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Marking Time: Jefferson's Spherical Sundial

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In the summer of 1809, following his recent retirement from the presidency, Thomas Jefferson received a letter from Washington architect Benjamin Henry Latrobe (Figure 2) advising that Jefferson would soon be receiving a gift at Monticello. Latrobe had been hired by President Jefferson in 1803 to continue work on the national Capitol and other public buildings in Washington, and his gift was the full-scale model of a capital he had designed for the columns in the vestibule of the senate chambers (Figure 3). He suggested that if it were mounted on a short pedestal, raising it about four feet from the ground, the capital could serve to support a sundial. Should Jefferson be interested in putting it to this use, "I will forward to you an horizontal dial cut in Pennsylvanian Marble of a proper size." Jefferson thanked Latrobe for the model of the capital but made no reference to the offer of a sundial.¹

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Seven years would pass before Jefferson mentioned Latrobe's capital again, but in the interim, after settling further into retirement at Monticello and claiming an "unmeddling disposition" regarding politics, Jefferson began to indulge his lifelong interest in science and mathematics. In a letter of 1811 he explained, "Before I entered on the business of the world I was much attached to astronomy & had laid a sufficient foundation at College to have pursued it with satisfaction & advantage." He then went on to confess, "But after 40. years of abstraction from it, and my mathematical acquirements coated over with rust, I find myself equal only to such simple operations & practices in it as serve to amuse me. But they give me great amusement."²

As Jefferson began removing his mathematical "rust," he undertook tutoring his eldest grandson and namesake, Thomas Jefferson Randolph. The lessons in mathematics included taking latitudinal readings, and when Jefferson recorded the calculations in his weather records late in 1811 for the latitude of Monticello and Willis's mountain, located in a neighboring county, he noted two

observations were made by Jeff Randolph.³

Earlier in the year Jefferson had calculated the latitude for his retreat home, Poplar Forest, in Bedford County, Virginia. Then during a visit that summer, when he was confined to the house by rheumatism, he stayed mentally busy adapting these calculations for a sundial. He reported, "I have amused myself with calculating the hour lines of an horizontal dial for the latitude of this place which I find to be $37^{\circ}.22'26''$. The calculations are for every 5. minutes of time, and are always exact to within less than half a second of a degree." In the hope that his efforts might be of some use, he sent these calculations to a friend living in the area with the suggestion he have a sundial made from slate, one to two feet square. Jefferson reasoned that slate would be less affected by the sun than either wood or metal but could be prepared with just a saw and plane, then the lines and figures etched by a knife point. Such a dial would be, "the cheapest & most accurate measure of time for general use."⁴

Calculating longitude was more challenging, yet Jefferson planned to obtain the necessary readings for positioning Monticello during an annular eclipse of the sun in September 1811. He was joined by President James Madison and Madison's stepson Payne Todd. Jefferson questioned their first and final observations but felt secure in their readings for the forming and breaking of the annulus and suggested that Payne Todd take on the calculation as a "college exercise."⁵ Before Jefferson could attempt the "exercise" himself, he received an estimated longitude of Monticello from astronomer William Lambert, who had been sent Jefferson's readings by a mutual friend. Jefferson seemed pleased to receive Lambert's analysis and admitted that the calculations were more "elaborate" than he had anticipated. Had he undertaken the longitudinal calculations himself, "most probably I should have foundered by the way." He speculated that he would continue to "amuse" himself in attempting to determine Monticello's longitude but with lunar observations. He reasoned that this would offer the opportunity for more frequent observations and require "less laborious calculations."⁶

Even with the time to indulge in mathematical and astronomical pursuits, still it was not until August 1816 that Jefferson reported to Latrobe that, indeed, he had used his capital as a base for a sundial. What he described and illustrated with a drawing, however, was not the usual horizontal dial as suggested by Latrobe. It was a spherical sundial of his own design.⁷

Jefferson began his letter by crediting Latrobe's capital as the inspiration for his new dial: "As you were so kind as to give me your invention of the handsome and peculiarly American capital, I must give you mine of the new Dial to which that Capital has led" (Figure 4). Jefferson pronounced the capital "peculiarly American," because of an encircling motif of ears of corn that placed it in a new and distinctly American architectural order.⁸ Latrobe had noted earlier that this had made the design especially popular with Congressmen, who, he felt, inappropriately "christened it the corn cob capital."⁹

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