"Remarks," p. 495). The drum was positioned at the mouth of a trumpet. Ninth Census of the United States, 1870, New York, New York; *Annual Report of the Commissioner of Patents for the Year 1867*, vol. 2 (Washington, 1868), p. 995; "Remarks on Some Abnormal Phenomena of Sound," in *Smithsonian Report for 1878*, pp. 490–496.

6. These numbers evidently refer to the units used to mark the distance between the fog signal and the artificial ear, a device Henry invented to help compare "the relative penetrating power of sound from different sources" (Henry, "Report," p. 87). The ear contained a thin membrane with sand strewn over it; the sound of signaling devices disturbed the sand. When the sand ceased to be disturbed at a distance from the signal, a record of the distance would be made. According to Henry's report, engineers "had staked off a straight line parallel with the shore, and accurately divided it into equal distances of 100 feet" (Henry, "Report," p. 94). Henry, "Report of the Operations," pp. 87, 94; *Henry Papers, 10:*543n.

7. The practical results of the experiments were, according to Henry's 1874 report, that "the siren was adopted as a fog-signal, in addition to the reed-trumpet and the locomotive-whistle, to be applied to the more important stations, while large bells were retained for points at which fog-signals were required to be heard at but comparatively small distances." Henry, "Report of the Operations," p. 99.

8. Henry was conducting the experiments with the official cooperation of General Orlando M. Poe, engineer secretary of the Light-House Board, Commodore A. L. Case, inspector of the third lighthouse district, where the tests were being conducted, and Joseph Lederle, acting engineer of the district. Henry, "Report of the Operations," p. 93; *Register of Officers and Agents, Civil, Military, and Naval, in the Service of the United States on the Thirtieth September, 1867* (Washington, 1868), p. 63.

73. TO GEORGE BANCROFT[1]

Smithsonian Institution
Nov. 21, 1867,

My Dear Sir;

Your letter in reference to the publications requested by Prof Dove[2] was duly received and a package in accordance has been made up for him and will be sent to your address through the State Department—

I regret that I had not an opportunity of seeing you before you left the country, in order to give you some information, relative to the Smithsonian Inst^{on}, in which I know you have always taken a lively interest, and which, I think, is regarded with favour in Europe. I will, however, trespass a few moments on your time with a statement of some facts and reflections in regard to this subject.

You may recollect that, from the first, my idea has been, that the whole income, derived from the Smithsonian fund, should be appropriated to: the advancement of abstract science. I adopted this view because I am sure that it is in strict accordance with the will of the founder and best adapted to advance the cause of humanity.

Modern civilization differs from Ancient civilization, 1st in the higher morality of christianity and, 2^{d}, in a knowledge of physical science and its application to the wants of man. The Greeks developed the true and the beautiful, and made great advances in everything that related to abstract

thought, but had no idea or just conception of science, properly so called, or in other words, of that which enables man to foretell events, when certain conditions are known, and to render the powers of nature obedient slaves to his will.

It is, therefore, evident that if we would advance to a higher civilization one of the elements, at least, of this more elevated condition must be found in the progress of science. In regard to this there are three considerations; 1st the discovery of the laws of nature, which constitute science; 2d the diffusion of the knowledge of these laws, which comprises a portion of education, and, 3d, their application to the wants of life. Now it is evident that the second and third considerations depend upon the first. It is true that we may continue to teach the same principles to generation after generation, and to apply the same laws to the same, or similar, inventions, but in this there is but little progress.

With these views, it has appeared to me remarkable that so little provision is made in civilized countries for the advancement of abstract science. The appropriations of Governments and the benevolent bequests of individuals are, almost exclusively, confined to education, while the most trivial application of a scientific principle is frequently rewarded with that which would serve to support a whole class of savants, it may be, of the French Institute.

I have been assiduously laboring for the last 20 years to enforce these propositions, through the means of the Smithsonian Institution, and to prove that the true province of this establishment is neither to diffuse nor apply science, but, primarily, to increase it, and this by the application of all the funds unencumbered to the facilitating of research in the various branches of human thought.

Museums, libraries and galleries-of-art- are local Establishments and ought to be provided for, directly, by the Government; or by the people among whom they are located; but funds appropriated expressly for the increase of knowledge ought not to be expended upon these objects, however important they may be in themselves.

These ideas were, however, too much in advance of the intelligence of our country at the time of incorporation of the Instᵒⁿ, and, hence the large expenditures that were made on the building and other local objects. We have made, however, during the past year an important advance towards the realization of these conceptions, by the transfer of our library, for safe keeping and support, to the care of Congress. By this arrangement, through which we still retain the use of our books, in addition to those of the Library of Congress, we save nearly ten thousand dollars annually in binding, cataloguing, attendance &c.

You have probably heard that the Library of Peter Force has been purchased by the Government and, with these additions to the Congressional Library, a spirit has been awakened in regard to it which will, I trust, ensure, in a reasonable time, such a collection of books as shall be worthy of the nation.

There remains one step further to be taken in regard to the Inst^on^ and that is, the establishment, by the Government, of a museum, or a collection of objects of nature and art, ~~and~~ in which the specimens which have already been collected by the Inst^on^, as well as those belonging to the Government, might be deposited. I think this would have been accomplished before this had it not been for the desire to consecrate Ford's Theatre to the memory of President Lincoln. It was purchased by the Government and has been converted into an Army medical museum.[3] The cause of science would have been much better subserved had the Smithsonian edifice been taken for this museum.

By a reference to our last Report, a copy of which I send you, it will be seen that the funds of the Inst^on^ are in a very favorable condition, notwithstanding the loss from the fire.[4] The sum originally derived from the bequest has been increased, from $515,000—to $650,000—~~and~~ the interest on which is now paid in gold.

I fear I have exhausted your patience but when I once commence on the theme of the Smithsonian I find it difficult to limit myself within proper bounds. Please give my kind regards to Professor Dové. I shall always be glad to have an opportunity of furnishing him with any thing he may desire from this Institution. I consider him one of the first physicists of Europe. He has given attention to almost every ↑part of this↓ branch of science, and in the history of each he has conspicuously written his name.

I have the honor to remain, with
the highest respect, your friend & serv^t^
Joseph Henry.

Hon. George Bancroft,
U.S Minister, Berlin.

Bancroft Papers, Massachusetts Historical Society.

Letterpress copy: RU 33, Smithsonian Archives.

1. Bancroft (*Henry Papers, 7:*183n) had been appointed the United States minister to Prussia in July. *ANB;* Paul H. Bergeron, ed., *The Papers of Andrew Johnson* (Knoxville, 1995), *12:*280n.

2. Bancroft to Henry, October 10, 1867, Bancroft Papers, Clifton Waller Barrett Library, Special Collections Department, University of Virginia Library. Heinrich Wilhelm Dove (*Henry Papers, 5:*23n–24n), a physicist at the University of Berlin with an interest in meteorology, had requested a copy of J. H. Coffin's reduction of meteorological observations. The observations were published by the Patent Office as *Results of Meteorological Observations Made under the Direction of the United States Patent Office and the Smithsonian Institution, from the*

Year 1854 to 1859, Inclusive, 2 vols. (Washington, 1861–1864).

3. After Lincoln's assassination, the government took control of Ford's Theatre, renting it for a time and purchasing it by the spring of 1866. The building was remodeled and divided into three floors; the Army Medical Museum would occupy the third floor. *Henry Papers, 10:*562n; Stanley W. McClure, *Ford's Theatre and the House Where Lincoln Died* (Washington, 1969), p. 19.

4. Henry is referring to the *Smithsonian Report for 1866* (in particular page 13), in which he discussed the increase in the institution's endowment.

74. TO HEINRICH WILHELM DOVE

Smithsonian Institution,
November, 22, 1867.

Dear Sir;

In compliance with your request, through our Minister, Mr Bancroft, we send you a package of publications relative to Meteorology and shall be happy, at any time, to furnish you with any thing from the publications of the Institution which may be in the line of your studies.

So many demands have been made upon the Institution, for other purposes, that only a small appropriation could be made each year for meteorology. I regret that we have not been able to do more in this way, yet I think we have done something to advance the good cause. We have prepared and published a series of meteorological tables; introduced standard instruments; kept alive an interest in the subject; distributed instructions and have collected a large amount of material relative to the temperature, direction of the winds, the fall of rain, and the movements of storms. Our records, however, have all been made by voluntary observers who have furnished their own instruments and, consequently, are not as trustworthy as we could wish, particularly in regard to the barometers. The latter, however, serve the purpose of determining the passage of atmospheric waves for, although they may not give the absolute pressure of the air, they serve to indicate the changes.

Our system of observations which was gradually improving, ↑from↓ year to[A] year, was interrupted by the war,[1] and again embarrassed by the fire which occurred at the Institution. We are, however, about to attempt to improve the whole system of observations in the United States, in connection with the Medical Dep[t] of the Army. New posts are about to be established in different points of the country, and it is proposed to furnish, perhaps, fifty of these with full sets of standard instruments which, being interspersed throughout the country, will serve as the basis with which to compare the results obtained from the voluntary observers.[2]