed their action in the matter. There is a great desire to profit by these very favorable circumstances of our country, and of the present day, to organize a system which shall connect all these efforts, otherwise isolated, and to derive from these and from similar ones the means of advancing the knowledge of the meteorology of North America.

We expect to derive from systematic observations, extended over as much of our continent as is accessible to us, at stations selected in reference to the problems to be made out, a thorough knowledge of our climate in all its relations, and of its variations in the same and in different localities. The mean temperature of points is to be determined with carefully verified instruments, similar to each other, similarly placed, and observed under the same rules and conditions: the lines of equal mean temperature will result, and the variations at different seasons will be shown. The limits of vegetation will be found, and the areas of climate adapted to the cereals. The

parallels within which wheat, Indian corn, etc., may be profitably cultivated, and which present results so different from those found to exist in the eastern continent in Asia, will be determined accurately. The degree of dryness and moisture will be ascertained; the amount of rain, and the amount of evaporation; questions not only bearing upon the health and comfort of man, but upon his attempts to facilitate communication by canals and the improvement of rivers, and upon the means of avoiding or controlling floods and freshets. The number of days of rain, the number of clear and cloudy days, and the amount of loss of the sun's effect by cloudiness, will be determined; the direction and force of the wind, and the systems of winds prevailing in different parts of the continent, and in the different seasons of the year. The mean pressure of the air and its variations will be seen, as shown by the barometer; from which important data in regard to relative heights of points may be obtained, giving the general topographical features of our extended country, and serving as a reconnoissance in more distant parts of it for railroads or common roads which may be proposed. The progress of waves of pressure, either connected with storms or with the ordinary fluctuations of the atmosphere, will be ascertained. All periodical phenomena will be studied in connexion with these observations; the flowering of plants and trees, the ripening of grains and of fruits, the migrations of animals. The frequency and intensity of the aurora borealis will be determined; and its singular variations in passing from north to south and east to west, on our continent, will be studied. The direction of the motion, the frequency, the intensity, and other circumstances actuating our thunder storms, will be ascertained. From the observations will result the law of storms in its full development; and its application to all parts of the continent, or limitation to particular portions, will be entirely ascertained; an application so important to the farmer and navigator, so interesting to the man of science, and so desirable to be known by every one who travels on any of our lakes or rivers, or along our extensive and somewhat stormy coasts. The lines of our telegraphs will be rendered available for observations on this subject, more complete than any which have been hitherto practicable; and while they enable us to determine the laws of storms, will also furnish means of giving notice of their progress, and then of anticipating their approach.

The diseases incident to different climates, the phenomena of malaria, the progress and laws of epidemics, may be studied in connection with the periodical phenomena from carefully collected statistics.

A contribution to ethnology may be the statistics of the numerical decrease of the Indian races, to the interest of which many minds in this country are fully alive.

These are only a portion of the results which may be expected from a wide-spread and well organized system of meteorological observations.

We would propose, therefore, to establish at once, in addition to those which now exist, fifty meteorological stations in the positions named below; to supply the primary stations with a full set of instruments, carefully compared and of uniform construction, namely, a thermometer, barometer, hygrometer, rain and snow gauge, and wind vane; to cause hourly observations to be made at six or eight stations, and observations three times a day at all others, according to the same system.

The following list includes stations already occupied, which are, however, marked to distinguish them from those which it is proposed to establish :

List of the meteorological stations to be established.

Sub-tropical Zone.—Key West, Florida; Point Isabel, Rio del Norte; New Orleans, Louisiana.

Warm Temperate Zone.—A. St. Augustine, Florida; Tuscaloosa, Alabama; Vicksburgh, Mississippi; Fredericksburg, Texas; El Paso, New Mexico; San Diego, California. B. Chapel Hill, Carolina; Knoxville, East Tennessee; Nashville, West Tennessee; Fort Atkinson, Indian Territory; Fort Washita, Indian Territory; Santa Fé, New Mexico.

Middle Temperate Zone.—A. X. Washington, D. C.; Lexington, Virginia; Fort Leavenworth, Indian Territory; Bent's Fort, do. B. X. New York city, New York; a central point, Pennsylvania; Steubenville, Ohio; Columbus, Ohio; Indianapolis, Indiana; Springfield, Illinois; Bloomington, Iowa.

Middle Temperate Zone (continued.)—Fort Kearney, M. T.; Fort Laramie, M. T.; Salt Lake, Utah; Fort Hall, Oregon; Nueva Helvetia, California; San Francisco, do.

Cold Temperate Zone.—Bowdoin College, Maine; Dartmouth College, New Hampshire; Burlington, Vermont; Kingston, Canada; Manitoulin Island, or Bruce Mines, Canada; Lansing, Michigan; Milwaukee, Wisconsin; Fort Gaines Minnesota; Fort St. Pierre, Minnesota Territory; Fort McKenzie, do.; Fort Kootanie, Oregon; Fort Walla Walla, do.; Fort Vancouver, do.; three new light-houses along the coast from Oregon to Point Conception, California.

Resolutions.

Resolved, That the committee on meteorology recommend to the American Association for the Advancement of Science, the appointment of a committee to memorialize Congress in regard to the *immediate* extension of the system of meteorological observations now making in the United States, under the direction of the Smithsonian Institution.

Resolved, That this committee be authorized and directed to request the Secretary of the Treasury to provide for the making of meteorological observations, according to the directions of the Smithsonian Institution, by the keepers of the light-houses which are to be established at points on the western coast of the United States, named in the reports of the committee on meteorology.

Resolved, That the same committee be requested to address the Surgeon General of the United States in reference to the co-operation of this department in the same system, and to suggest the locations named in the report of the committee on meteorology as those where the observations should be made.

Resolved, That the same committee be requested to memorialize the Canadian government, and the several legislatures of the States of our Union, asking their co-operation in the foregoing system of observations.

Resolved, That the same committee be requested to inform the Hudson's Bay Company of the steps which have been taken to carry into effect the system referred to in the memorial addressed to them by this association, at the last annual meeting.