

April 28, 1838

which goes tomorrow. I hope you will receive it in the course of about two weeks.<sup>4</sup> The arrival of two steam vessels from across the great deep on the same day has caused a great sensation in our country and already several parties have been formed to visit England for the Coronation.<sup>5</sup> The result of the experiment must have an important influence on the state of Europe and America.

transporting cargo until at least 1860. Not until the post-Civil War immigrant boom was the economic survival of steamship lines not dependent upon government subsidies for carrying the mail. Engine reliability remained a question throughout the nineteenth century. It was 1899 before a steam liner was built without provision for the setting of canvas in case of engine breakdown.

We suspect that Henry obtained some personal satisfaction in the arrival of the *Sirius*. Dionysius Lardner and Henry previously clashed over the velocity of the Hudson River steamboats (*Henry Papers*, 3:508-510; Henry to Bache, August 9, 1838, below); in 1835 Lardner was quoted as equating the possibility of a direct steam voyage between Liverpool and New York with one from Liverpool to the moon. The alternative route proposed by Lardner was from Valentia, Ireland, to St. Johns, Newfoundland, a distance of only 1,900 miles, as compared to the 3,500 miles between New York and Liverpool. The former dis-

tance was safely within the range limitations of steam vessels as set by Lardner, approximately 2,550 miles. With the success of the *Sirius* and *Great Western*, Lardner was forced to admit his error at the 1838 meeting of the British Association.

David Budlong Tyler, *Steam Conquers the Atlantic* (New York, 1939); Edgar Charles Smith, *A Short History of Naval and Marine Engineering* (Cambridge, England, 1937), pp. 39-48; George Rogers Taylor, *The Transportation Revolution, 1815-1860* (New York, Evans-ton, and London, 1968), pp. 115-119.

<sup>4</sup> The *Sirius* left New York on May 1, 1838. She required seventeen days for the return voyage, two days more than the *Great Western*, which left on May 7. Tyler, *Steam Conquers the Atlantic*, p. 61; E. Keble Chatterton, *Steamships and Their Story* (London, New York, Toronto, and Melbourne, 1910), p. 100.

<sup>5</sup> Queen Victoria (1819-1901) was crowned on June 28, 1838.

TO LEWIS R. GIBBES<sup>1</sup>

*Gibbes Papers, Library of Congress*

Princeton April 28<sup>th</sup> 1838

My Dear Sir

Our text books in Natural Philosophy are Boucharlats mechanics,<sup>2</sup> Lardner on the Steam Engine,<sup>3</sup> Electricity, Magnetism, Electro-magnetism & Light from the Library of useful Knowledge.<sup>4</sup> Boucharlat is not the proper

<sup>1</sup> Apparently a reply to a Gibbes letter no longer existing. We have not located any letter to Henry earlier than 1843.

<sup>2</sup> This is the translation by E. H. Courtenay for which see *Henry Papers*, 2:32-33, et passim.

<sup>3</sup> Dionysius Lardner's popular book on the steam engine was a great success on both sides of the Atlantic. In fact, in 1836 two editions

appeared in the United States. The New York edition with additions by James Renwick, *The Steam Engine Familiarly Explained . . .* is probably the work used by Henry.

<sup>4</sup> For the Library of Useful Knowledge, see *Henry Papers*, 2:84. The electricity and magnetism sections are by P. M. Roget; David Brewster authored the optics.



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book for us. It has too little *physique* and I think of substituting for it Renwicks mechanics a work which contains more Physical facts than any other I am acquainted with in the English language. I do not like however the mathematical part and would probably substitute demonstrations selected from other sources.<sup>5</sup>

I have not yet given any lectures on Light since my return and therefore have not attempted to get up the experiments on polarization for exhibition to a class. I was formerly in the habit of giving some of the more simple phenomena but think much more may be done in the way of illustration on a large scale. You will probably be surprised when I inform you that I have as yet heard nothing from my apparatus since you left Paris. I wrote soon after your arrival but have received no answer. All my books and many other articles were in the boxes left with Pixii. Unless some good reason be given for the delay I now feel like publishing the affair from Georgia to Maine warning all americans to be ware of French dealers.

Our Friend Dr Hun sailed for Paris on the 24<sup>th</sup> of March. I expect a letter from him as soon as one can return which will give me the information required concerning my apparatus. Dr H. intends remaining in Paris during the summer and then to return for a permanent residence in America. He will probably settle in Albany.

I am now much engaged in a series of experiments on common electricity & have succeeded in developing some new and interesting results on the Phenomina of electricity in motion. I am much in want of the French articles for these experiments and must defer one part of the investigation until I can command some more powerful apparatus. I hope to be able to send you a copy of my memoir<sup>6</sup> in a few weeks.

With much Respect  
Yours &c  
Joseph Henry

May 3<sup>rd</sup>

We have just heard the melancholy intelligence that your city is nearly

<sup>5</sup> Prior to 1838-1839, the entry in the *Princeton Annual Catalogue* for junior year courses gave Boucharlat as the mechanics text. In that year appear the cryptic words, "Renwick's additions," most likely based upon *The Elements of Mechanics* (Philadelphia, 1832). This comment to Gibbs is indicative of Henry's attempts to define his place as a scientist which we can loosely equate with the transformation of natural philosophy into physics. In defining his interests to Princeton in 1832, Henry

described them as "intermediate to pure Mathematics on the one hand and the more detailed parts of Chemistry . . ." (*Henry Papers*, 1:435). Here he substitutes the physical specifics of Renwick for the more analytic mode of Boucharlat but then expresses a need for a better mathematical treatment.

<sup>6</sup> Gibbs is on the distribution list for "Contributions III: Electro-Dynamic Induction." Address book, p. [25], Box 17, Henry Papers, Smithsonian Archives.



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destroyed by fire. I h[ope] that the accounts are exaggerated and that you and yours are not among the sufferers.<sup>7</sup>

Yours  
J.H.

<sup>7</sup> The fire started in the evening of April 27. The *Charleston Courier* of May 1 estimated that 1,000 structures were destroyed.

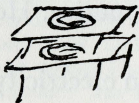
### "RECORD OF EXPERIMENTS"

*Henry Papers, Smithsonian Archives*

May 4<sup>1</sup> 1838

Cleaning Hall & cold weather has prevented my doing any thing since the last date except to have made 3 coils

*Exp 1* Coils on flat boards one over the other with space for plates of different substances to be interposed. The distance of the two coils was 8 inches. When a plate of <thin> copper about  $\frac{1}{30}$  of an inch thick the screening was perfect at this distance, was nearly perfect with a thin pece of copper, the screening was not as perfect with a still thicker piece or two pieces each  $\frac{1}{30}$  of an inch; the shock could now be felt



*Exp 2<sup>nd</sup>* The metal was next varied in position, *ie* lowered and raised between the two coils but no apparent change produced in the screening effect

*Exp 3<sup>rd</sup>* Different metals were placed between the coils to determine if any difference exists in the power of screening. The screening effect of lead and mercury appeared to be much less then than that of copper and zinc.<sup>2</sup> A measure of the screening effect of different metals approximately was obtained by gradually increasing the distance of the coils and then noting when the shock became imperceptible with the different substances of equal thickness interposed. All the metals transmitted the principle when the upper coil was sufficiently near the lower one. A rather singular result show in the extreme case that the action was not perfect. A thin plate of iron acted about as well as copper

<sup>1</sup> Henry originally wrote "May 3<sup>rd</sup>," then wrote a 4 over the 3.

<sup>2</sup> In April 1840 Henry footnoted this result

with the observation "This effect was found to be due to the greater superficial extent of the zinc and copper plates."