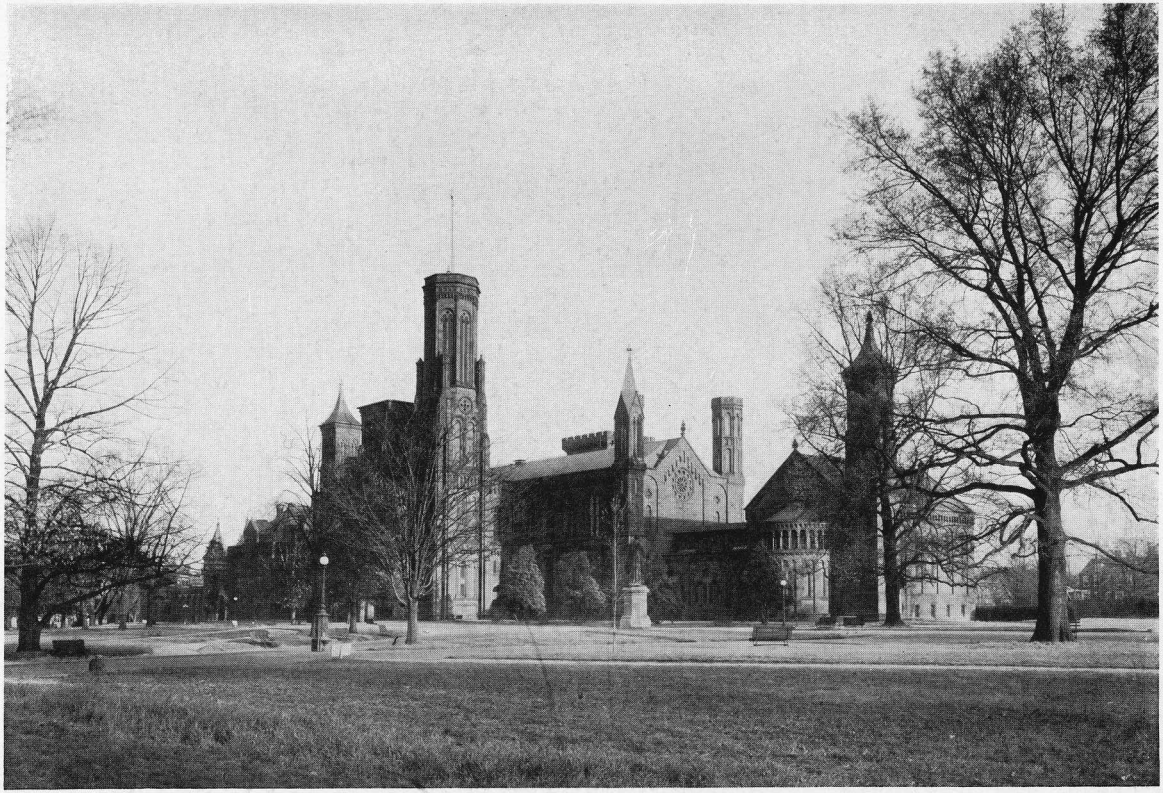
PROCEEDINGS OF
CONFERENCE ON THE FUTURE
OF THE
SMITHSONIAN INSTITUTION

FEBRUARY 11, 1927

CITY OF WASHINGTON
1927



THE SMITHSONIAN INSTITUTION AT WASHINGTON

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PURPOSE OF THE CONFERENCE

"To advise with reference to the future policy and field of service of the Smithsonian Institution."

ESTABLISHMENT OF THE SMITHSONIAN INSTITUTION

CREATED BY ACT OF CONGRESS AUGUST 10, 1846

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CHARLES G. DAWES, Vice-President of the United States
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SMITHSONIAN INSTITUTION—ESTABLISHED 1846
GIFT OF AN ENGLISHMAN TO AMERICA

SOME ACHIEVEMENTS DURING 80 YEARS

I. Began Work from which Sprang 9 Government Bureaus.
   1. Initiated systematic meteorological studies lasting 25 years; developed into WEATHER BUREAU.
   2. Gave world first principles of fish conservation; organized and directed U. S. FISH COMMISSION.
   3. Built up NATIONAL MUSEUM collections to leadership. It now contains over 10,000,000 specimens in all fields.
   4. Led way in preserving records of Indian life. Built up BUREAU OF AMERICAN ETHNOLOGY.
   5. Inspired and organized NATIONAL ZOOLOGICAL PARK to promote interest in American animals.
   6. Created ASTROPHYSICAL OBSERVATORY, preeminent authority on Sun's heat.
   7. Created BUREAU OF INTERNATIONAL EXCHANGES; foremost in making world science a unit.
   8. Organized United States Bureau of INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.
   9. Organized NATIONAL GALLERY OF ART.

   (Smithsonian still administers for government last seven of above Bureaus.)

II. Foremost in Diffusion of Scientific Knowledge.
   1. Gave American scientists premier agency for free publication and world wide distribution.
   2. Built up ten standard technical series; circulates these throughout world, FREE.
   3. Created America's leading scientific library.
   4. Collaborated in 42 expositions here and abroad.
   5. Gave over million specimens to schools and museums.
   6. Answers by mail over 8000 questions yearly.
   7. Cooperated through publications, specimens, instruments, men, and advice, with scientific agencies throughout world.
   8. Fostered scientific development of schools.

III. Led Way in Scientific Survey of North America.
   Made major contributions to U. S. Geological Survey.

IV. Took Part in 1500 Expeditions Covering Globe.

V. Served as Link between America and World Science.

VI. Gave American Science a High and Generous Ideal.

SMITHSONIAN SUPPORTS ALL BRANCHES OF SCIENCE

I. Meteorology.
   1. Introduced accurate instruments, daily weather maps, use of telegraph and national system of observers.
   2. Prepared first tables rainfalls and temperatures.
   3. Established basic principles of storm movements.
   4. Discovered influence of Sun's variation on weather.

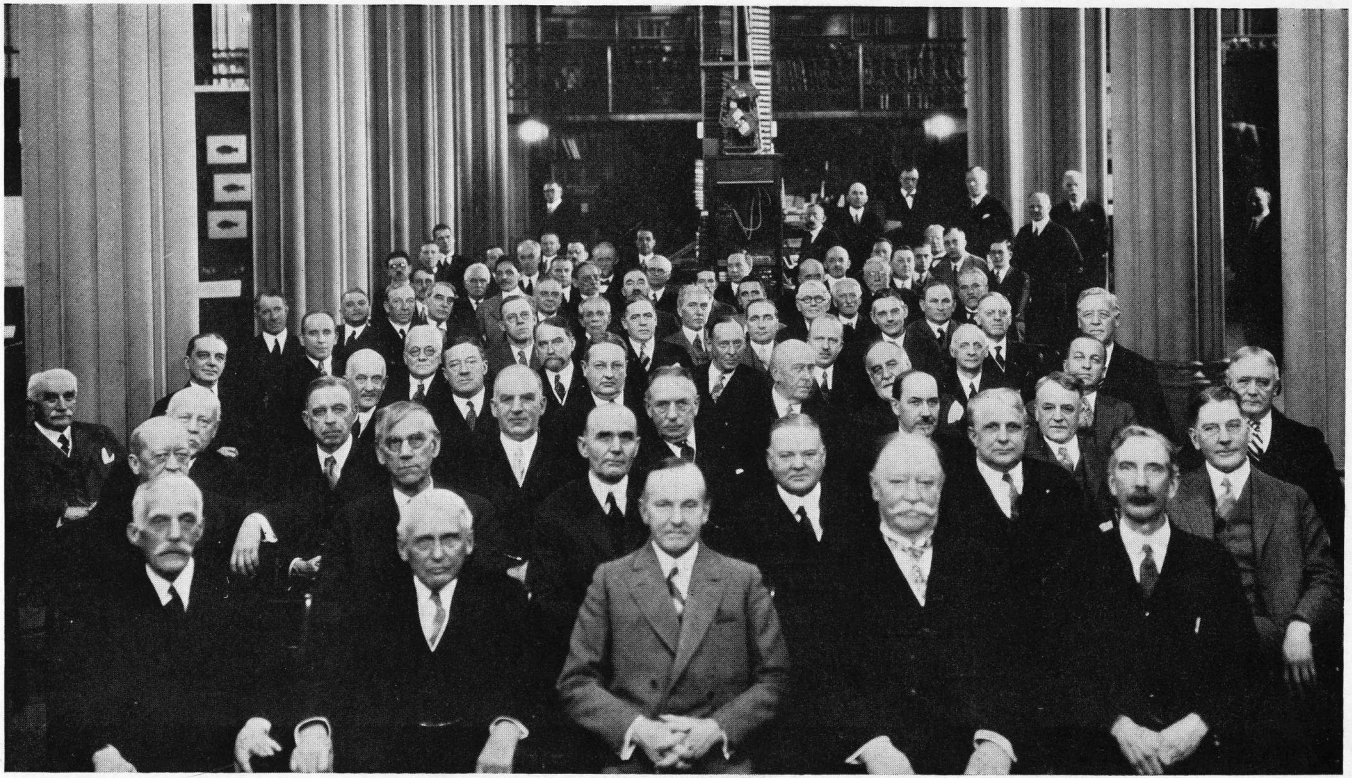
II. Astronomy and Mathematics.
   1. Circulated by wire news of astronomical discoveries.
   2. Subsidized Gauss' celestial mechanics in English.
   3. First measured heat in spectra of stars.
   4. Published indispensable mathematical tables and formulae.

III. Physics and Chemistry.
   1. Langley made aviation a science and built first flying machines to fly under own power.
   2. Extended Sun spectrum 10-fold by heat measurements.
   3. Subsidized classic work on velocity of light, on interferometry, and on ultra-violet rays.
   4. Invented 8 standard instruments to measure radiation.
   5. Subsidized determination by Morley of atomic weights of oxygen and hydrogen.

IV. Geology, Mineralogy, Paleontology.
   1. Established science of paleogeography.
   2. Led way in study of earliest known life.
   3. Foremost in study of meteorites and rockweathering.
   4. Made basic contributions to micro-paleontology.

V. Biology.
   1. Published comprehensive monographs on American fishes, birds, whales, crustaceans and many other groups.
   2. Recognized as authority for identification of plants and animals.
   3. Gathered one of finest insect collections in world; forms basis of economic entomology.
   4. Published 25 volumes on American plants.
   5. Made exhaustive study of trees and shrubs of Mexico.
   6. Built up largest bird collection in America.

VI. Anthropology.
   1. Made basic contributions to study of primitive man, and of origin and antiquity of man in America.
   2. Foremost scientific collection relating to physical man.
   3. Conducts extensive studies of American Indian.
   4. Initiated preservation of Indian ruins for posterity.
   5. Compiled and published Handbook of American Indians.



GROUP PHOTOGRAPH TAKEN AT SMITHSONIAN CONFERENCE

JAMES SMITHSON

THE SMITHSONIAN INSTITUTION—PARENT OF AMERICAN SCIENCE

By WILLIAM HOWARD TAFT,
Chancellor of the Institution

GENTLEMEN: You have been invited here today to discuss the future of an institution which was given to this country by a native and resident of another; an institution which enjoys the protection of the United States Government and is yet a private organization; an institution which inspired the orderly development of American science and which, as long ago as 1850, made youthful America an international patron of thought and knowledge.

James Smithson was an Englishman. He was the natural son of the Duke of Northumberland and a direct descendant through his mother of Henry VII, King of England. Embittered by the bar sinister on his name, this gentleman of the 18th century was yet great spirited enough to devote his life to the service of men. A chemist and mineralogist of repute, he was admitted to the Royal Society at the early age of twenty-two. "*Every man,*" he said, "*is a valuable member of society who, by his observations, researches and experiments, procures knowledge for men.*" Acting on this principle, he devoted his attention with equal thoroughness to the small and the great, the practical and the cultural. His chemical papers are numerous and fine. He discussed the origin of the earth, and he improved oil lamps. Yet for all his labors, fame mocked him. The years brought him only bad health and painful infirmities. Broken in body, he sat down in 1826, at the age of sixty-one, to make his will, and

because in that act he held true to the ideals which had inspired his life, he gained for himself the immortality which seemed to have escaped him.

James Smithson had never been in the United States. He lived in a day when Englishmen prophesied the collapse of this government; in a day, also, when great philanthropic foundations were rare. Yet he bequeathed, in case of the death of his nephew without heirs, his entire estate of half a million dollars *"to the United States of America, to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."*

Smithson died in 1829, but the estate did not come to the United States until the death of the nephew in 1835. From the moment in 1835 that President Andrew Jackson reported Smithson's bequest to Congress, it engaged the attention and inspired a sense of responsibility in the leading men, whether in public or private life, in this country. Such men as John Quincy Adams, then serving in the House of Representatives, and Jefferson Davis, in the Senate, appreciated the importance of the gift and its great possibilities for good if properly administered. They overcame the objections of John C. Calhoun, and others, and induced Congress to accept the bequest.

In July 1836, Richard Rush of Pennsylvania, who had been Attorney General, Secretary of the Treasury, minister to France and minister to England, was named to go to England to put in a formal claim for the bequest.

The English government appreciating the nobility of Smithson's legacy, pushed a friendly suit through Chancery in the then unprecedentedly short period of two years. Consequently, in 1838, Rush was able to bring back to the United States $508,000 in gold sovereigns, a sum which later small additions brought to a total of $550,000.

Congress and the country were now faced with the difficult problem of defining knowledge and determining how best to increase and diffuse it. Five successive Congresses spent much time in indecisive debate of these matters. Three Presidents urged the duty of decision on them. Learned men proffered advice—voluntary and solicited. The press and the pulpit discussed the matter. But not until August 10, 1846, did the 29th Congress give form to the long waiting Smithsonian Institution. The long debate impressed the men of Congress and the public strongly with the country's obligation to make the Institution worthy of the beneficence of the donor's gift and purpose. This alone was worth the delay.

In view of the condition of knowledge in those days many immature proposals sought to absorb the fund. The wonder is that none of them succeeded. A postgraduate university, an astronomical observatory, a normal school, a library, an institute for the promotion of agriculture, a mineralogical bureau, a system of lectureships, were suggestions advanced. The Institution, as it finally took shape, was a compromise. To its charter John Quincy Adams, Joel R. Poinsett, ex-Secretary of War, Richard Rush and Robert Dale Owen contributed the basic ideas.

Among the good points of this charter were, first, the solidity of organization which it secured to the Institution. It vested the Smithsonian with the prestige and dignity of the United States Government by making the President, Vice President, Chief Justice and members of the Cabinet the Smithsonian Establishment. It put the actual management in the hands of men whose positions guaranteed their high mindedness. I refer to the Board of Regents, which includes the Vice President, Chief Justice, three Senators, three Representatives, and six citizens chosen from the country at large. It was this insured stable control which led Charles Lang Freer of

Detroit to select the Smithsonian as the institution in this country to which he was willing to leave his rare collections of Oriental and American art and his fortune to endow them.

The second important thing the charter did was to secure the permanent investment of the principal and to permit the use of the interest only.

Thirdly, it ordered that no part of the primary fund should be expended for buildings and structures.

Fourthly, after stipulating for the inclusion of a library, a museum, a chemical laboratory, a gallery of art and lecture rooms, it left the development to a large extent in the hands of men who would be best qualified to determine what that should be.

Gentlemen, this charter was sound, but it did not make the Smithsonian Institution. The credit for that, belongs to a great man, who was its first Secretary. The first Board of Regents recognized clearly that the " future good name and success and usefulness of the Smithsonian " would depend in the main on the character and ability of the Secretary. In selecting this officer the Board sought the advice of the most distinguished men of science here and abroad. The unanimous choice of all who were consulted, including Faraday, David Brewster, Arago, Bache, Silliman, was Joseph Henry, professor of physics and natural history at Princeton. In their opinion, Joseph Henry stood " without a peer in American science." He had discovered the principle of the electric telegraph. He had anticipated the great Faraday by a year in the discovery that a magnet induces electricity, though he did not publish his results in time to get the credit. For him to undertake the organization of a new institution meant the sacrifice, to a great extent, of his own career of research and discovery. Henry knew this, and nothing less important than the Smithsonian Institution and what it

could be made to mean to American science could have induced him to make this sacrifice.

He came to the Smithsonian in December 1846 and he gave himself to the Institution unreservedly for 32 years, until he died in May, 1878. During that time he built his own ideals into the Institution. He was far beyond men of his time and many men since, in his willingness to share with others, and without claim of credit, knowledge which he and his associates had gathered. His sole aim was an extension of the boundaries of knowledge.

Only last December when the American Telephone & Telegraph Company presented a bust of Alexander Graham Bell to the Institution, we heard read a letter written by Mr. Bell to his parents in 1875 when he was working on the telephone. In that letter Bell gave credit for the continuation of his researches to a successful conclusion to the encouragement and advice given him by Henry. Alexander Graham Bell was only one of many whom the first Secretary of the Smithsonian inspired.

Joseph Henry gave to the Smithsonian a program of organization which has never been essentially modified. He deduced that plan from Smithson's phrase: "the increase and diffusion of knowledge among men." He proposed to increase knowledge by stimulating original research through suitable awards and pecuniary assistance, by publishing the results achieved by investigators in order to encourage them, and by promoting major investigations, like that of continental scope on meteorology. He proposed to achieve the diffusion of knowledge by publishing memoirs containing the results of original research and a series of reports, giving, in language easily understood, accounts of the new discoveries in science, and of the changes made from year to year in all branches of knowledge.

Joseph Henry did not seek a great building, or a heavy administrative organization with a necessarily large overhead, nor did he feel it a justifiable expenditure of Smithson's bequest to maintain public museum collections, an art gallery and a great library, such as the charter of the Institution imposed upon the funds. He saw, long before anyone else, that in a short time the accumulations of a museum or a library would use up *for their care alone* more than the small income of the Smithsonian endowment without contributing effectively to the increase and diffusion of knowledge.

He was not against any of these things in themselves, but he did not feel that they should be supported by the Smithsonian funds. He set himself, therefore, with an ability which we cannot too highly appraise, to prevent the Institution from being swamped with the care of such material. While he avoided the expenditure of a large portion of the funds in this way he put the Institution in the way of building a better library than could possibly be bought, by exchanging Smithsonian publications for those of learned societies throughout the world. In 1866 he succeeded in having the care of this accumulating library transferred from the Smithsonian to the Library of Congress, which agreed to give it a special custody. This has been a most happy arrangement for it has permitted the Smithsonian to build up the foremost scientific library in this country, without bearing the cost of upkeep and care. It is called the Smithsonian Deposit in the Library of Congress.

While he was thus successful in part in saving the Smithsonian funds from the burden of caring for vast masses of museum material, it was twelve years, or 1858, before he induced Congress to recognize its responsibility for the upkeep of a national museum. It took twenty-four years before the Government was persuaded to assist in

any adequate way to support the great collections of the National Museum created by the Smithsonian, and for which the Smithsonian had been spending yearly more than half of its own limited income, which was in 1870 $45,000.

To illustrate how burdens that did not belong there were piled on the meager Smithsonian funds, let me cite to you the case of the International Exchanges. This service, by which the Smithsonian acted as the channel for the sending of scientific literature from this country to all institutions and learned societies abroad and receiving from abroad scientific literature for distribution among American learned societies, was inaugurated in 1847. In 1867 Congress recognized it as so efficient and desirable that it imposed upon the Smithsonian the duty of distributing and receiving governmental publications in the same way, without, however, appropriating for that purpose. From 1860 to 1876 the annual cost of the Exchanges to the Institution mounted from $2,348 to $10,199, but it was not until 1881 that Congress made an annual appropriation of $3,000 to this service.

The wonder is, gentlemen, that these burdens did not absorb the entire fund. That they did not is due solely to the constant struggle and self-sacrificing zeal of Secretary Henry and of his aid and successor Spencer F. Baird. With a few thousand dollars annually, these two men performed marvels in the encouragement of investigations in every field of science and in the publication of results. They had their fingers on the pulse of American science. Where the greatest need was, there they were to help, sparingly but effectively, and it was for that reason that the Institution came to be in a peculiar sense the incubator of American science.

Secretary Langley and Secretary Walcott, the successors of Henry and Baird, have held to the fruitful prin-

ciples built into the Institution by Henry. In their time the burden of maintaining the various Government bureaus created by the Institution and left for the sake of efficiency under its administration has been lifted from the small Smithsonian funds, although the immediate Smithsonian staff is not recompensed for their administrative services to these Government bureaus.

I must make clear, gentlemen, that the Smithsonian Institution is not, and has never been considered a government bureau. It is a private Institution under the guardianship of the Government. That point was clearly made in the first report of the House Judiciary Committee in 1836, when it said: *"The sum given to the United States by Mr. Smithson's will is no wise and never can become part of their revenue. They cannot claim or take it for their own benefit. They can only take it as trustees to apply to the charitable purpose for which it was intended by the donor."*

It is because the Institution still administers for the Government seven of the public bureaus which it created that many people suppose this private research establishment to be a part of the Government. The importance of keeping the Smithsonian—in so far as it is an institution for the *"increase and diffusion of knowledge"*—a private organization, was early brought out by Joseph Henry. He said: *"That the institution is not a national establishment, in the sense in which institutions dependent on the government for support are so, must be evident when it is recollected that the money was not absolutely given to the United States, but intrusted to it for a special object, namely: the establishment of an institution for the benefit of men, to bear the name of the donor, and, consequently, to reflect upon his memory the honor of all the good which may be accomplished by means of the bequest. The operations of the Smithsonian Institution ought, therefore, to*

JOSEPH HENRY
First Secretary of the Smithsonian Institution

be mingled as little as possible with those of the government, and its funds should be applied exclusively and faithfully to the increase and diffusion of knowledge among men." That this opinion is a sound one, gentlemen, we believe the Smithsonian's achievements prove. It is obvious that the freedom from political exigencies which has permitted the Institution to play so great a part is due primarily to the private nature of its funds.

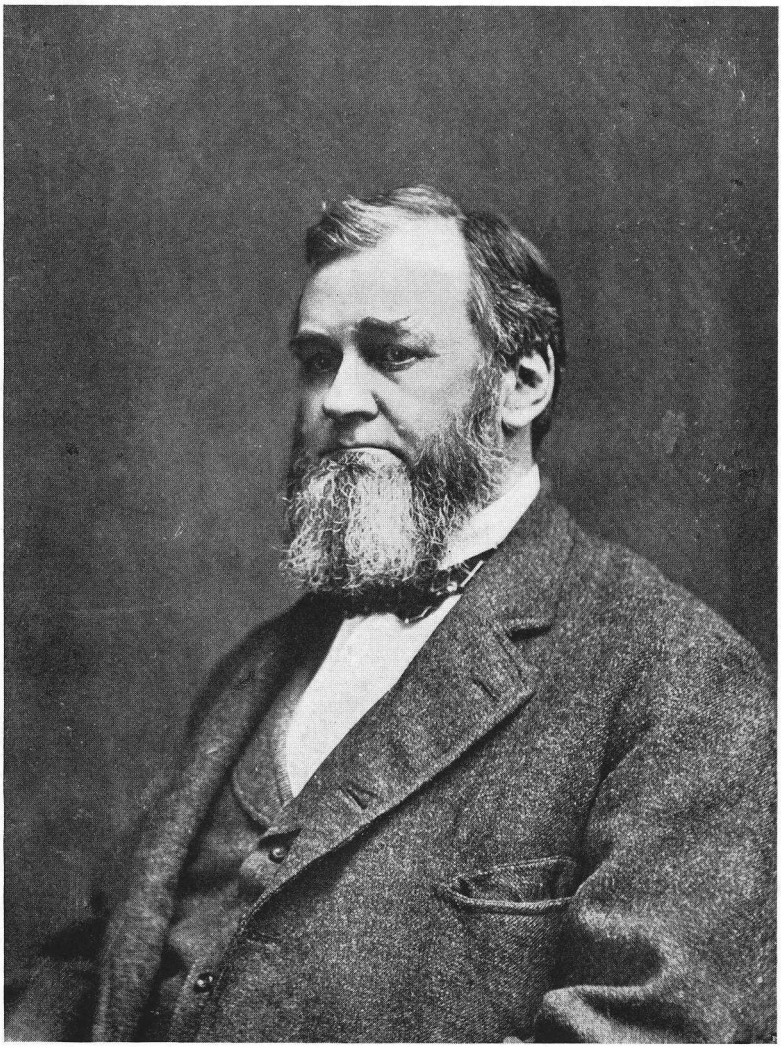
Gentlemen, there seems something fateful in the timeliness of James Smithson's bequest to the United States. It came to meet an unexampled opportunity. Here in 1846 was a vast untouched continent, enclosing, in a single geographical and political unit, a prolific plant and animal life ready under the most favorable conditions to reveal their secrets to botanists and zoologists; a continent peopled by a primitive race, illustrating the mode of life and habits of thought of prehistoric man, and offering a useful key to the lost story of man's climb upward. At the same time, in the hands of an energetic people were the mechanical tools—particularly steam transportation—capable of developing this new continent. Such a setting and such men to deal with it offered possibilities for the increase of knowledge such as perhaps the world had never seen before. The danger was that the men would remain blind to those possibilities and waste the setting for practical ends before those of its secrets which were perishable should be gleaned. It was a crucial moment in the history of knowledge. What was needed was some powerful inspiring force, actuated by the highest ideal of knowledge for its own sake, which would be conscious of the possibilities and which would devote its energies to making the most of them. That force, the liberality of an Englishman helped to supply, and the self-sacrificing idealism of American men of science—Joseph Henry and his associates—directed. The

debt of America and of science to the Smithsonian Institution is great.

Joseph Henry had the vision to understand clearly what Smithson meant his foundation to be, and the energy and character to make it that. The Smithsonian has now come to a time when without the support of the nation, it can no longer continue to be what Henry made it. And yet the need for just such an Institution as it has been is no less than the need was 80 years ago. In some respects the unique opportunities are even greater. This Institution is not the product of a moment; 80 years of the toil of great men have gone into its making. There is that about it which cannot be replaced.

The Regents have felt it their duty to reveal to a leading group of representative American citizens what it is, and does, and to advise with them what its future shall be. For that reason they have invited you here. They wish you to see the broad and comprehensive scope of the Institution, competing or interfering with nobody, cooperating with all, reaching the basic problems of mankind and of the time, with a view to furnishing the information through which alone they can be solved. They wish you to see what the future possibilities of the Institution are, and if you think them worthy of realization, to advise us as to how we may go about achieving it.

Around this hall are arranged exhibits of the researches and publications of the Smithsonian, with especial emphasis on how they should and could most profitably be extended. The scientists in charge are at hand to answer your questions. May we invite your careful attention to them?



SPENCER FULLERTON BAIRD
Second Secretary of the Smithsonian Institution

THE SMITHSONIAN INSTITUTION—ITS ACTIVITIES AND CAPACITIES

By C. G. ABBOT,
Assistant Secretary

GENTLEMEN: The exhibits which you have examined offer a bird's-eye view of the Smithsonian Institution, its past, its present, and its possibilities. To make the impression complete and vivid we must see the founder, James Smithson, son of the Duke of Northumberland, and lineal descendant through his mother from Henry VII of England. This man of aristocratic lineage devoted himself to usefulness. Expressing a ruling motive of his life, he said: *"No ignorance is probably without loss to man, no error without evil."* Such a man, denied legitimacy, but inspired to do an act which gives immortality to his tarnished name, foresees the coming greatness of our young Republic, and makes it his heir. Yet not America alone, but all mankind shares in his memorial. For he attaches to his bequest no condition excepting *"to found at Washington an establishment for the increase and diffusion of knowledge among men."*

This happened a century ago, in an age of wars, when his countrymen and our countrymen had twice in half a century shed each other's blood. Smithson's idea was highly original, for it occurred to him before men began to establish great foundations as they do today. Others caught his motive.

If there be giants in fortune and giants in industry, there are also giants in self-sacrifice for ideas. Such was Henry, the first Secretary; Baird, who killed himself untimely carrying three men's burdens and three men's knowledge; Major Powell, the one-armed hero, who dared for science

the first passage of the Grand Canyon of the Colorado strapped in his boat; Langley who dared to encounter ridicule to rescue from derision the science of flying. All these and many more, of whom some are with us, but many have passed on, loved the Smithsonian Institution and denied themselves to make it live.

THE SMITHSONIAN NOT A GOVERNMENT BUREAU

Some of you, doubtless, have been accustomed to think of the Smithsonian as a Government bureau. It is easy to point out the contrary. Founded by the private fortune of a foreigner as his memorial; given by him to the United States in trust for "the increase and diffusion of knowledge among men," and thus not merely North American but worldwide in scope; accepted by the United States as a public trust; secured in a perfectly unique standing by the eminence of the governing body appointed by Congress; it is obvious that in the origin of the Smithsonian Institution something far broader in its nature than a United States Government bureau was in contemplation. This is the more manifest in the extraordinary care taken in its organization, for Ex-President John Quincy Adams, three successive presidents, and six Congresses gave much thought to the form which Smithson's memorial should take. Resolving that their Secretary must be a man of international scientific standing, the Regents called Joseph Henry, the foremost exponent of physical science in America, who was the peer of Faraday in discovery, to devote the best thirty years of his life to forming the Smithsonian Institution.

By the wisdom of Secretary Henry, seconded by the indefatigable self-sacrificing zeal of Assistant Secretary Baird, there soon grew up at the Smithsonian Institution activities of great public value. The first six among these are the National Museum; the Weather Service; the sys-

tem of International Exchanges of Scientific Literature; the Scientific Library, now a growing unit known as the Smithsonian Deposit in the Library of Congress; the United States Fish Commission; and the Bureau of American Ethnology. Four other valuable enterprises arose later from Smithsonian initiative, namely: The National Zoological Park; the Astrophysical Observatory; the International Catalogue of Scientific Literature; and the National Gallery of Art, the latter including as its greatest single unit the privately endowed Freer Gallery of Oriental Art.

These enterprises were initiated by the Smithsonian, and for years were financed from the income of the private Smithsonian Endowment. When they became indispensable to the public, they out-grew Smithsonian support, and Congress now appropriates for their maintenance because the public needs them. Instead of removing these public bureaus to be under some department of the Government, Congress, recognizing the great efficiency, rigid economy, and appropriateness of the Institution's management of them, has seen fit to leave most, but not all, of them under Smithsonian administration.

If the Smithsonian did not exist, the National Museum, the Zoological Park, the International Exchanges, the scientific department of the Congressional Library, the Bureau of American Ethnology, would all have to go on because the public demands them. The Congressional appropriation for them, amounting to approximately a million dollars a year, is not a largess to the Smithsonian Institution but a necessary public expenditure irrespective of it.

Both the Government and the Institution gain by the present connection. The Smithsonian gives much of its energy to the administration of the bureaus, and has in consequence lamentably lost reputation as a private foundation while it has lent extraordinary prestige to these gov-

ernment activities. The public collections themselves contain vast quantities of material which are the absolute property of the Smithsonian. In return, the trained experts who care for the collections aid the Institution in the acquirement and diffusion of knowledge. The publications of the National Museum, Bureau of American Ethnology, and the Smithsonian Report are done at public expense. The franking privilege is highly valuable to the Institution. So it is give and take, with mutual advantage.

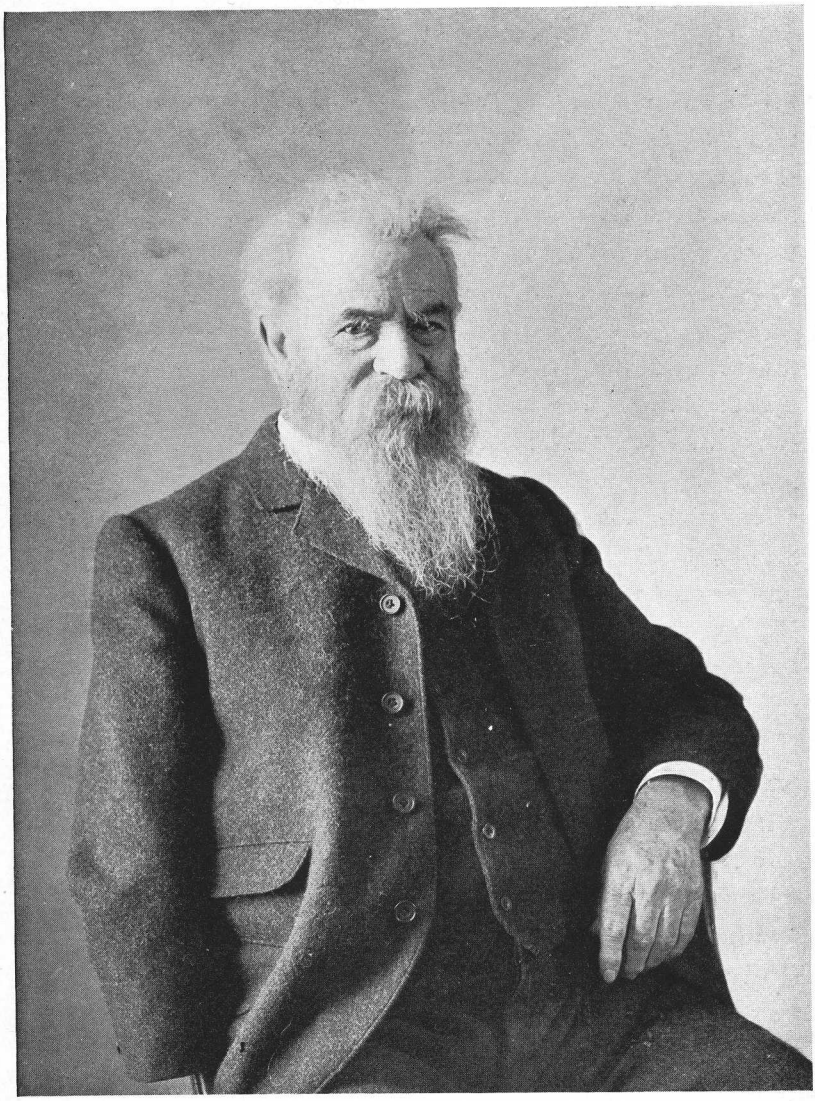
Thus the Smithsonian Institution, while not itself a Government bureau, by direction of Congress administers for the Government specific appropriations amounting to approximately a million dollars annually. It is this great public service by this private trust that causes many people to suppose that the Institution is publicly supported.

RANGE OF SMITHSONIAN ACTIVITIES

The administration of these seven Government bureaus is but incidental. The Smithsonian field is far broader, embracing all science and all the world. As there is nowhere in the world its like, I must tell you what the Smithsonian Institution does.

1. It carries on original scientific investigations with its own staff. At some time in its history it has pursued researches in every branch of the physical and natural sciences. Secretary Walcott's work in Cambrian geology and paleontology furnishes an outstanding example. He has added a new volume to our knowledge of the earliest forms of life. Smithsonian researches involve expeditions over the face of the earth from Pole to Pole. In the past year alone, aided by gifts and sacrifices of individuals, the Institution has directed or participated in 40 such expeditions.

2. The Institution subsidizes other researches by men not directly connected with the Institution, and these not



MAJOR J. W. POWELL
Founder of the Bureau of American Ethnology

Americans alone, but Englishmen, Frenchmen, Norwegians, Germans, and scientists of many other nationalities. To give you classical examples of such support of outsiders by the Smithsonian, let me cite the pioneer work of Schumann, the German scientist, on the extreme ultraviolet rays, by which these rays were first made known to science, and Morley's determination of the atomic weights of oxygen and hydrogen, which is basic for the atomic weights of all chemical elements.

3. The Smithsonian publishes new knowledge gained by its own and outside workers in the form of large memoirs and smaller original papers, which, with unique liberality, and to secure the widest possible use, it distributes free to 1500 libraries and learned bodies in every country of the world. Among these it publishes also tables and formulae useful to the engineer, and to all workers in the physical sciences. In addition, the Institution seeks to spread knowledge of scientific advances among intelligent general readers by reprinting in the Smithsonian Annual Report informing articles. The demand for these Reports is extraordinary, and they are praised by the most discerning of critics. Outstanding illustrations of Smithsonian memoirs are its monograph on Oceanic Ichthyology by Goode and Bean; the Langley memoir on Mechanical Flight. We have now in press a collection of internationally prepared meteorological records which will be fundamental to every practical and theoretical research in that science for many years to come. These are published with funds given by Mr. John A. Roebling.

4. The Smithsonian evolved the International Exchange Service and is now the official channel for the exchange of scientific intelligence between the United States and the world.

5. For over half a century the Institution has been building up in the Library of Congress the foremost scientific library in this country, now reaching nearly 700,000 volumes.

6. It fosters the scientific development of schools, museums and institutions in all countries by its free distribution of scientific literature, by the loan of research men, by the gift of over a million specimens, by the distribution of instruments, and by its advice. It is safe to say that there has not been a single text-book in any branch of science published in the last 50 years which has not showed the result of Smithsonian research.

7. The Institution cooperates with every department of our Government. Its botanists supply basic information for the economic botanists of the Department of Agriculture, its ichthyologists for the Fish Commission, its geologists for the Geological Survey, its ethnologists for the Bureau of Indian Affairs, its physicists for the Army and the Navy. In the late war it was the Smithsonian scientists whose optical knowledge lay at the basis of the revolutionary improvements in searchlights, which did good service on the American front before the armistice.

8. The Smithsonian answers by mail an average of 8000 questions a year on scientific subjects. These answers go to many inquirers who can neither spell nor punctuate, as well as to some of the most learned men in the world.

9. It gives occasional lectures and courses of lectures. For example, it recently sponsored the lecture of Dr. Johannes Schmidt of Denmark on his remarkable discoveries of the life migrations of the eel; and Dr. Hrdlicka's lecture series on prehistoric man. The Smithsonian was quick to seize upon radio broadcasting as a means to diffuse information, and has already given 123 talks by its own or invited experts.

10. It fosters research by conferring medals of honor on eminent discoverers. For example, on the Wright brothers for the first human flight in power-propelled machines heavier than air, and on Rayleigh and Ramsay for the discovery of argon.

11. It procures foreign diplomatic and learned recognition and assistance to expeditions going abroad. Credentials addressed to "Friends of the Smithsonian Institution" insure an open door even in semi-barbarous countries.

12. It fosters American scientific progress by providing headquarters for the American Association for the Advancement of Science and the American Association of Museums. Until 1924 it was the headquarters and meeting place of the National Academy of Sciences.

13. As already pointed out, the Smithsonian administers seven governmental bureaus in addition to the Freer Gallery.

14. It disburses annually funds from four sources:

I. Unrestricted—the income of its endowment—$65,000.

II. Sums disbursed in trust for special objects:

a. Intrusted for miscellaneous purposes by private individuals—annual average for 5 years, $70,000.

b. The income of the Freer bequest, annual average for 5 years, $190,000.

c. Congressional appropriations for 7 public bureaus—annual average for 5 years, $850,000.

It is interesting to note in passing that for the support of bureaus which are a direct outgrowth of the early activities of the Smithsonian, including those which the Institution administers, Congress appropriated last year

$5,618,549. Contrast this with the $65,000 which the parent institution has to spend annually.

HOW THE SMITHSONIAN DEVELOPED

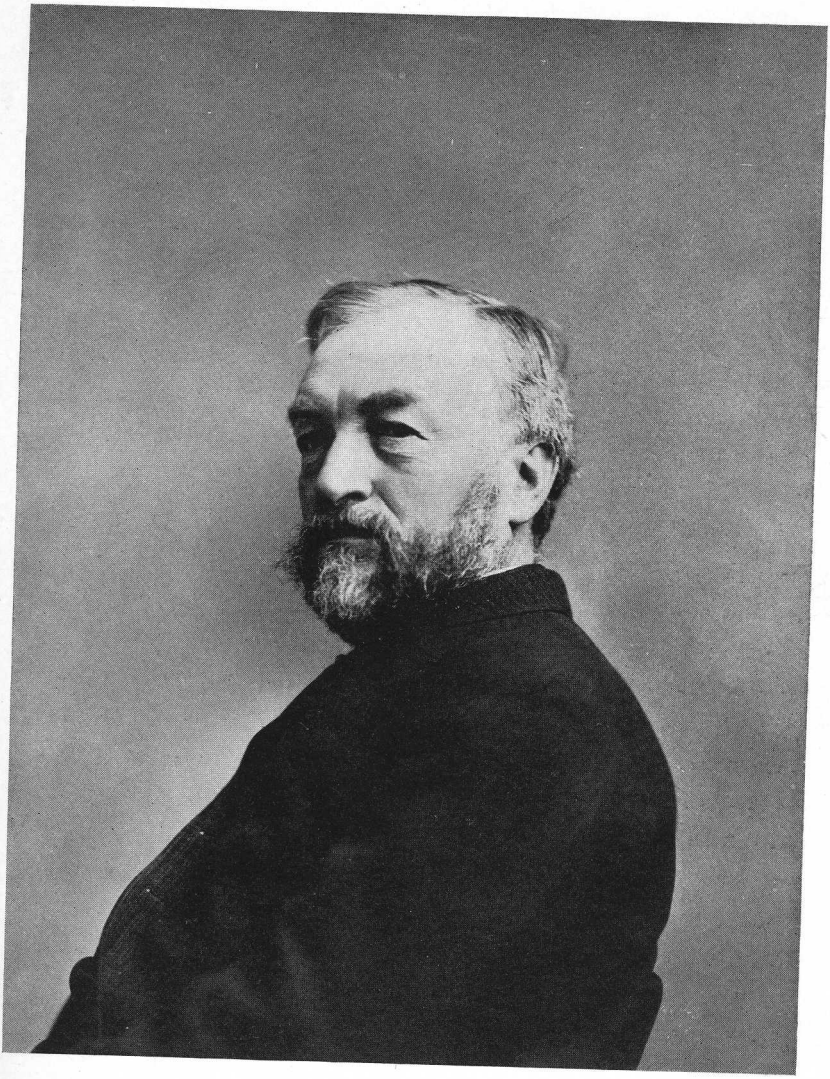
In the year 1846, Secretary Henry drew up a masterly plan of action which has never been essentially modified. That plan included a few elementary principles which have proved creative principles of the first order. They are Henry's interpretation of the purpose of the founder, James Smithson—"for the increase and diffusion of knowledge among men." We may list five of these principles.

The *first* of them directs the Institution to embrace all branches of knowledge. This insures the breadth of its scope.

The *second* directs the Institution to seek facts irrespective of their apparent economic value. Henry knew that the application of a fact would take care of itself; that the important thing was to discover the laws of aviation, for example, or the facts of plant distribution. Plenty of people would be found to build on such discoveries.

His *third* principle was to do nothing that could be equally well done by any other agency. The withdrawal of the Smithsonian from the domains of the Weather Bureau and the Fish Commission illustrates the application of this principle. The Smithsonian initiated the work when its importance was not appreciated. When other agencies arose capable of carrying it on, the Smithsonian withdrew and directed its energies to untried fields.

As a *fourth* principle, Henry insisted upon a simplicity of organization and a minimum of overhead, to prevent it choking itself with mere administrative expense. He designed the Institution to be the cavalry of science, free to dart from front to front, giving just enough encouragement at one place to insure effective work, and able at will



SAMUEL PIERPONT LANGLEY
Third Secretary of the Smithsonian Institution

to dash off to another spot when the emergency arose. In publication this principle has caused the Smithsonian to give to the world facts of vital importance which would have found no other channel of publication.

Wise application of this principle has largely accounted for the tremendous effect the Smithsonian has had on American science. The Institution has achieved its results not by sinking all its eggs in one basket, but by a wise allotment of, for example, $200 for the making of botanical collections in Texas, of $1,000 for meteorological and magnetic instruments to be furnished expeditions all over the country, of $100 to a struggling learned society to complete the cost of an important technical publication—by effective aid here, there, and everywhere. Nothing better illustrates the Smithsonian's method of getting the greatest results with the least expenditure, than its relations with the 600 volunteer meteorological observers, which it had scattered throughout the country in the '50's and '60's of the last century. Besides weather data, it induced these men to make collections of birds, plants, and insects, and to furnish statistics on agriculture, and many similar services.

It may seem at first glance that the Institution has departed from this principle, but the great plant which you now see here, with the exception of the building in which we are and Mr. Freer's magnificent Gallery, belongs to the Government bureaus administered by the Institution.

Finally, we must not overlook the *fifth* and yet basic principle of cooperation which is employed in all the four which I have just mentioned, and which is the keystone of all Smithsonian activities. No serious applicant for aid or advice, whether it be a government, a university, a great scientist, or an illiterate miner, has ever been brusquely turned away from the Smithsonian Institution. Nothing in the way of information or materials, such as instruments and collections, has ever been re-

stricted solely to the use of the Institution. In the words of Secretary Henry in 1854, "*It is the policy of the Institution to furnish all the means in its possession to aid scientific research, and not to hoard up its treasures, or confine their use to those who may be immediately connected with the establishment, or who may be supported by its funds. Cooperation and not monopoly is the motto which indicates the spirit of the Smithsonian's operations.*"

Such are the sterling principles by which Joseph Henry and his successors attained so great results from so little means. It is natural that they have become a part of the Institution, built into it like the bones in a man's body. I think that if you will picture to yourselves the last 80 years with the Smithsonian left out, you will have a better conception of what fruit these principles have borne in public intelligence and in international cooperation, as well as in all the world of science. Suppose, for instance, that the Smithsonian had not initiated the plan of the international exchange service, by which all institutions or scientific workers in this country are enabled to send publications to and receive publications from institutions anywhere abroad.

THE SMITHSONIAN'S OPPORTUNITY

1. RESEARCH.
2. DIFFUSION OF KNOWLEDGE.

But we are only concerned with the past in so far as it points to the future, and I want to show you what we conceive the Smithsonian's mission may be and ought to be in the 20th century.

RESEARCH IN NATURAL HISTORY

On the side of the natural history sciences, did it ever occur to you to inquire where fundamental facts came from? Where do agricultural experiment stations learn

of parasites which may down insect plagues? Where do oil geologists learn to distinguish the microscopic fossils which serve as guides to oil-bearing strata? Where do fish experts find out about the foods which fish require, or the migrations which they undertake? Where do dealers in hardwoods, fruits, drug, oil and cordage plants discover the whereabouts and the conditions of growth of their sources of supply? You will find these various people get such basic information from men who spend their lives on the systematic study, description, and mapping of habitats of the infinitely diverse plants and animals found in nature.

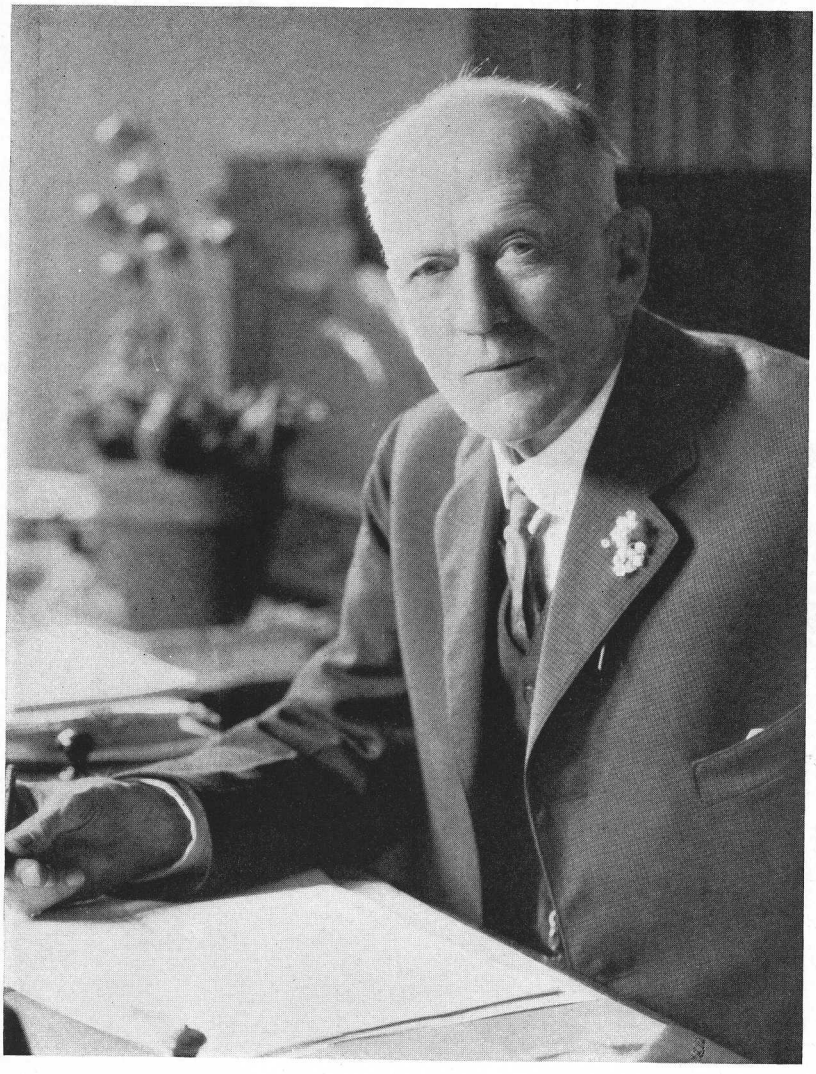
The great parent of such work in America has been the Smithsonian Institution, and with the great and constant increase of its collections the duty of pushing on this basic research becomes more and more pressing. Yet in the enormous collections of the United States National Museum, built up by and now under the direction of the Smithsonian, repose millions of specimens unexamined, unclassified, undescribed and so useless because the Smithsonian has no means to devote thereto. A single case will illustrate the importance of study of this material. For years the Institution had been gathering together samples of bottom muds from every sea in the world incidental to oceanographic studies. All this material had piled up in the Museum and would have been considered by the average man who saw it so much waste mud. But the Smithsonian Institution engaged an expert to learn all there was to know about one single family of little marine shelled animals, called foraminifera, found in the muds from the sea bottom. Some six or seven years ago, oil geologists discovered the presence in oil-bearing sands of fossil forms of these foraminifera. It became apparent that the presence of certain species of the foraminifera would serve as a guide to oil-bearing strata to a man who

knew about them. The only man in the United States who did know was this worker on the Museum collection under the Smithsonian. The oil companies turned to him for the information, which as the Encyclopaedia Britannica states, " has brought about the principal advance in the geological technique of oil finding."

The study of these millions of specimens in the Smithsonian, many of which have no counterpart in the world, is something which only the Institution can properly undertake. Yet despite the wealth of material we already have, the collections are by no means complete. Many important regions of America are unrepresented, and we ought to be sending out expeditions to study the fauna and flora, the mineralogy, the ethnology, and the archeology of these regions.

The Smithsonian, to a large extent, originated the study of the prehistoric Indian life of this continent. It created the Bureau of American Ethnology and has done more than any other one agency in this branch of science. At the present moment the encroachments of the white man are obliterating forever the remains of Indian civilization in America. The Indians are being absorbed, forgetting their own languages. The next few years offer the last opportunities to learn the story of America's native tribes and it would be wasteful not to use to the utmost the Smithsonian's qualifications to make the most of these opportunities.

The same is true of the animal and plant life of the world. Because of the encroachments of the white man's agriculture and other activities, hundreds and thousands of species of animals and plants have disappeared, and more must disappear. My colleague, Dr. Wetmore, has published a curious example of such annihilation in the case of Laysan Island in the Hawaiian group. Early accounts of Laysan Island, and photographs taken 20 years



CHARLES DOOLITTLE WALCOTT
Fourth Secretary of the Smithsonian Institution

ago, depicted it as a pleasant spot covered with green vegetation. When Dr. Wetmore went there in 1923 for the Biological Survey, he found it nothing but a barren waste of sand, bird and insect life scanty, and vegetation practically obliterated. What had caused this desolation? In 1902, the foreman of the guano works brought to Laysan three or four pairs of rabbits, partly to amuse his children and partly for the fresh meat they would furnish. They increased with incredible rapidity. In a short while they had absolutely stripped the island of vegetation, and they themselves began to starve, so that when Dr. Wetmore arrived only a few remained of the vast army of destroyers.

The next 50 years will offer the last opportunities to secure many forms of nature to preserve for the information and study of future generations. It is a serious responsibility to neglect our fleeting opportunities.

RESEARCH IN THE PHYSICAL SCIENCES

In the physical sciences, the Smithsonian compilations of the constants of nature are of exceptional value for physicists and engineers, and need new support. The Physical Tables, inaugurated by the Smithsonian, have now gone through seven editions with many reprints. Owing to the great progress of recent years, a revision is urgently required. A prominent scientist said to me a month ago, " What would we do without the Smithsonian Physical Tables? " Our recent publication of mathematical formulae is an epitome of mathematics as a tool for physicists and engineers. What we now see the opportunity for doing is to establish a laboratory for useful mathematical research to develop new formulae, and to collect and publish existing formulae. We should also like to associate therewith a loan collection of difficultly accessible mathematical publications.

In accordance with the basic Smithsonian principle of furthering investigations in fields not occupied by others,

we contemplate basic researches in hydraulics and others in chemistry. James Smithson was a chemist, yet the Institution he founded has been able to do nothing for chemistry for a quarter of a century. Yet the chemistry of plant life, and even the properties of the chemical elements, excepting at a narrow range of ordinary temperature, are as yet largely unknown.

Time will not permit me to go into detail on all the fields of research in which the Smithsonian is particularly prepared and ought to enter. To illustrate what these investigations are, what results may be expected from them and the reasons which make the Smithsonian the logical agent for undertaking them, let me speak for a moment of astrophysics, my own field of investigation. I choose this not because it is any more important than the other fields of Smithsonian research, but because I can give you the essential facts at first hand.

The rays of the sun support all life, make all weather, and directly or indirectly supply all power. They have basic relations to human life and to the growth of plants. They are, in short, of first importance to mankind, and yet there is a vast deal that we do not yet know about them. At the present time we need to know four things in particular:

1. Which rays are best for human health and growth, and at what intensity? How do these intensities change by day, by year, by altitude and by latitude? Physicians come to the Smithsonian now for information on the influence of sun rays on child health. We cannot give them the answer, nor can anyone else, because the investigations have not been made.

2. What rays and in what intensity promote growth and reproduction in the great food and otherwise commercially valuable plants? Are useful modifications of these plants possible by the regulation of radiation? How

do plants use solar energy to make chemical energy, and can we improve upon their processes and accomplish photosynthesis directly?

3. Can solar rays advantageously be used directly for power?

4. Can studies of solar variation foretell good and bad weather conditions?

The Smithsonian Institution has spent 30 years in constant measurements of radiation. It was the first to accurately measure solar radiation. Its measurements and the instruments it has invented and developed, and which you have seen today, are recognized as standard for the world in the study of the sun. At the present moment we have under our charge three stations located on high mountains in the driest deserts in the world, daily measuring solar radiation. As a result of work done at these stations and annually at Mt. Wilson for many preceding years, the Smithsonian has discovered that the sun is a variable star and that there is a definite correlation between solar variation and the weather. To make sure just what this relation is and whether use can be made of it for weather forecasts, requires uninterrupted and constant data for a term of years.

The African station, given to us by the National Geographic Society, and which is indispensable in learning whether or not radiation governs weather, must be abandoned in 1929 unless the Smithsonian finds means to continue it.

Men cannot stay indefinitely at these wilderness observatories. We have four experts who must soon be brought home. Their training fits them particularly to carry on here such investigations as the effect of solar rays on plants and health, and their application for power. Yet in our present situation we shall have to discharge these experts with loss to us of their experience. The buildings, ap-

paratus and plans suitable to making radiation researches, which we have already, would almost cover the overhead for these proposed researches.

Experience as valuable, similar tools in the nature of collections, and comparable plants, fitting the Smithsonian for research in other sciences, are likewise going to waste for lack of means.

DIFFUSION OF KNOWLEDGE

The increase of knowledge is only half of the Smithsonian's purpose. The diffusion of it is of equal importance, and has been a main source of the Smithsonian's greatness. The coming of the Institution gave to American science the first great agency for free publication of technical results. At the end of the third year, that is in 1849, Secretary Henry reported on the publication program as follows: *"The real working men in the line of original research hail this part of the plan as a new era in the history of American science. The assistance which the Institution will thus render to original research will occupy the place of the governmental patronage of other countries, and will enable true genius, wherever found, to place its productions before the world free of cost, and in a manner most favorable for securing due attention and proper appreciation."* That prophecy has been fulfilled. Smithsonian publications are now standard works of reference throughout the world, and scientific men everywhere look to it to publish those indispensable monographs which cannot be undertaken by private publishing firms. At no time has there been greater need than now for such publications service. Members of our own staff have manuscripts which represent the work of years lying in drawers because the Smithsonian has no funds for publication.

It is now over 20 years since the Smithsonian has been able, without outside help, to publish one of its chief series,

EXHIBIT OF SMITHSONIAN RESEARCHES IN AMERICAN ETHNOLOGY AND ARCHEOLOGY

The Contributions to Knowledge. Since the War, the Miscellaneous Collections have been reduced to a third of their former size. We have no funds available to publish the urgently needed new edition of the Physical Tables of which I have already spoken. For several years past our publication fund has been totally exhausted in the first half year, and valuable manuscripts delayed.

CATALOGUE OF SCIENTIFIC LITERATURE

Secretary Henry proposed, and English scientists succeeded in realizing, an international cooperative scheme for cataloging scientific literature. You may readily see how important this is, for if research men could not easily learn what has been done by others in their sciences, they would, as likely as not, waste their time altogether in the rediscovery of what is already known. This is what Russian scientists, cut off from the rest of the world by the revolution, were actually doing during the years 1917-22. This danger looms more and more serious as the number of workers and their publications grows so rapidly in late years.

The Smithsonian is the American agency for this undertaking. In the disaster of the World War the publication end of the program went to smash. The nations are still preparing the card indices of their scientific publications, but there is no agency with the means to publish them. It is estimated that a revolving fund of $100,000 would put this great project on its feet again.

LIBRARY

The Smithsonian library is a mine of scientific wealth. It contains nearly 700,000 volumes, is especially rich in foreign periodicals, and is unequalled of its kind in this country and possibly even abroad. Yet we cannot make anything like full use of it. Those parts reserved at the

Institution for constant reference by our staff have no subject catalogue; 10,000 volumes in constant use need binding; 30,000 lie uncatalogued and therefore inaccessible.

RECRUITING SCIENTIFIC MEN FOR THE FUTURE

One of the great services of the Smithsonian to American science has been its training of men. It did this largely through encouraging their researches. The influence of this Smithsonian trained personnel is felt throughout the world. The lack of funds for some years past has prevented the Institution from gathering to it the promising young men who should benefit by the scientific opportunities, such as collections and associations, offered by the Smithsonian, and should grow to be worthy to step into the shoes of those who have grown old in Smithsonian service. Neither has it been possible to set up any system of pensions such as might permit aged employees to retire, though the salaries of Smithsonian scientific men are not such as to permit them to lay up against old age. We have among us the world's acknowledged leaders of several branches of science who have never received a compensation exceeding $5,200 per annum. Had they been equally eminent in other activities, industrial, commercial, artistic, or even in sports, they would have achieved fortunes. We cannot expect to attract geniuses to such situations in the face of present outside competition.

PRIVATE ENDOWMENT ESSENTIAL

The Government not only supports the exhibitions of the National Museum and Zoological Park, but it supports various researches and publications in the seven public bureaus which the Smithsonian administers. Notable among these are some in the National Museum, the Bureau of American Ethnology, and the Astrophysical

Observatory. The Government support for these purposes takes the form of specific annual appropriations, for which estimates are made fifteen months before the appropriations become available, and twenty-seven months before they are totally expended.

It will be asked whether the Government may not be looked to to undertake the entire support of the program which the Smithsonian should carry out. It is true that the annual Congressional appropriations for the seven bureaus have increased by approximately 30 per cent within the past five years, 1922 to 1927. It is to be hoped that still more liberal support may be made by Congress. There are, however, certain considerations which must incline well wishers of the Institution to hope for a considerable increase of its private endowment.

1. Considering the immense benefit which Smithson's foundation has brought to our country, it would be ungrateful to transform the private memorial character of the Institution wholly into a Government agency.

2. The altruistic object of the Institution is not merely national but world-wide in its scope.

3. The Institution should be free to undertake researches of no immediate or probable utilitarian aspect, and such as might with difficulty attract Congressional support or approval.

4. In many cases, opportunities rapidly change the plan of operations; or require immediate expenditures; neither of which exigencies are conveniently met by annual Congressional appropriations. For these appropriations we have to estimate from 15 to 27 months before expenditure, and rigid rules apply to them which are very difficult to meet under field conditions.

5. Some researches require far-reaching plans over a term of years, so that the uncertainty of the system of annual hearings and appropriations is embarrassing.

6. Some researches require notable experts whose services cannot be procured under the usual limitations of salary obtaining in the Government service.

For these and other reasons it is desired to obtain a continuing income disposable by the Institution, such as a private endowment would furnish, in order to promote the work which seems particularly its own.

STRATEGICAL POSITION

No one who has the interest of the increase of knowledge and its diffusion sincerely at heart can overlook the extraordinary efficiency of this Institution for these purposes.

1. *Overhead.* The unique relations subsisting between the Government and the Smithsonian, already described, have led to the combination in the United States National Museum, the Freer Gallery, the Zoological Park, and the Bureau of American Ethnology, of collections of specimens partly the property of the United States, partly the property of the Smithsonian Institution, numbering over 10,000,000. In certain lines these collections are the richest in the whole world. Their housing and preservation, laboratory facilities for their study, and a trained staff of experts able to devote a certain amount of time to research and to the aid and direction of research workers—all these facilities, and the administrative and financial corps for them, are maintained by the Congressional appropriations. If means to pay assistants, costs of explorations, purchase of specimens, publication of monographs, etc., were offered, these means would go 100 per cent to the work, because the overhead is cared for by the Government.

2. *Experience.* The Smithsonian enters any field of research with 80 years of experience behind it, and it knows the why and the wherefore.

3. *Reputation.* The Smithsonian arrived first in the field in America. This fact, plus its world-wide service

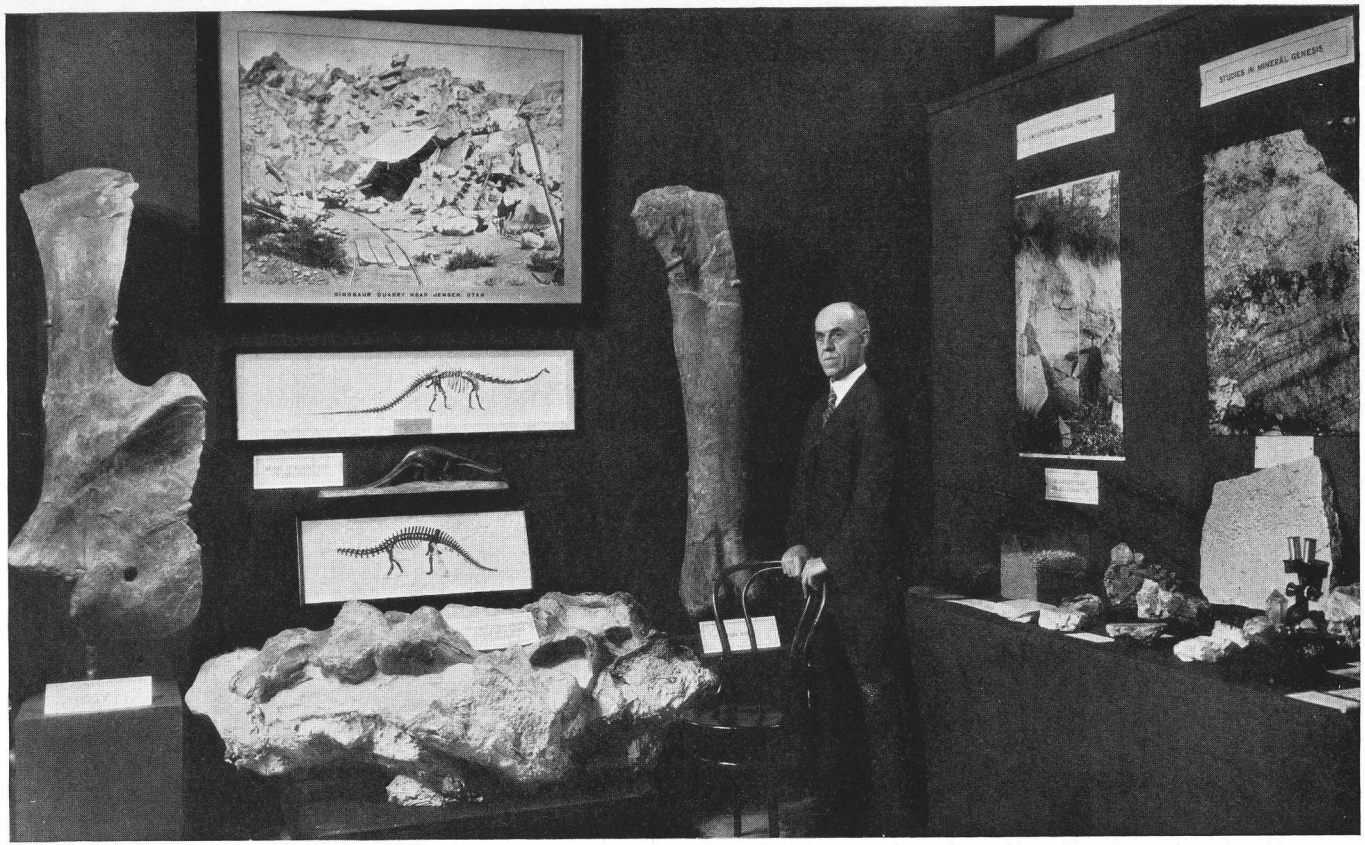


EXHIBIT OF SMITHSONIAN RESEARCHES IN VERTEBRATE PALEONTOLOGY

in the increase and diffusion of knowledge give it a foremost place in universal opinion. Consequently it can mobilize men and command cooperation in all corners of the earth. It has representatives in all principal countries in the world.

4. *Wide Range of Activities.* As Secretary Hoover has said, the day of garret scientists is past, if it ever existed. Problems of the present day are so interrelated that they demand the cooperation of many men. The Smithsonian has a vast plant, and works in all fields of science. It is fitted, therefore, to take up any problem.

5. *Location.* Situated in Washington, the Smithsonian can draw upon all the scientific branches of the Government, as well as the Carnegie Institution, the National Academy of Sciences, the National Research Council, and the American Association for the Advancement of Science.

6. *Program.* The Institution knows specifically what ought to be done and what it can best do. It has undertaken a survey of the present situation in science to determine the branches which are most backward and most deserving of cultivation. Forty eminent scientists outside the Institution have advised on these points in the preparation of the present program.

7. *Organization.* It is a private institution under the guardianship and protection of the Government. So long as the United States endures, the Smithsonian will endure.

8. *Aim.* Finally, less tangible but perhaps more important than all of these other factors, is the broad and altruistic purpose of the Institution, "*the increase and diffusion of knowledge among men.*" In 1896, Professor Holden, Director of the Lick Observatory, declared: "*It is not unlikely that the greatest service of the Smithsonian Institution to the country has been the constant exhibition in its general policy and in its daily relations for half a century, of a high and generous ideal. Any sketch of its*

services would be most inadequate which failed to emphasize this fundamental point."

THE SMITHSONIAN ESTIMATE OF VALUES

Hitherto I have dwelt, possibly too strongly, on material considerations. In conclusion, I wish to place the subject in another attitude. After all, it is superfluous to use many words to justify the increase and diffusion of fundamental knowledge of the universe in which we live, and of the myriad forms of life which it contains. Our comforts and luxuries, which place us beyond the dreams of kings of a few generations ago, are all results of scholarly investigation. Out of a desire to know how rarified gases could conduct electricity, grew the X-ray. There, in a nut-shell, is the utilitarian argument for basic research.

But our country does not need to stress the utilitarian aspects of the increase of knowledge. It has profited beyond all other peoples in its application of facts. Having leisure and means in abundance, our people are now coming to a time when the profound satisfactions of knowledge will be sought for their own sake. It is not too much to say that we have reached a turning point in our intellectual history. Hitherto we have been concerned mainly with felling forests, building railroads, and winning a living from a new land. In these things we have attained an overwhelming success. The energetic minds of our people are turning to new concerns. The province of the mind offers itself as of the richest promise. In his recent message to Congress, the President of the United States expressed the desire that Washington should become the national and world center of science, education, art and literature. Here is the great opportunity of the Smithsonian Institution. It has worthily led the van hitherto towards that great aim. Should it not go strongly on?

The Smithsonian is not just another institution; it is not just another museum, not just another university or educa-

tional foundation. I have striven to show you the unique part which this private bequest of Smithson to the United States of America has played in inspiring the increase and diffusion of knowledge for its own sake. At first the Smithsonian was greatly preeminent in this field. Many other influential agencies happily have arisen for the same purpose, but there are certain great services which the Institution, because of its past, its position, its relation to the Government, and its great traditions, can best perform.

Cooperating loyally and closely with all those, both public and private, who promote knowledge both in America and abroad; ready to yield ground when others occupy it, and hastening to move its forces to fill the gaps of the front of science; held in highest esteem throughout the world, the Smithsonian has a place of its own to occupy.

You are invited here by the Regents to give your advice on how best to sustain the Institution in this great mission. As you deliberate, I hope that you will be moved by still another consideration which hitherto I have omitted. It is the feeling that America cannot honorably permit the national trust, which she accepted from a foreign hand, to languish and be forgotten as the memorial of Smithson's passion " for the increase and diffusion of knowledge among men." As it is the Nation's ward, held in trust for all men, no other establishment should outrank it. Least of all should the Government itself relegate it to the position of a bureau for purely domestic concerns.

When, as many of us hope, it shall be our privilege to look down upon the affairs of this world from the vantage of a future life, I conceive that as we survey the constantly expanding benefits which shall have arisen from the Smithsonian Institution's service to mankind, it will be no small satisfaction to recall that we ourselves have aided to make that good influence strong and wide.

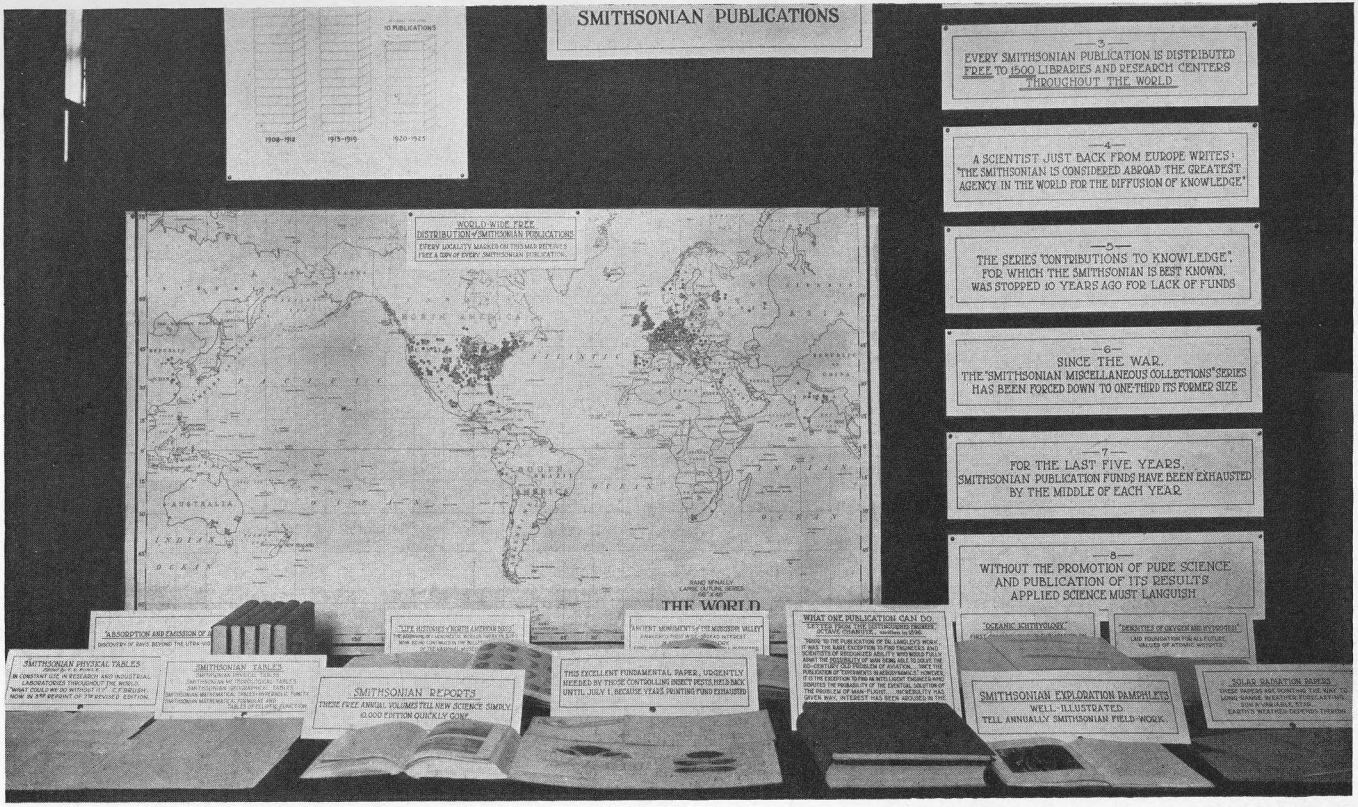


EXHIBIT SHOWING NATURE OF SMITHSONIAN PUBLICATIONS AND THEIR WIDE DISTRIBUTION

ADDRESS

By FREDERIC A. DELANO,
Regent of the Institution

GENTLEMEN: We have met here to consider the future policy and field of service of the Smithsonian Institution. The eighty years of its history, to which may be added the ten years of travail and debate preceding its actual launching, have served to bring about some important developments which, solely for a clearer understanding of the situation, we will do well to emphasize.

Joseph Henry, who more than any single man shaped the course of the Institution in its formative years, interpreted the phrase "increase of knowledge" as implying study, investigation, research, into the realms of the unknown. The phrase "diffusion of knowledge," he interpreted as the freest possible distribution of that knowledge to the waiting world. His realm was that of pure science, the bases of knowledge. He very properly conceived, however, that it was no part of the duty of the Institution to apply these bases, principles, to the problems of the day, beyond indicating the possibilities. For that reason he gladly gave to those who desired them the results of his findings.

But side by side with this development, there was another which, in spite of Professor Henry's efforts to resist it, went steadily on. The development I refer to was the steady increase in accumulation of books, pamphlets, materials of research, and vast collections of all sorts. Far be it from me, a Regent, to take the position that this was an unfortunate development; but I do wish to emphasize that the mere reception of these immense collections added greatly to the burden of the Institution. Professor

Henry very evidently felt that this burden might become so great that the Institution would soon have no funds for its research work, so he fought against it. Congress, on the other hand, felt, and very naturally, that this was the Institution best qualified to receive such material, hence more and more it has become the practice of Congress to turn over to the care of the Smithsonian Institution all historical or interesting material, however acquired; even to the models of expired patents in the Patent Office. Beside this, we have received many private gifts and bequests.

We all of us know by experience that the collection of materials accomplishes very little. The mere exhibition of this material so that the interested visitor may see what the Institution has, costs immense sums of money, and yet we must also remember that in order to make these collections of real and dynamic value to the public they must be studied by scientific men in the most thorough way, and that costs a great deal more.

An interesting aspect of the problem before us is that even though these two functions of the Institution, to wit, its function as a research organization and its function as a care-taker for vast collections, are separate and distinct, we necessarily find them constantly inter-associated and interlaced. The student in research is continually accumulating valuable material which he wishes to keep in accessible form. Almost inevitably, therefore, the research scientist becomes also an accumulator, and, necessarily, a curator of collections. It is equally true that a good curator is one who is reaching out as student and investigator and thus becomes the apostle of research.

The Smithsonian Institution has fathered a number of studies which have developed into activities of great economic importance, some of which have been taken over by the Government. For example, (1) most of us know that it was after an investigation of nearly twenty-six years

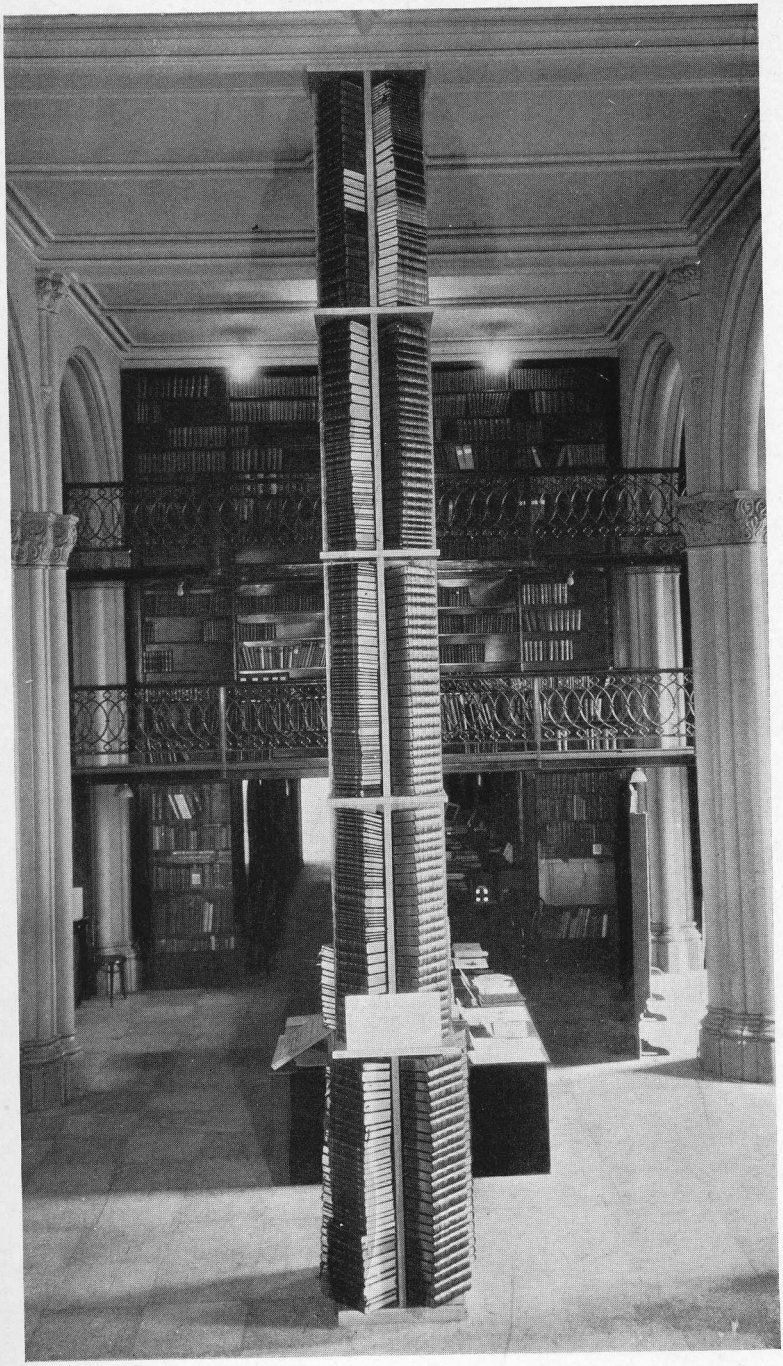
by the Smithsonian Institution that the Weather Bureau was launched as a necessary service, now maintained for the benefit of our people. (2) Again, the work of Professor Baird, later Secretary of the Institution, in the study of fishes, resulted in the creation of an important Bureau in the Department of Commerce. (3) We also know that the early work of Professor Langley in aeronautics, undertaken in spite of ridicule, is fully entitled to the credit for pointing the way of future development. (4) So, too, the Smithsonian Institution aided Professor Morley with a modest subvention, which resulted in his establishing the basis of the atomic weight system. (5) Not long ago, in this very building, you will remember that Mr. Gifford, of the American Telephone & Telegraph Company, told us the interesting story of how Alexander Graham Bell, at the age of twenty-nine, came to talk to Professor Henry about the work he was doing, and received much needed inspiration and encouragement. (6) During the World War very great contributions to applied science were made by Dr. Abbot, and others, of this Institution, and at the present time, as you will see when you inspect the exhibits, highly important work is being done which has a close contact with the problems of the oil, the rubber, the food, and the drug industries.

I return again to the fundamental economic problem of determining our future policy and field of service. It is true that this is a private institution, by the gift of its founder to the people of the United States in trust for the benefit of mankind, and devoted to the broad principles of the increase and diffusion of knowledge. But as I see it, that is not the whole story, for it is also true that Congress by annual appropriations to the bureaus under it has done much to build up the Institution as it now stands, and we find it today not only a laboratory for research, but an immense and ever-growing museum receiving gifts from

public and private sources, and receiving also annual appropriations from Congress. It stands today somewhat in the relation to our country which the great British Museum, founded nearly a century earlier, stands to Great Britain. It is unique in this country, and while the picture that it presents is somewhat complex, it is equally true that many pieces of machinery of great importance to man are complex and yet work admirably in practice. Those of us who have been close to the problem believe that so far from minimizing our relations with Congress, they might more properly be strengthened. At the same time, we also feel that private endowment is very necessary, and probably essential if we are to maintain what may be termed the central heart, the directing force and inspiration of the entire plant.

It has sometimes been said that Congress cannot be expected to give money to research work, that Congress must naturally earmark its appropriations, and indicate with definiteness how and where money shall be expended, and, that this is entirely inconsistent with the necessities of research work in the field of pure science. But a little consideration will convince you that Congress is more and more appropriating sums for research work. At the present moment the great Department of Agriculture receives appropriations running into millions for research work in entomology, plant breeding and the like. The Advisory Committee on Aeronautics, the Army and the Navy, each receive very considerable appropriations for the study of aeronautics, and these are only a few of many cases which might be cited.

And yet, we all recognize that the Smithsonian Institution should be the central and, let us say, the motivating head of all such work, governmental, quasi-governmental, and private; that while the Smithsonian is in no sense a university, instructing students, it should be the central



BOOK COLUMN SHOWING COMPLETE SET OF SMITHSONIAN PUBLICATIONS

point, coordinating so far as humanly possible the immense amount of scientific research that is being done by the Government, by quasi-government corporations, by the state universities, and by privately endowed universities and research laboratories.

Is it not, therefore, time that we should arouse or, may I say, re-awaken public interest in this splendid organization? Should we not seek in every proper way, in Congress and out of Congress, to arouse the public to aid us in this undertaking? As I look into the future, it appears to me quite conceivable that the day will come when, in every prominent corner of our broad land, perhaps in the capital city of every state, there will be an agency of the Smithsonian Institution, preserving contacts with local problems, and by the kind of cooperation that Professor Henry had so close to his heart, receiving and diffusing knowledge by an interchange not only of ideas but of materials, thus in a truly national sense spreading the benefits and influence of this Institution as widely as possible.

INTRODUCTION TO THE EXHIBITS

By ALEXANDER WETMORE,
Assistant Secretary

GENTLEMEN: The Chief Justice, as Chancellor of the Board of Regents, has outlined for you the history of the Smithsonian Institution and the principles on which it was originally planned; Dr. Abbot has given some account of its activities past and present and its possibilities for the future; and Mr. Delano, for the Board of Regents, has made a statement of its present economic condition. It remains to discuss briefly the exhibition that has been arranged in this hall to illustrate some of the research problems that are now being prosecuted under the Institution, what they are, what has been done, and what it is hoped may ultimately be accomplished.

You will see on either hand a series of booths in which are arranged specimens of various kinds, apparatus and instruments, and charts and diagrams. These are not to be considered merely as exhibits brought over for the time being from the public halls of the National Museum. On the contrary each one has been designed to explain some definite scientific study from which has come contribution of new facts to human knowledge and from which will flow additional information in the future. The whole may be considered as an epitome of the scientific research of the present moment as carried on by the Smithsonian Institution—a cross-section of its activities in the field of modern science. For convenience in examination we have grouped the various projects according to their kind, and to make them easily comprehensible have restricted each to a limited space and a small number of objects. I may say in this latter connection that these studies are of such

nature that any one might be expanded to occupy the entire hall with material of interest equal to that now shown.

Let me take up briefly, in order of arrangement, these exhibits and state in outline what we wish to demonstrate.

Anthropology, as that branch of science that deals with man, has always a surpassing interest to the human mind. Smithsonian studies in America have dealt largely with the question of primitive man, his methods of life, his culture in all its varied ramifications, and, as a background, the problem of whence and how he arrived in the New World. Recent studies in the Columbia River Valley, in Alaska, in the lower Mississippi Valley, and among the ancient pueblos of our southwest, are illustrated in the material presented before you, and to supplement them certain matters dealing with Old World archeology and with the evolution of man as a species in the animal kingdom. As a study of more modern times there are the problems connected with the recent invasion of the New World by man of another race, the Caucasian, a matter covering only a short space of years, yet one of tremendous significance in its reaction on natural environment and in the fusion and amalgamation of varied elements into a newer American people.

In the space beyond are grouped our projects in geology and paleontology, including a widely varied range of subjects. In this section may be seen huge bones of fossil dinosaurs and elephants to illustrate our studies in ancient vertebrate life, researches that are steadily productive of new facts concerning strange creatures that ranged the earth in ages long past, or that man perhaps has had contemporaneous with him in less ancient periods. Here are illustrated also our problems in the studies of minerals, typified by rich materials that have come to us recently through gift and bequest of the late Mr. Roebling and the

EXHIBIT OF SMITHSONIAN RESEARCHES IN ORNITHOLOGY

late Mr. Canfield, which will serve to give new stimulus and direction to these investigations. The formation of soil through the weathering of granite and other rock, viewed from the geological standpoint, and the investigation of the thousands of fossil invertebrate species, of the greatest importance in establishing the age of rock strata, are matters of equal weight. I desire here to call your attention especially to the work of the late Secretary, Dr. Walcott, whose life time studies and their rich contribution to our knowledge of the Cambrian are shown graphically in this section.

In the center of the room there has been erected a pillar of books built from the several hundred volumes that have been issued under the auspices of the Smithsonian Institution during the more than eighty years since its foundation, and constituting in themselves a lasting monument to its accomplishment in the field of science. I may say without hesitation that in recent years there has appeared no text-book, encyclopaedia, or other publication dealing with science in a general way that has not included facts taken originally from the published researches of the Smithsonian Institution.

Beyond this monument, on screens and tables, you will find illustrated our present activities in publication, now, so far as the Smithsonian Institution proper is concerned, sadly curtailed for lack of means. There are shown here selected Smithsonian publications that have been of definite importance to various branches of science. Opposite these is a screen devoted to the International Exchange of Scientific Literature, through which publications from governmental and private sources are assembled and assorted here in the Institution and shipped to foreign centers where they are distributed to libraries or workers for whom they are intended, a service not at all spectacular but one of far reaching importance through its results in

the wide dissemination of knowledge. With this there is shown the International Catalogue of Scientific Literature. The writings of the present day are so vast that it is difficult or impossible for the scientific worker unaided to keep abreast of what is published in his own or other fields of research. The catalogue, conducted by regional bureaus throughout the world, assembles all the many papers and lists the titles under classified headings where they are easily accessible. Since 1922, due to increased cost, it has been necessary to suspend printing this information, though the work of assembling the data continues in the hope that means may be found to make it available.

The Smithsonian Library, one of the greatest scientific libraries in our country, in addition to supplying reference works to laboratories in Washington, lends important volumes to many outside workers in American colleges and universities and other research organizations. It has on view a few of its treasures in rare and interesting books accumulated during its many years of growth.

The National Zoological Park, conducted here in the city of Washington for the education and recreation of the people, is not of purely local interest, since it has as visitors annually five times the total population of our city, an audience drawn largely from the millions of Americans who come to visit the capital city. Through the interest of Mr. Walter Chrysler, the Institution has recently conducted an expedition to East Africa to secure living animals. A few of the smaller forms have been brought here today together with some others of interest. I desire to call attention especially to paintings that decorate this booth, made on the expedition mentioned, since it is believed that Mr. Haweis, the artist, is the first of our modernist school to accompany a scientific expedition to portray its activities on canvas.

There follow in order a series of exhibits devoted to biology, a subject so vast that attempt is made to cover

only a few of its various branches. One entire section is devoted to botany; in it are illustrated many researches dealing with plants. Though botany has been a serious study for many years, knowledge of plant species, their occurrence, and their uses, is far from complete. The science is the foundation of agriculture and is thus of the highest importance. Botanical exploration in tropical America is one of the fields that the Smithsonian Institution is developing as rapidly and thoroughly as its available funds permit. Already its workers have made important contributions which, although primarily scientific researches, have yielded immediate economic results to commerce, as concerned with woods; drug plants; such plant products as chicle, the base of chewing gum; rubber; and similar materials. There are illustrated here by paintings and dried and living plants the basis for studies of several groups of plants. Others are in progress or are contemplated.

Illustrations of work in zoology are numerous and have been selected from a considerable series of investigations. Specimens of snakes are shown to indicate the close resemblance between harmless and poisonous species. Careful research is necessary to make available the characters by which those to be feared may be distinguished from those that are harmless. Above these is displayed a series of paintings of fishes made in Philippine waters by a Japanese artist employed for the purpose during work of the Fish Commission steamer "Albatross" in that region. A complete treatise on the fishes of the Philippine Islands is in preparation, with the first volume now in press. This work will have great value to science and to commercial fisheries and should be adequately illustrated. It has been necessary, however, due to shortage of funds, to omit these plates because of the cost of reproducing them.

The insect life of the world is of the greatest importance to man since many of its species are directly harmful or beneficial according to their habits. Insects may carry disease to man or his domestic animals, may fertilize with pollen plants and fruits under cultivation, or may destroy vast crops worth many millions of dollars. One well-known entomologist, possibly in a pessimistic mood, has even predicted that eventually insects may drive man from his control of the earth. Certainly such creatures merit the careful study and observation that is given to them, as illustrated concisely in that section of our exhibition.

Birds attract more attention on the part of man than any other of our wild creatures as they are easily and frequently seen and delight the senses with beautiful combinations of color, sprightly actions, and pleasant song. The growing interest in their study is indicated by the increasing thousands who seek membership in organizations devoted to nature study. From the scientific side—I may be permitted to state that this is the field of my direct personal interest—birds offer important problems in correlation of external form with internal structure as an indication of the lines followed in their development and their present status in connection with animate nature. The study of their fossils, their skeletons, and their other structures, while seemingly abstruse, is, like all other scientific problems, of fascinating interest, with resultant harvest of new facts and knowledge.

In the exhibit devoted to mammals other than man, there are indicated a few of the matters that confront the student in this group. In studies of external form, there is shown first an indication of variation in color correlated with difference in environment illustrated by specimens from our arid west, which are pale in color, and by similar animals from the northwest coast of the United States

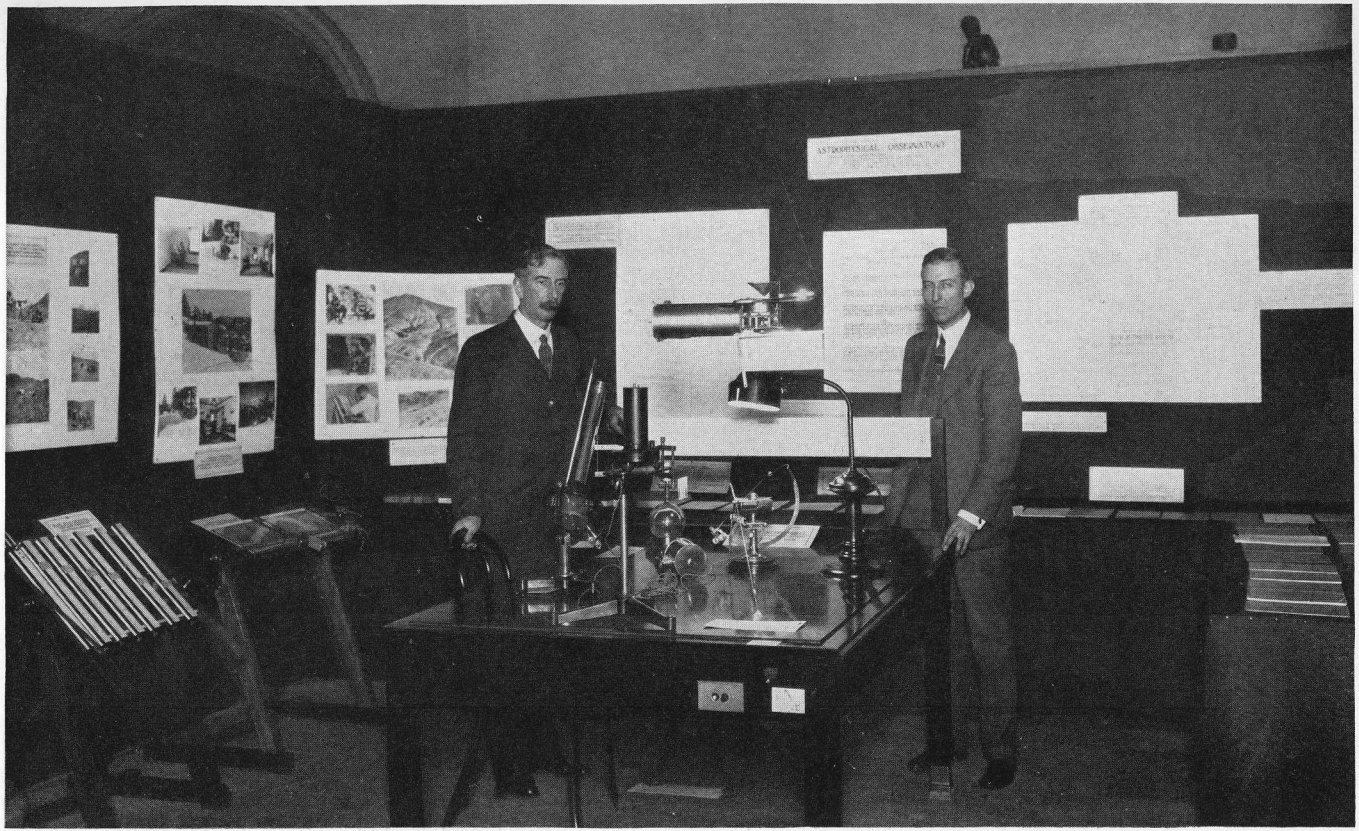


EXHIBIT OF SMITHSONIAN RESEARCHES IN ASTROPHYSICS

where rainfall is heavy, which are dark in hue; and second, variation in color regardless of external surroundings exemplified by a number of species of squirrels from the Malay region, which live in the same types of forests, so far as known under similar conditions, and yet offer regular diversity of color marking. Finally, difference in internal structure due to method of life, as shown by the teeth in certain mammals, and by the telescoping of the skull in the two principal groups of whales, brought about by pressure of the water in deep sea diving.

Mollusks suggest insects in their great variety and in their seemingly obscure but nevertheless certain connection with man and his activities. Certain creatures detrimental to the health of man himself or to that of his domesticated animals, find a secondary host necessary to their cycle of development in species of mollusks. When the mollusk concerned is placed under control the diseased condition is checked. Again there are molluscan forms like the shipworm that do annually millions of dollars of damage. All these must be scientifically studied in order that the harmful forms may be singled out from those that are harmless, and direct effort at control be centered upon them. Mollusks, from their ease in handling, also offer excellent material for experiments and studies in evolution.

Dr. Abbot during the course of his remarks commented on recent economic application of scientific knowledge of the foraminifera—sometimes called the chalk animals—which range in size from minute creatures that may be viewed only through a miscroscope, to others as large as half a dollar. We show a few of the many species so that you may see their form. They are found in myriads as fossils and are certain indication of the formation and age of the rocks in which they occur. You may be interested to learn that an oil geologist for one of the leading American

oil interests informed me recently that his company was about to bring to successful development an oil well whose drilling had been directed solely through the guidance of fossil foraminifera—without other indication of the presence of oil-bearing strata. Our studies in pure science here bring immediate and direct application.

Adjacent to the exhibit just mentioned you will find a display of the crinoids or sea-lilies, both in recent and fossil form, of importance, in connection with other marine creatures in the invertebrate group, in examination of the sea and in studies of the inter-relationships of its varied forms of life. As the crinoids, in addition to beauty of form, have definite function in indicating depths at which certain rock strata of marine formation have been deposited and other similar matters their importance scientifically is readily understood.

The booth devoted to the Astrophysical Observatory, concerning whose work Dr. Abbot has spoken at some length, displays types of instruments developed for this work by the Smithsonian Institution, together with some indication of the results that have been obtained. The sun as an ultimate source of light and heat has the greatest importance to human welfare and well merits profound and prolonged research. The studies made under the Smithsonian have been productive of concrete result and indicate definitely lines of investigation that should be followed. The work in solar radiation, carried on in remote desert regions where observations may be made without hindrance from veiling clouds, has been of great importance and should have no check.

Finally, I may point out a series of charts designed to indicate graphically the income of the Smithsonian Institution, with sources and application, and the certain needs of the organization if our scientific program is to be developed and carried out in the future as the concrete results

obtained in our previous and current work would justify. The comparative little that we now have is so distributed as to gain the greatest result and is administered with the greatest possible economy.

Research workers of the Institution are in attendance with all the exhibits and will explain them fully. The brief account that I have given will permit you to select for inspection those things of greatest personal interest. We trust, however, that you will endeavor to view as many of the exhibits as possible that you may have a broader view of the varied and manifold subjects embraced in our investigations and researches. The problems presented are carried on with relatively small investment. They are illustrative of what may be accomplished, and in every case offer opportunity for greater development and expansion with proper financial support. All contemplate as their goal, addition in some form to our store of knowledge.

INFORMAL DISCUSSION AT SMITHSONIAN CONFERENCE

Chief Justice TAFT: Mr. President, and gentlemen. We feel very much honored by the President's coming here. We have known in the past of his interest in this Institution. For two years or more he was one of the Regents, and his presence now indicates that he has not lost interest.

I am the nominal head of the Institution and so I represent the Institution as the host.

But when we desire men to do things we turn from pulchritude to business, and my friend Dwight W. Morrow fills the latter requirement. Therefore, I shall turn this meeting over to the tender mercies of Mr. Morrow of New Jersey, which I have great pleasure in doing. He means to institute what he calls a round table. He has great power, but I do not think he can make this table a round one. But he can bring you all close to the situation, which gives the effect of having it round. I have great pleasure in introducing Mr. Morrow.

INTRODUCTORY REMARKS BY MR. MORROW

Mr. DWIGHT W. MORROW: Mr. President, Mr. Chief Justice, and distinguished guests. I understand that it is a rule of the great court over which the Chief Justice presides, that when they have a case of first impression, it is the custom to call first upon the most recent member of the Court to express an opinion. Upon some such principle as that the Chief Justice has turned over to me, the most newly appointed Regent of the Smithsonian Institution, the task of greeting you and of introducing you to each other.

I know that those who are invited to any educational or philanthropic institution always come with great suspicion. I beg of you to throw those suspicions aside, because nobody has any ulterior designs upon you today.

The purpose of this meeting is exactly as set out in the formal invitation, " to advise with reference to the future policy and field of service " of the Smithsonian. We have gathered here a very remarkable group of men. In the first place, the members of the Establishment are present. I know not when they last met. In the second place, the Regents are here, earnestly seeking an education. But most important of all, the scientists are here, without whom the Smithsonian, of course, could not go on. We shall call upon a few of the distinguished scientists to comment upon the past or the present or the future of the Smithsonian. I explain now for those who are about to be called upon, that they are speaking without preparation.

You heard this morning the history of this great Institution. You have had a bird's-eye view of its work in these small exhibits arranged in the other room. I will now ask Dr. Merriam of the Carnegie Institution to give us any advice he can.

REMARKS BY DR. JOHN C. MERRIAM

Dr. JOHN C. MERRIAM: Mr. President, Mr. Chief Justice, distinguished guests and members of the Smithsonian Institution. I understand you are here today to consider certain problems which relate to the future. For a discussion of those questions a study of the past is naturally important.

There are very many opportunities which might be considered as within the field of vision of the Smithsonian. I take it to be your purpose, sir, not so much to consider what all these things may be as to consider what the specific objects are toward which this organization should be directed.

The Smithsonian Institution arose at a time when the country was concerned with a struggle to utilize, to harvest, an unparalleled wealth of natural resources. With what seems to me rare vision, the leaders of the Government and the scientific men of this country gave themselves to a consideration of means by which this gift might be made of largest use to all people.

The result was a plan most wisely conceived and wonderfully carried out, a plan by which there was set up under the guardianship of the Government an agency which had its own funds to do fundamental work, with the understanding that it would devote itself first to the development or advancement of knowledge, and then to the interpretation or diffusion of the information which might be obtained, so that it could be of use to the people as a whole.

Those in control of the Smithsonian in its earlier days properly avoided so far as possible tying up the funds in buildings or in formal activities which it might seem necessary to continue to the disadvantage of new work which ought to be initiated.

As the Smithsonian grew there arose out of it the numerous departments or bureaus which have been discussed already in the splendid presentation this morning. Of these some have passed beyond control of the Smithsonian—for example, the Bureau of Fisheries and the Weather Bureau. These agencies, however, are closely related to the Smithsonian so far as the development of their fundamental research program is concerned. They have given themselves, however, to a direct service for the people, therefore they must and do recognize that their first responsibility is to meet requests for information from the people. These departments also recognize that it is a part of their function to carry on research and to disseminate information, and they do it admirably and with

increasing effectiveness as the years go by. It would not seem reasonable, however, to set up, for example, a Bureau of Fisheries that would devote itself entirely to fundamental research, and fail to answer questions of immediate economic importance.

There grew up also out of the Smithsonian other agencies, such as the National Museum, which has in the first instance a conservatorial function. The Bureau of Fisheries discovers new specimens and sends them to the National Museum, where they are stored, and where those who have direction of the work of the Museum make scientific study of the specimens and return to the Bureau of Fisheries the information that can be of immediate practical value.

With the passing of the years the Smithsonian carried on extremely important fundamental researches; but more and more, as time passed, its activities and its strength, its administrative organization, were absorbed in direction of the agencies which had grown out of it, or which were turned over to it for administration. In the meantime its income has shrunk in purchasing power and need for the very thing which was in the minds of those who set up the Smithsonian Institution has increased enormously.

We recognize today that we have mapped out our natural resources and know approximately what we have—and we have large supplies. They will last for a long time. But the population increases and the demands increase proportionately. We recognize, also, that now and in the future we must depend on a moderate supply of natural resources and on what we trust will become a very large supply of information as to how best to utilize these resources. So, referring to the need of the increase of fundamental knowledge and the dissemination of that knowledge, which was in the minds of those who developed the Smithsonian, that need has increased enormously. But the

Institution's possibility of doing these things has decreased greatly because the resources of the Smithsonian have, relative to costs of activities, practically diminished in value, and its activities have been absorbed to a considerable extent in administration.

It seems to me that the problem today is one in which, in the first instance, we should consider what the original function of the Smithsonian was and what its opportunities are for the future. I do not say that one should sit down to inquire whether the Smithsonian should be discontinued or whether it has passed the period of its maximum usefulness. But all aspects of every problem should be taken into account if you are to reach a solution. One of the questions to be asked is: As the Smithsonian has developed and become the mother of these children, has it come to the stage in which its original activities will be taken over by other agencies?

The answer it seems to me is that its activities are not finished, that its opportunity continues, that the need of the thing which it was set up to do is an increasing need and will increase during the years; that although we set up other agencies for fundamental research and agencies for service, although we set up a National Museum, which is for conservatorial purposes and also research, yet we must remember that there should be back of all these institutions an agency with the opportunity to use mobile funds in support of the fundamental research needed by the people, but with that freedom which is required if you are to attack really fundamental questions.

By definition, research is the attacking of a problem about which you know relatively little. The Smithsonian in its inner directing or original organization, or its holy of holies, has the problem of attacking the basic or the fundamental principles, upon which knowledge is based. It seems to me that we need to keep in mind the great

importance to our Government of all three of these types of effort mentioned: First, the Government department carried on primarily for service, and also developing its fundamental activities in research; second, the conserving group, which embraces the National Museum, having departments responsible for protection and classification of material, and also concerned with research; and, third, this inner group represented by the original Smithsonian. This was the mother of many of these agencies and has continued its great influence in disseminating knowledge. This inner group should always have the ability to attack the new question when it arises and should therefore have mobile funds so that the new problem can be taken up immediately. Such problems can be considered in connection with the National Museum which the Smithsonian still directs, or in connection with the Bureau of Fisheries, or with any other bureau or department, but always with recognition of the fact that the inner group of the Smithsonian was set up to develop fundamental knowledge, to make it available to the people, and to help develop those agencies which come in immediate contact with the people through the practical application of knowledge in every day affairs.

So, as we look at this Institution and its relations to our Government, it is clearer today than at any past time that an agency of this type, with an opportunity to take up fundamental questions in the service of the people, with a certain mobility in the use of its funds, is desirable regardless of other agencies which may come into existence.

And here let me make it clear that the problem of the Smithsonian is a specific opportunity. It is not the same problem that the institution which I represent has before it. You have a great agency closely related to the departments of the Government, with certain advantages and opportunities that exist for no other organization. It seems

to me that the Smithsonian in that inner group should always consider that it has the right to sit down and discuss scientific problems assuming that they have large human significance but without regard to immediate utilities. It is this inner Smithsonian that I believe you should consider, and the continuation and the extension of its activities in the future.

REMARKS BY DR. WILLIAM HENRY WELCH

Chairman MORROW: Thank you very much, Dr. Merriam. Dr. Welch, Director Emeritus of the School of Hygiene and Public Health of Johns Hopkins University, is here. We all look upon him as the Dean of the medical profession of the country. I hope he will say a few words.

Dr. WILLIAM HENRY WELCH: It seems to me highly significant and of historical interest that for the first time since the establishment of the Smithsonian Institution and the appointment of its first secretary and director, Joseph Henry, eighty years ago, a group of conferees such as this has been summoned to consider the present situation and policies and the possibilities of further development of the Institution.

From the admirable historical sketch and most interesting presentation of the organization, work and needs of the Institution by Chief Justice Taft, followed by the instructive addresses of Dr. Abbot, Mr. Delano and Dr. Wetmore, to whom we listened this morning, we learned that throughout its wonderful development the general policies and program of the Smithsonian Institution continue today along lines formulated eighty years ago by Joseph Henry. When one considers the remarkable development not only of the Institution but also of our country and of science during these eight decades, this fact constitutes a marvelous tribute to the wisdom and farsightedness of the first Secretary of the Smithsonian.

The men of science of our country cherish the history, the traditions and the achievements of the Smithsonian Institution as a precious possession of American science and of our nation; we are proud of a record, which we hope to see continued with expanding usefulness in the future. The conception of science and of its relation to the civilization and welfare of the country embodied in the original organization of the Smithsonian Institution and since perpetuated in its development was a broad one and little appreciated at the time in this country, and even today inadequately appreciated. The flame of that idea was a small one at the beginning but even then it burned brightly and today it is a beacon light.

The value of the service rendered by the Smithsonian in the development of American science is beyond expression on this occasion. The spirit, the methods and the ideals of scientific research were for many years represented more adequately in the Smithsonian than elsewhere in this country. The four secretaries—Henry, Baird, Langley and Walcott—have held a kind of premiership for science in America, and on national and international occasions their scientific colleagues in this country have been proud of their semi-official governmental representation of American Science. You can be assured that the scientific men and the educational and scientific institutions of this country guard jealously the traditions of the Smithsonian, and are eager not only to preserve but to strengthen and to develop this Institution.

These traditions and this history constitute in themselves a great asset not possessed in the same way or in equal degree by other institutes for research, such as those to which Dr. Merriam in his remarks has referred. These later institutes of research have expanded rather than narrowed the field which may appropriately be occupied by the Smithsonian. While in the course of years the Smith-

sonian has assumed many activities assigned to it by the Government other than the cultivation of science the real significance and heart of the Institution lie, I believe, in the fulfilment of James Smithson's provision in his will that it shall be "an establishment for the increase and diffusion of knowledge among men." Before this audience it is unnecessary to say that increase of knowledge is most effectually secured by the pursuit of truth for its own sake. Applications of knowledge thus revealed sooner or later follow.

It is obvious from what we have heard that the Institution is in great need of additional financial resources. I think the method adopted today of presenting the history of the Institution, the work which it is now doing, and the opportunities for expansion is the best method of making the appeal, both to the Government and to the general public for additional resources for the Institution.

One may stress possibly more the appeal to the Government and another may emphasize the appeal to the public, but I see no incompatibility between the two. As pointed out by Chief Justice Taft in his address the relations of the Institution to the Government are in some respects unique. I should say that a large part of the material for study is in the scientific collections owned by the Smithsonian Institution. It is the favored recipient from various sources, of valuable scientific material. As I understand it, the Government undertakes the maintenance—I do not believe adequately, I am told not adequately—of these collections. Why should it not be appealed to also to support the study of the scientific material which is gathered here?

At present, as I understand it, almost no funds whatever are available for that purpose. I am rather inclined, therefore, to stress bringing this to the attention of the Government, and of course to the attention of the public,

and of creating public opinion in support of larger appropriations for the Smithsonian Institution from the Government, on the ground that there exists here very remarkable, and in some directions at least, almost unique material for study. Of course, I do not wish to be understood as suggesting the limitation of the scientific activities to the study of the material in collections of the Institution.

I see nothing in this suggestion which lessens the strength of the appeal to the general public. It is very important that individuals who are able to give should have brought to their attention the very rewarding field of investment for their funds in the Smithsonian Institution.

I therefore feel that both sides—the need of larger governmental support and the opportunity for private beneficence—should be presented; the appeal to private benevolence, on the one hand—because it is quite obvious that the Smithsonian should have funds which are not tied up in ways in which most Government appropriations must of necessity be restricted. It should have funds which it could use in any direction which seems to it for the time being the most important and the most rewarding. But it is of equal importance to make the general public understand, and through them the Government, that there is a great opportunity with a corresponding duty and responsibility on the part of the Government to support pure research in the bureaus administered by the Smithsonian.

My principal idea, therefore, is to strengthen the appeal on both sides—to the general public on the one hand, because there are certain directions in which mobile funds could be most advantageously used—and to the Government, on the other hand, to enable them to use the material which is gathered here not only for the instruction of the general public, but also for the purpose of scientific research. I again assure you, Mr. President and Toastmaster, and the members of the Smithsonian Institution,

that you have the interest and support of the universities, of all the other scientific institutions, including all the research institutions, and of the whole body of scientific men in this country in efforts to secure additional aid in the development of this great Institution.

REMARKS OF DR. S. W. STRATTON

Chairman MORROW: We now make a rapid journey from Johns Hopkins University to the Massachusetts Institute of Technology and I have pleasure in calling upon Dr. Stratton, President of the Massachusetts Institute of Technology.

Dr. S. W. STRATTON: Mr. Chairman and gentlemen. As one who has had some experience in Government service, I can perhaps say more from that point of view than I could from the standpoint of the activities of any private institution.

When I came to Washington I was fortunate in coming in contact with Professor Langley, Secretary of the Smithsonian Institution at that time. His advice was sought in many problems that I had, and I received valuable help from him. The Smithsonian and my Bureau of Standards worked most harmoniously, and I learned to appreciate that the functions of the Smithsonian were really the increase and diffusion of knowledge.

Let me give you a single illustration. As you know very well, Professor Langley was the first to feel the necessity of increasing the scientific knowledge pertaining to aviation. His work is well-known and the results have been utilized by those who followed him in the practical development of aviation. Later on, it was in this building that the first Government committee was formed for harmoniously building up the work of aviation. The then Secretary of the Institution, Dr. Walcott, was elected president of this committee, and he has been president ever

since. It is the one agency more than any other which has held together certain functions of the Government service. For the last 10 or 15 years, under Dr. Walcott's direction, scientific men of the Government interested in the development of aviation, representatives of the Army and Navy and of the civil departments have met together regularly, from once a month to several times a year, and have placed all information on the table; that has had far greater influence upon the harmonious functioning of the scientific work in aviation than most people suppose.

This is a splendid illustration of, first, the increase of knowledge in that particular subject; and, later, its diffusion. That committee today is distributing information in regard to fundamental principles of aviation as no other agency in the world is doing. As soon as anything appears that is useful in that particular industry and that particular scientific investigation, it is disseminated throughout this country and other countries. I am very pleased to say that Dr. Walcott has kept this committee alive from the beginning.

REMARKS OF DR. SIMON FLEXNER

Chairman MORROW: I call next upon Dr. Simon Flexner, who has done so much in medical research. His work as Director of the Rockefeller Institute for Medical Research is known to you all. We will be glad to hear from you, Dr. Flexner.

Dr. SIMON FLEXNER: Mr. President, Mr. Chief Justice, and gentlemen. I personally have had a highly illuminating experience today. My knowledge of the Smithsonian was very imperfect. I had always believed that the Institution's activities were of great importance; I knew, of course, of many of its scientific operations; but I obtained today from the addresses, and in the exhibits, an insight into the variety and the magnitude of the work

being done which altogether aroused my deep interest and appreciation.

I wish, therefore, to support everything which has been said by the previous speakers on the obvious value of that work. In recent years the pursuit of science for its own sake or for the sake of application, has greatly extended in this country. Private resources of almost fabulous amount have gone in, or are going into this pursuit. It might, therefore, be asked whether in view of this increase taking place generally there is reason for believing that the increase in activities of the Smithsonian Institution might not be needed.

From such knowledge as I have of the way in which science is being more and more cultivated in this country, in comparison with what has gone on, what is going on, in this Institution, I should wish to express the strong belief that the activities of the Smithsonian Institution should in no way be permitted to diminish by reason of these other activities which are increasing.

It would seem to me from the way in which the subjects are assembled here, of their effects on each other, that there is nothing in existing scientific institutions or institutions likely to be created elsewhere to parallel the work of the Smithsonian.

It is not only that we cannot have too much science, that there need be no apprehension of danger from repetition of effort, but as I see it that we shall not have science pursued anywhere else in the same manner in which it is capable of being cultivated in the Smithsonian Institution.

Therefore, it seems to me that the Smithsonian Institution makes an appeal on the one hand strongly to Government and equally to private philanthropy; because the fruits of science, however they are garnered, of course, are something of which the public as a whole, without distinction, enjoys the benefit.

REMARKS BY DR. W. W. CAMPBELL

Chairman MORROW: Dr. Campbell, President of the University of California, has come all the way from California to this meeting today. His state has furnished so many of our scientific leaders that the country owes her a great debt. I am very glad to call upon President Campbell.

Dr. W. W. CAMPBELL: Mr. Chairman and gentlemen. We have come here today from far and near because of the glorious past of this Institution, and, again, because we want to assist in providing in any way which seems wise and practicable for a future at least equally glorious.

It was a remarkable gift which Mr. Smithson made to the United States as the financial foundation for this Institution. I doubt if any investment ever made in behalf of the people of this country has been more productive of dividends of priceless value.

I feel also that you will all agree with me that just as the provision made by Mr. Smithson in the days of the meagreness and almost total absence of research facilities in this country has been exceedingly fruitful, so there is promised for the future of this Institution a degree of productivity proportional to the increased resources and increased needs of this country, and the services required of the Smithsonian are of the same type as it has always rendered. I think we all want to see the Smithsonian Institution given the facilities for carrying on work which it is so well fitted and so well situated here at the heart of the country to conduct.

Now, it is superfluous for me to say to successful men of affairs—and this is a gathering of successful men, 100 per cent I think—that there are certain fundamental principles of an exceedingly elemental nature to which we could perhaps direct our attention for a moment.

Successful men know that their plans prosper because they have got able men to compose their staffs. A banker, for instance, cannot go to an officer of another great bank and say, "Our institution is starting out upon an ambitious plan; we know it will have resources to carry it on for a few years; we don't know what the future beyond that is going to be; we don't know whether the funds are always going to be great enough, but for two or four or six years the assets will be splendid, and I am going to offer you a large salary." The head of the Institution would not be successful under those conditions in attracting the best type of men.

Men of the type of university professors or investigators are in need of favorable environment; they are in need of tranquillity; they must be men without worries. They must be assured of a reasonable degree of support in the indefinite future. The administration of their institution, to attract them, must be able to say that this activity to which it is calling them is one upon which they may count in the indefinite future. This means that there must be a continuing financial policy.

It is not so much a question of a large salary as it is a question of favorable environment and of the assurance that the activity in which the given professor is specially interested may be conducted for many years; if it is a research problem, with the assurance that he is not going to be called upon perennially to show results, or to say just when he is going to bring his researches to a conclusion.

The sum of money, $550,000, provided by Mr. Smithson as the total foundation eighty years ago, is less than half the annual income possessed by some existing research institutions today. I know a state university for which twice that sum is provided annually by the legislature of a liberal state in support of research. Two-thirds of it is of the utilitarian type, largely devoted to research in agricul-

ture, to those fundamental and special problems of agriculture which concern the farmer today. Seven hundred and fifty thousand dollars, roughly, are devoted to that type of research. One-third of the total sum, about $350,000, is available for research along idealistic and fundamental lines.

That sum for pure research alone is about six times the total income which this Institution, this ward of the United States, enjoys in fee simple! Six times, in other words, the income, the use of which the Secretary and the wonderful Board of Regents of this Institution are free to determine!

When this Institution was established, 80 years ago, a salary of $2,000 would go as far as a salary of $6,000 will go today. And I wonder if we, the guardians, so to speak, of this Institution, are doing our full duty when we let the evolutionary process of finance and the cost of living defeat in large degree the purpose of the founder of this Institution. I wonder if our Government is sufficiently generous in support of fundamental research, research which has in fact for its purpose the solution of the problems which immediately confront the people of this country. I wonder if our Government is as generous in support of that activity as are a number of the individual states of the union. Are we a bit more idealistic when considering our individual states than when considering the United States as a whole?

It seems to me that this Institution, the Smithsonian Institution, should have an income from the general Government, or from outside sources, one or both, which would permit its Secretary, and its Board of Regents, to take up a solution of problems—and there will be many of them—upon which a considerable staff must expect to work for many years; an income which will enable it to

take up new problems and not have to remain in doubt or in uncertainty as to the financial support thereof.

In behalf of the universities and other research institutions of this country, I beg to repeat the feelings voiced by Dr. Welch, namely, that we recognize the existence of an enduring field of activity for this Institution, and we wish for it a very high degree of success in the cultivation of that field.

REMARKS OF DR. HENRY FAIRFIELD OSBORN

Chairman MORROW: We thank you, President Campbell, for what you have said. We can now go from a great state university to a great museum. We are fortunate in having with us Dr. Henry Fairfield Osborn, President of the American Museum of Natural History, whom I now call upon.

Dr. HENRY FAIRFIELD OSBORN: Mr. Chairman and gentlemen. I wish I had time to dwell on the sentimental side of this question before us. I do want to say that I endorse with all my heart and with all my intelligence and experience everything that has been said by Dr. Merriam, Dr. Welch, Dr. Flexner, and Dr. Campbell. Let me go for a few minutes directly to the practical side, and speak of the immediate practical question which faces the Smithsonian Institution.

Its free income is $65,000 a year. Its free income in order to carry on its work should be $600,000 a year! I say this from my own experience in an institution, which in many respects is similar, in which we have a free income of that amount a year. I am quite sure that this is a correct estimate of the sum needed to run the Smithsonian as it was run in the earliest years of its life, to keep pace with the demands for pure scientific research, which—I think it is no exaggeration to say—has multiplied a thousand fold, if not a million fold.

I will give you two illustrations in my own experience. When I started my own scientific career I had the privilege of meeting Secretary Joseph Henry. At that time any man who was studying such an animal as a fly, or any man, like the great Joseph Leidy, who was studying protozoa, or any man studying such a humble insect as the louse, who would apply to any government in the world for support for research along those lines would have been met with the statement that such research was of no practical importance, that it was not a function of government to support researches of that kind. In fact, I remember a great student of the fly who was considered a rather inferior order of being. Now we do not need to say in the presence of Dr. Welch and the members of the Rockefeller Institute that the fly and the louse and the protozoa and the bacteria combined as carriers of disease are three of the most important economic factors in the life of the world today. I could give a thousand illustrations of the same kind.

Consequently, my thought on the matter is this; that in any field of research you can never tell when a subject which seems absolutely remote from human interest is going to turn around and going to prove most intimately related to human interest.

I remember well when my friend, Secretary Langley, was laughed at for diverting the funds of the Institution to experiments in flight. They were held to be of no practical or economic value. Who would challenge those experiments today? Who would suggest they were not valuable today, when the world is covered with airplanes?

But let me say one word more. In answer to those who would say, "well, the Government has no concern with giving money directly for pure research"—that is, money to such institutions as the Smithsonian—I advise them to analyze the accounts of the United States Treasury from

the years 1870 to 1880. They will find that the Government was spending large amounts of money on pure research in many of its important divisions. For instance, in the Geological Survey, under Dr. Hayden, pure research work was being done; it was going on in the hands of all the leading scientific men of the country. Dr. Leidy published at Government expense his classic volume on the protozoa, which I have said has proved to be of enormous value to man.

After looking over those accounts and comparing them with the present, you will find that the United States Government, supposedly representing one of the most intelligent bodies of people on the earth, has been steadily diminishing the amount of money it gives for pure research.

In my opinion the Government's former support should be restored. I agree with what Dr. Welch has stated. It is important for the Smithsonian to call for Government as well as for outside funds, and I hope that both calls will be responded to. But of the two sources, I believe it is really more important for the United States Government to range itself beside the government of Germany and the government of Great Britain. Pure research is now bringing back to Germany thousands of fold the small sums that it originally invested in research. You will be interested to know that during my residence in England the last year a number of scientific men told me that the British Government is waking up to the value of pure research.

Pure research for the most part is research in which the immediate welfare, the immediate advantage of the research is not apparent, is not obvious. It is that kind of research for which the Smithsonian stands, and I do hope that as a result of this splendid meeting the idea will go abroad that the Government of the United States has every reason, sentimentally, historically, and practically, to go to the aid of this great Smithsonian Institution which

abroad and all over the world is one of the brightest ornaments in our whole United States today.

REMARKS OF DR. GEORGE E. VINCENT

Chairman MORROW: I take pleasure in introducing next the President of the Rockefeller Foundation, Dr. George E. Vincent.

Dr. VINCENT: One thing I want to mention is the rôle of the semi-autonomous institution in relation to government. The Chief Justice has presented this Institution as being on the one hand a governmental institution and on the other hand a wholly private institution. It seems to me that it is a governmental institution, with a considerable degree of autonomy.

If the Smithsonian Institution should turn out to be the institution which would lead the Government of the United States to support scientific research with annual lump sum appropriations, it will have made one of the greatest contributions it could make to the world.

The accomplishments of Germany in the way of pure research, and the practical benefits that have arisen to that nation from such research have been referred to. When Kaiser Wilhelm authorized the expenditure of large sums for pure research work, do you suppose that there were purchasing agents going around inquiring what this expenditure was for and what that expenditure was for? In order to accomplish the most, it is important that lump sum appropriations should be made for research work, and the money used where it will do the most good, and under men of such standing and prestige that there will be no suggestion of suspicion attaching to their expenditures.

Look at the situation in England. Five hundred thousand dollars a year is given to be expended under the direction of a group of seven or eight gentlemen who have been selected to oversee it. The money is paid over to them

without any question on the part of the British treasury. It is rather an appalling fact from one point of view, but it is illuminating from another.

One of the speakers referred to what our state institutions have done. In the progressive states there have been lump sum appropriations, and a great deal has been accomplished with those lump sum appropriations.

I believe that the Smithsonian has not only a great opportunity in research but it has a splendid opportunity with the many good citizens who are interested in scientific work to begin a campaign for Government appropriation for the Institution and thus help these autonomous institutions that are carrying on research in the interest of the whole people. I believe it can be done.

Think of what Dr. Stratton has done with the Bureau of Standards. It is one of the best institutions in the world. What he accomplished was accomplished as a government bureau. How did he do it? By talking to Congress; by spending time in talking to legislators; not in lobbying, but in explaining and telling the real facts. After he had done it, he explained what he had done and they got interested, and he went on with his process as long as he was here, and he got a response.

It would have been easier if he had had a board of trustees and had not had to explain himself so much in detail. The time for that has not come, but the time is coming. The research by the Government up to this time has been largely surreptitious. It is pure research; but it is explained that it is going to be made impure at the earliest possible moment.

So I believe that a perfectly honest, straightforward campaign, even though delayed for a considerable time, is called for, is worth while, and that a response will be found to it.

Of course you will at once recognize that this is a speech made by one representing a private institution that has developed a mechanism of self-protection.

I have not said that this fund should be provided exclusively by the Government, but I am saying with great earnestness and conviction that we ought not to assume that our Federal Government is not going—with proper education and with the proper sort of influence brought to bear—to make lump sum appropriations to autonomous institutions which become a part of the great governmental machinery of Washington.

I believe that is sure to come, and I believe we could render a very great service by cooperating with the Smithsonian in every possible way, and by doing everything that private citizens can do, to express the conviction that the policy of supporting an institution of this kind out of Federal funds in a generous way is not only a legitimate but an essential function of the Government if we are going to take our place as a great democracy in competition with countries not quite so democratic but who have shown wisdom and foresight in appropriating money to carry on investigations in scientific fields which have resulted ultimately to their great material advantage.

There are people who speak about democracy in a slighting way today, and democracy seems to be under a cloud in some parts of the world; but there are some of us who still cling to the idea that it can be made to work, and if we do believe that, here is a chance to show what it can accomplish.

I regard this as one of the most interesting and inspiring days I ever enjoyed, and I am sure that out of this conference there will develop a plan by means of which private citizens and the Government of the United States will combine to make this great institution still more influential in the future; make it a governmental institution

that the Government will not be ashamed of in any way, that the Government will be glad to support, not only in its practical activities, but in a larger and generous measure in the work of pure research which it has done so well in the past, but for which there is still a greater demand in the future.

REMARKS OF MR. CHAUNCEY J. HAMLIN

Chairman MORROW: We would now be glad to hear from any others who have suggestions to make. I remind you that we have no set program. As I said at the outset, the meeting has been exactly what the invitation calls for, a conference to advise with reference to the future policy and field of service of the Smithsonian.

Mr. CHAUNCEY J. HAMLIN, of New York: Mr. Chairman, I am very pleased to be here and very much honored by the invitation.

As I see it, the heart of the Institution is its scientific research work. Then you have surrounding this scientific heart a number of satellites. The satellite that is most visible, perhaps, is the National Museum. I hope soon that there will be appearing another satellite upon the horizon in the shape of a National Gallery of Art.

We have a satellite in the Freer Gallery. Perhaps some day there will be a satellite in the way of a great museum of history. We have in the Smithsonian Institution remarkable historical material.

Again, we may hope to see spring up a great industrial museum. You have here one of the greatest collections of industrial material in the world to form the basis of such a museum. The great wealth of the nation has come out of our industries. They form the backbone of the nation. We have consequently a wonderful possibility for the establishment of such a museum here.

The increase of knowledge was only half of Mr. Smithson's bequest. There were also those other words, "the diffusion of knowledge." The museum is an agent for the diffusion of knowledge. We are going through an interesting stage in this country in the museum movement. It parallels to a certain extent the library movement of twenty years ago. In the last five years there has been over a hundred million dollars given to museums in the United States through bequests or direct gifts. The people in this country are now awakening to the feeling that there is little use in all this material wealth of ours unless we develop something more worth while out of it than just material well-being. We are reaching the stage where we want to build on this great material foundation that we have laid during the last two or three generations something higher and better.

I visualize the Smithsonian Institution, with its satellites, as the leader in the museum movement in America, as the parent of it all, as the one institution that will be encouraging this diffusion of knowledge through museums, through publications, from one end of the country to the other. I know it has served so in the past, but I can see it clearly serving much more so in the future.

REMARKS BY GENERAL H. M. LORD

General H. M. LORD: Mr. Chairman, I have been listening with a great deal of interest to what has been so entertainingly and ably said in regard to this great Institution.

One point developed by Dr. Flexner was that in planning for the future of this Institution you must face the situation that this is an institution which is generally regarded as a private institution, and that in its fields of research it is supposed to be largely promoted and supported by private funds. I wish to call attention to the fact

that that has not been the thought that has prevailed with the President or the Budget or Congress, as evidenced by the fact that since 1921 Government appropriations for the bureaus under the Smithsonian have increased by 55.4 per cent, from $604,630 in 1921 to 939,711 for 1928. This is a ratio of increase of appropriation which if applied to other agencies of the Government would have driven us to additional taxation instead of the reduction of taxation, which has taken place.

REMARKS OF SENATOR REED SMOOT

Chairman MORROW: I will now take the liberty of calling upon Senator Smoot to express the point of view of a Regent of the Institution.

Senator REED SMOOT: Mr. Chairman and gentlemen. I have enjoyed this meeting very much indeed. I think America has arrived at a point in her history now where men of thought and men of action will take an interest in the development of the sciences and the arts.

We are still a young country, speaking in terms of years. I think I have noticed in the last ten years a growing sentiment throughout the country that we are behind hand in our development of art; that our resources are greater than those of any other country but that nearly every other country is ahead of us in the development of art.

I suppose you are all aware of the fact that the Government has at last decided to buy the triangular piece of land between Third Street and 15th Street, south of Pennsylvania Avenue, and to B Street. I want to assure you that the plans for the buildings there when carried out are going to be an inspiration to men and women in America which will result in a real desire to see the Capital of this great nation ahead of that of any other country in the erection of wonderful public buildings, and in its beauty. I am quite sure that the Smithsonian Institution

is going to share, so far as buildings are concerned, in the expenditure of that $250,000,000.

Speaking of art, I have been ashamed of my country. The first thing I did after being appointed a Regent of the Smithsonian Institution was to spend the first Sunday after that appointment in going through every nook and corner of the buildings to find out just what we did have and what we did not have, and what we were doing. And what did I find?

I found the only National Gallery of Art pinched within a few feet of space in the National Museum Building. I assure you we are going to have a separate National Gallery, and I am also quite sure an art building will be erected before long without asking an appropriation of the Government. The love and admiration which many Americans have for art and for beautiful things, will strongly support the move. I think I can prove that point by telling you that I have now in my possession offers of three art collections, to be given at the deaths of the owners if a gallery building is erected.

That will only be a beginning, and though I am not a very young man, I expect to live long enough to see a national art gallery established in America with a collection that will do honor to any country.

The handicap under which the Smithsonian Institution labors in its relations with Congress is that Congressmen know so little about the Institution. There may be ten members who have gone through the Smithsonian and who know some little about what work it is doing and has done. But the great majority do not know what is being done. They have not been led to appreciate what fruitful investigations have been carried on even in the last few years by the Smithsonian as well as investigations carried on with private funds which have done so much to make America what she is.

I am sure that appreciation of these achievements is going to increase. But there has been a feeling, and I want to say it frankly, in Congress that they are not responsible for the Smithsonian Institution. And as to increases in appropriations for the Smithsonian, I know, and General Lord knows, how hard it will be to secure what he or I think the Institution ought to have.

What we want to do more than anything else is to hold meetings such as we have held today and get people interested in this Institution. You talk to your Senator; you talk to your Congressman. Tell them the interest you have in it. Ask them to make an investigation and see for themselves what, with the little money the Institution has had in the past, has been accomplished. That will be the foundation to lay and build upon.

All I can do is to say to the men here, you men who are interested in this wonderful work and in this wonderful development of the sciences and of art, that I am not discouraged. I am interested in every move, whether it be by private funds or whether it be by direct appropriation from the Government. Let everyone of us now constitute himself a committee of one and determine to bring this great question to the people wherever we may go, in private or public, and I am quite sure that results will be patent in a very short time.

I did not intend to say anything here today, but I am perfectly willing to defend upon the floor of the Senate any reasonable appropriation. I can imagine, however, if I were to make a speech on the floor of the Senate, such as that of Dr. Vincent, the aftermath would have been different from what it was here. But, be that as it may, I appreciate what Dr. Vincent has said.

CONCLUDING REMARKS OF CHAIRMAN MORROW

Chairman MORROW: The assurance that Senator Smoot has just given to this whole company was not needed by

those who have worked with him on the Board of Regents. Every Regent knows that, in season and out of season, Senator Smoot has been a staunch friend of this Institution. We thank you, Senator.

As some of the gentlemen here have to catch trains, I fear that we must break up this meeting even though it is getting more and more interesting.

May I say a word in parting? I have been deeply impressed with this meeting. I, like Dr. Flexner, have learned much about the Smithsonian today. It is a great honor to be associated in any way with such an institution. It is a great honor to those of us on the Board of Regents to have so many distinguished men respond to our invitation to advise with us with reference to the future policy and field of service of an institution which has had so honorable a past. We are particularly grateful to those of you who have taken part in the discussion.

In the course of the conference there has been some discussion of the funds available to the Smithsonian from the Government for those bureaus which are administered by the Smithsonian and those funds available from the original endowment of the Smithsonian. I am sure that General Lord is correct when he tells us that there has been a greater percentage of increase in the Government appropriations for the bureaus administered by the Smithsonian than for the other Government bureaus. We must all remember, however, the point that Dr. Merriam brought out when he referred very beautifully to the work designed to be done by the original Smithsonian Foundation as the "holy of holies." This "holy of holies" remains pretty much as it was when John Quincy Adams induced Congress to grant the charter which makes the work of James Smithson go on.

I have been much interested in this keen competition to see whether the appropriation should be made by the

Government or by private benefactors. It made me think of an experience I had many years ago when I was practicing law. A lawyer and his client had gotten into an acute controversy as to the size of the legal fee which should be charged. Although I had been practicing law only 15 years I was called upon to arbitrate the question. I had charged some legal fees myself, but I had not the slightest idea how to properly measure a lawyer's fee. I went to a wise old lawyer in New York and asked him what possible rule there was to apply when a lawyer had a controversy with his client. He said there was only one real rule for charging a lawyer's fee: it must be such a fee that after it has been paid the client would wish it had been larger and the lawyer would wish it had been smaller.

Now when one thinks of the splendid history of the Smithsonian Institution, when we think of what devoted men have been doing and are doing upon inadequate salaries, it seems to me that the only way to resolve this dispute as to whether the Smithsonian Institution should be supported by the Government or supported by private benefactions, is to get the Government and the private benefactors into such a state of mind that they will vie with each other, the benefactors insisting that they should do it all and the Government insisting that they should do it all.

And in saying good-bye to you, I should like to leave a text in your mind. It is a very material text, but after all, the Chief Justice, in turning this luncheon over to me, referred to the descent from pulchritude to business. You will find the text in one of the earlier chapters of Deuteronomy. It reads like this:

"Thou shalt not muzzle the ox when he treadeth out the corn."

That was a practical injunction to a practical people. The ox, who was doing a real work, should not be muz-

zled. I offer no apology to the devoted men who have been rendering this Institution service in comparing them to the ox. The ox has a very ancient and a very honorable lineage. If the historians are correct, the ox, as a bearer of burdens, goes back much further than the horse. The ox is perhaps the most ancient burden bearer for mankind. And the devoted men that have been running this institution, what have they been doing? They, too have been bearing the burdens of mankind, the burdens of the future generations of men.

"Thou shalt not muzzle the ox when he treadeth out the corn."