

APPENDIX

JAMES LICK'S GREATEST MONUMENT today is the Lick Observatory of the University of California. A group of letters in the archives of the Smithsonian Institution throws considerable light on the role of Joseph Henry, Secretary of the Smithsonian, in the carrying out of James Lick's intention to build an observatory which would be second to none.

In a letter¹ of August 1, 1874 to Thomas Huxley, Henry explained how his path had crossed that of Lick. "I made the acquaintance of Mr. Lick in a visit to San Francisco in 1872² the summer after my return from Europe and took the opportunity of speaking to him in regard to the wants of science and I think that my conversation with him and subsequent letter, for which he has given me thanks, had some influence in directing his attention to the method which he has adopted of disposing of his property. . . ."

Professor George Davidson, President of the California Academy of Sciences and the most prominent scientist on the Pacific Coast, urged Henry to renew his acquaintance with Lick (via correspondence)³ on February 20, 1873. Davidson was grateful to Lick for the latter's entirely unsolicited gift to the Academy of an eighty-foot lot on San Francisco's Market Street. It was only natural that Davidson would hope for further gifts to science from the millionaire so he asked Henry

¹Joseph Henry to Thomas Huxley: Aug. 1, 1874. Outgoing Official Correspondence, Vol. 40, pp. 283-89.

²Henry was in error as he met Lick in 1871. He was in San Francisco from August 23 until September 18, 1871.

³George Davidson to Joseph Henry: Feb. 20, 1873. Incoming Official Correspondence, Vol. 132, p. 486.

to write a note of congratulations to Lick. Already, Davidson had asked the same favor of Louis Agassiz, Daniel Gilman, and James D. Dana. He was sure that these letters, if made public, would lead to further gifts to American science.

Davidson rationalized what amounted to a begging campaign by reminding Henry, "You know how hard it is to move human nature to aid science except through real love for it or a desire to have a donor's name connected with it. . . . With these three letters in form that they can be made public we may excite others to aid us by emulating Mr. Lick, or possibly in time influence Mr. Lick to modify his conditions, if we do not succeed to the extent of our hopes. . . . It is simply appealing to all the human nature of him and his rich compeers to aid in a cause that will give them a certain celebrity as benefactors to science." Davidson ended his letter by vowing, "I will give all my surplus energy of the next two years to carry out this plan, but I know our people and thus beg for outside aid."

Joseph Henry obliged Davidson and penned a flattering letter⁴ to Lick on March 10, 1873. He told Lick, "I have just seen in the public papers an account of your gift to the Academy of Sciences of San Francisco and I beg leave, as the Director of an institution of a similar character, founded by a benevolent Englishman of enlarged views and extended sympathies, to express in behalf of science the high appreciation which will be attached, by all who are qualified to pronounce upon the subject, to your munificent donation.

"The study of abstract science without regard to its immediate application forms an essential element in the advance of the world in its moral and intellectual development. Without a constantly increasing knowledge of the laws of nature modern civilization must in time become stationary, like that of Japan and China. It is only by making new conquests in

⁴Joseph Henry to James Lick: Mar. 10, 1873. Outgoing Official Correspondence, Vol. 33, p. 40.

the real
and app
acted wi
the rep
contains
mand le
men in
wealth
dom and
There is
duces the
low men
could cha
to himsel
that whic
the cause
creased in
most sim
will suppl
ing a suit
an appeal

"It shou
building,
lishment
sary and
more, an
of consec
country p
marked d

Doubt
the compl
April 3, 18
trust he w

⁵George Dana
Vol. 132, p. 45.

the realms of nature that man is enabled to control her forces and apply them to her manifold uses. You have therefore acted wisely in making the donation in question. Money is the representative of accumulated power and every dollar contains a certain amount of potential energy which can command labor; but while there are thousands of enterprising men in our country who have talents for accumulating wealth there are but very few like yourself who have the wisdom and enlightened sympathy to apply it as you have done. There is in most men an instinct of immortality which induces the desire to live favorably in the memory of their fellow men after they have departed this life, and surely no one could choose a more befitting means of erecting a monument to himself more enduring or more worthy of admiration than that which you have chosen. You have done good service to the cause of science by your gift which I trust will be increased in value by the example you have set for others. I most sincerely hope that other wealthy citizens of California will supplement your gift by furnishing the means of erecting a suitable building; but should there be none such perhaps an appeal to the city or state might be made for the purpose.

"It should be recollected, however, that, besides a suitable building, funds are required to sustain, properly, an establishment like that of the Academy. A curator will be necessary and the means for publishing the proceedings. Furthermore, an establishment of the kind ought to have the means of consecrating to science any one who may be found in the country possessed of the peculiar character of mind in a marked degree for original investigation."

Doubtless, both Davidson and Henry were disappointed by the complete lack of response to their blandishments. On April 3, 1873, the former wrote to the latter to complain,⁵ "I trust he will let me publish the letter, but he shrinks from

⁵George Davidson to Joseph Henry: April 3, 1873. Incoming Official Correspondence, Vol. 132, p. 485.

notoriety, and may not grant permission, although it would greatly stimulate others."

Finally, however, Lick replied to Henry on October 22, 1873⁶ almost six months after having received the latter's communication. He explained that it was ill health which had prevented an early reply and apologized for having to make use of an amanuensis, even yet. "The sentiments and views expressed by you relative to the aid given to the California Academy of Sciences are fully appreciated and my acknowledgments should have been made at an earlier day but for an attack of Paralysis which has so far disabled me as to prevent personal correspondence, and must now be my apology for addressing you by another. . . ."

Now, for the first time, Lick broached to Henry his idea of a great California astronomical observatory. "For the further advancement of Science I have in contemplation the erection of an Observatory on this Coast which shall rank first of any in the World, and in furtherance of my desire, I shall be obliged if you will give me the benefit of your knowledge and experience in whatever may be new and valuable in the construction of a *Telescope* that shall be as near a perfect instrument as the best Scientific Knowledge and skill and human workmanship can make, and that shall surpass in power anything yet attempted."

Lick did not tell Henry that he had decided to spend \$700,000 on his observatory but perhaps the latter sensed that it would be given precedence by the benefactor. In any case, on December 13, 1873,⁷ the Secretary of the Smithsonian Institution wrote a long letter, jammed with specific recommendations. After first reminding the Californian of their meeting at the Lick House and of their discussion of science

⁶James Lick to Joseph Henry: Oct. 22, 1873. Incoming Official Correspondence, Vol. 137, p. 302.

⁷Joseph Henry to James Lick: Dec. 13, 1873. Outgoing Official Correspondence: Vol. 36, pp. 762-67.

at that time
since been
have received
cumulative
therance
not have
wealth
connect
part of the
long after

Henry
tion you
Alvan C
complete
largest
established
to the first
those of
observatory
heavenly
fixed stars
other
cal work
urement
and cost

"The
cially for
heavenly
telescope
set of
heat, fire
mining
and
tration

at that time, Henry praised his correspondent again. "It has since been a source of gratification to me to learn that you have resolved to devote a portion of the fortune you have accumulated by your talents industry and sagacity to the furtherance of physical science. Permit me to say that you could not have adopted a wiser plan for the disposition of your wealth since it will in the most efficient manner favorably connect your name with the progress of knowledge in every part of the earth and cause its influence to be felt among men long after you shall have departed this life."

Henry then got down to cases. "In regard to the information you ask as to the telescope I would refer you to Messrs. Alvan Clark & Sons, Cambridgeport, Mass., who have just completed for the National Observatory at Washington, the largest refracting telescope ever made. With reference to the establishment of an observatory I would call your attention to the fact that there are two kinds of observatories—one, like those of Paris, Greenwich, Pulkova and Washington, in which observations are being constantly made on the motions of the heavenly bodies, the determination of the positions of the fixed stars and those of the Sun, Moon and planets; or, in other words, an Observatory devoted to ordinary astronomical work. Such an observatory requires instruments of measurement of great precision and power and corps of observers and computers.

"The other class of observatories is intended more especially for the observation of the physical phenomena of the heavens and the earth. For this purpose, a large refracting telescope and also a reflecting one are required, besides a full set of instruments for spectroscopic observations, for celestial heat, for the photogenic emanations from the sun, for determining the constant changes in the magnetical, electrical and meteorological phenomena of the globe, for the registration of earthquake tremors, etc., and, if the observatory

be on the coast, for noting all the phenomena of the tides and ocean waves.

"In the establishing of an observatory of either of the two kinds mentioned, or one embracing the features of both, the paramount fact should be kept prominently in view that implements (sic), however powerful and refined, are of no use unless employed by persons well qualified, by natural talent, acquired information and practical skill, to use them. Hence it is absolutely necessary that the observatory be well endowed with funds *permanently* invested, the principal of which is never to be diminished and the income, after the equipment of the establishment, to be applied, mainly, to the support of the astronomer and his assistants.

"The income of the establishment should be sufficient to command the *best* talents of the world, the offices to be held on the tenure of producing absolute fruit in the way of new discoveries and new determinations and *not* as sinecures for the support of favored incapacity.

"Another point of importance is that the building should be an inexpensive one, although in every respect adapted for the uses for which it is designed. For example in the erection of a building for the great telescope at Washington one has been put up at a cost of only \$16,000 of which the sides are thin plates of galvanized iron instead of the more expensive material of brick and stone. By using galvanized iron an equal temperature within and without the house is secured and currents of air prevented on opening the dome for the use of the telescope.

"In conclusion, my advice would be that, in carrying out your noble and philanthropic enterprise, you *permanently* invest the amount you intend to devote to an observatory and at once secure a Director, of the best talents and practical skill in the line of astronomy that can be obtained, to take charge of it, allowing the building to be constructed and the implements prepared under his immediate superintendence.

Besides the assistants
be required

"The
this country
tories, in
to any
single tele
most imp
tellectual
no avail
cost might
itable in
have done
which h
ers from
not fall in

In sign
plete rec
the cons
power to
civilization

By Ang
ready to
observat
heavens a
measure
would eff
that will
of the wa
able astr
of London
in the N

⁸Joseph H.
40, pp. 290-91

Besides the support of a principal astronomer, that of several assistants and a practical instrument maker will, also, in time, be required.

"The great mistake has been made in several instances in this country, in connection with the founding of observatories, in erecting large and imposing buildings, illy adapted to any purpose, and furnishing them with, perhaps, only a single telescope without any provision for the support of the most important part of the establishments—namely, the *intellectual*. In consequence, these observatories have been of no avail in the way of advancing science. The money they cost might better have been bestowed on some ordinary charitable institution. Indeed so far as science is concerned they have done injury by awakening anticipations of great results which have ended in disappointment and thus deterred others from making donations in the same line. I trust you will not fall into this error."

In signing off, Henry gave Lick his best wishes for a complete recovery, adding—"that you may live long and enjoy the consciousness of having, by your efforts, obtained the power to advance human knowledge, and thereby a higher civilization?"

By August 3, 1874, when Henry again wrote Lick,⁸ he was ready to urge the Californian to direct his attention to an observatory for the study of physical phenomena of the heavens and earth, rather than one strictly confined to the measurements of heavenly bodies. He felt that the former would offer "the most immediate means of producing fruit that will be hailed with gratitude by civilized man in all parts of the world." He not only urged Lick to appoint the best available astro-physicist but even singled him out—J. N. Lockyer of London. He suggested that Lick read the sketch on the man in the November 1873 issue of *Journal of Popular Science*.

⁸Joseph Henry to James Lick: Aug. 3, 1874. Outgoing Official Correspondence, Vol. 40, pp. 290-96.

Said Henry, "I think it highly probable that if he were offered the opportunity of extending the bounds of human knowledge, through your enlightened liberality, he would accept it.

"I would advise that he be immediate- (sic) appointed your astronomer with the means afforded him to procure at once a full series of astronomical and physical instruments, such as a refracting and reflecting telescope of moderate size with a series of the best spectroscopic, magnetic, electrical, meteorological, and seismological (for study of earthquakes) instruments which can be obtained. I doubt not that every disinterested friend of science in this country will second the suggestion I have made as a sure and efficient method of putting your munificent donation to science in a condition to produce immediate and important results. The principal part of the instruments required can be procured within a year or eighteen months and as they may be fitted up in inexpensive buildings, the Observatory can be put in full operation in the course of two years, with the confident expectation of producing immediate results which shall redound to the good of science and your own reputation."

Before closing, Henry, with considerable bluntness, warned Lick, "On the other hand if you adopt the ordinary course of putting up an expensive building which, when finished, may be badly adapted to the uses for which it is intended, and if you wait until the largest telescope can be finished, your life will probably be terminated before any results are produced."

The stubborn Lick was not used to following advice. And he would not be rushed. When he wrote Henry from the Lick House on August 13, 1874,⁹ it was to thank him for his valuable suggestions but to add, firmly, "At the present time however I am not prepared to take any steps in the matter,

⁹James Lick to Joseph Henry: Aug. 13, 1874. Incoming Official Correspondence, Vol. 145, p. 419.

but when
be forgett

Henry v
He died
gun. The
money—
his mem
Joseph H

*The original
Archives. P*

but when any action is taken you may be assured I shall not be forgetful of your kind advice?"

Henry was right. Lick did not live to see his Observatory. He died on October 1, 1876 before construction was even begun. The Observatory took time to build and a great deal of money—about \$610,000—but in 1888 James Lick finally had his memorial thanks, at least in part, to the good advice of Joseph Henry.

The originals of the letters quoted in the appendix are in the Smithsonian Archives. Permission to use this material is gratefully acknowledged.