

"An Event Of No Ordinary Interest" – The Inauguration of Albany's Dudley Observatory

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Abstract

The Inauguration of the Dudley Observatory was a watershed in mid-nineteenth-century American science; most American scientists of any note attended the event, which took place in Albany in 1856 August at the close of the Annual Meeting of the AAAS. New York artist Tompkins Matteson's painting of the event, which includes more than 160 portraits, has been widely reproduced; however, an accompanying identification key created decades later is quite erroneous and misleading. A new key, which identifies 58 of the country's leading scientists and New York business and political figures, has been prepared, and, in conjunction with what is currently known about the painting's history, is detailed. Dudley Observatory's plan to sell time to New York cities and railroads was highlighted at the inauguration ceremony; an engraved marble tablet linking the electrical clock depicted in Matteson's painting to the facility's mean-time distribution system is discussed.

Key words: *Dudley Observatory, timekeeping, U.S. Coast Survey, Lazzaroni, AAAS*

1 INTRODUCTION

The inauguration of two institutions of science at the capitol of our state – yesterday the Geological Hall, to day [sic] the Dudley Observatory – is an event of no ordinary interest. "

With these words of context former New York governor Washington Hunt (1856) began a eulogy for Charles Edward Dudley, successful merchant and banker, on 1856 August 28. Twice mayor of Albany, U.S. Senator, and member by marriage of one of the city's prominent families, Dudley had died fifteen years before. In recognition of his merit and early interest in astronomy, and through the munificence of his widow, Blandina Bleecker Dudley, an enterprise for the advancement of astronomical science was being launched.

It had taken more than five years to arrive at this beginning. Possibly inspired by the mid-century lectures of Ormsby MacKnight Mitchel, charismatic director of the Cincinnati Observatory, a group of Albany's business and political elites decided to include an astronomical observatory in their plans for a national university. Receiving Mitchel's encouragement, they met with him in August of 1851, the astronomer selecting a suitable site and providing a ground plan for the observatory building. Then, having secured considerable support from Mrs. Dudley, the Albanians approached members of the New York legislature. On 1852 April 3 an Act incorporating "The Dudley Observatory, of the City of Albany" was passed (New

York, 1852a, 1852b, 1852c). With additional funds in-hand, these citizens, now the Trustees of the Dudley Observatory, oversaw the building's erection. Begun in the spring of 1853 and completed in 1854, the structure was merely a shell: it contained no astronomical equipment at all. The Albanians had collected insufficient funds.

Lack of funds had also prevented the hiring of Ormsby Mitchel as the Observatory's director – although the astronomer did agree to serve in a titular capacity for a year or so. Benjamin Apthorp Gould, Jr., of Cambridge, who had received his Ph.D. in astronomy from the University of Göttingen under Carl Friedrich Gauss, was approached. He refused the post.

Attempts to put this very visible white elephant to work continued. During the summer of 1855, physician James H Armsby, Secretary of the Board of Trustees and the one who had first advanced the idea of an astronomical observatory, travelled to Providence, where the American Association for the Advancement of Science (AAAS) was holding its annual meeting. Armsby, one of Albany's most successful institution builders, met with two important and influential scientists: Alexander Dallas Bache, great-grandson of Benjamin Franklin and Superintendent of the U.S. Coast Survey, the agency responsible for charting America's coasts; and Harvard professor Benjamin Peirce, the country's leading mathematician. Also at this private meeting was Gould, Coast Survey Assistant and responsible for the agency's longitude-differences programme.

Years earlier, Bache, Peirce, and Albany-born Joseph Henry, Secretary of the Smithsonian Institution, had advised the city's leaders against the erection of an under-endowed observatory unable to support a strong programme in astronomical research. But with an empty building in place, an anxious trustee before them, and a long-standing technical challenge occupying their immediate attention, the scientists altered their stance.

Despite a dozen years of effort, the Coast Survey found itself unable to define the longitude between Greenwich Observatory and Harvard College's Cambridge Observatory to an accuracy better than two seconds (time). Its two astrometric methods for determining longitude – lunar culminations and stellar occultations – were in conflict, despite each showing results precise to a few tenths of a second (time). Indeed, the Survey's contract with Harvard astronomer William C Bond's family firm to conduct transatlantic chronometer transports had made matters worse, for this third precision method disagreed with both the astrometric ones (Bartky, 1999).

Given this intolerable state of affairs, Superintendent Bache asked Peirce to review all methods. The mathematician concluded that occultations was likely to be the most accurate one, but advances both in observations and theory were necessary. He recommended that the Survey focus its resources on occultations of the Pleiades. However, Bache informed Peirce that the enormous cost of the required telescope far exceeded the flexibility he possessed with regard to the Coast Survey's budget. So at the AAAS's Providence meeting, Peirce (1856) closed his paper on the subject with, "This labor will be greatly relieved by a new determination of the places of the Pleiades, and there seems no instrument capable of such delicate work as the heliometer. It is much to be desired, therefore, that this important instrument may be obtained for one of our observatories."

With such a propitious alignment of needs, a bargain was rapidly struck. Board of Trustees vice-president Thomas A Olcott convinced Mrs Dudley to fund the purchase of a heliometer. The Trustees agreed to accelerate their canvassing efforts in order to secure an endowment sufficient to operate and maintain this nascent research institution, now slated for national fame and international influence. In exchange, Superintendent Bache promised to assign trained observers to the Observatory after the heliometer had been installed. Beginning immediately, Coast Survey staff would aid in selecting the necessary scientific equipment.

The Observatory's trustees also created a technical advisory body – the Scientific Council – its members Henry, Bache, Peirce, and Gould. Astronomer Gould, though continuing at the Coast Survey, accepted responsibility for bringing the Observatory into working operation. All involved agreed on a target date: the third Wednesday of the following August, the opening day of the Tenth Annual Meeting of the AAAS, with Albany the venue.

Benjamin Gould failed to meet this optimistic goal; in fact, the astronomer never brought the Dudley Observatory into operating condition. Though he was self-assured at the Inauguration, his deadline became a moving target, always a distant point in time. Finally, more than two years after the ceremony and six months after his dismissal as director, Gould was ejected from the Observatory site by direction of a group of enraged trustees.

That tale of the Observatory's first years has already been told in a compelling social-history framework (James, 1980, 1987). What follows here is an account of two artefacts resulting from the Dudley Observatory's formal inauguration before a large group of American scientists, New York and Albany business and political leaders, and a vast throng of Albany citizens. One is a large painting of the Inauguration, the other a white marble tablet inscribed, "The Gift of ...", with the name of the erstwhile donor gouged out.

2 THE VISUAL RECORD OF THE INAUGURATION

No study of the painting could have been undertaken had the Dudley Observatory's inauguration not been linked to the Tenth Annual Meeting of the AAAS, whose daily sessions were held in the chambers of the capitol. Albany's leaders opened their homes to the scientific visitors and the receptions honouring the city's distinguished guests, including one given by Mrs Dudley, became the social events of the summer. The eight days of talks and lectures; the State Geological Hall's inauguration; and the Dudley Observatory Inauguration, which followed the last session, were featured in local and regional daily newspapers, in a New York weekly (Leslie, 1856a, 1856b, 1856c, 1856d), and elsewhere (Maverick, 1856; Pruyn, 1856). The two ceremonies took place inside an enormous tent that the city erected in Academy Park, close by the capitol. An estimated four-to-seven thousand citizens attended the Dudley Observatory's inauguration.

2.1 The Artist and his Painting

The Observatory inauguration was depicted by Tompkins Harrison Matteson, who is known for his paintings of historical, patriotic, and biblical subjects. Named after the then-governor Daniel D Tompkins, Matteson (1813-1884) enjoyed a successful career in New York city, where he was a member of the National Academy of Design. He continued painting after he moved to Sherburne, Chenango County, New York. Among his civic duties there Matteson represented his district in the New York State Assembly from 1855 to 1857 (Sherburne Art Society, 1949).

The artist's signed and dated, 56 × 72 inch oil-on-canvas work, the Inauguration of the Dudley Observatory, was completed in 1857 (Figure 1). Matteson did not title his painting, which has been identified as the "Dedication of the Dudley Observatory" in the art historical literature. In our view, that title is inappropriate, for it does not connote the public status of the facility at the time of the ceremony (Dudley Observatory, 1856; Munsell, 1856:307).

The Inauguration's origins and its early history are obscure. Nothing is known regarding Matteson's patron; perhaps one of the Observatory's trustees, or Mrs Dudley herself, commissioned the work. Presumably the painting was finished soon after the artist completed a term in the New York State Assembly and returned to Sherburne.¹

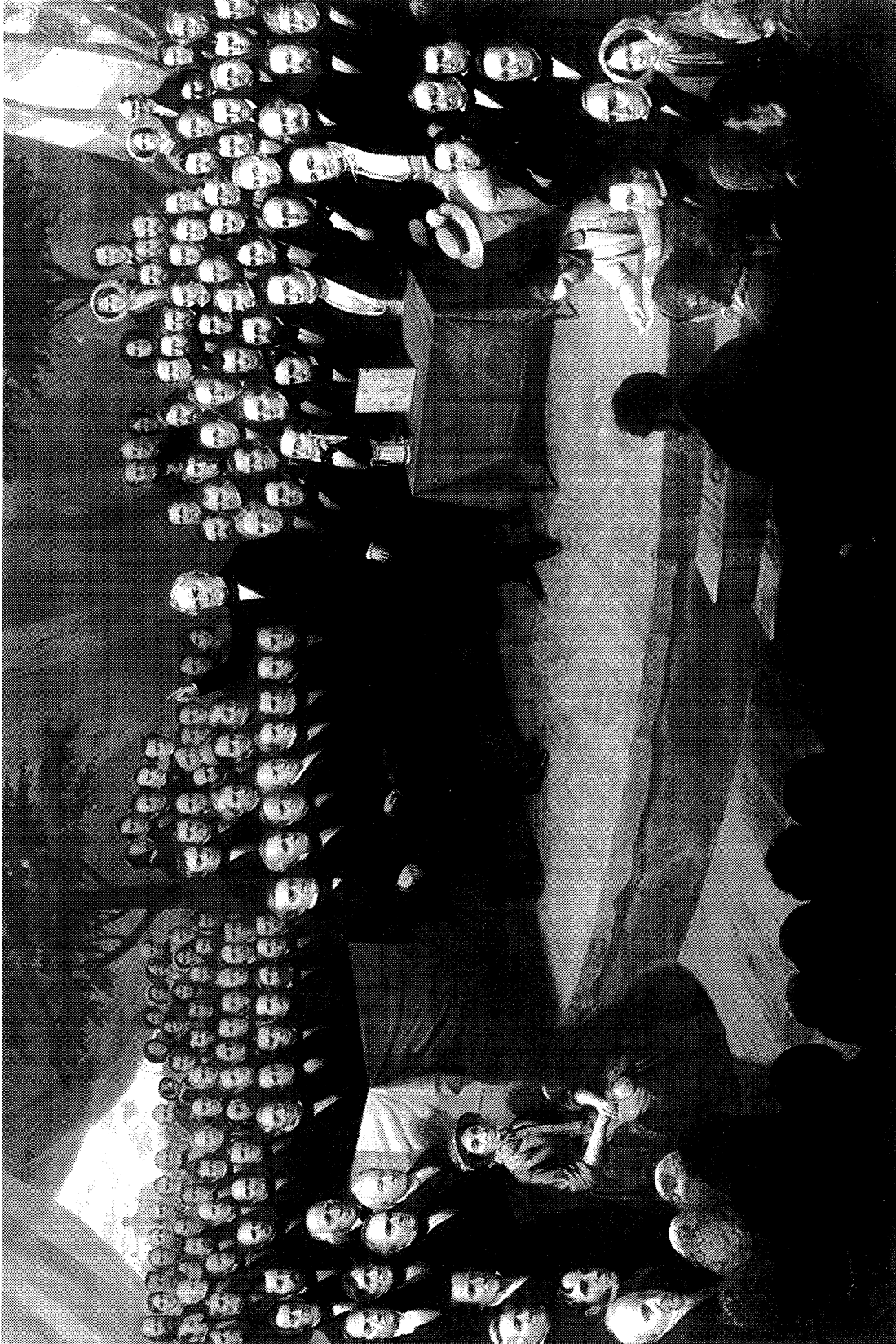


Figure 1. Tompkins Matteson's *Inauguration of the Dudley Observatory*, oil on canvas, 1857. Courtesy of the Albany Institute of History & Art, Albany.

Where the Inauguration was hanging in its first years is also unknown; no mention of it has been found in the Records of the Dudley Observatory Board of Trustees: 1852-1943. Around 1866, George Washington Hough, the Observatory's third director, prepared a description of the building and its siting, the telescopes and ancillary equipment, and his current observing programme. Even though he gave the precise locations of a marble bust of Charles Dudley, the portraits of Ormsby Mitchel and a second deceased Observatory astronomer, and the large tablets on which donors' names had been inscribed, Hough (1866:5-6) made no mention of Matteson's painting. However, an 1874 history placed it on the (south) wall of the library, the astronomer-author writing that Matteson's "portraits of the chief donors, and of the State and city authorities ... are said to be life-like" (Nourse, 1874).

During the 1890s the Dudley Observatory vacated its first site and moved all its equipment to a new building located on South Lake Avenue. In November of 1893 a second Observatory ceremony – a "dedication" – took place, the event coinciding with a scientific meeting held in the capitol by the National Academy of Sciences (1895).

According to its records, the Albany Institute of History & Art acquired the Inauguration in 1917 – a gift from General Amasa J Parker, son of one of the Albany notables depicted by Matteson. In 1958 the painting was lent by the Albany Institute to the Dudley Observatory; it hung in the Library until 1967, at which time the Observatory vacated the facility and moved to a building on Fuller Road, also in Albany. Returned to the Institute, the painting was conserved in 1970. Late in 1972 and into 1973, the Inauguration was included in "The Lazzaroni," an exhibit mounted by the National Portrait Gallery, Washington, and scheduled to coincide with the 139th Meeting of the AAAS (Lazy Ones, 1972; Miller *et al.*, 1972). In 1986 it was lent to the University Art Gallery, State University of New York at Albany, for a tricentennial exhibit, "Faces of the City." Currently the painting is on display at the Albany Institute.

2.2 Portraits in Matteson's Inauguration.

Matteson's painting is an icon of mid-nineteenth-century science, its importance defined by the scientists who attended the Inauguration.² The painting's central figure is statesman and popular orator Edward Everett, shown delivering his two-hour speech on "The Uses of Astronomy." On and around the speaker's platform are more than 160 people, sixteen of them female. Mrs Dudley is shown seated in the foreground.

After the Inauguration's acquisition by the Albany Institute of History & Art, attempts were made to find a record of the artist's placement of his subjects; however, these efforts proved unsuccessful. Subsequently, Institute staff members identified some thirty male and female images, locating them in terms of an x-y grid (Albany Institute, 1919). However, a number of the most prominent likenesses were not identified, and, with three or four exceptions, all those identified were affiliated with business, politics, and religion, not with science.

Geologist John Mason Clarke, New York State Museum director, sometime president of the Albany Institute and trustee of the Dudley Observatory, modified and extended this first key. In his key, Clarke (1923:322, 324) listed forty-two people, a dozen of them scientists, locating them via two truncated sketches of the painting. His results are the source for subsequent listings of those depicted in Matteson's Inauguration, these lists erroneously ascribed to the Frick Art Reference Library, New York city (James, 1987; Lurie, 1974). Unfortunately, Clarke's key is so riddled with errors that even the logic underlying the artist's creation has been destroyed.

2.3 Portraits of James Hall

We begin with Clarke's misidentification of Albany geologist and palaeontologist James Hall, who had been elected president of the AAAS, and at the opening of the Albany meeting he gave the traditional address. Near the end of the sessions, the

inauguration of the Geological Hall, a renamed, renovated and enlarged State building scheduled to house Hall's extensive collections, was held. For Clarke, this ceremony on the afternoon prior to the Dudley Observatory's inauguration was the more important of the two. He even titled Matteson's work as the "Dedication of the Dudley Observatory and Geological Hall."

To illustrate his biography of Hall, Clarke included a lithograph from an engraving by Frederick Swinton (Figure 2a) that he captioned "James Hall President, American Association for the Advancement of Science 1856." Clarke used this image, which shows Hall with a full beard, to locate the geologist in Matteson's painting. However, the National Gallery of Art's collection includes Daniel Huntington's portrait of Hall, showing the famous geologist with a modest beard (Figure 2b). An 1857 date has been assigned to this portrait (Davis, 1996).

While reviewing the James Hall collection at the New York State Library, we chanced upon an unsigned carte-de-visite. In all respects save reversal, this photographic image (Figure 2c) is identical to Swinton's engraving of James Hall. Photographs in this format did not appear in the United States until c. 1860, so the Swinton lithograph can be no earlier than that date. Daniel Huntington's portrait must be the correct representation of James Hall in 1856; Clarke's identification of the full-bearded portrait in the Inauguration as Hall is wrong.

2.4 Misidentifications of three Scientific Council members

A few years ago, one of us (IRB) acquired an almost forgotten image of Alexander Dallas Bache (Figure 3).³ It is identical to a person depicted in the Inauguration, even to the shadow on his shirt. Matteson's placement of this likeness – prominently in a front row – is entirely consistent with Bache's importance in the affairs of the Dudley Observatory, as well as in the event unfolding there. Clarke did not identify, or even sketch in, this portrait.

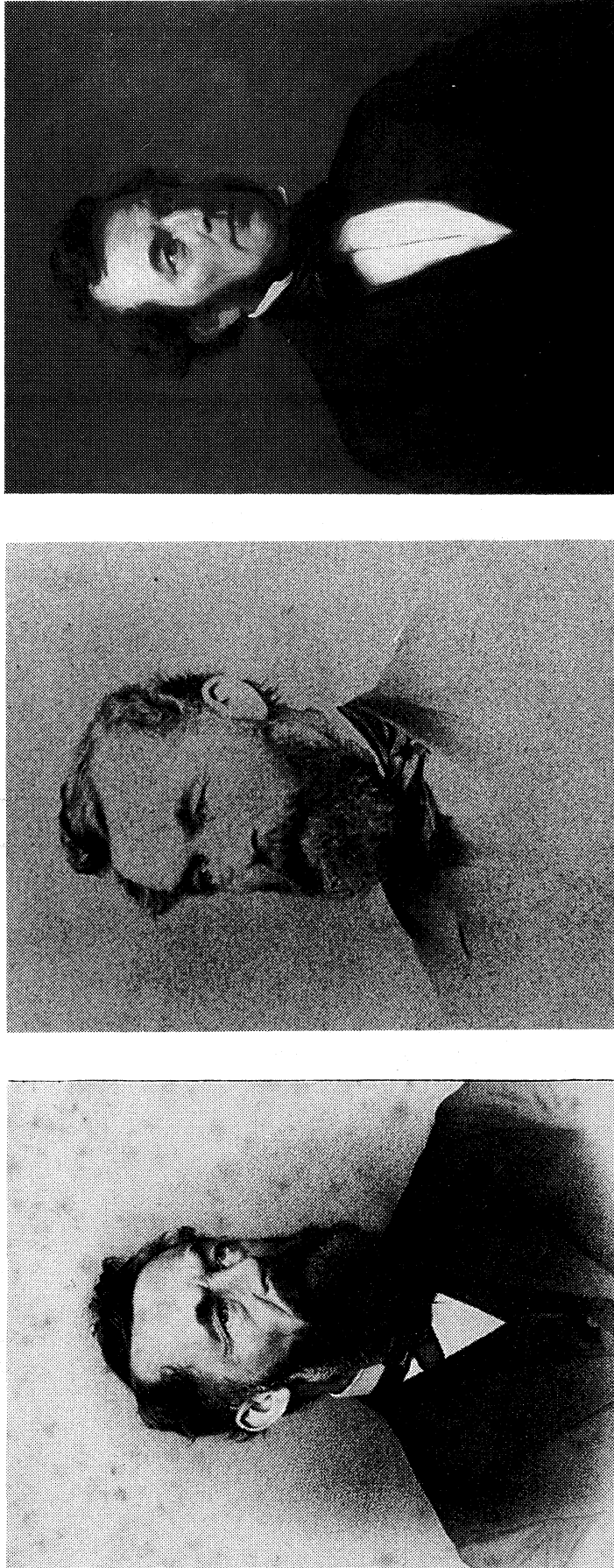
For Bache, Clarke identified the image of a man with a greying full beard, placed at the painting's far left side at mid-row level. Adjacent to it is another bearded man, identified earlier by the Albany Institute staff as Benjamin A Gould; Clarke used this particular identification in his key. Further, he identified a background image in the Inauguration as Benjamin Peirce.

Clarke's identifications of these scientists are illogical. Bache, Peirce, and Gould (Figure 4) were key participants in the affairs of the Dudley Observatory; at the Inauguration, Gould's and Bache's remarks followed Washington Hunt's eulogy. Any artist would have depicted such persons in prominent locations.

2.5 Mid-century American Scientists

In order to develop a more accurate key, we focused on scientists. We began with lists of members attending the 10th Annual Meeting in Albany. The AAAS's signature book contains 381 names; though not inclusive – for example, we did not find known attendee James D Dana's signature – its existence allowed us to correct the somewhat garbled and incomplete listings published in contemporary newspapers. Kohlstedt (1976:193, 201) has commented on such signature lists.

A decade ago Cornell University historian Robert V Bruce published his masterful history, *The Launching of Modern American Science, 1846-1876*. Although a few scientists within the time period have been the subject of detailed biographies, Bruce's work is one of the few providing a framework for an entire group of American notables in science – and thus is a gauge of their importance. We used Bruce's history as we winnowed the lists of AAAS members. We assumed that astronomers would have stayed in the city beyond the days of their sessions in order to attend the inauguration of an important observatory, and that, as a matter of course, the leaders of the AAAS were there as well.



a

b

c

Figure 2. James Hall , (a) lithograph by Frederick Swinton in the James Hall collection, New York State Library, Albany; (b) Daniel Huntington's Dr James Hall, oil on canvas, 1857, courtesy of the National Gallery of Art, Washington; (c) unsigned carte-de-visite, in the James Hall collection, New York State Library, Albany.

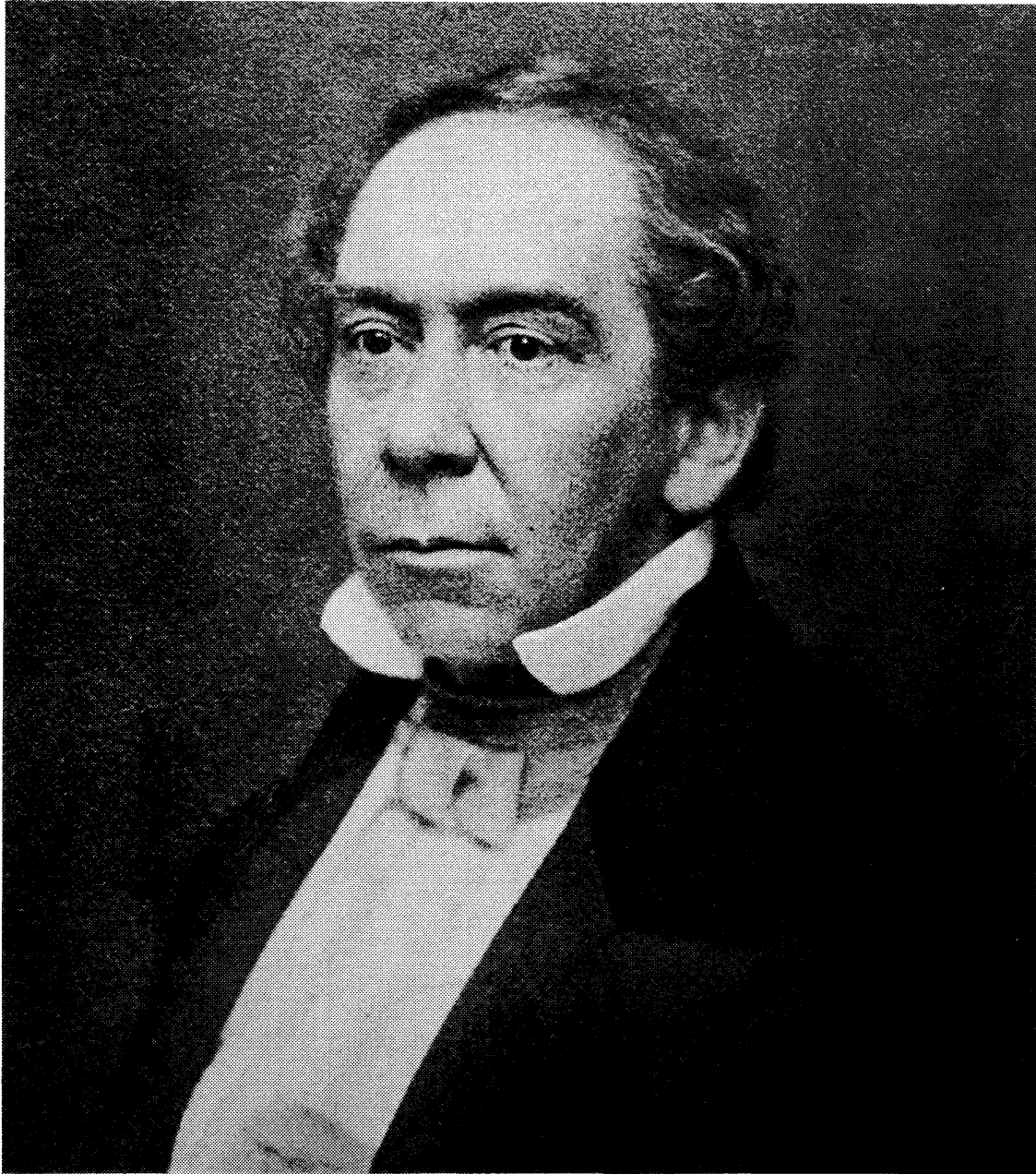


Figure 3. Alexander Dallas Bache (c. 1857), from the Mary Lea Shane Archives of the Lick Observatory, University of California-Santa Cruz.

We reviewed pictorial holdings at various American university archives, and selected photographic images taken within five or so years of the event. Some non-scientists attending the August 28 ceremony were important national figures. An examination of the image collections at the National Portrait Gallery and the Library of Congress led to the confirmation of several of the Albany Institute's earlier identifications.

We identified some fifty-eight of the portraits in Matteson's painting, thirty-six of them scientists and university administrators, located mostly in front rows and in the foreground. To display our results, we prepared an outline sketch (Figure 5); our numbering of the portraits differs from those in Clarke's sketches (and the numbers used in the 1919 key). In Table 1, the list of accompanying names, we have included the subjects' dates and their then-current affiliations.⁴

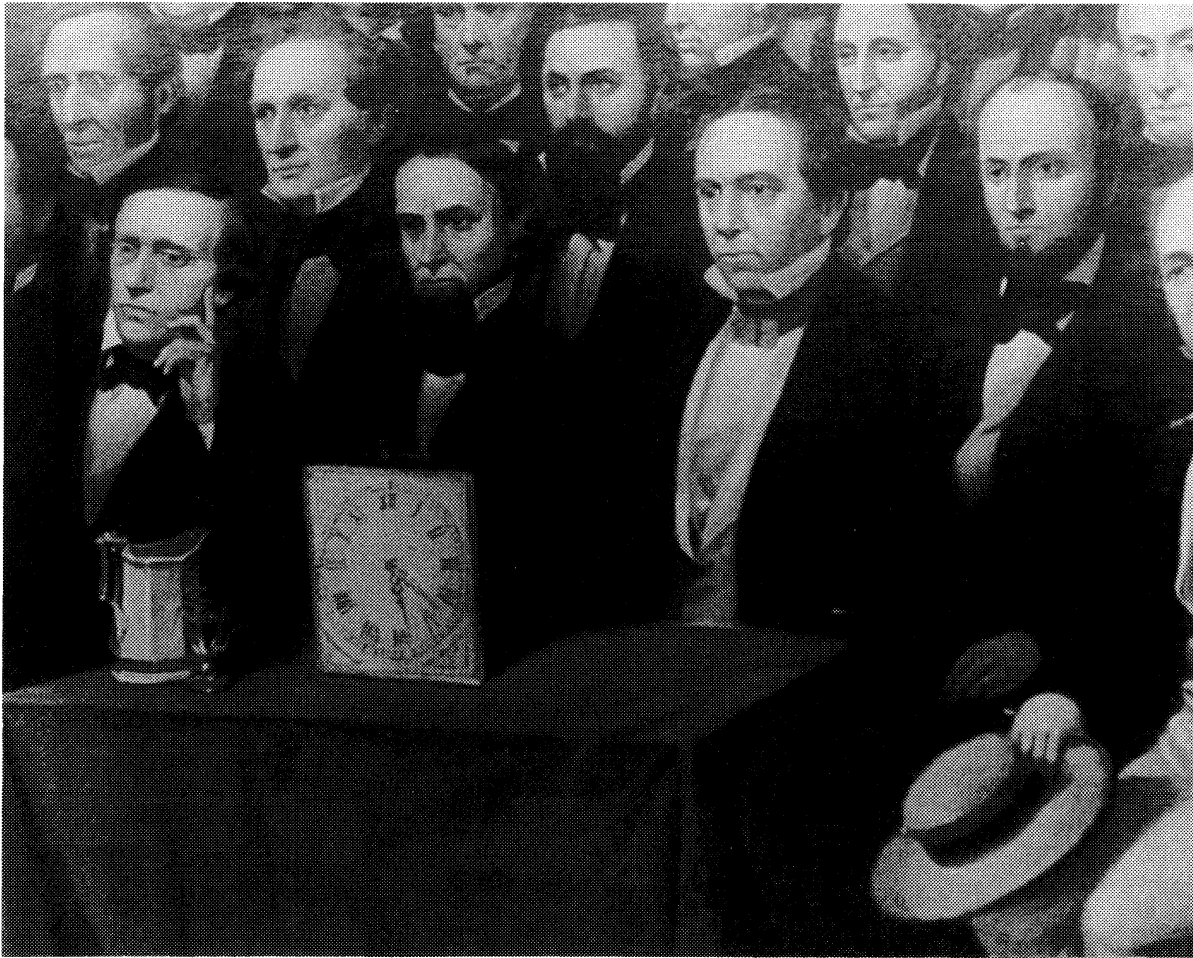


Figure 4. Detail from Matteson's *Inauguration*. Seated behind Moses Farmer's electrical-clock dial are, left to right, Washington Hunt, Benjamin Peirce, Alexander Dallas Bache, and Benjamin Apthorp Gould, Jr. Courtesy of the Albany Institute of History & Art.

2.6 The Artist's Approach

Although incomplete, our set of identifications sheds light on Matteson's plan for his canvas. First, the artist grouped his subjects: AAAS officers and scientists together, university and science administrators in a balancing row, and significant Albany and New York business and political figures in the foreground. (Some accounts describe the AAAS members entering the tent as an escorted group after the other notables had been seated, suggesting that a space on the platform was reserved for them.) Probably he worked entirely from photographs.

2.6.1 The Historical Record of the Inauguration

We believe the artist was deliberately creating a record. We have identified three images in the *Inauguration* as representing scientists who did not actually attend the Observatory's inauguration. They are University of the City of New York (now New York University) astronomer Elias Loomis, Yale College chemist Benjamin Silliman, Jr., and Matthew Fontaine Maury, Superintendent of the U.S. Naval Observatory. Their names are in square brackets in Table 1.

Lieutenant Maury's inclusion is of particular interest. In the public's eyes this naval officer was one of the country's most important scientists, his fame resting on the publication of his ocean navigation sailing charts. So great was his fame, and so significant his position as head of the country's so-called National Observatory, that he could not be excluded from this "picture-perfect" depiction of an event.

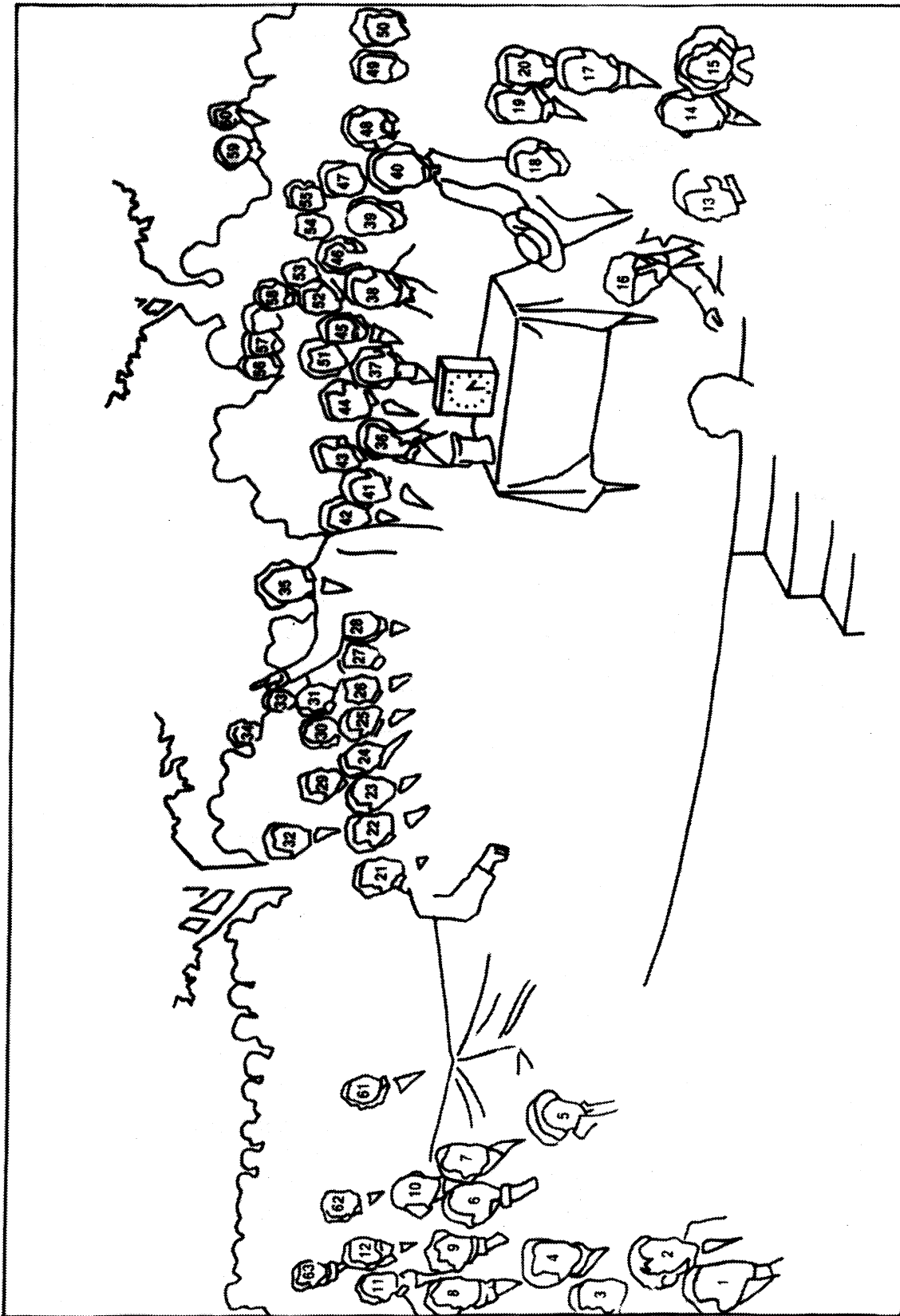


Figure 5. Sketch of Matteson's Inauguration, with numbered locations of identified portraits (see Table 1).

Table 1. Key identifying portraits in Matteson's Inauguration; locations are given in Figure 5.

No	Name	Dates	Affiliation
1	NOTT, Dr. Eliphalet	1773-1866	President, Union College
2	BARNARD, Daniel Dewey	1797-1861	Albany
3	FILLMORE, Millard	1800-1874	Former President of the United States
4	WYCKOFF, Rev. Dr. Isaac N.	1792-1869	Albany
5	DUDLEY, Blandina Bleecker	1783-1863	Widow of Charles Edward Dudley
6	OLCOTT, Thomas W.	1795-1880	Vice-President, Board of Trustees, Dudley Observatory
7	LANSING, Gerrit Y.	1783-1862	Chancellor, University of the State of New York
8	SPRAGUE, Rev. Dr. Wm. B.	1795-1876	Albany
9	PRENTICE, Ezra P.	1797-1876	Albany
10	HAWLEY, Gideon	1785-1871	Regent, University of the State of New York
11	ANDERSON, Martin B.	1815-1890	President, University of Rochester
12	Unknown-1		
13	PRUYN, Hon. Robert Hewson	1815-1882	Albany
14	CORNING, Erastus	1794-1872	Albany
15	CORNING, Harriet Weld	1793-1883	Albany
16	Unknown-2		
17	DEAN, Amos, LL.D.	1803-1868	Albany
18	ARMSBY, Dr. James H.	1810-1875	Secretary, Board of Trustees, Dudley Observatory
19	HARRIS, Hon. Ira	1802-1875	Albany
20	PARKER, Hon. Amasa J.	1807-1890	Albany
21	HENRY, Joseph	1797-1878	Secretary, Smithsonian Institution
22	SILLIMAN, Benjamin	1779-1864	Yale College
23	HITCHCOCK, Edward	1793-1864	ex-President, Amherst College
24	FERRIS, Isaac	1798-1873	Chancellor, University of the City of New York
25	ROGERS, William B.	1804-1882	State Geologist, Pennsylvania
26	MITCHEL, Ormsby MacKnight	1809-1862	Director, Cincinnati Observatory
27	[SILLIMAN, Benjamin, Jr.]	1816-1885	Yale College
28	TAPPAN, Henry P.	1805-1881	Chancellor, University of Michigan
29	WILKES, Charles	1798-1877	U.S. Navy, Washington
30	Unknown-3		
31	[MAURY, Matthew F.]	1806-1873	Superintendent, U.S. Naval Observatory
32	PRUYN, Hon. John V.L.	1811-1877	Albany
33	[LOOMIS, Elias]	1811-1889	University of the City of New York
34	BARNARD, F.A.P.	1809-1889	Chancellor, University of Mississippi
35	EVERETT, Hon. Edward	1794-1865	Orator and ex-U.S. Senator, Massachusetts
36	HUNT, Washington	1811-1867	ex-Governor, New York
37	PEIRCE, Benjamin	1809-1880	Harvard College
38	BACHE, Alexander D.	1806-1867	Superintendent, U.S. Coast Survey
39	GOULD, Benjamin A., Jr.	1824-1896	U.S. Coast Survey
40	AGASSIZ, Louis	1807-1873	Harvard College
41	HALL, James	1811-1898	State Geologist, New York
42	REDFIELD, W.C.	1789-1857	1st President, AAAS
43	LOVERING, Joseph	1813-1892	Harvard College
44	GRAY, Asa	1810-1888	Harvard College
45	GIBBS, (Oliver) Wolcott	1822-1908	Free Academy, New York
46	CHAUVENET, William	1820-1870	U.S. Naval Academy
47	Unknown-4		
48	GAVIT, John E.	1817-1874	Albany
49	LECONTE, John Lawrence	1825-1883	Entomologist, Philadelphia
50	HARE, Robert	1781-1858	University of Pennsylvania
51	DANA, James D.	1813-1895	Yale College
52	HORSFORD, Eben Norton	1818-1893	Harvard College

Table 1. Key identifying portraits in Matteson's Inauguration; locations are given in Figure 5 (Concluded).

No	Name	Dates	Affiliation
53	SCHOOLCRAFT, Henry R.	1793-1864	Ethnologist, Washington
54	COFFIN, John H.C.	1815-1890	U.S. Naval Academy
55	ALEXANDER, Stephen	1806-1883	College of New Jersey (Princeton)
56	BRÜNNOW, Franz F.E.	1821-1891	Director, Detroit Observatory, Ann Arbor
57	LECONTE, Joseph	1823-1901	Franklin College, Athens, Georgia
58	PETERS, C.H.F.	1813-1890	U.S. Coast Survey
59	MITCHELL, Maria	1818-1889	Astronomer, Nantucket Island
60	MITCHELL, William	1791-1869	Banker, Nantucket Island
61	Unknown-5		
62	SEYMOUR, Hon. Horatio	1810-1886	Ex-Governor, New York
63	BANCROFT, Hon. George	1800-1891	Historian and statesman, New York

Superintendent Maury's inclusion suggests that the Scientific Council had no influence on the work. Indeed, if Gould, Bache, and Peirce had ever viewed the completed canvas, they would have been displeased. They judged Maury a most inadequate scientist, and certainly not worthy of inclusion in any record of "their" event.

Logic suggests that the person in the painting seated between U.S. Navy officers Charles Wilkes and Matthew Maury is Charles Henry Davis, Superintendent of the Nautical Almanac Office in Cambridge, and a close friend and professional colleague of Bache. No record documents his presence in Albany during the period, and we were unable to locate any contemporary image of this important scientist. This likeness remains unidentified.

With regard to Albany and New York figures included in the painting but not present at the Inauguration, the lack of sources other than newspaper articles hinders further analysis. However, we note that former President Millard Fillmore – prominent in the painting – was not mentioned in these contemporary accounts. Additionally, there is an image suggestive of Senator William H Seward of New York, known to be in Washington during this August period. We predict that an analysis of political figures by some future art historian will enlarge our understanding of Tompkins Matteson's political intent.

2.6.2 The Dudley Observatory Building

In addition to depicting those notables who attended the Inauguration, Matteson included the Dudley Observatory building, showing it in good detail in the distance (Figure 1). This structure had been erected within an eight-acre site on the plateau of a high hill a mile north of the capitol. Starting in 1856, the building was extensively remodelled to accommodate larger-than-planned-for instruments. These changes, which were not completed until well after the Inauguration, altered the building's north and south exteriors. Nonetheless, contemporary writings and lithographs indicate an attractive structure, similar in basic style to many of that era's observatories – see Hough (1866), Leslie (1856d:201), and Munsell (1856:303-306). A before-1856 view of the Observatory building is in Loomis (1856) – undoubtedly the engraving used eighteen years later by Nourse (1874). A later photograph of the building is shown in Figure 6.

Matteson's depiction of the unfinished building was also part of his creative historical record, for the structure could not be seen from the site of the Inauguration. However, the two locations had been linked especially for the ceremony, and the artist documented this coupling in his visual recording of the day's events.

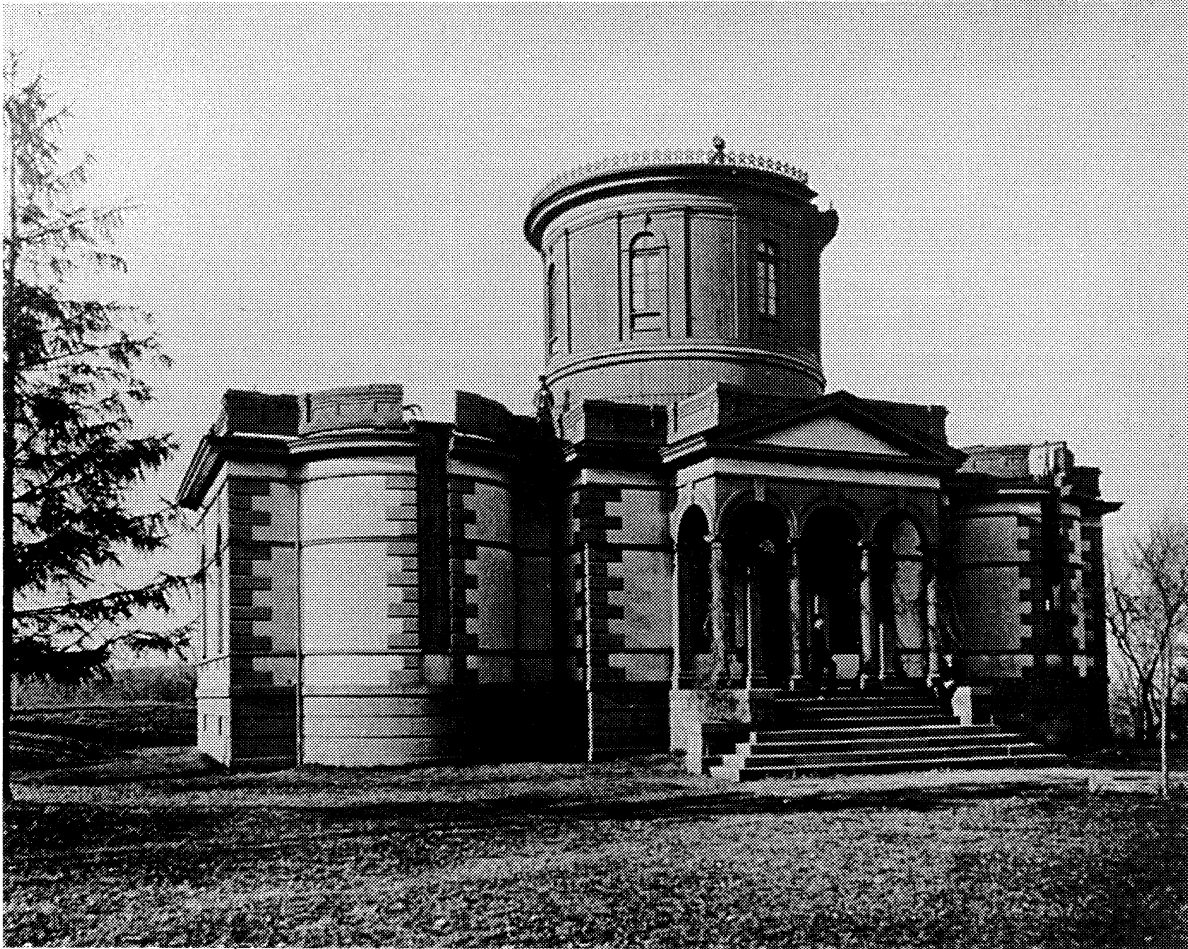


Figure 6. The Dudley Observatory, Albany, photograph taken after 1856.
Courtesy of the Trustees of the Dudley Observatory.

3 DUDLEY OBSERVATORY TIMEKEEPING: THE 'CORNING CLOCK'

All astronomical observatories must possess a clock displaying sidereal time. The funds for this absolutely vital piece of equipment were to come from Erastus Corning, arguably Albany's wealthiest citizen and one of its most powerful and politically influential businessmen (Neu, 1960). After the formation of the Scientific Council, and with the urging of his wife, Harriet Weld Corning, the financier and president of the New York Central Railroad agreed to transform an earlier pledge of \$1000 into one for the purchase of the Observatory's timekeeper (Gould, 1855b, 1856b).

When in 1855 September Benjamin Gould sailed for Europe to contract for the construction of the Observatory's advanced telescopes, he also carried authority to purchase its *normal* (i.e., standard) clock. Journeying to Altona, Gould ordered a timekeeper far beyond the state-of-the-art. So at this moment in time the 'Corning clock' was an advanced astronomical regulator whose pendulum would be adjusted to sidereal time (Gould, 1855a).

3.1 Distributing Mean Time

During this European buying trip, Gould also visited the Royal Observatory at Greenwich. There he examined in great detail the mean-time distribution system that Astronomer Royal George Airy had been perfecting. Created and installed over the previous half-dozen years, this government-supported service allowed the distribution

of time signals to London and more distant cities via the kingdom's commercial telegraph lines. Selected railroads were among the users. Undergoing further expansion at that moment, Airy's system so impressed the American astronomer that he immediately adopted it as the model for observatory public time services (Gould, 1855d). Already the Dudley Observatory's trustees and the Scientific Council had decided to sell Albany time to the railroads headquartered in Albany and New York, and, eventually, to cities along the New York Central Railroad's right-of-way across the state (Armsby, 1855).

Home from Europe, the astronomer took a logical, but ultimately disastrous step with regard to the specifics of timekeeping: he decided that the Observatory's mean-time system should be called the 'Corning clock.' In early January Gould (1856a) ordered an electrical pendulum and dials for displaying both mean and sidereal times at various stations within the Observatory's building.

Eight weeks before the Inauguration the issue of the Corning clock came to the fore once more, with Benjamin Gould's reminding James Armsby of the two clock systems for the Dudley Observatory. The astronomer noted that the one with its subsidiary dials displaying "solar (civil) time" would give Albany time "to the [New York Central] RR, so it will be best to call that [mean-time system] the Corning clock." Gould (1856d) requested Armsby's decisions with regard to the construction of a large marble clock dial for displaying Albany time, including where it and the separate driven-pendulum works should be placed in the building.

'Best', of course, is in the eyes of the beholder. Apparently, no one thought to inform Erastus Corning that his name would not be associated with one of the Observatory's primary astronomical instruments, its sidereal timekeeper. Instead, it had been relegated to a secondary time distribution system. Of course that system's Albany time – mean time – would be compared frequently with the Observatory's normal clock, and would be more than adequate for all public uses, including the running of trains. Nonetheless, without his knowledge, Corning's pledge had been reassigned to a commercial venture (Corning, 1858; Dudley Observatory Trustees, 1858:9).

All through July and into August Gould scrambled to ensure that the clock system would be completed and installed by the middle of the month. Armsby, who was also an active member of the AAAS's Local Committee, hurried about overseeing the myriad large and small tasks that had to be finished before the scientists arrived. One chore was the preparation of a marble tablet honouring the clock's donor, done under the close supervision of Albany engraver John E Gavit (Gould, 1856d).

On the day before the August 20 opening of the Annual Meeting, a just-completed clock was rushed to the Observatory building. The clock – actually a battery-driven pendulum invented by Moses Farmer (1852) of Boston – was the heart of the Dudley Observatory's commercial mean-time distribution system, and was America's state-of-the-art at that moment.

Farmer's electrical pendulum was installed in a wall niche in the Observatory's main hall. Mounted in another wall niche symmetric to it was a large marble clock dial, its hands driven by impulses generated via the pendulum's motion. Below the dial was placed a marble tablet inscribed, "The Gift of Erastus Corning." (This tablet is the second artefact associated with the Inauguration of the Dudley Observatory.)

A line of telegraph wire running from the Observatory building to the tent in Academy Park had already been erected (Gould, 1856c, 1856d, 1859:154, 211; Parker, 1857:235). When connected to the driven pendulum, it carried electrical pulses to a subsidiary clock dial – the one pictured in the Inauguration (Figure 4). Matteson showed the dial on a table in front of Peirce, Bache, and Gould. His choice may be an exaggeration, considering the fragile control wires and the claim made later that Gould turned "to a clock exhibited by Mr. Gavit upon the rear of the platform" (Dudley

Observatory Trustees, 1858:27). However, both its inclusion and placement near the painting's focus document the artist's awareness of the importance of timekeeping to the Observatory's fortunes.

3.2 Gould on Observatory Timekeeping

During his talk at the Inauguration, Gould (1856e) referred briefly to the Observatory's master timekeeper "ordered in Altona ... [which] will soon be here and described." He devoted many words to the "clock for mean time" with its "great marble dial, three feet square, which shows the Observatory time, beat by the beautiful electromagnetic pendulum," concluding these remarks with, "An elegantly engraved marble inscription below it commemorates the name of the donor." After mentioning the Observatory's new chronograph, a device for comparing clocks with star transits and other timekeepers, the astronomer concluded his description of the Observatory's timekeeping equipment with

Dials in every room will telegraphically record [display] the time indicated by the normal clock imbedded in the massive pier below; while the Corning clock sends out the corresponding mean or civil time, to the north, south, east and west.

Ending his remarks with an appeal for operating funds, the astronomer summarized the Observatory's status, telling the thousands before him that the building's completion "needs but a few weeks," while adding, "By that time ... the clocks will be sending their mystic signals to all the dials, even as the Corning clock now ticks above my head." At that moment he undoubtedly also pointed to the subsidiary clock dial on the platform, its hands being driven by pulses from the mean-time pendulum situated over a mile away.

Certainly it was clear in Gould's mind that the mean-time clock in the Observatory was now the 'Corning clock'. Armsby, Secretary of the Board of Trustees, also understood the relations linking the normal clock, the mean-time clock and dial at the Observatory, and the subsidiary dial that Gould had just highlighted. In contrast, most of those attending the ceremony neither understood nor particularly cared about such differences: the working clock before them was being associated with the famous Albanian's name. And as the Inauguration became a distant memory for them, any Observatory timekeeper became the 'Corning clock'. Even most of the Scientific Council had trouble distinguishing between the two classes of timekeepers, still terming both of them the 'Corning clock' in mid-1858 (Henry *et al.*, 1858a; however, Henry *et al.*, 1858b).

4 AFTERWARD: 1856-1859

The Inauguration over, the Observatory's electrical pendulum was stopped; it had served its purpose, and would not operate again for almost three-and-a-half years. Efforts to bring the Observatory itself into operation continued, then slowed, and finally ground to an apparent halt. Frustration grew. Late in 1857 Gould, whose nominal title was "astronomer-in-charge," accepted the directorship of the Dudley Observatory, and the following February moved to Albany to focus on his charge. But it was too late; tensions between Gould and the Trustees multiplied. In early June, citing "want of harmony," a majority of the Observatory Board voted to dismiss him. Despite the decision, the astronomer refused to vacate the site (James, 1987:139-152).

A war of words began. In their pamphlet the Trustees (1858:24) summarized the astronomer's tenure: "Of all the splendid promises made by Dr. Gould ... not a single one was realized." Even Joseph Henry, Alexander Dallas Bache, and Benjamin Peirce – the astronomer's ardent supporters on the Scientific Council – could not deflect this reality.

The Trustees highlighted Gould's actions with regard to the many facets of Observatory timekeeping. One issue was the non-delivery of the Observatory's master timekeeper, which they termed "the Corning clock." They accused Gould of deceiving those at the Inauguration when he mentioned, not only "the Corning clock [which] now ticks above my head," but when he "turned significantly to a clock ... upon ... the platform."

Self-serving, clever, often inaccurate, and frequently hilarious, the Trustees' "Statement" outraged Gould and his supporters, who proceeded to enhance the genre of character assassinations with their own contributions.

4.1 Corning Repudiates "his" Clock

In December the Observatory's normal clock still had not arrived.⁵ Undoubtedly judging (correctly) that it would never be delivered, Erastus Corning (1858), strong supporter of the Scientific Council, promised to honour his pledge "when the clock shall have been completed and placed in the Observatory." The financier added that he knew nothing about the mean-time clock and the inscription below it. Surely Gould winced when he read these remarks; in essence, they supported the Trustees' position.

Early in 1859 January the astronomer was finally removed from the Observatory; his addition to the war of words appeared a month later. Joining with the Trustees in dissembling, Gould wrote that they were "falsely implying that the Normal clock was known" as "the Corning clock." The record – in print as well as in correspondence – counters the astronomer's assertion (Gould, 1859:154, 213).

With Gould gone from the site, the Dudley Observatory was finally under the Trustees' control. Thomas Olcott, also a major benefactor and now President of the Board of Trustees, began the lengthy process that would finally lead to the inauguration of the Dudley Observatory's programme in astronomy. Banker Olcott, a long-time business and political rival of Erastus Corning, must have been furious at the latter's repudiation of the Observatory's mean-time clock system.

But by this time Congressman Corning must have been furious as well. He may even have requested formally that his name be removed from the mean-time clock. Clearly, the sequence of events occurring over the Observatory's next months will



Figure 7. Clock donor's tablet. Approximate dimensions (inches): 12 3/4 by 7 3/4 by 1 9/16. Engraved 1856 August; text partially removed, c. 1859. Artefact is in the Archives of the Dudley Observatory. Courtesy of the Trustees of the Dudley Observatory.

never be known with certainty. Nonetheless, someone caused Corning's name to be gouged out of the marble tablet. Perhaps the now-altered tablet (Figure 7) was placed below the Observatory's clock dial once more, for all to see. Here, too, the record is silent.⁶

5 EPILOGUE

The first Dudley Observatory is no more, the site vacated, its building gone. Matteson's Inauguration hangs prominently in the Lansing Gallery of the Albany Institute, reminding us of that watershed in American science. The 'Corning clock' tablet remains, a symbol of technical and managerial naivety – as well as hubris. And as Mary Ann James's *Elites in Conflict* disclosed, the unfolding of this unhappy episode in mid-nineteenth-century American science serves as a constant reminder of the absolute need for mutual respect – "comity" in another context – between those who would use a scientific facility, and those who would fund it.

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7 NOTES

1. In 1858 one R Van Dien asserted copyright protection on images of Matteson's Inauguration taken by the well-known New York city photographer, Charles DeForest Fredricks. The mount of the 16¾" by 12½" albumen print bears both their names and the title, "The American Association for the Advancement of Science./Inauguration of the Dudley Observatory." (Originals are owned by the Albany Institute of History & Art and the Dudley Observatory). Except for a passing mention by Kohlstedt (1976:117), Van Dien is completely unknown.
2. Matteson's painting is reproduced in Clarke (1923); forms the front and back covers of an important biography of Louis Agassiz (Lurie, 1974); is included in the seminal history of the AAAS (Kohlstedt, 1976); is reproduced in the history of the Dudley Observatory (James, 1987); and is prominent in the collage forming the cover of the 1998 February 6 *Science*. Along with the new identification key discussed in this study,

a copy of the Inauguration was part of "150 Years of Advancing Science," an exhibit unveiled at the 150th Annual Meeting of the AAAS in Philadelphia and subsequently displayed at AAAS headquarters in Washington.

3. The image is from the Mary Lea Shane Archives of the Lick Observatory, Santa Cruz, CA – one in a bound album of photographs and part of an extensive collection of nineteenth-century scientists assembled by Edward S Holden (1846-1914), Lick's first director. Printed underneath the subject original is "A. D. Bache." This image gave the first indication that Clarke's identifications were grossly in error.
4. A list of the specific images used in our comparisons, with estimated dates and current location, has been deposited with the Albany Institute of History & Art and the Keeper of the Catalog of American Portraits, National Portrait Gallery, Smithsonian Institution.
5. Since early 1858 the Observatory's sidereal standard was a borrowed astronomical regulator made by Edward Dent of London. Eventually donated by George W Blunt, partner in the New York nautical chart and instrument company of that name, the clock was modified by William Bond & Son, Boston, soon after Gould's ejection from the observatory site. The timekeeper continued as the Observatory's primary standard for many years, and is now at the New York State Museum, Albany.
6. Subsequent to this study, Dudley Observatory Archivist Nancy Langford brought to our attention an undated note appended to Erastus Corning's 1854 August pledge in the Albany Astronomical Observatory's subscription book: "This subscription was never paid. It was changed to an astronomical clock to cost \$1000 which was ordered from abroad. But which order was countermanded, the clock never delivered & the inscription on the marble stone in the Hall of the Observatory in commemoration of the gift & the giver had in consequence to be removed."

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Christine Bain is Associate Librarian at the New York State Library, Albany. For many years she was the Dudley Observatory's librarian, and, to our great fortune, became the 'keeper' of the second artefact discussed in this paper.