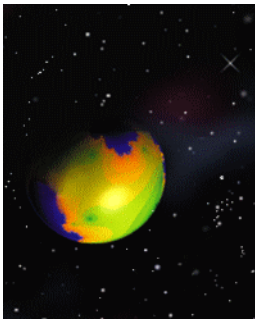


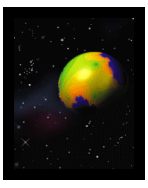
WHAT WAS HAPPENING

ON CONCORD AVENUE IN CAMBRIDGE:

DEEP BACKGROUND FOR A PENDING INVESTIGATION

OF

THOREAU'S INTEREST IN THINGS ASTRONOMICAL



THOREAU AND TELESCOPES

WALDEN: If I wished a boy to know something about the arts and sciences, for instance, I would not pursue the common course, which is merely to send him into the neighborhood of some professor, where any thing is professed and practised but the art of life; -to survey the world through a telescope or a microscope, and never with his natural eye; to study chemistry, and not learn how his bread is made, or mechanics, and not learn how it is earned; to discover new satellites to Neptune, and not detect the motes in his eyes, or to what vagabond he is a satellite himself; or to be devoured by the monsters that swarm all around him, while contemplating the monsters in a drop of vinegar. Which would have advanced the most at the end of a month, -the boy who had made his own jack-knife from the ore which he had dug and smelted, reading as much as would be necessary for this, -or the boy who had attended the lectures on metallurgy at the Institute in the mean while, and had received a Rodgers' penknife from his father? Which would be most likely to cut his fingers? -To my astonishment I was informed on leaving college that I had studied navigation! -why, if I had taken one turn down the harbor I should have known more about it.

ASTRONOMY

THOREAU AND TELESCOPES

An email correspondent has inquired:
> What were Thoreau's views on astronomy?

Since I also am interested in astronomy, I have attempted to create a complete context for astronomical discoveries occurring during Henry David Thoreau's lifetime, 1817-1862. The Kouroo Contexture has a hundred-page file tracking all comets that passed through the solar system during that period, and the public reaction to those apparitions. This present file also tracks the discoveries of new planets and new satellites around these planets, discoveries of asteroids, views of the surface of Mars, theories of the origin of the earth's moon, etc. It is within this context that we will need to situate Thoreau's visit to the Harvard Observatory, and his various interactions with the astronomers of his era, and his dealings with local people who had obtained astronomical telescopes, and his various remarks about astronomical bodies such as "the Morning and Evening Star."

A hundred pages is a whole lot of material to summarize, but, basically, Thoreau was interested in astronomical discovery but seems not himself to have any pronounced attitudes or beliefs other than this lively interest. He was not at all tempted to regard astronomical events as portents. He exhibited no tendency to confuse or conflate astronomy with astrology, a study in regard to which his affect was that of considered disdain. His interest in astronomy seems to have been oriented around just what one might expect, to wit, it was about the same as his reaction to new innovations in travel (the railroad) and in communication (the telegraph), where he focused upon the possibility of turning these new inventions and discoveries toward literary usefulness.

His was a search for juicy and fruitful metaphors.

1671

February 2, day: Harvard College was given a "3 foote and a halfe with a concave ey-glasse" reflecting telescope. This would be the instrument with which the Reverends Increase and Cotton Mather would observe a bright comet of the year 1682.

ASTRONOMY
HALLEY'S COMET
HARVARD OBSERVATORY

1682

How many times does a "blazing exhalation" that has been appearing in the upper skies at intervals of about every 76 years at least since the year 1404 BCE have to return right on schedule, and lose another about 1/10,000ths of its mass into an awesome tail across the heavens, before anyone will notice that it is a recurring phenomenon? Well, maybe this time Edmond Halley would notice. And maybe, also, the Reverends Increase Mather and Cotton Mather would speculate on this bright comet through Harvard College's "3 foote and a halfe with a concave ey-glasse" reflecting telescope.

HARVARD OBSERVATORY
HALLEY'S COMET
ASTRONOMY

THOREAU AND TELESCOPES

HALLEY'S COMET

This is what Halley's Comet looked like, the last time it passed us. We have records of the appearances of this comet on each and every one of its past 30 orbits, which is to say, we have spotty records of observations before that, in 1,404 BCE, 1,057 BCE, 466 BCE, 391 BCE, and 315 BCE, but then on the 240 BCE return the sightings record begins to be complete. The Babylonians recorded seeing it in 164 BCE and again in 87 BCE, and then it was recorded as being seen in 12 BCE, 66 CE, 141 CE, 218 CE, 295 CE, 374 CE, 451 CE, 530 CE, 607 CE, 684 CE, 760 CE (only by Chinese), 837 CE, 912 CE, 989 CE, 1066, 1145, 1222, 1301, 1378, 1456, 1531, 1607, 1682, 1758, 1835, 1910, and 1986 — and we are confidently awaiting sightings in 2061 and 2134 even though due to a close conjunction with the earth we are presently unable to calculate what orbit it will have by the date of that approach. Each time P/Halley orbits in out of the Kuiper belt beyond the planets Neptune and Pluto and whips around the sun, it has been throwing off about one 10,000ths of its mass into a streaming tail, which means that this comet which we know to have been visiting us for at the very least the past 3,000 years or so is only going to be visiting us for perhaps another half a million years or so!

EDMOND HALLEY

1712

Harvard College obtained an 8-foot reflecting telescope.

ASTRONOMY
HARVARD OBSERVATORY

1722

Harvard College obtained a 24-foot refracting telescope.

ASTRONOMY
HARVARD OBSERVATORY

1723

A comet passed by the earth at a distance of merely 0.1 astronomical units.

Thomas Robie observed a solar eclipse with Harvard College's 24-foot refracting telescope:

SUNSPOTS

The Sunspot Cycle 1710-1804

MIN / MAX
1710 - 1718
1723 - 1727
1732 - 1739
1744 - 1750
1755 - 1762
1765 - 1770
1775 - 1779
1785 - 1788
1798 - 1804

ASTRONOMY

HARVARD OBSERVATORY

1727

Harvard College established its Hollis chair in mathematics and natural philosophy.

Thomas Hutchinson graduated from Harvard and became an apprentice in his father's counting-room. He would for several years devote himself to business.

A son of a Concord physician, John Prescott, graduated from Harvard. He would go on to become a physician.[1]

> JOHN PRESCOTT [of Concord], son of Dr. Jonathan Prescott, was born May 8, 1707, and graduated [at Harvard] in 1727. He was a physician in Concord, and highly esteemed for his professional skill and excellent character. When the unfortunate expedition to Cuba was proposed, he entered readily into the views of the

1. Peter Prescott, a brother of John Prescott, would graduate from Harvard College in 1730, and Benjamin Prescott, presumably another of the Prescott brothers of Concord, would enter Harvard College in 1744 but would fail to graduate (he would be killed by native Americans).

government, and enlisted a company of 100 men from this neighborhood. He sailed from Boston, as commander of this company, September 23, 1740, and was off "Don Maria Bay" in the following February. After the melancholy failure of the expedition, he returned to this country in 1743, and not long after went to England, at the request of the government, where he was treated with great respect. He died in London, of the small-pox, December 30, 1743, aged 35.
He married Ann, the 8th child of Nathaniel Lynde, Esq. She died May 12, 1795, aged 88. Her sister married Joseph Willard of Rutland, who was killed by the Indians in 1723. Her mother was Susannah Willoughby, and her father son of Simon and Hannah Newdigate, who came from London. In testimony of the esteem in which Captain Prescott's services were held, his widow received a pension from the British government during her life. She had 5 children, Ann, Rebecca, 2 sons, who died young, and Willoughby, who died in Concord April 15, 1808, aged 65.[2]

1759

Nathan Davis of Acton, son of Samuel Davis, graduated at Harvard College. He would be ordained as the minister at Dracut on November 20, 1765, be dismissed there in 1785, remove to Boston, and be appointed as the chaplain at Fort Independence, and a review officer. He would die on March 4, 1803, at the age of 65.

Professor of Mathematics and Physics John Winthrop at Harvard published TWO LECTURES ON COMETS, which he had delivered to popular audiences in Boston, in which he correctly predicted that a comet seen in 1682, called "Halley's Comet," would return and again be seen.

ASTRONOMY
HARVARD OBSERVATORY

1761

April 6, day: Thomas Hancock, a prominent merchant of Boston, offered a fine portable reflecting telescope to Harvard College.[3]

ASTRONOMY
HARVARD OBSERVATORY

2. Lemuel Shattuck's 1835 A HISTORY OF THE TOWN OF CONCORD;... Boston MA: Russell, Odiorne, and Company; Concord MA: John Stacy, 1835
(On or about November 11, 1837 Henry Thoreau would indicate a familiarity with the contents of at least pages 2-3 and 6-9 of this historical study.)

3. However, before this instrument was delivered it was taken off for use in the expedition to Newfoundland for the observation of a transit of the planet Venus across the surface of the sun, the purpose of which was to more accurately determine the distance of the sun from the earth. This surviving instrument would never in fact be delivered to Harvard, for the American Revolution intervened. It apparently became part of the plunder of that war, and is presently to be seen at the Science Museum of South Kensington, England. Had it been delivered to Harvard rather than seized in this manner, of course, it would have been consumed with the other astronomical instruments in Harvard Hall in the great fire of January 24, 1764!

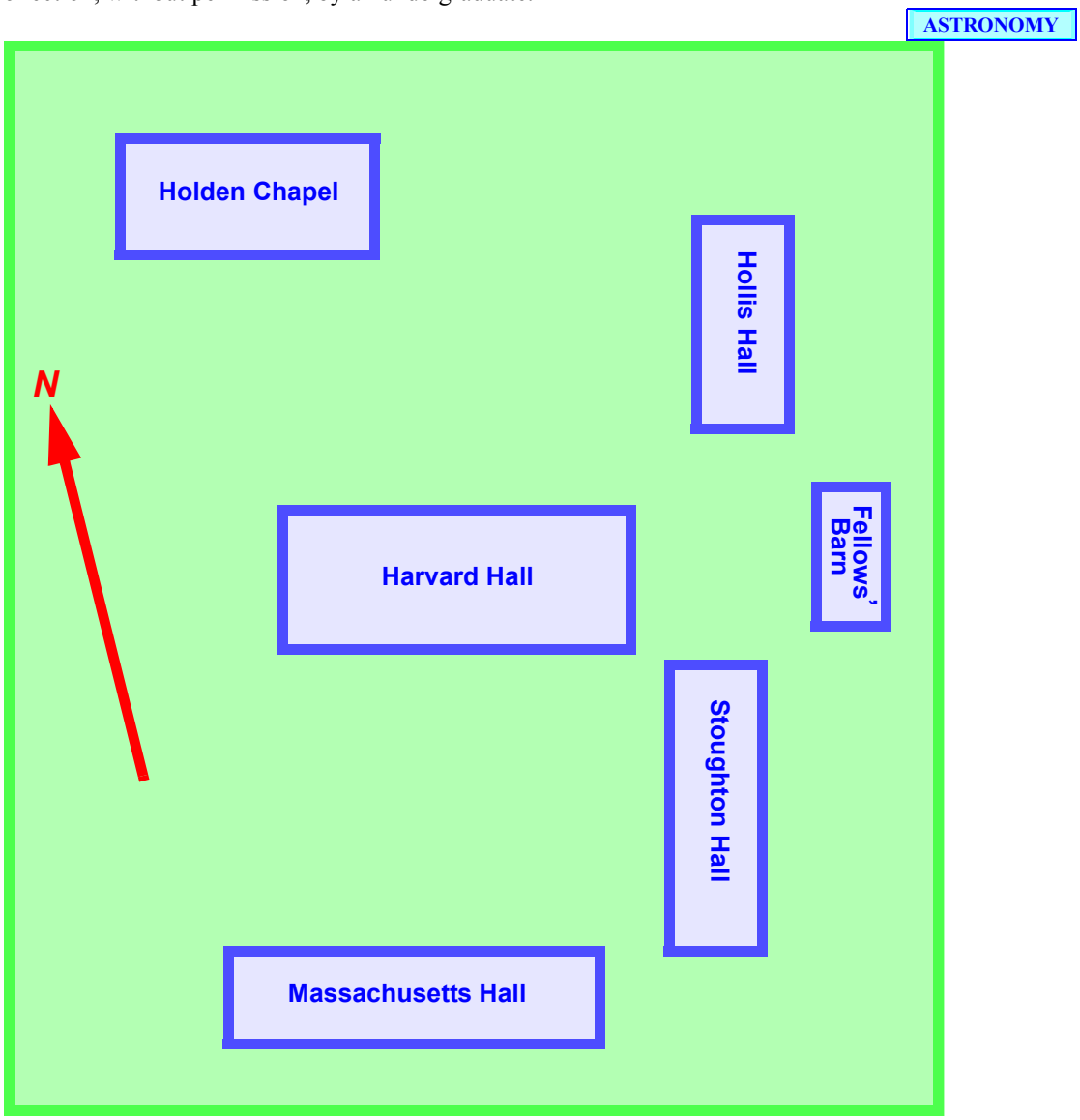
THOREAU AND TELESCOPES

1764

January 24, day: At night during a driving snowstorm, Harvard Hall burned. In the general conflagration (Hollis Hall was also "burnt much" and other surrounding buildings were badly scorched) all but one of Harvard College's astronomical instruments were consumed.[4] The entire library of the college was destroyed. The Reverend John Harvard's library donation was lost except for one volume which had been removed from

4. The instrument that escaped the fire was the Thomas Hancock portable reflecting telescope "donated" to the college in 1761, which had before delivery been taken off for use in the expedition to Newfoundland for the observation of a transit of the planet Venus across the surface of the sun, the purpose of which was to more accurately determine the distance of the sun from the earth. This surviving instrument was never in fact delivered to Harvard, for the American Revolution intervened. It apparently became part of the plunder of that war, and is presently to be seen at the Science Museum of South Kensington, England.

the collection, without permission, by an undergraduate.[5]



1765

August 17: The *Devonshire* delivered from England, for the benefit of Harvard College's science students, an Ellicott Regulator Clock with a big shiny pendulum behind the glass door in its handsome mahogany case, to use in conjunction with Harvard's other "philosophical apparatuses" such as telescopes and astrolabes. This

grandfather-type clock was no mere piece of parlor furniture as it had been described at length in the Transactions of the Royal Society as one of the very most accurate timepieces available. It must have enabled many precise scientific measurements. At £35 14s. 0p. it would be the only one of its design to be exported to England's colonies.

HARVARD OBSERVATORY

5. This student was, of course, then expelled, and you can see the book he attempted to return after the fire, CHRISTIAN WARFARE AGAINST THE DEVIL WORLD AND FLESH by the Reverend John Downame, on display in Houghton Library.

http://history.hanover.edu/courses/excerpts/260down.html

1769

Benjamin Franklin provided a telescope to Harvard College.

ASTRONOMY

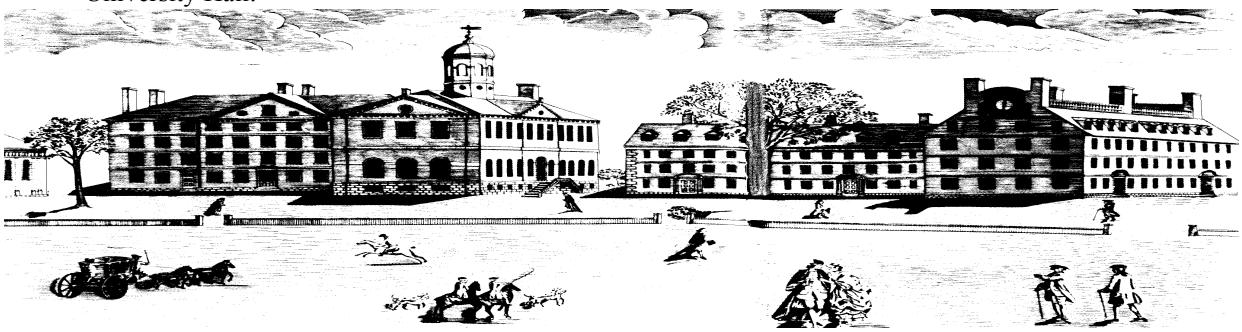
1770

Joseph Hunt of Concord, youngest son of Deacon Simon Hunt, graduated from Harvard College. He would become a physician in Dracut and Concord, and would be for several years Secretary of the Massachusetts Medical Society.

> JOSEPH HUNT [of Concord], youngest son of Deacon Simon Hunt, was born March 1, 1749, and graduated [at Harvard] in 1770. He was a physician at Dracut and Concord, and several years Secretary of the Massachusetts Medical Society. He died May 27, 1812, aged 63.[6]

6. Lemuel Shattuck's 1835 A HISTORY OF THE TOWN OF CONCORD;... Boston MA: Russell, Odiorne, and Company; Concord MA: John Stacy, 1835
(On or about November 11, 1837 Henry Thoreau would indicate a familiarity with the contents of at least pages 2-3 and 6-9 of this historical study.)

This was Harvard College, with Holden Chapel at the far left of the edifices standing about the proud campus University Hall:[7]



University Hall

7. You will notice the mention of a Harvard law school. The money from the selling of slaves in the sugarcane fields of Antigua would not be applied to this facility until 1817.

UNIVERSITY HALL is a handsome granite edifice, and contains the chapel, lecture rooms, &c. Besides the large halls occupied by the under graduates, there are DIVINITY HALL, appropriated to theological students, and HOLDEN CHAPEL, which contains the anatomical museum, &c. A large observatory is furnished with one of the largest and finest telescopes in the world. The LEGISLATIVE GOVERNMENT is vested in a corporation, which consists of the president and six fellows, and a board of overseers, composed of the president, the governor and lieutenant governor of the state, the members of the executive council and the Senate, and the speaker of the House of Representatives, *ex officiis*, together with thirty others, fifteen clergymen and fifteen laymen, elected for the purpose. The faculty of instruction, embracing the professional and scientific schools, consists of the president, twenty-eight professors, five tutors, and several teachers. The degree of Bachelor of Arts is conferred at the close of a course of four years' study. The term of study for the divinity school is three years; that of the law school, three years for graduates of any college, and five for students who have not received a classical education. There are very liberal funds appropriated to the support of students who require assistance in the prosecution of their studies. The law school, which enjoys a high repute, was established in 1817. The lectures to the medical students are delivered at the Massachusetts Medical College, in Boston. A degree of M.D. is conferred only upon those students who have attended the courses of lectures, and spent three years under the tuition of a regular physician.

1789

September 9, Wednesday: William Cranch Bond was born in Falmouth (which is now Portland, Maine).

Some further amendments to the Constitution seem to have been transmitted to the US House of Representatives by the US Senate. (The printed journals of the Senate do not state the time of the final passage, and the message transmitting them to the State Legislatures speaks of them as adopted at the 1st Session, which had begun on March 4, 1789.)

1806

June 16, Monday: Friend Stephen Wanton Gould wrote in his journal:

> *2 day / Owing to the great Eclipse of the Sun which happened this morning & was nearly total, the meeting began buisness* [sic] *after a solid silence of about fifteen minutes which is much sooner than is common — at near eleven O Clock the meeting broke, as it was very dark & adjourned to three in the Afternoon — In the afternoon we met & entered on the State of Society as represented by the Queries which drew forth the testimonys of divers living members among whom were Wm Crotch, Enoch Dorland, Isaac Bonsall, Daniel Quinby & others.*

RELIGIOUS SOCIETY OF FRIENDS

A total eclipse of the sun was visible from San Diego, California to New-York. In the Indiana Territory, the Shawnee prophet Tenskwatawa accurately predicted this eclipse. As a result of observing this eclipse from Kinderhook, New York, José Joaquin de Ferrer came up with the name "corona" to designate the faint outer glowing atmosphere of the sun visible only during such a total occultation. On Boston Neck the grazing cattle began their evening walk home at noon as the eclipse blackened the cloudless sky. Observing this phenomenon, William Cranch Bond determined to become an astronomer. In the garden behind his home on Chestnut Street[8] in Salem sat Nathaniel Bowditch with a telescope, and a lantern by which to consult his watch.

"The moon was seen like a black spot in the heavens surrounded by light like that of twilight.
Several of the fixed stars were visible to the naked eye.
At 11h 32' 18" the light burst forth with great splendor."

SKY EVENT
HARVARD OBSERVATORY

Many years later, a description of this event belatedly recollected by James Fenimore Cooper in about the year 1831 would belatedly appear in 1869 in Putnam's Monthly Magazine (Volume 21, pages 352-359):

> THE ECLIPSE. FROM AN UNPUBLISHED MS. OF JAMES FENIMORE COOPER.
>
> Note by the Editor.— During Mr. Cooper's residence at Paris, he wrote, at the request of an English friend, his recollections of the great eclipse of 1806. This article, which is undated, must have been written about the year 1831, or twenty-five years after the eclipse. His memory was at that period of his life very clear and tenacious, where events of importance were concerned. From some accidental cause, this article was never sent to England, but lay, apparently forgotten, among Mr. Cooper's papers, where it was found after his death. At the date of the eclipse, the writer was a young sailor of seventeen, just returned from a cruise. At the time of writing these recollections, he had been absent from his old home in Otsego County some fifteen years, and his affectionate remembrance of the ground may be traced in many little touches, which would

8. Now 12 Chestnut Street.

very possibly have been omitted under other circumstances. S.F.C.

THE eclipse of the sun, which you have requested me to describe, occurred in the summer of 1806, on Monday, the 16th of June. Its greatest depth of shadow fell upon the American continent, somewhere about the latitude of 42 deg. I was then on a visit to my parents, at the home of my family, among the Highlands of Otsego, in that part of the country where the eclipse was most impressive. My recollections of the great event, and the incidents of the day, are as vivid as if they had occurred but yesterday. Lake Otsego, the headwaters of the Susquehanna, lies as nearly as possible in latitude 42 deg. The village, which is the home of my family, is beautifully situated at the foot of the lake, in a valley lying between two nearly parallel ranges of heights, quite mountainous in character. The Susquehanna, a clear and rapid stream, flowing from the southeastern shore of the lake, is crossed by a high wooden bridge, which divides the main street of the little town from the lawns and meadows on the eastern bank of the river. Here were all the materials that could be desired, lake, river, mountain, wood, and the dwellings of man, to give full effect to the varied movement of light and shadow through that impressive day. Throughout the belt of country to be darkened by the eclipse, the whole population were in a state of almost anxious expectation for weeks before the event. On the eve of the 16th of June, our family circle could think or talk of little else. I had then a father and four brothers living, and as we paced the broad hall of the house, or sat about the family board, our conversation turned almost entirely upon the movements of planets and comets, occultations and eclipses. We were all exulting in the feeling that a grand and extraordinary spectacle awaited us — a spectacle which millions then living could never behold. There may have been a tinge of selfishness in the feeling that we were thus favored beyond others, and yet, I think, the emotion was too intellectual in its character to have been altogether unworthy. Many were the prophecies regarding the weather, the hopes and fears expressed by different individuals, on this important point, as evening drew near. A passing cloud might veil the grand vision from our sight; rain or mist would sadly impair the sublimity of the hour. I was not myself among the desponding. The great barometer in the hall — one of the very few then found in the State, west of Albany — was carefully consulted. It was propitious. It gave promise of dry weather. Our last looks that night, before sleep fell on us, were turned toward the starlit heavens. And the first movement in the morning was to the open window — again to examine the sky. When I rose from my bed, in the early morning, I found the heavens serene, and cloudless. Day had dawned, but the shadows of night were still lingering over the valley. For a moment, my eye rested on the familiar view — the limpid lake, with its setting of luxuriant woods and farms, its graceful bay and varied points, the hills where every cliff and cave and glen had been trodden a thousand times by my boyish feet — all this was dear to me as the face of a friend. And it appeared as if the landscape, then lovely in summer beauty, were about to assume something of dignity hitherto

unknown — were not the shadows of a grand eclipse to fall upon every wave and branch within a few hours! There was one object in the landscape which a stranger would probably have overlooked, or might perhaps have called unsightly, but it was familiar to every eye in the village, and endowed by our people with the honors of an ancient landmark — the tall gray trunk of a dead and branchless pine, which had been standing on the crest of the eastern hill, at the time of the foundation of the village, and which was still erect, though rocked since then by a thousand storms. To my childish fancy, it had seemed an imaginary flag-staff, or, in rustic parlance, the "liberty pole" of some former generation; but now, as I traced the familiar line of the tall trunk, in its peculiar shade of silvery gray, it became to the eye of the young sailor the mast of some phantom ship. I remember greeting it with a smile, as this was the first glance of recognition given to the old ruin of the forest since my return. But an object of far higher interest suddenly attracted my eye. I discovered a star — a solitary star — twinkling dimly in a sky which had now changed its hue to a pale grayish twilight, while vivid touches of coloring were beginning to flush the eastern sky. There was absolutely no other object visible in the heavens — cloud there was none, not even the lightest vapor. That lonely star excited a vivid interest in my mind. I continued at the window gazing, and losing myself in a sort of day-dream. That star was a heavenly body, it was known to be a planet, and my mind was filling itself with images of planets and suns. My brain was confusing itself with vague ideas of magnitude and distance, and of the time required by light to pierce the apparently illimitable void that lay between us — of the beings who might inhabit an orb like that, with life, feeling, spirit, and aspirations like my own. Soon the sun himself rose into view. I caught a glimpse of fiery light glowing among the branches of the forest, on the eastern mountain. I watched, as I had done a hundred times before, the flushing of the skies, the gradual illuminations of the different hills, crowned with an undulating and ragged outline of pines, nearly two hundred feet in height, the golden light gliding silently down the breast of the western mountains, and opening clearer views of grove and field, until lake, valley, and village lay smiling in one cheerful glow of warm sunshine. Our family party assembled early. We were soon joined by friends and connections, all eager and excited, and each provided with a colored glass for the occasion. By nine o'clock the cool air, which is peculiar to the summer nights in the Highlands, had left us, and the heat of midsummer filled the valley. The heavens were still absolutely cloudless, and a more brilliant day never shone in our own bright climate. There was not a breath of air, and we could see the rays of heat quivering here and there on the smooth surface of the lake. There was every appearance of a hot and sultry noontide. We left the house, and passed beyond the grounds into the broad and grassy street which lay between the gates and the lake. Here there were no overhanging branches to obstruct the view; the heavens, the wooded mountains, and the limpid sheet of water before us, were all distinctly seen. As the hour for the eclipse drew near, our eagerness and excitement

increased to an almost boyish impatience. The elders of the party were discussing the details of some previous eclipse: leaving them to revive their recollections, I strolled away, glass in hand, through the principal streets of the village. Scarce a dwelling, or a face, in the little town, that was not familiar to me, and it gave additional zest to the pleasure of a holiday at home, to meet one's townsfolk under the excitement of an approaching eclipse. As yet there was no great agitation, although things wore a rather unusual aspect for the busy hours of a summer's day. Many were busy with their usual tasks, women and children were coming and going with pails of water, the broom and the needle were not yet laid aside, the blacksmith's hammer and the carpenter's plane were heard in passing their shops. Loaded teams, and travellers in waggons, were moving through the streets; the usual quiet traffic at the village counters had not yet ceased. A farm-waggon, heavily laden with hay, was just crossing the bridge, coming in from the fields, the driver looking drowsy with sleep, wholly unconscious of the movement in the heavens. The good people in general, however, were on the alert; at every house some one seemed to be watching, and many groups were passed, whose eager up-turned faces and excited conversation spoke the liveliest interest. It was said, that there were not wanting one or two philosophers of the skeptical school, among our people, who did not choose to commit themselves to the belief in a total eclipse of the sun — simply because they had never seen one. Seeing is believing, we are told, though the axiom admits of dispute. But what these worthy neighbors of ours had not seen, no powers of reasoning, or fulness of evidence, could induce them to credit. Here was the dignity of human reason! Here was private judgment taking a high stand! Anxious to witness the conversion of one of these worthies, with boyish love of fun I went in quest of him. He had left the village, however, on business. But, true to his principles, before mounting his horse that morning, he had declared to his wife that "he was not running away from that eclipse;" nay, more, with noble candor, he averred that if the eclipse did overtake him, in the course of his day's journey, "he would not be above acknowledging it!" This was highly encouraging. I had scarcely returned to the family party, left on the watch, when one of my brothers, more vigilant, or with clearer sight than his companions, exclaimed that he clearly saw a dark line, drawn on the western margin of the sun's disc! All faces were instantly turned upwards, and through the glasses we could indeed now see a dusky, but distinct object, darkening the sun's light. An exclamation of delight, almost triumphant, burst involuntarily from the lips of all. We were not to be disappointed, no cloud was there to veil the grand spectacle; the vision, almost unearthly in its sublime dignity, was about to be revealed to us. In an incredibly short time, the oval formation of the moon was discerned. Another joyous burst of delight followed, as one after another declared that he beheld with distinctness the dark oval outline, drawn against the flood of golden light. Gradually, and at first quite imperceptibly to our sight, that dark and mysterious sphere gained upon the light, while a feeling of watchful stillness, verging upon

reverence, fell upon our excited spirits. As yet there was no change perceptible in the sunlight falling upon lake and mountain; the familiar scene wore its usual smiling aspect, bright and glowing as on other days of June. The people, however, were now crowding into the streets — their usual labors were abandoned — forgotten for the moment — and all faces were turned upward. So little, however, was the change in the power of the light, that to a careless observer it seemed more the gaze of faith, than positive perception, which turned the faces of all upward. Gradually a fifth, and even a fourth, of the sun's disc became obscured, and still the unguarded eye could not endure the flood of light — it was only with the colored glass that we could note the progress of the phenomenon. The noon-day heat, however, began to lessen, and something of the coolness of early morning returned to the valley. I was looking upward, intently watching for the first moment where the dark outline of the moon should be visible to the naked eye, when an acquaintance passed. "Come with me!" he said quietly, at the same moment drawing his arm within my own, and leading me away. He was a man of few words, and there was an expression in his face which induced me to accompany him without hesitation. He led me to the Court House, and from thence into an adjoining building, and into a room then occupied by two persons. At a window, looking upward at the heavens, stood a figure which instantly riveted my attention. It was a man with haggard face, and fettered arms, a prisoner under sentence of death. By his side was the jailor. A painful tragedy had been recently enacted in our little town. The schoolmaster of a small hamlet in the county had beaten a child under his charge very severely — and for a very trifling error. The sufferer was a little girl, his own niece, and it was said that natural infirmity had prevented the child from clearly pronouncing certain words which her teacher required her to utter distinctly. To conquer what he considered the obstinacy of the child, this man continued to beat her so severely that she never recovered from the effects of the blows, and died some days after. The wretched man was arrested, tried for murder, condemned, and sentenced to the gallows. This was the first capital offence in Otsego County. It produced a very deep impression. The general character of the schoolmaster had been, until that evil hour, very good, in every way. He was deeply, and beyond all doubt unfeignedly, penitent for the crime into which he had been led, more, apparently, from false ideas of duty, than from natural severity of temper. He had been entirely unaware of the great physical injury he was doing the child. So great was his contrition, that public sympathy had been awakened in his behalf, and powerful petitions had been sent to the Governor of the State, in order to obtain a respite, if not a pardon. But the day named by the judge arrived without a return of the courier. The Governor was at his country-house, at least eighty miles beyond Albany. The petition had been kept to the last moment, for additional signatures, and the eighty miles to be travelled by the courier, after reaching Albany, had not been included in the calculation. No despatch was received, and there was every appearance that there would be no reprieve. The day arrived — throngs of people from Chenango, and Unadilla, and

from the valley of the Mohawk, poured into the village, to witness the painful, and as yet unknown, spectacle of a public execution. In looking down, from an elevated position, upon the principal street of the village that day, it had seemed to me paved with human faces. The hour struck, the prisoner was taken from the jail, and, seated, as is usual, on his coffin, was carried to the place of execution, placed between two ministers of the gospel. His look of utter misery was beyond description. I have seen other offenders expiate for their crimes with life, but never have I beheld such agony, such a clinging to life, such mental horror at the nearness of death, as was betrayed by this miserable man. When he approached the gallows, he rose from his seat, and wringing his fettered hands, turned his back upon the fearful object, as if the view were too frightful for endurance. The ministers of the gospel succeeded at length in restoring him to a decent degree of composure. The last prayer was offered, and his own fervent "Amen!" was still sounding, hoarse, beseeching, and almost despairing, in the ears of the crowd, when the respite made its tardy appearance. A short reprieve was granted, and the prisoner was carried back to the miserable cell from which he had been drawn in the morning. Such was the wretched man who had been brought from his dungeon that morning, to behold the grand phenomenon of the eclipse. During the twelve-month previous, he had seen the sun but once. The prisons of those days were literally dungeons, cut off from the light of day. That striking figure, the very picture of utter misery, his emotion, his wretchedness, I can never forget. I can see him now, standing at the window, pallid and emaciated by a year's confinement, stricken with grief, his cheeks furrowed with constant weeping, his whole frame attesting the deep and ravaging influences of conscious guilt and remorse. Here was a man drawn from the depths of human misery, to be immediately confronted with the grandest natural exhibition in which the Creator deigns to reveal his Omnipotence to our race. The wretched criminal, a murderer in fact, though not in intention, seemed to gaze upward at the awful spectacle, with an intentness and a distinctness of mental vision far beyond our own, and purchased by an agony scarcely less bitter than death. It seemed as if, for him, the curtain which veils the world beyond the grave, had been lifted. He stood immovable as a statue, with uplifted and manacled arms and clasped hands, the very image of impotent misery and wretchedness. Perhaps human invention could not have conceived of a more powerful moral accessory, to heighten the effect of the sublime movement of the heavenly bodies, than this spectacle of penitent human guilt afforded. It was an incident to stamp on the memory for life. It was a lesson not lost on me. When I left the Court House, a sombre, yellowish, unnatural coloring was shed over the country. A great change had taken place. The trees on the distant heights had lost their verdure and their airy character; they were taking the outline of dark pictures graven upon an unfamiliar sky. The lake wore a lurid aspect, very unusual. All living creatures seemed thrown into a state of agitation. The birds were fluttering to and fro, in great excitement; they seemed to mistrust that this was not the gradual approach of evening, and

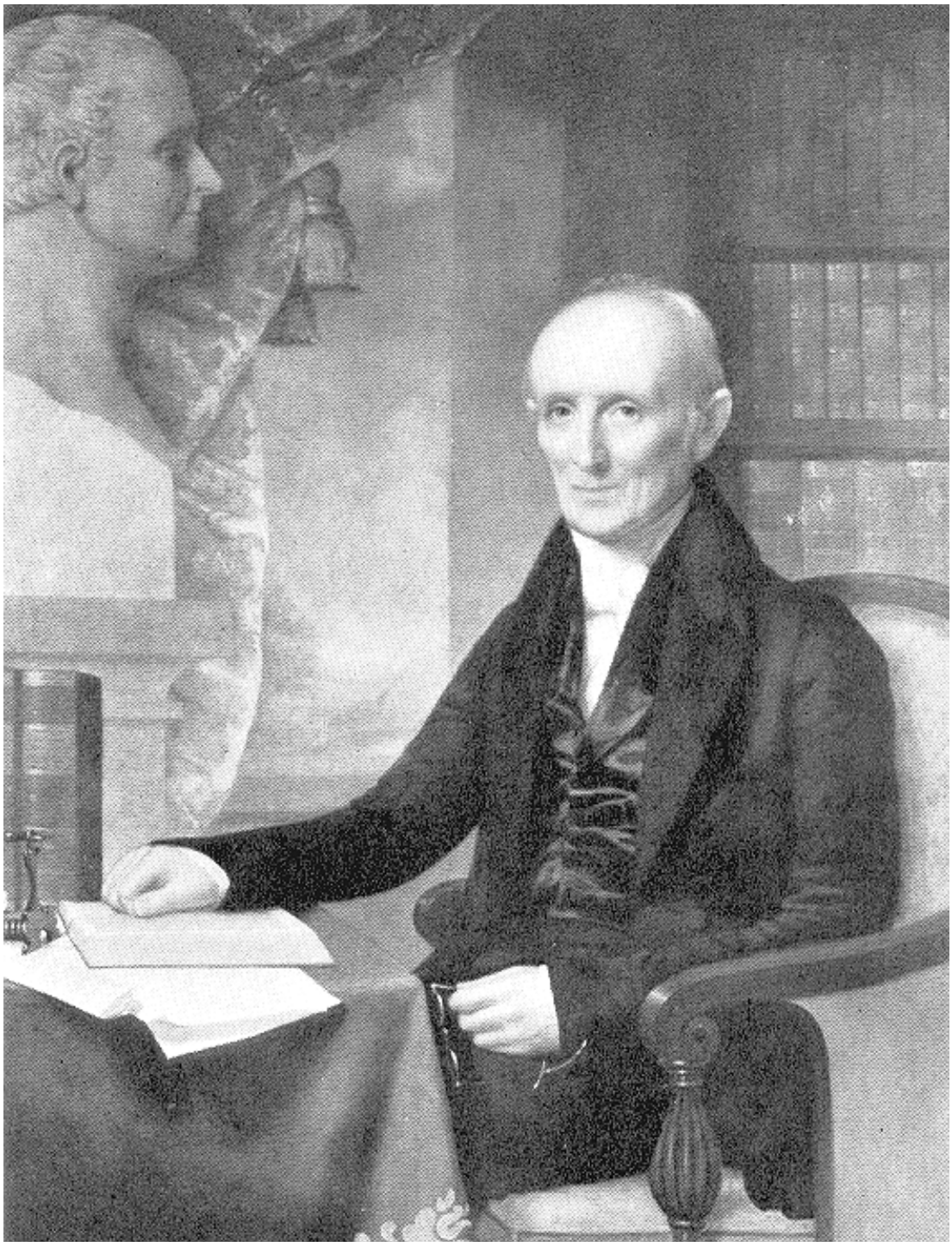
were undecided in their movements. Even the dogs — honest creatures — became uneasy, and drew closer to their masters. The eager, joyous look of interest and curiosity, which earlier in the morning had appeared in almost every countenance, was now changed to an expression of wonder or anxiety or thoughtfulness, according to the individual character. Every house now gave up its tenants. As the light failed more and more with every passing second, the children came flocking about their mothers in terror. The women themselves were looking about uneasily for their husbands. The American wife is more apt than any other to turn with affectionate confidence to the stronger arm for support. The men were very generally silent and grave. Many a laborer left his employment to be near his wife and children, as the dimness and darkness increased. I once more took my position beside my father and my brothers, before the gates of our own grounds. The sun lay a little obliquely to the south and east, in the most favorable position possible for observation. I remember to have examined, in vain, the whole dusky canopy in search of a single cloud. It was one of those entirely unclouded days, less rare in America than in Europe. The steadily waning light, the gradual approach of darkness, became the more impressive as we observed this absolutely transparent state of the heavens. The birds, which a quarter of an hour earlier had been fluttering about in great agitation, seemed now convinced that night was at hand. Swallows were dimly seen dropping into the chimneys, the martins returned to their little boxes, the pigeons flew home to their dove-cots, and through the open door of a small barn we saw the fowls going to roost. The usual flood of sunlight had now become so much weakened, that we could look upward long, and steadily, without the least pain. The sun appeared like a young moon of three or four days old, though of course with a larger and more brilliant crescent. Looking westward a moment, a spark appeared to glitter before my eye. For a second I believed it to be an optical illusion, but in another instant I saw it plainly to be a star. One after another they came into view, more rapidly than in the evening twilight, until perhaps fifty stars appeared to us, in a broad, dark zone of the heavens, crowning the pines on the western mountain. This wonderful vision of the stars, during the noontide hours of day, filled the spirit with singular sensations. Suddenly one of my brothers shouted aloud, "The moon!" Quicker than thought, my eye turned eastward again, and there floated the moon, distinctly apparent, to a degree that was almost fearful. The spherical form, the character, the dignity, the substance of the planet, were clearly revealed as I have never beheld them before, or since. It looked grand, dark, majestic, and mighty, as it thus proved its power to rob us entirely of the sun's rays. We are all but larger children. In daily life we judge of objects by their outward aspect. We are accustomed to think of the sun, and also of the moon, as sources of light, as etherial, almost spiritual, in their essence. But the positive material nature of the moon was now revealed to our senses, with a force of conviction, a clearness of perception, that changed all our usual ideas in connection with the planet. This was no interposition of vapor, no deceptive play of shadow; but a vast

mass of obvious matter had interposed between the sun above us and the earth on which we stood. The passage of two ships at sea, sailing on opposite courses, is scarcely more obvious than this movement of one world before another. Darkness like that of early night now fell upon the village. My thoughts turned to the sea. A sailor at heart, already familiar with the face of the ocean, I seemed, in mental vision, to behold the grandeur of that vast pall of supernatural shadow falling suddenly upon the sea, during the brightest hour of the day. The play of light and shade upon the billows, always full of interest, must at that hour have been indeed sublime. And my fancy was busy with pictures of white-sailed schooners, and brigs, and ships, gliding like winged spirits over the darkened waves. I was recalled by a familiar and insignificant incident, the dull tramp of hoofs on the village bridge. A few cows, believing that night had overtaken them, were coming homeward from the wild open pastures about the village. And no wonder the kindly creatures were deceived, the darkness was now much deeper than the twilight which usually turns their faces homeward; the dew was falling perceptibly, as much so as at any hour of the previous night, and the coolness was so great that the thermometer must have fallen many degrees from the great heat of the morning. The lake, the hills, and the buildings of the little town were swallowed up in the darkness. The absence of the usual lights in the dwellings rendered the obscurity still more impressive. All labor had ceased, and the hushed voices of the people only broke the absolute stillness by subdued whispering tones. "Hist! The whippoorwill!" whispered a friend near me; and at the same moment, as we listened in profound silence, we distinctly heard from the eastern bank of the river the wild, plaintive note of that solitary bird of night, slowly repeated at intervals. The song of the summer birds, so full in June, had entirely ceased for the last half hour. A bat came flitting about our heads. Many stars were now visible, though not in sufficient number to lessen the darkness. At one point only in the far distant northern horizon, something of the brightness of dawn appeared to linger. At twelve minutes past eleven, the moon stood revealed in its greatest distinctness — a vast black orb, so nearly obscuring the sun that the face of the great luminary was entirely and absolutely darkened, though a corona of rays of light appeared beyond. The gloom of night was upon us. A breathless intensity of interest was felt by all. There would appear to be something instinctive in the feeling with which man gazes at all phenomena in the heavens. The peaceful rainbow, the heavy clouds of a great storm, the vivid flash of electricity, the falling meteor, the beautiful lights of the aurora borealis, fickle as the play of fancy, — these never fail to fix the attention with something of a peculiar feeling, different in character from that with which we observe any spectacle on the earth. Connected with all grand movements in the skies there seems an instinctive sense of inquiry, of anxious expectation; akin to awe, which may possibly be traced to the echoes of grand Christian prophecies, whispering to our spirits, and endowing the physical sight with some mysterious mental prescience. In looking back to that impressive hour, such

now seem to me the feelings of the youth making one of that family group, all apparently impressed with a sensation of the deepest awe — I speak with certainty — a clearer view than I had ever yet had of the majesty of the Almighty, accompanied with a humiliating, and, I trust, a profitable sense of my own utter insignificance. That movement of the moon, that sublime voyage of the worlds, often recurs to my imagination, and even at this distant day, as distinctly, as majestically, and nearly as fearfully, as it was then beheld. A group of silent, dusky forms stood near me; one emotion appeared to govern all. My father stood immovable, some fifteen feet from me, but I could not discern his features. Three minutes of darkness, all but absolute, elapsed. They appeared strangely lengthened by the intensity of feeling and the flood of overpowering thought which filled the mind. Thus far the sensation created by this majestic spectacle had been one of humiliation and awe. It seemed as if the great Father of the Universe had visibly, and almost palpably, veiled his face in wrath. But, appalling as the withdrawal of light had been, most glorious, most sublime, was its restoration! The corona of light above the moon became suddenly brighter, the heavens beyond were illuminated, the stars retired, and light began to play along the ridges of the distant mountains. And then a flood of grateful, cheering, consoling brightness fell into the valley, with a sweetness and a power inconceivable to the mind, unless the eye has actually beheld it. I can liken this sudden, joyous return of light, after the eclipse, to nothing of the kind that is familiarly known. It was certainly nearest to the change produced by the swift passage of the shadow of a very dark cloud, but it was the effect of this instantaneous transition, multiplied more than a thousand fold. It seemed to speak directly to our spirits, with full assurance of protection, of gracious mercy, and of that Divine love which has produced all the glorious combinations of matter for our enjoyment. It was not in the least like the gradual dawning of day, or the actual rising of the sun. There was no gradation in the change. It was sudden, amazing, like what the imagination would teach us to expect of the advent of a heavenly vision. I know that philosophically I am wrong; but, to me, it seemed that the rays might actually be seen flowing through the darkness in torrents, till they had again illuminated the forest, the mountains, the valley, and the lake with their glowing, genial touch. There was another grand movement, as the crescent of the sun reappeared, and the moon was actually seen steering her course through the void. Venus was still shining brilliantly. This second passage of the moon lasted but a moment, to the naked eye. As it ceased, my eye fell again on the scene around me. The street, now as distinctly seen as ever, was filled with the population of the village. Along the line of road stretching for a mile from the valley, against the side of the mountain, were twenty waggons bearing travellers, or teams from among the hills. All had stopped on their course, impelled, apparently, by unconscious reverence, as much as by curiosity, while every face was turned toward heaven, and every eye drank in the majesty of the sight. Women stood in the open street, near me, with streaming eyes and

clasped hands, and sobs were audible in different directions. Even the educated and reflecting men at my side continued silent in thought. Several minutes passed, before the profound impressions of the spectacle allowed of speech. At such a moment the spirit of man bows in humility before his Maker. The changes of the unwonted light, through whose gradations the full brilliancy of the day was restored, must have been very similar to those by which it had been lost, but they were little noted. I remember, however, marking the instant when I could first distinguish the blades of grass at my feet — and later again watching the shadows of the leaves on the gravel walk. The white lilies in my mother's flower-garden were observed by others among the first objects of the vegetation which could be distinguished from the windows of the house. Every living creature was soon rejoicing again in the blessed restoration of light after that frightful moment of a night at noon-day. Men who witness any extraordinary spectacle together, are apt, in after-times, to find a pleasure in conversing on its impressions. But I do not remember to have ever heard a single being freely communicative on the subject of his individual feelings at the most solemn moment of the eclipse. It would seem as if sensations were aroused too closely connected with the constitution of the spirit to be irreverently and familiarly discussed. I shall only say that I have passed a varied and eventful life, that it has been my fortune to see earth, heavens, ocean, and man in most of their aspects; but never have I beheld any spectacle which so plainly manifested the majesty of the Creator, or so forcibly taught the lesson of humility to man as a total eclipse of the sun.

Date	Greatest Eclipse	Type	Saros #	Gamma	Eclipse Mag.	Lat.	Long.	Sun Alt	Path Width	Center Dur.
1806 Jun 16	16:24	T	124	0.320	1.060	42.2N	64.5W	71	210	04m55s



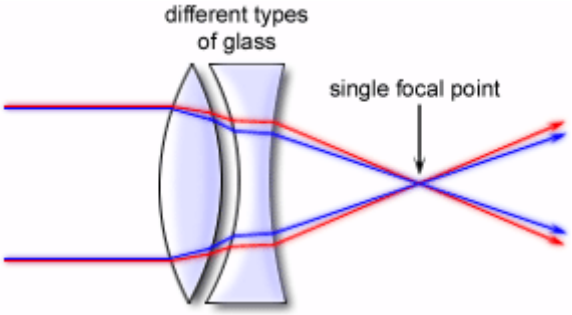
[Henry C. Wright's autobiography]

When quite young, there was a total eclipse of the sun in June.

That event made a deep impression on me. I heard much about it for weeks beforehand. I knew not what it was to be like, except that it was to be dark about mid-day. I was hoeing Indian corn, with two older brothers. They sent me off on an errand, and as I passed to the place, I could see the woods becoming dingy. I started to return, and by this time, birds and beasts began to be in extraordinary excitement, rushing to the roost and the lair. The woods became dark and gloomy. I was in the midst, and night seemed to drop down upon the scene in the midst of daylight. The forest had the same gloomy appearance which it had at night. The sun had an appearance I never saw before; it seemed to be in a process of going out, till, for a moment, it was all gone. I knew where I was, and the way out of the wood, and what was the matter, and had no fear. I stood still in the woods, and contemplated the scene with wonder. It soon passed, and I went on my way; but an awe was on my spirit long afterwards, whenever I saw the heavens by day or night.

1813

The optical refractor telescope, redeemed from its initial problem of chromatic distortion, was by this point coming to dominate astronomy.



HISTORY OF OPTICS

1819

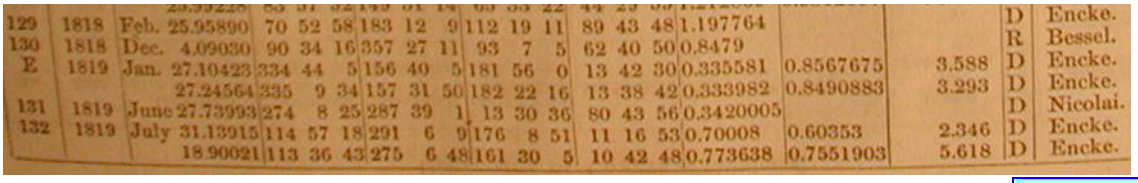
June 26, Saturday: Emma di Resburgo, a melodramma eroico by Giacomo Meyerbeer to words of Rossi, was performed for the initial time, in Teatro San Benedetto, Venice. This would eventually receive 74 performances.

Abner Doubleday, who would be credited with inventing American baseball, was born.

SPORTS

At about this point a comet was passing unobserved between the earth and the sun, with the tail of the comet brushing over the earth without producing any noticeable effects. The passage of this comet would not be inferred until, on July 1st, it would be noticed low in the west after sunset.

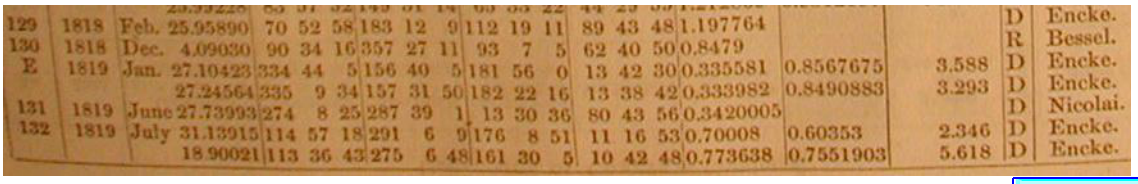
According to a list published in Boston in 1846, attributed to Professor Benjamin Peirce:



129	1818	Feb. 25.95890	70	52	58	183	12	9	112	19	11	89	43	48	1.197764			D Encke.
130	1818	Dec. 4.09030	90	34	16	357	27	11	93	7	5	62	40	50	0.8479			R Bessel.
E	1819	Jan. 27.10423	334	44	5	156	40	5	181	56	0	13	42	30	0.335581	0.8567675	3.588	D Encke.
		27.24564	335	9	34	157	31	50	182	22	16	13	38	42	0.333982	0.8490883	3.293	D Encke.
131	1819	June 27.73993	274	8	25	287	39	1	13	30	36	80	43	56	0.3420005			D Nicolai.
132	1819	July 31.13915	114	57	18	291	6	9	176	8	51	11	16	53	0.70008	0.60353	2.346	D Encke.
		18.90021	113	36	43	275	6	48	161	30	5	10	42	48	0.773638	0.7551903	5.618	D Encke.

SKY EVENT

July 3, Saturday: Dominique François Jean Arago (1786-1853) directed his newly developed polarimiter toward the comet 1819 II Tralles and observed its tail region through a doubly refracted prism. He detected that the light from the tail, unlike the light given off by stars, was slightly polarized — indicating that it was reflected rather than emitted light.
According to a list published in Boston in 1846, attributed to Professor Benjamin Peirce:



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		18.90021	113	36	43	275	6	48	161	30	5	10	42	48	0.773638	0.7551903	5.618	D Encke.

SKY EVENT

The 1st savings bank in the USA, the Bank for Savings of New-York, opened its doors for business and received a total of $2,807.$\frac{00}{}$ in deposits.

Friend Stephen Wanton Gould wrote in his journal:

> *7th day 3rd of 7th M / A little precious favor this Morning, for which I desire to be thankful. —*

RELIGIOUS SOCIETY OF FRIENDS

August 14, Saturday: Apparently, according to a report which appeared in the American Journal of Science, between 8PM and 9PM on the previous evening two women of Amherst MA had observed "a brilliant white light resembling burnished silver" which they supposed to descend slowly from the sky as a ball onto their front yard. At one point this light was bright enough for them to see it reflect upon or cast a shadow against a nearby wall. The next morning, according to a report from a Professor Rufus Graves, the man of the house, an Erastus Dewey, noted that there was in his yard, some 20 feet from the doorstep, a "circular form, resembling a sauce or salad dish bottom upwards, about eight inches in diameter and one in thickness, of a bright buff color, with a fine nap upon it similar to that on milled cloth.... On removing the villous coat, a buff colored pulpy substance of the consistency of good soft soap, of an offensive, suffocating smell appeared; and on a near approach to it, or when immediately over it, the smell became almost insupportable, producing nausea and dizziness. A few minutes exposure to the atmosphere changed the buff into a livid color resembling venous blood. It was observed to attract moisture very rapidly from the air. A half-pint tumbler was nearly half filled with the substance. It soon began to liquefy and form a mucilaginous substance of the consistence, color, and feeling of starch when prepared for domestic use." Whatever this material was, within two or three days it would evaporate, leaving only some sort of dark-colored residue upon the sides and bottom of that tumbler. It would be noted that when they then rubbed some of this dried residue between their fingers, it became a fine, odorless ash.

SKY EVENT

Samuel Cabot reported his attention to have suddenly been arrested by an object emerging from the sea about 100 to 150 yards from him, "which gave to my mind at the first glance the idea of a horse's head.... I perceived at a short distance eight or ten regular bunches or protuberances, and at a short interval three or four more.... The Head ... was serpent shaped it was elevated about two feet from the water ... he could not be less than eighty feet long."

SEA SERPENT SIGHTINGS

After some passage of time, Friend Moses Brown wrote again to Sophronia N.J. Forster of Weare, New Hampshire, expressing continued interest in her teaching at Yearly Meeting School.

In Newport, Rhode Island, Friend Stephen Wanton Gould had a conversation with a local Jew and was reassured about the superiority of Quakerism:

> *7th day 14th of 8 M / Rec'd two letters from Wm Rickman in N York one of them mentioned that Wm Foster of England had obtained a Certificate from Friends there to pay a religious visit to friends in this Country & expected to embark next spring — This Afternoon my mind was struck in conversation with Moses Lopez a Jew, by a remark of his he was speaking of religion & giving some of his views on the subject & observed that was he to change his religion he should turn Quaker & remarked that there were some of our manners & customs that he approved beyond others & even some of his own — he Said he was once in New Bedford & was invited to dine at the house of Our friend Sam Rodman, who provided a good Salt Fish dinner for him & when they set down to the table he observed a profound silence which seemed very strange to him & was at an entire loss what to think or how to account for it but after a few moments, Socobility was resumed & things went on in their usual order, at tea he remarked the same pause, when, (to use his own expressions) he considered it must be some of our ceremonies, & he could but approve of it, being much more solemn in its effects than a prayer rabbled over*

with apparant feeling or sensibility, he remarked that it was their practice to say a short prayer after dinner, but he says I like Your mode best being more Solemn. now I have no doubt but this poor son of Israel was Struck with real religious feelings on the occasion, which from the dark state of his mind he would not fully comprehend. — This circumstance may tend to confirm Friends of the necessity of such pratices. — we know not the effects of them, if attended too with reverance they may reach the hearts of some, when we are not aware of it ourselves, & perhaps most effectively when nothing may be uttered

RELIGIOUS SOCIETY OF FRIENDS

1821

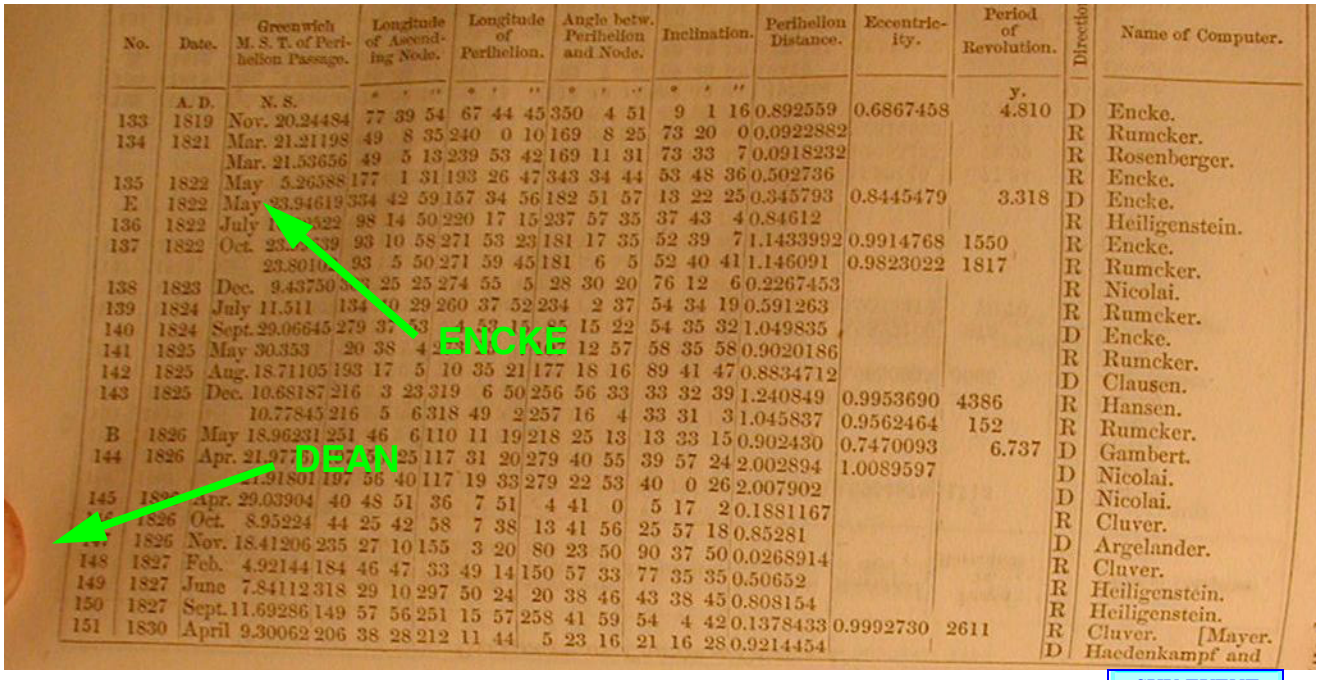
Michael Faraday demonstrated electromagnetic rotation, the basis for the electric motor.

August 27, Monday: There was an annular eclipse of the sun (#7218) from Baja California to the tip of Florida.

1822

May: Successful prediction of the return of the comet Encke.

According to a list published in Boston in 1846, attributed to Professor Benjamin Peirce (the fingernail in the photo belongs to Brad Dean, who rooted out this information in the Harvard stacks):



No.	Date.	Greenwich M. S. T. of Perihelion Passage.	Longitude of Ascending Node.	Longitude of Perihelion.	Angle betw. Perihelion and Node.	Inclination.	Perihelion Distance.	Eccentricity.	Period of Revolution.	Direction	Name of Computer.
	A. D.	N. S.	° ′ ″	° ′ ″	° ′ ″	° ′ ″			y.		
133	1819	Nov. 20.24484	77 39 54	67 44 45	350 4 51	9 1 16	0.892559	0.6867458	4.810	D	Encke.
134	1821	Mar. 21.21198	49 8 35	240 0 10	169 8 25	73 20 0	0.0922882			R	Rumcker.
		Mar. 21.53656	49 5 13	239 53 42	169 11 31	73 33 7	0.0918232			R	Rosenberger.
135	1822	May 5.26588	177 1 31	193 26 47	343 34 44	53 48 36	0.502736			R	Encke.
E	1822	May 23.94619	334 42 59	157 34 56	182 51 57	13 22 25	0.345793	0.8445479	3.318	D	Encke.
136	1822	July 1	98 14 50	220 17 15	237 57 35	37 43 4	0.84612			R	Heiligenstein.
137	1822	Oct. 23	93 10 58	271 53 23	181 17 35	52 39 7	1.1433992	0.9914768	1550	R	Encke.
		23.8010	93 5 50	271 59 45	181 6 5	52 40 41	1.146091	0.9823022	1817	R	Rumcker.
138	1823	Dec. 9.43750	25 25 274	55 5	28 30 20	76 12 6	0.2267453			R	Nicolai.
139	1824	July 11.511	134	29 260	37 52 234	2 37 54	34 19	0.591263			R Rumcker.
140	1824	Sept. 29.06645	279 37		15 22	54 35 32	1.049835			D	Encke.
141	1825	May 30.353	20 38	4	12 57	58 35 58	0.9020186			R	Rumcker.
142	1825	Aug. 18.71105	193 17	5 10	35 21	177 18 16	89 41 47	0.8834712			R Clausen.
143	1825	Dec. 10.68187	216 3	23 319	6 50	256 56 33	33 32 39	1.240849	0.9953690	4386	D Hansen.
		10.77845	216 5	6 318	49 2	257 16 4	33 31 3	1.045837	0.9562464	152	R Rumcker.
B	1826	May 18.96231	251 46	6 110	11 19	218 25 13	13 33 15	0.902430	0.7470093	6.737	R Gambert.
144	1826	Apr. 21.97	25	117	31 20	279 40 55	39 57 24	2.002894	1.0089597		D Nicolai.
		21.91801	197 56	40 117	19 33	279 22 53	40 0 26	2.007902			D Nicolai.
145	182	Apr. 29.03904	40 48 51	36 7 51	4 41 0	5 17 2	0.1881167			R	Cluver.
	1826	Oct. 8.95224	44 25 42	58 7 38	13 41 56	25 57 18	0.85281			D	Argelander.
	1826	Nov. 18.41206	235 27 10	155 3 20	80 23 50	90 37 50	0.0268914			R	Cluver.
148	1827	Feb. 4.92144	184 46 47	33 49 14	150 57 33	77 35 35	0.50652			R	Heiligenstein.
149	1827	June 7.84112	318 29 10	297 50 24	20 38 46	43 38 45	0.808154			R	Heiligenstein.
150	1827	Sept. 11.69286	149 57 56	251 15 57	258 41 59	54 4 42	0.1378433	0.9992730	2611	R	Cluver. [Mayer.
151	1830	April 9.30062	206 38 28	212 11 44	5 23 16	21 16 28	0.9214454			D	Haedenkampf and

SKY EVENT

February 21, Thursday: There was an annular/total eclipse of the sun (#7219) from Hudson Bay to Seattle.

Friend Stephen Wanton Gould wrote in his journal:

> *5th day 21 of 2nd M 1822 / A Violent Stormy day & hevy rain, which raised the brooks so high that only four women could get to meeting they rode. - The Meeting was silent - The preparative meeting I thought was remarkabley well conducted & it was a season of quiet & some favor. —*

RELIGIOUS SOCIETY OF FRIENDS

1823

William Cranch Bond of the timekeeper manufacturing firm of William Bond & Sons constructed an astronomical observatory in his home in Dorchester, Massachusetts.

HARVARD OBSERVATORY
ASTRONOMY

One Sunday in October: Waldo Emerson was deeply impressed by a "Discourse upon Revelation" by the Reverend William Ellery Channing, preaching in the Reverend Frederic Henry Hedge's Federal Street Church in Boston:

> *I heard Dr Channing deliver a discourse upon Revelation as standing in comparison with Nature. I have heard no sermon approaching in excellence to this, since the Dudleian Lecture. The language was a transparent medium, conveying with the utmost distinctness, the pictures in his mind, to the minds of the hearers. He considered God's word to be the only expounder of his works, & that Nature had always been found insufficient to teach men the great doctrines which Revelation inculcated. Astronomy had in one or two ways an unhappy tendency. An universe of matter in which Deity would display his power & greatness must be of infinite extent & complicate relations and of course too vast to be measured by the eye & understanding of man. Hence errors. Astron. reveals to us infinite number of worlds like our own accommodated for the residence of such beings as we of gross matter. But to kindle our piety & urge our faith, we do not want such a world as this but a purer, a world of morals & of spirits. La Place has written in the mountain album of Switzerland his avowal of Atheism. Newton had a better master than Suns & Stars. He learned of heaven ere he philosophized, & after travelling through mazes of the universe he returned to bow his laurelled head at the feet of Jesus of Nazareth. Dr C. regarded Revelation as much a part of the order of things as any other event. It would have been wise to have made an abstract of the Discourse immediately.*

ASTRONOMY

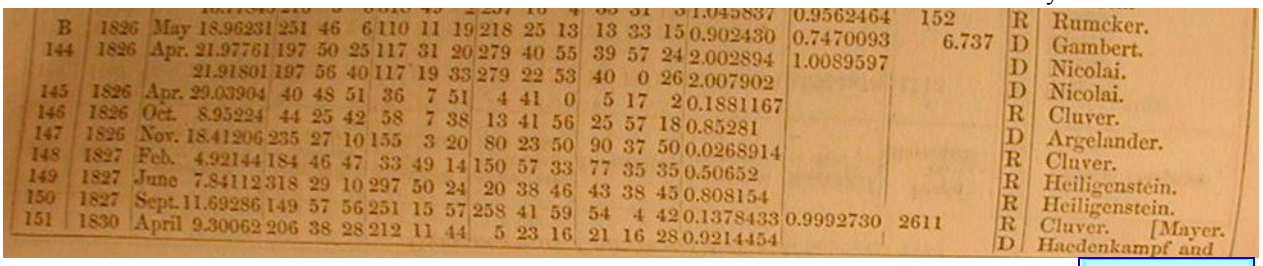
1825

May 20, Friday: George Phillips Bond was born.

ASTRONOMY
HARVARD OBSERVATORY

1826

February 27, Monday: Captain Wilhelm von Biela was searching the skies, having accepted the calculation of Joseph Morstadt that a comet seen in 1772 and a comet seen on November 10, 1805 were the same object returning repeatedly, and sure enough, on this night he was able to detect that object returning as predicted. What would become known as Biela's Comet would remain visible on this visit for 72 days.



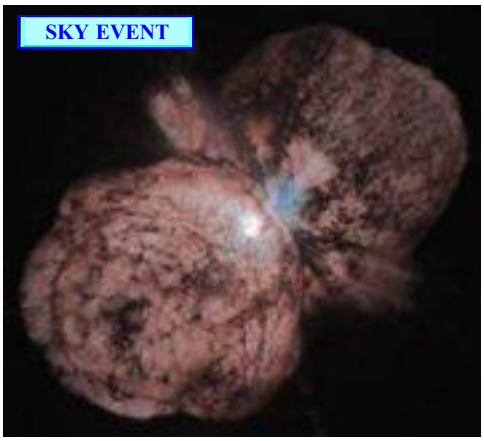
B	1826	May	18.96231	251	46	6	110	11	19	218	25	13	13	33	15	0.902430	0.9562464	152	R Rumcker.
144	1826	Apr.	21.97761	197	50	25	117	31	20	279	40	55	39	57	24	2.002894	0.7470093	6.737	D Gambert.
			21.91801	197	56	40	117	19	33	279	22	53	40	0	26	2.007902	1.0089597		D Nicolai.
145	1826	Apr.	29.03904	40	48	51	36	7	51	4	41	0	5	17	2	0.1881167			D Nicolai.
146	1826	Oct.	8.95224	44	25	42	58	7	38	13	41	56	25	57	18	0.85281			R Cluver.
147	1826	Nov.	18.41206	235	27	10	155	3	20	80	23	50	90	37	50	0.0268914			D Argelander.
148	1827	Feb.	4.92144	184	46	47	33	49	14	150	57	33	77	35	35	0.50652			R Cluver.
149	1827	June	7.84112	318	29	10	297	50	24	20	38	46	43	38	45	0.808154			R Heiligenstein.
150	1827	Sept.	11.69286	149	57	56	251	15	57	258	41	59	54	4	42	0.1378433	0.9992730	2611	R Heiligenstein.
151	1830	April	9.30062	206	38	28	212	11	44	5	23	16	21	16	28	0.9214454			R Cluver. [Mayer.
																			D Haedenkampf and

SKY EVENT

1827

Although Edmond Halley had cataloged the star Eta Carinae in 1677 as one of only the 4th magnitude, and during the early 19th century it had been a run-of-the-mill variable star, sometimes appearing at 4th magnitude, sometimes at 2d, in this year it rose to 1st magnitude. We can now use the Hubble Space Telescope to inspect what had been happening:

SKY EVENT



1828

November 30, Sunday: Johann Franz Encke (1791–1865)'s comet returned.

SKY EVENT

In Providence, Rhode Island, Friend Stephen Wanton Gould wrote in his journal:

> *1st day 30 of 11 M 1828 / Both Meetings silent but solid opportunities to me. —*

RELIGIOUS SOCIETY OF FRIENDS

1830

The 1st course of lectures offered by the Salem Lyceum consisted of:

The Salem Lyceum — 1st Season

Daniel A. White of Salem
Advantages of Knowledge

John Brazer of Salem
Authenticity of Ancient Manuscripts

Francis Peabody of Salem
Steam Engine

Abel L. Peirson of Salem
Physiology

George Choate of Salem
Geology

Thomas Spencer of Salem
Optics

Charles G. Putnam of Salem
Nervous System

Thomas Cole of Salem
Astronomy

Stephen C. Phillips of Salem
Reading of a Lecture written by E. Everett of the Workingmen's Party

Stephen C. Phillips of Salem
Public Education, with a sketch of the origin of the public schools of Salem

Henry Colman of Salem
Human Mind

Joshua B. Flint
Respiration

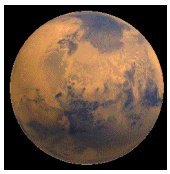
Joshua B. Flint
Circulation of the Blood

Joshua B. Flint
Digestion

By this year the observed position of the 7th planet Uranus, which had been discovered in 1781, was deviating so much from its calculated position (about half a minute of space), as to cause speculation that there must be another massive object out there beyond it, as yet undiscovered (this 8th planet would be observed in 1845, and named Neptune).

ASTRONOMY

September 19, Sunday: During the perihelic opposition of Mars, the planet's appearance was being carefully scrutinized with the best available instruments. Sketches were made by independent observers and then compared one with another. It was clear that the markings being claimed were objectively present, and were stationary on the surface and thus not clouds.



ASTRONOMY

Friend Stephen Wanton Gould wrote in his journal:

> *1st day 19th of 9th M 1830 / Silent meetings & poor dry times to me. — But I desire to be thankful that I have some evidence of divine Support*

RELIGIOUS SOCIETY OF FRIENDS

1831

February: In August of this year there would be an obscurement of the sun which would cause much alarm in America, and, from the "confession" of Nat Turner in his jail cell later in this year, we can now learn that his thinking had at that time been:

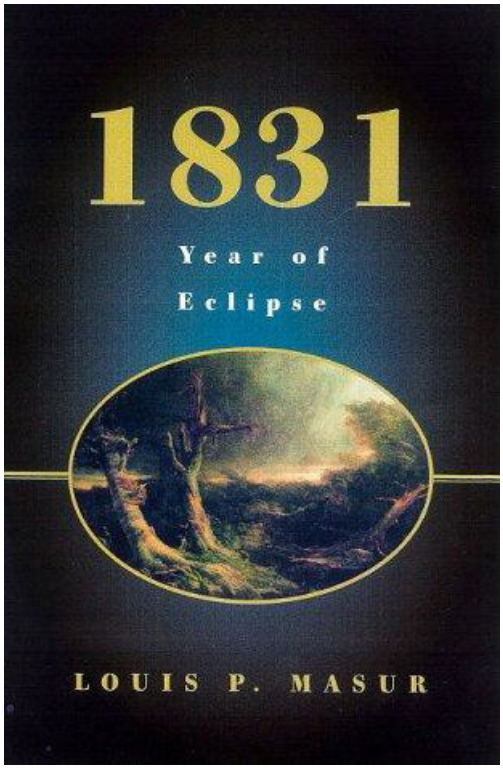
> *And by signs in the heavens that it would make known to me when I should commence the great work, and until the first sign appeared I should conceal it from the knowledge of men; and on the appearance of the sign, I should arise and prepare myself, and slay my enemies with their own weapons. And immediately on the sign appearing in the heavens, the seal was removed from my lips, and I communicated the great work laid out for me to do, to four in whom I had the greatest confidence (Henry, Hark, Nelson, and Sam).*

Here is the standard uncorroborated and undocumented and, indeed, uninvestigated and inaccurate, eclipse theory of this, an interpretation which strangely places the sign in the heavens in the month of February, half a year earlier than in the month of August when Turner's insurrection actually went down — per J.S.

Bowmen's CAMBRIDGE DICTIONARY OF AMERICAN BIOGRAPHY (emphasis added):

> Turner, Nat (1800-31): Leader of slave insurrection, born in Southampton County, Virginia, USA. He was born on the Virginia plantation of Benjamin Turner, who allowed him to be instructed in reading, writing, and religion. Sold three times in his childhood and hired out to John Travis (in the 1820s), he became a fiery preacher and leader of African-American slaves on Benjamin Turner's plantation and in his Southampton County, Va, neighbourhood, claiming that he was chosen by God to lead them from bondage. Believing in signs and hearing divine voices, **he was convinced by an eclipse of the sun (1831)** that the time to rise up had come and he enlisted the help of four other slaves in the area. An insurrection was planned, aborted, and rescheduled; then, on August 21-2, he and six other slaves killed the Travis family, managed to secure arms and horses, and enlisted about 75 other slaves in a disorganized insurrection that resulted in only the murder of 51 white people. Afterwards, he hid nearby successfully for six weeks until his discovery, conviction, and hanging at Jerusalem, Va, along with 16 of his followers. The incident put fear in the heart of Southerners, ended the organized emancipation movement in that region, resulted in even harsher laws against slaves, and deepened the schism between slaveholders and free-soilers that would culminate in the Civil War.

This standard uncorroborated and undocumented and, indeed, uninvestigated and inaccurate, eclipse theory has recently been perpetuated by the incautious "historian" Louis P. Masur, in his 1831: YEAR OF ECLIPSE (Hill and Wang, 2001. ISBN: 0-8090-4118-9):



The circumstances of any and all partial or total eclipses of the sun that might possibly have been viewed by an ignorant Nat Turner as alleged in that CAMBRIDGE DICTIONARY OF AMERICAN BIOGRAPHY above, who had

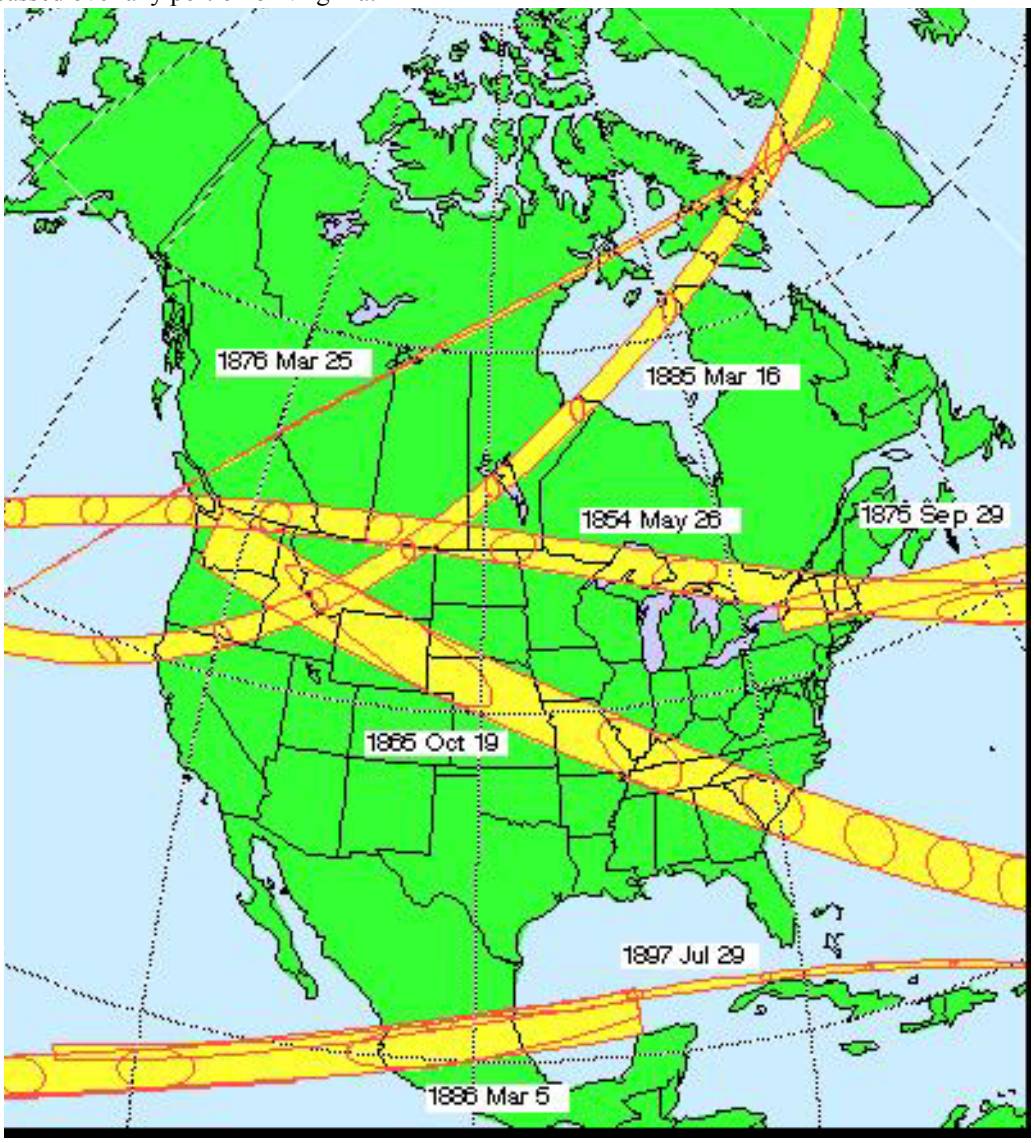
been born in 1800 and was executed in 1831, at any point during his lifetime in North America, would be exhaustively iterated as follows:

Date	Greatest Eclipse	Type	Saros #	Gamma	Eclipse Mag.	Lat.	Long.	Sun Alt.	Path Width	Center Dur.
1801 Apr 13	04:08	P	145	1.315	0.420	61.3N	11.7E	0		
1801 Sep 08	05:54	P	112	1.466	0.160	61.1N	168.4W	0		
1802 Aug 28	07:12	A	122	0.757	0.937	51.3N	105.7E	41	354	05m35s
1803 Aug 17	08:25	A	132	-0.005	0.966	13.6N	54.7E	90	124	03m47s
1804 Feb 11	11:16	H	137	0.705	1.000	26.7N	4.4W	45	0	00m00s
1805 Jan 30	18:57	P	147	1.465	0.167	62.7N	152.8W	0		
1805 Jun 26	23:27	P	114	1.046	0.935	65.5N	9.8W	0		
1806 Jun 16	16:24	T	124	0.320	1.060	42.2N	64.5W	71	210	04m55s
1807 Nov 29	11:42	H	139	0.538	1.014	11.1N	3.9E	57	55	01m26s
1808 Nov 18	02:30	P	149	1.187	0.657	69.2N	162.7E	0		
1809 Apr 14	20:07	A	116	0.874	0.943	65.8N	157.3W	29	436	04m35s
1810 Apr 04	01:41	A	126	0.103	0.997	11.1N	153.8E	84	12	00m21s
1811 Sep 17	18:43	A	141	0.680	0.934	43.0N	85.9W	47	330	06m51s
1812 Feb 12	20:28	P	108	1.355	0.341	70.7N	168.8W	0		
1812 Sep 05	19:04	P	151	1.394	0.287	71.8N	4.5E	0		
1813 Feb 01	08:58	A	118	0.715	0.982	28.0N	40.4E	44	91	01m53s
1814 Jul 17	06:30	T	133	0.164	1.077	30.9N	84.7E	80	254	06m33s
1815 Jul 06	23:43	T	143	0.906	1.059	88.1N	162.8W	25	469	03m13s
1816 Nov 19	10:17	T	120	0.841	1.023	35.0N	41.5E	32	145	02m00s
1817 May 16	06:58	A	125	-0.205	0.948	7.9N	78.5E	78	194	06m30s
1818 May 05	07:16	A	135	0.544	0.946	45.8N	52.5E	57	233	05m05s
1819 Apr 24	11:32	P	145	1.258	0.522	61.7N	108.1W	0		
1819 Sep 19	13:03	Pe	112	1.526	0.058	61.0N	75.7E	0		
1820 Sep 07	14:00	A	122	0.825	0.933	51.6N	8.7E	34	433	05m49s
1821 Aug 27	**15:19**	**A**	**132**	**0.067**	**0.966**	**13.6N**	**47.7W**	**86**	**123**	**03m38s**
1822 Feb 21	**19:40**	**A**	**137**	**0.691**	**1.000**	**28.6N**	**132.3W**	**46**	**2**	**00m02s**
1823 Feb 11	03:03	P	147	1.454	0.185	62.0N	76.7E	0		
1823 Jul 08	06:56	P	114	1.118	0.795	64.6N	131.9W	0		

Date	Greatest Eclipse	Type	Saros #	Gamma	Eclipse Mag.	Lat.	Long.	Sun Alt.	Path Width	Center Dur.
1824 Jun 26	23:46	T	124	0.396	1.058	46.6N	171.4W	66	207	04m31s
1825 Jun 16	12:19	H	134	-0.381	1.004	1.0N	6.0W	68	13	00m25s
1825 Dec 09	20:22	H	139	0.530	1.015	9.2N	127.4W	58	60	01m34s
1826 Nov 29	11:14	P	149	1.176	0.677	68.2N	20.0E	0		
1827 Apr 26	03:11	A	116	0.932	0.946	74.8N	73.4E	21	560	03m53s
1828 Apr 14	09:19	Hm	126	0.150	1.003	17.9N	37.7E	81	10	00m18s
1829 Sep 28	01:47	A	141	0.624	0.932	34.9N	164.4E	51	323	07m43s
1830 Feb 23	05:04	P	108	1.372	0.309	71.3N	48.9E	0		
1830 Sep 17	02:08	P	151	1.332	0.393	72.1N	115.5W	0		
1831 Feb 12	**17:22**	**A**	**118**	**0.729**	**0.981**	**31.9N**	**88.3W**	**43**	**100**	**01m57s**

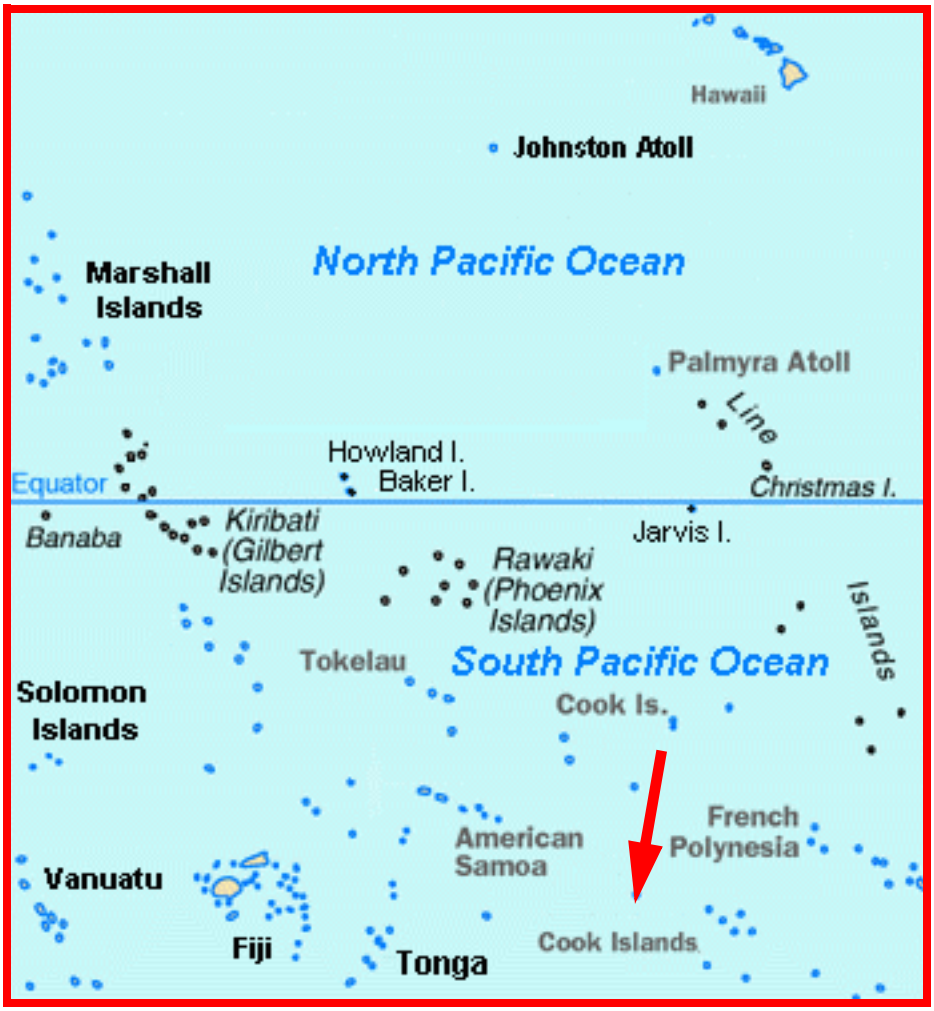
There is only one solar eclipse of the 38-odd calculated in the above table, as having occurred at some point on the northern hemisphere of the earth during Nat Turner's lifetime, which could possibly qualify as the initiator of the timing of his revolt, and that would have been the one marked in red letters on the above list, the very last entry before his execution, the one which had occurred on February 12, 1831. However, that solar eclipse (#7243) had been merely a partial (annular) one passing across the continent from Baja California to Massachusetts in such an entirely glancing manner as to be viewable for less than two minutes just north of Silas, Alabama (31.5N 88.2W) even in its partiality, and might be plausible as an explanation for the timing of the slave revolt only had Turner been a Mississippi bottomlands plantation freedom fighter rather than a tidewater freedom fighter in the vicinity of the Great Dismal Swamp and Newport News, Virginia (36.6N 76.3W). Our astronomers haven't even bothered to put this little local February 12, 1831 Alabama nibble thingie upon their chart of historically significant annular eclipses in the USA, none of which it seemed ever

passed over any portion of Virginia:



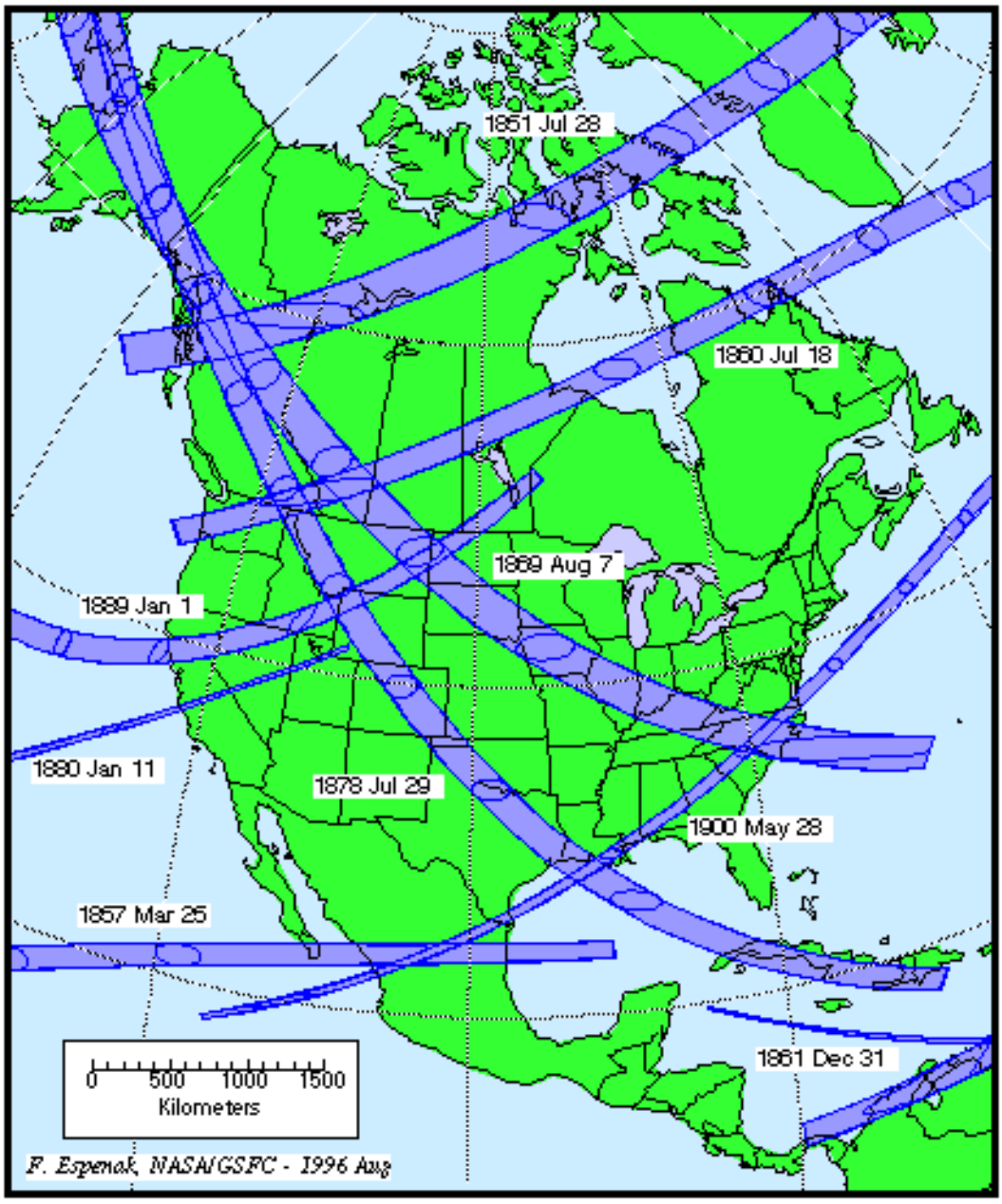
To expand upon this ridiculousness, there was also a total eclipse on August 7, 1831, the totality of which lasted for almost three and a half minutes, and that of course was precisely timed to be unquestionably the cause of this August 21, 1831 American freedom fight — but that total solar eclipse had been viewable only along a path 160 miles wide in the vicinity of Rarotonga (21.1S 159.5W) in the Cook Islands chain in the Southern Hemisphere, for instance by the Reverend John Williams of the London Missionary Society at his

post there in that remote reach of the South Pacific.



Although there has indeed been a total eclipse of the sun that might qualify for the honor of triggering ignorant

expectations in tidewater Virginia, that event would not transpire until May 28th in the year 1900:

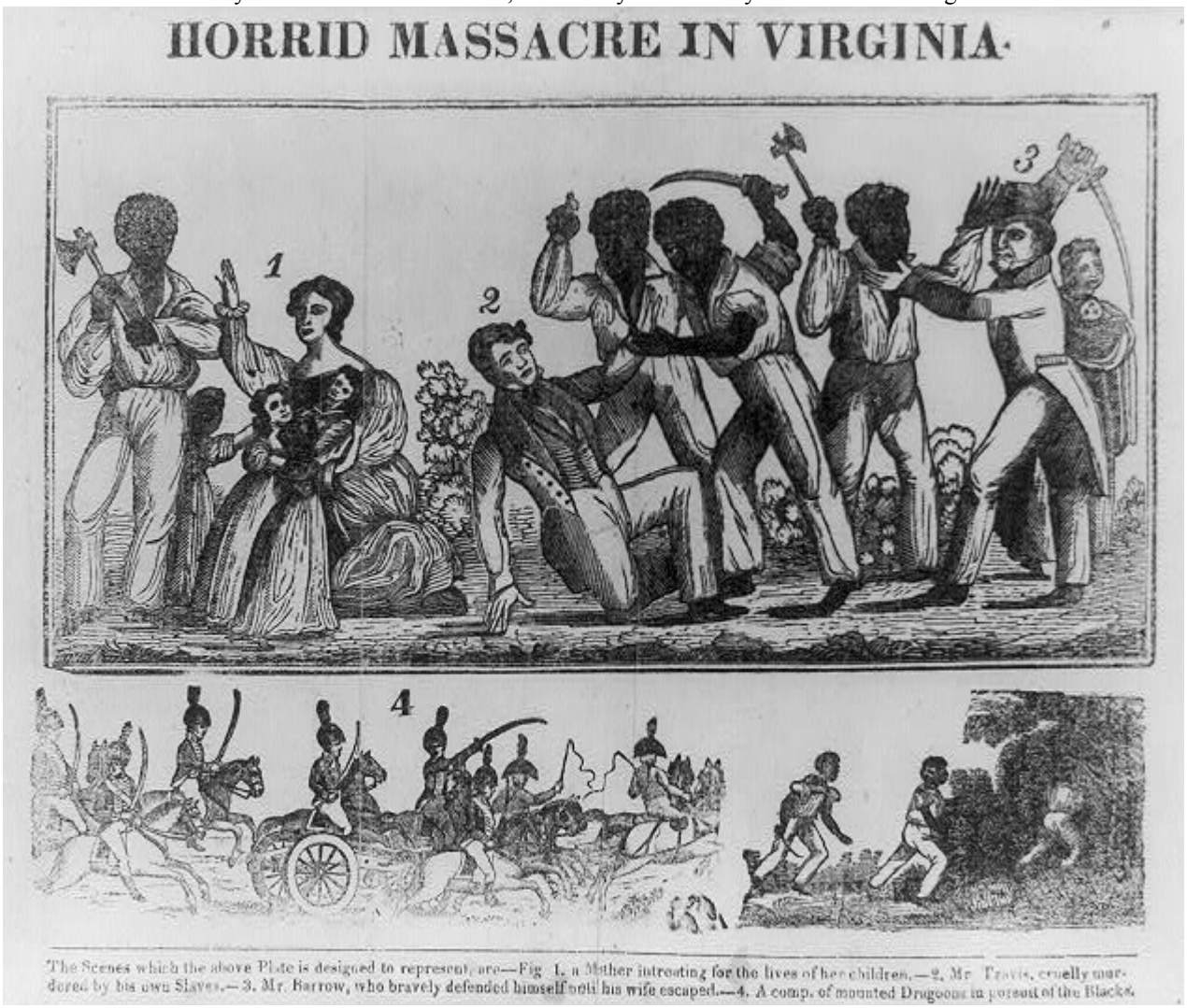


How then to account for the explanation offered by Nat Turner in his confinement awaiting his execution and rendering? For three days the sun appeared, all the way from New York down into South Carolina, to have changed in color. This atmospheric disturbance has been characterized as "The Three Blue Days" centering upon August 12th. Some superstitions white people in Philadelphia had announced this to be "a sad augury of coming evil" and Turner had interpreted it as a black hand appear to cross the sun ("as the black spot passed over the sun, so shall the black pass over the earth"), while other persons reported that they believed they had seen in the heavens, emerging from "a long narrow (or serpentine) silvery colored belt," the letters **G – O – D**.

But this has not been an eclipse. The phenomenon had been caused by high altitude smoke given off by an

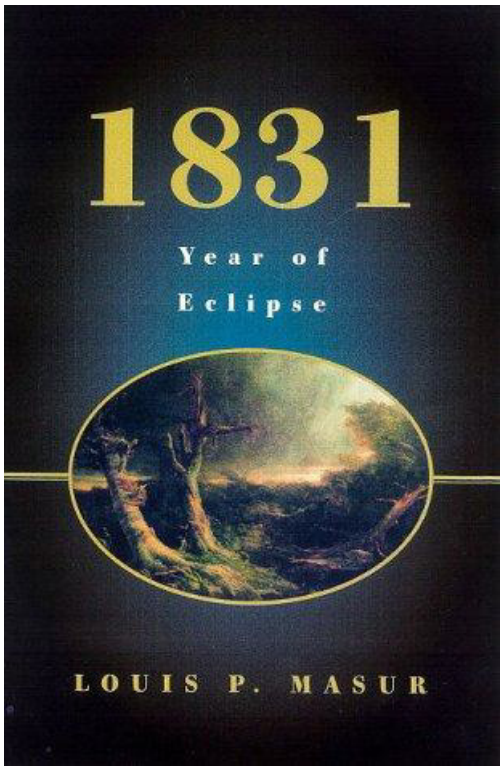
immense forest fire in Canada.

Why does it matter, whether the trigger event influencing the timing of the revolt had been a solar obscurement rather than an eclipse? Here is the reason. What had occurred was a one-time, quite mysterious event, which all across our nation in the absence of factual information received weird spontaneous explanation.
To presume that Nat Turner was so ignorant and sprang from such a deprived culture, that people like him would not have known what a solar eclipse was, and would therefore have been subject to such serious misunderstandings when one occurred, actually is of a piece with the 19th-Century story that when Turner's body was rendered after his death, his skull was discovered to be as thick as that of a sheep. We should beware of the one story as we beware of the other, as not only unnecessary but also demeaning.



February 12, Saturday: At this point the Glasgow Skating Club's SKATERS MANUAL contained descriptions of 13 combined skating figures.

According to Chapter I of the history of this year by Professor Louis P. Masur, titled 1831: YEAR OF ECLIPSE (Hill and Wang, 2001. ISBN: 0-8090-4118-9), everyone, presumably even Nat Turner, even the recreational skaters on the frozen Delaware River, knew that an eclipse was coming:



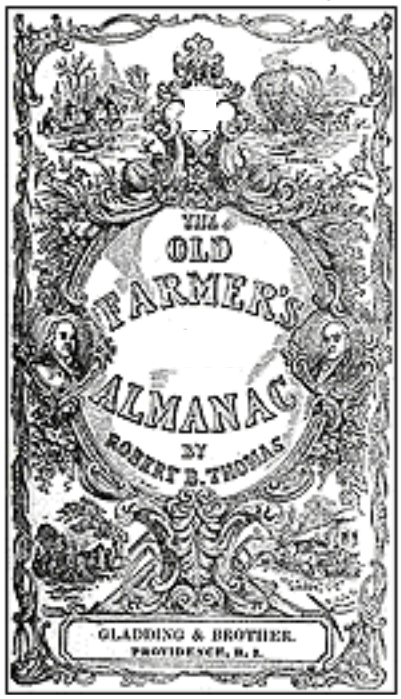
Everyone knew it was coming. "THE GREAT ECLIPSE OF 1831 will be one of the most remarkable that will again be witnessed in the United States for a long course of years," alerted ASH'S POCKET ALMANAC. One editor reported that the February 12 eclipse would even surpass historic occasions when "the darkness was such that domestic fowls retired to roost" and "it appeared as if the moon rode unsteadily in her orbit, and the earth seemed to tremble on its axis." On the day of the eclipse, from New England through the South, Americans looked to the heavens. One diarist saw "men, women and children ... in all directions, with a piece of smoked glass, and eyes turn'd upward." The Boston Evening Gazette reported that "this part of the world has been all anxiety ... to witness the solar eclipse.... Business was suspended and thousands of persons were looking at the phenomena with intense curiosity." "Every person in the city," noted the Richmond Enquirer, "was star gazing, from bleary-eyed old age to the most bright-eyed infancy."
Unlike previous celestial events, thought some commentators, the eclipse of 1831 would not produce superstitious dread that the world would end. "Idle fears and gloomy forebodings of evil formerly raised by the appearance of phenomena caused by the regular operation of natural laws," one writer claimed, "have

yielded to pleasing admiration; a change which the march of science and general diffusion of knowledge have largely contributed to effect." Another writer mocked the notion that eclipses were "signs or forerunners of great calamities." Eclipses, he thought, "necessarily result from the established laws of the planetary revolution, and take place in exact conformity with those laws.... Those who entertain the opinion that eclipses of the sun are tokens of the Divine displeasure can produce no warrant from scripture for their irrational belief. If we would look for the signs of the displeasure of God towards a nation, we can see them, not in eclipses, but in national sins and depravity of morals."

Rational explanations of atmospheric events, however, offered little solace to most Americans. In many, "a kind of vague fear, of impending danger –a prophetic presentiment of some approaching catastrophe"– was awakened, and "the reasonings of astronomy, or the veritable deductions of mathematical forecast," did little to diminish the anxiety. One correspondent reported that an "old shoe-black accosted a person in front of our office, the day previous to the eclipse, and asked him if he was not afraid. For, said he, with tears in his eyes, the world is to be destroyed to-morrow; the sun and moon are to meet ... and a great earthquake was to swallow us all! — Others said the sun and the earth would come in contact, and the latter would be consumed. Others again, were seen wending their ways to their friends and relations, covered with gloom and sadness; saying that they intended to die with them!" The day after the eclipse, preachers employed LUKE 21:25 as the text for their sermons: "there shall be signs in the sun." "In strict propriety of language," one minister observed, "it is not the sun that is eclipsed. Not the slightest shadow is cast upon the least portion of his broad disk. His beams are shot forth precisely the same. It is over us only that the momentary darkness is spread, and it is truly the earth that is eclipsed."

The spectacle, however, proved anticlimactic. "The darkness being less visible than generally expected," the heaven-gazers felt "bamboozled." "At the moment of greatest obscuration," reported one paper, "a foolish feeling of disappointment was generally prevalent and this was expressed by many in such terms as they might have used after having been taken in by the quacking advertisement of an exhibitor of fireworks or phantasmagoria. It was not half as dark as they expected." "The darkness was that of a thunder gust," snorted one observer: "The light of the sun was sickly, but shadows were very perceptible." "The multitude have been sadly disappointed," reported one editor. "They looked for darkness and the shades of light; they expected to drink in horrors, and feel the power of superstition without its terrors or apprehensions; they expected to work by candlelight, see cows come home, and poultry go ultimately to roost –to count the stars and tell them by their names; in short, to see something that they might talk about now and hereafter–

something to tell their children and grandchildren."



With the anticipation more disturbing than the event, some sought to cast blame. Almanac makers and newspaper editors were chastised for their extravagant predictions of darkness and glowing descriptions of the wonders that would be seen. Some thought the astronomers deserved condemnation for offering elaborate calculations that fizzled. Others blamed regional temperaments for the heightened expectations. "Our Yankee proneness to exaggeration," thought the Boston Patriot, "was manifested in a ludicrous manner on the occasion of the late eclipse." Southerners agreed: "Our eastern brethren are, as usual, up in arms about the matter – they talk of a convention. Truth to say, expectations were scarcely realized. On such occasions, people now-a-day show a shockingly morbid appetite – they look for portentous signs, for ghastly gleanings of fiery comets, the rushing up, with dire intimations of the `northern lights,' and expect to see `clouds of dark blood to blot the sun's broad light, / And angry meteors shroud the world in night.'"

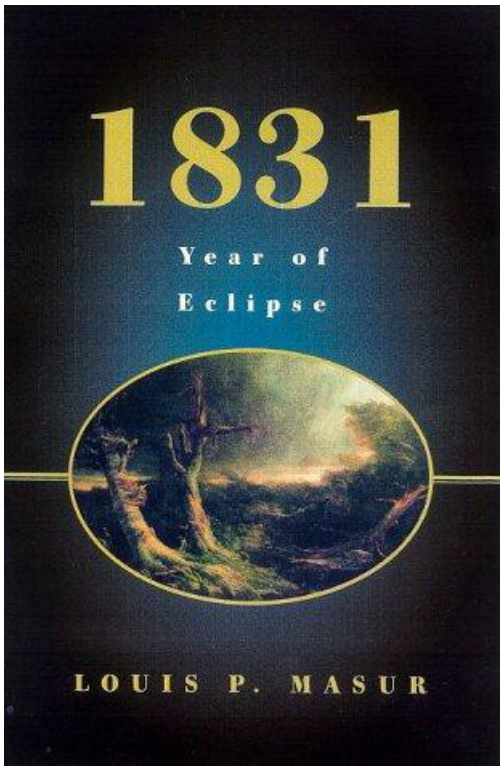
However much the eclipse disappointed, it served as metaphor and omen. Edward Everett, senator from Massachusetts, reported that "a motion was made in the House of Representatives to adjourn over till Monday in consequence of the darkness which was to prevail." The motion did not pass, and Everett quipped, "After sitting so frequently when there is darkness inside the House, it would be idle I think to fly before a little darkness on the face of the heavens." The United States Gazette, which feverishly opposed the re-election of President Andrew Jackson, joked that "the solar eclipse has not attracted as much attention here, as the late curious obscuration of one of the smaller stars in the constellation, Jupiter Jackson." With

greater sobriety, the editor of the Philadelphia Gazette observed that "the affairs of the Eastern hemisphere ... have reached a thrilling and portentous crisis. An irresistible spirit of reform seems burning with occult but mighty energy among the nations.... An eclipse in Europe at the present time might be considered as an omen. In this country, where it has lately occurred, the sunshine of regulated freedom appears alone to rest."

Unmoved by editorial, ministerial, astronomical, or political pronouncements and predictions, on the day of the eclipse some Philadelphians went ice-skating. The coldest winter in decades had frozen the Delaware River, and thousands of citizens chose to pass the day in recreation. The Saturday Bulletin reported, "It is probable that fifteen thousand persons were amusing themselves by sliding and skating on the river, while the numerous booths, or travelling dram-shops which were located at short distances apart, throughout the whole city front, were observed to do a brisk business in hot punch, smoked sausages, crackers, and ten-for-a-cent cigars. Sober citizens, whom we have observed never exceed a regular dog-trot, while walking our streets, were now capering around with the agility of a feather in a whirlwind."

One artist drew the scene. On February 12, Edward William Clay set up his easel by the Delaware River and produced an image of citizens at play. Men of all classes slip and swirl, some into one another's arms, as they skate the day away. To the right, a rough-hewn citizen warms himself with a drink; a woman looks on contentedly. A black man, in stereotypical comic fashion, slides helplessly away, his hat lost. All is movement and motion, energy and action. But the sky is gray, the light is pale, and

dusk is approaching.



Louis P. Masur titled his book 1831: YEAR OF ECLIPSE: That's apparently short for 1831: YEAR OF THE ECLIPSED ECLIPSE. Now is somebody going to write a history book titled 1957: YEAR OF THE THIRD WORLD WAR THAT DIDN'T HAPPEN AS EXPECTED?

Although nothing whatever was visible to the naked eye at any point north of the Gulf Coast (where a brief minor "nibble" might possibly have been noted by some extraordinarily attentive observer), Maria Mitchell, age 12, assisted her father in his attempts to use his amateur astronomical equipment to view the moon as it passed, invisible to the naked eye, close by but at no point touching upon the disk of the sun. Although it is of record that this attempt was made (they were attempting to determine the exact longitude of Nantucket Island), I very much doubt that –so close to the solar brilliance– they would have been able by the use of available instruments to make any readings at all.

Louis P. Masur to the contrary notwithstanding, here are the salient events that might have (but did not) create scholarly monographs entitled perhaps 1806: YEAR OF ECLIPSE or perhaps 1868: YEAR OF ECLIPSE:

Date	Type	Size	Length	Name
May 3, 1375 BCE	Total	1.029	02m05s	Ugarit Eclipse
June 5, 1302 BCE	Total	1.080	06m24s	Early Chinese Eclipse
April 16, 1178 BCE	Total	1.060	04m34s	Homer's "Odyssey"
April 20, 899 BCE	Annular	0.959	03m05s	China's "Double-Dawn" Eclipse
June 15, 763 BCE	Total	1.060	04m59s	Assyrian Eclipse
April 6, 648 BCE	Total	1.069	05m02s	Archilochus's Eclipse

May 28, 585 BCE	Total	1.080	06m05s	Herodotus/Thales Eclipse (Medes vs. Lydians)
May 19, 557 BCE	Total	1.026	02m22s	The Siege of Larisa
October 2, 480 BCE	Annular	0.932	07m58s	Xerxes's Eclipse
August 3, 431 BCE	Annular	0.984	01m04s	Peloponnesian War
March 21, 424 BCE	Annular	0.943	04m38s	8th Year of Peloponnesian War
November 24, 29 CE	Total	1.022	01m59s	Crucifixion of Christ?
March 19, 33 CE	Total	1.058	04m06s	Crucifixion of Christ?
April 30, 59 CE	Total	1.019	01m50s	Plinius's Eclipse
March 20, 71 CE	Hybrid	1.007	00m35s	Plutarch's Eclipse
June 6, 346 CE	Total	1.059	03m58s	no name
July 19, 418 CE	Total	1.046	03m52s	no name
November 24, 569 CE	Total	1.036	03m17s	Eclipse Preceding Birth of Mohammad
January 27, 632 CE	Annular	0.984	01m40s	Death of Mohammad's Son Ibrahim
December 7, 671 CE	Annular	0.924	10m18s	no name
May 5, 840 CE	Total	1.076	05m46s	Emperor Louis's Eclipse (Treaty of Verdun)
May 14, 1230	Total	1.060	03m17s	Major European Eclipse
May 3, 1715	Total	1.063	04m14s	Edmund Halley's Eclipse
August 5, 1766	Annular	0.943	05m15s	Captain Cook's Eclipse
June 16, 1806	Total	1.060	04m55s	Tecumseh's Eclipse
August 18, 1868	Total	1.076	06m47s	King of Siam's Eclipse
July 29, 1878	Total	1.045	03m11s	Pike's Peak Eclipse
January 22, 1879	Annular	0.970	03m03s	Zulu War Eclipse
April 17, 1912	Hybrid	1.000	00m02s	The "Titanic" Eclipse
May 29, 1919	Total	1.072	06m51s	Einstein's Eclipse (Test of General Relativity)
January 24, 1925	Total	1.030	02m32s	NYC's Winter Morning Eclipse
August 31, 1932	Total	1.026	01m45s	Great Maine Eclipse

August 12, day: There was an obscurement of the sun which caused much alarm in America, and, from the "confession" of Nat Turner in his jail cell later in this year, we can now learn that his thinking had at that time been:

> *And by signs in the heavens that it would make known to me when I should commence the great work, and until the first sign appeared I should conceal it from the knowledge of men; and on the appearance of the sign, I should arise and prepare myself, and slay my enemies with their own weapons. And immediately on the sign appearing in the heavens, the seal was removed from my lips, and I communicated the great work laid out for me to do, to four in whom I had the greatest confidence (Henry, Hark, Nelson, and Sam).*

This obscurement has been construed by generations of careless historian to have been an eclipse.

It was no such animal. For three days the sun appeared, all the way from New York down into South Carolina, to have changed in color. This atmospheric disturbance, the "The Three Blue Days," centered upon August 12th. Some of the superstitious white people of Philadelphia announced this to be "a sad augury of coming evil" and Turner was interpreting it as a black hand crossing the sun ("as the black spot passed over the sun, so shall the black pass over the earth"), while other persons reported that they believed they had seen in the heavens, emerging from "a long narrow (or serpentine) silvery colored belt," the letters **G – O – D**.

The phenomenon had been caused by high altitude smoke given off by an immense forest fire in Canada.

(This sort of thing had happened before and would happen again and again.)

Why does it matter, whether the trigger event influencing the timing of the revolt had been a solar obscurement rather than an eclipse? Here is the reason. What had occurred was a one-time, quite mysterious event, which all across our nation in the absence of factual information received weird spontaneous explanation. To presume that the black man was so ignorant and sprang from such a deprived culture, that people like him would not have known what a solar eclipse was, and would therefore have been subject to such misunderstandings when one occurred, actually is of a piece with the 19th-Century story that when Turner's body was rendered after his death, his skull was discovered to be as thick as that of a sheep. We should beware of the one story as we beware of the other, as not only unnecessary but also demeaning.

Nevertheless, here is the inaccurate manner in which this story is now being spread by non-scholars on the Internet:

THOREAU AND TELESCOPES

"The sign came in February 1831, with an eclipse of the sun. He told his closest comrades that the time of battle and blood was approaching. With him in the initial leadership cadre were four men: Henry Porter, Hark Travis, Nelson Williams, and Samuel Francis. Evidently there was a group of some 25 who would form the core of the fighting force at first, convinced that others would be recruited as the struggle was openly joined.
The Fourth of July, that prime symbol of white American contradictions, was chosen as the date for the uprising. But as the time approached, Nat became ill (were there fears or premonitions?) and the date was abandoned. Another sign had to be sought. On August 13, 1831, there was 'a day-long atmosphere phenomenon, during which the sun appeared bluish-green,' and Nat knew that he had found the way again. One week later he met with Hark and Henry to agree on a final plan. The next night they met again, this time with several others; they agreed on their work, and ate a final meal together.
'IT WAS PLAIN to me that the Savior was about to lay down the yoke he had borne for the sins of men, and the great day of judgment was at hand.' —Nat Turner
In the dark hours of the morning of August 22, Nat Turner's God pressed him forward at the head of his band of black avenging angels, drove him in search of what seemed the ultimate justice: that 'the first should be last and the last should be first.'"

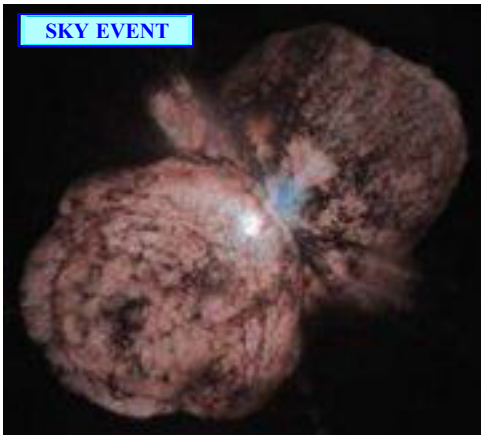
There was no detectable eclipse of the sun noticeable at any point in Virginia or North Carolina at any time during February 1831. All that had happened was that a whole bunch of white Americans had been, in anticipation of an eclipse that was announced for February 12th, engaging in a whole lot of chitchat, which then on February 12th was radically disappointed. The solar eclipse that they had been anticipating had been an utter fizzle. There had been no darkening whatever. If this non-event of February 1831 had had any impact at all upon Nat Turner, it would of necessity have needed to have come as his having heard white people chit-chatting about their anticipations of the event they were predicting, as it could not possibly have come from his having actually observed anything in the sky — there having been nothing in the sky for him to have observed.

ASTRONOMY

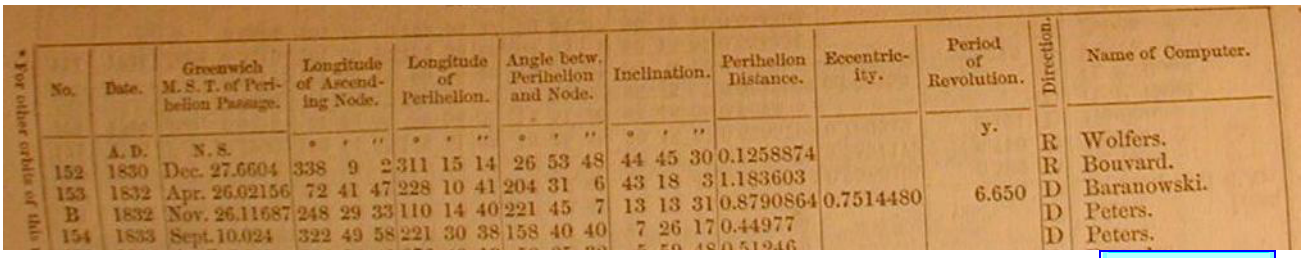
1832

Although Edmond Halley had cataloged the star Eta Carinae in 1677 as one of only the 4th magnitude, and during the early 19th century it had been a run-of-the-mill variable star, sometimes appearing at 4th magnitude, sometimes at 2d, in 1827 its brightness had briefly risen to 1st magnitude, and in this year, its brightness again increased to 1st magnitude. We can now use the Hubble Space Telescope to inspect what had been happening:

SKY EVENT



With Biela's Comet scheduled for its first predicted return, a respected astronomer named H.W.M. Olbers inadvertently set off a public panic by announcing, accurately enough, that the head of the comet would pass through Earth's orbit on October 29th. The newspapers sounded an alarm and then it took a concerted effort by pamphlet to educate the general public to the obvious fact: a comet's passing through Earth's orbit is not at all the same thing as a comet's impacting upon Earth itself. The public was educated that, at its closest approach, this comet would be 90,000,000 kilometers away from us — and a "War Of The Worlds" panic was averted.



No.	Date.	Greenwich M. S. T. of Perihelion Passage.	Longitude of Ascending Node.	Longitude of Perihelion.	Angle betw. Perihelion and Node.	Inclination.	Perihelion Distance.	Eccentricity.	Period of Revolution.	Direction.	Name of Computer.
	A. D.	N. S.	° ′ ″	° ′ ″	° ′ ″	° ′ ″			y.		
152	1830	Dec. 27.6604	338 9 2	311 15 14	26 53 48	44 45 30	0.1258874			R	Wolfers.
153	1832	Apr. 26.02156	72 41 47	228 10 41	204 31 6	43 18 3	1.183603			R	Bouvard.
B	1832	Nov. 26.11687	248 29 33	110 14 40	221 45 7	13 13 31	0.8790864	0.7514480	6.650	D	Baranowski.
154	1833	Sept. 10.024	322 49 58	221 30 38	158 40 40	7 26 17	0.44977			D	Peters.

* For other orbits of this

ASTRONOMY

1833

November 12, Tuesday: Alyeksandr Porfiryevich Borodin was born in St. Petersburg, an illegitimate son of Prince Luka Stepanovich Gedianov (Gedianishvili) by Avdotya Konstantinovna Antonova, daughter of a soldier from Narva. According to common practice the infant was registered as the son of one of the Prince's serfs, Porfiry Ionovich Borodin.

This would be the night of the birth of meteor astronomy. With David Henry Thoreau 16 years old and John Shepard Keyes 12 years old, a spectacular meteor shower during the wee smalls of the early morning hours was witnessed by numerous observers at various places on the eastern seaboard of the North American continent. For four hours the pre-dawn sky was lit with meteors. We don't know that Henry himself saw it; presumably he was asleep, although there were newspaper reports that many people were awakened by the flashes of light cast on the walls of dark bedrooms by the fireballs, and in the towns many people were awakened by the shouts and cries of neighbors. Keyes would report that:

> I slept in a chamber with an easterly window and happening by some unusual circumstance to be waked very early perhaps by the flashes of light I laid in bed for an hour or two watching and trying to count the bright streams of fire that shot so incessantly and madly across the sky. At last thoroughly roused by the sight I got up and pulling the bed clothes over my shoulders sat at the window till the day light hid the display. In my ignorance of the cause I almost concluded that the stars set or went out like that every morning and wondered I had never been told of it or seen it before. On coming down to breakfast I told the family that I saw hundreds of shooting stars that morning and was soundly taken to task for exaggeration, and scolded so that I held my tongue about it. But in a day or two when the accounts were in all the papers and everybodys mouth, I had an even worse scolding for not calling up the others to see the sight. It was grand splendid and magnificent beyond any thing I have ever seen since. The only picture I have ever seen that at all comes up to the scene is the one in the bulky volume of the one hundred memorable events of the first century of the U.S. It literally for all that hour or two rained stars with their long trails of sparks rocket like, in all directions across the heavens, mainly starting from a point in front of my window, and varying in sheer directions and colors to any extent.

J.S. KEYES AUTOBIOGRAPHY

The United States Telegraph of Washington DC suggested that "The strong southern wind of yesterday may have brought a body of electrified air, which, by the coldness of the morning, was caused to discharge its contents towards the earth." The Charleston Courier suggested that the sun had caused gases to be released from plants recently killed by frost. These gases, the most abundant of which was believed to be hydrogen, "became ignited by electricity or phosphoric particles in the air." Yale College's professor of natural philosophy, Denison Olmstead, however, in collecting and collating these various reports, would note that the apparent point of origin for these thousands upon thousands of streaks, regardless of the point of observation, had been a stationary radiant position in the neck of the constellation Leo. (This is why we now term them the Leonids, meaning "children of Leo.") A historian of Philadelphia would write the following description of the event:

> The meteors of the 13th of November, 1833, were the most remarkable ever witnessed. A beholder says, he was sitting alone in a well lighted apartment at 4 AM., when he suddenly saw through the window a shower of sparks falling past it on the outside. He supposed the house was on fire, and rushing to the door, to his extreme amazement, he found the entire atmosphere filled with flakes of fire, (for they fully resembled flakes of snow of a stellated or radiated form) of a pale rose red, seemingly of an inch diameter, falling in a vertical direction, as thick as he ever saw snow! Intermingled with the smaller stars, were a larger kind, equal to one in a hundred of the others, of an intense sapphire blue, seemingly of three to four inches diameter. This shower continued up to broad day light. They were seen all over the United States, and have been variously described, but all agreeing that they surpassed all other known cases.

SKY EVENT

A woodcut of the times, which would be recycled in color as below in Edmund Weiss's 1892 volume *BILDER-ATLAS DER STERNENWELT*, displays the sublime falling-star spectacle as it had been experienced above the magnificent sublime gloom and drifting sublime vapors of the Niagara Falls.[9]

The Reverend William Miller and his followers interpreted these falling stars as a sure sign of The End.

MILLENNIALISM

This display would lead to the first formulation of a theory on the origin of meteors.

> ...a tempest of falling stars broke over the Earth.... The sky was scored in every direction with shining tracks and illuminated with majestic fireballs. At Boston, the frequency of meteors was estimated to be about half that of flakes of snow in an average snowstorm. Their numbers ... were quite beyond counting; but as it waned, a reckoning was attempted, from which it was computed, on the basis of that much-diminished rate, that 240,000 must have been visible during the nine hours they continued to fall.

9. Whether such a Leonid meteor shower is spectacular or not varies from year to year and from region to region. The best one of this century has come and gone in 1966, with up to 100,000 meteors an hour having been visible. The last chance of this millennium to see a potentially enticing Leonid will come in 1999, but to view this during the hours of darkness you will need to travel to Europe. If you miss it you'll need to wait another century or more for the next one expected to be spectacular, at least until the year 2098 and perhaps until the year 2131. Yep, it just ain't fair.

This Leonid storm was of course observed on the Great Plains by a number of bands of Dakota and appears in any number of "winter counts" painted on animal skin. Von Del Chamberlain of the Smithsonian has tabulated the astronomical references in 50 such Dakota records and found that 45 of the 50 made reference to the meteor shower of 1833/1834. The journal of Alexander M. Stephen records a meeting with Old Djasjini of the Hopi group on December 11, 1892. Old Djasjini is recorded as having said "How old am I? Fifty, maybe a hundred years, I can not tell. When I was a boy of so big (eight or ten years) there was a great comet in the sky and at night all the above was full of shooting stars — ah! that was a very long time ago, maybe a hundred years, maybe more." During the probable lifetime of Old Djasjini there had been two such events which we know of, the great Leonid storm of 1833 followed by the sungrazing comet 1843 I. The Pawnee remember a Pahokatawa was of the opinion that when meteors were seen falling in great numbers it was not a sign that the world would end. Thus when the Pawnee witnessed the Leonid shower of 1833, when "the stars fell upon the earth," they were able to say to one another "Remember Pahokatawa" and overcome their fear.

SKY EVENT

In this year, as in 1866 and in 1966, observers might see "waterfalls" of shooting stars flowing down all sides of their sky. There might well on occasion be more than 8,000 flashes per minute.

The Leonids of this year generated numerous accounts of meteors that made a swishing noise, meteors that made a whooshing noise — and one that "resembled the noise of a child's pop-gun."

1834

January: Yale College's professor of natural philosophy, Denison Olmstead, made his report on the strange flashes and streaks in the sky during the pre-dawn hours of November 13, 1833. He noted that this phenomenon had not been observed in Europe. He also believed, falsely, that this phenomenon had not been observed west of Ohio, simply because it had not been reported farther west than Ohio **by white people**. He noted that the coordinates of the point of radiation in the constellation of Leo had been RA = 150 degrees, DEC = +20 degrees. (Professor A.C. Twining at West Point, New York estimated the radiant at RA = 148.4 degrees, DEC = +22.3 degrees and W. E. Aiken of Emmittsburg, Maryland estimated the radiant at RA = 148.2 degrees, DEC = +23.8 degrees.) Professor Olmstead theorized correctly that the meteors had originated from a swarm of particles in space, although he failed to associate this swarm of particles with a disintegrating comet.

Eventually it would be noted that at Cumana, South America on the night of November 12, 1799, F.H.A. Humboldt had made an observation of similar thousands of bright meteors, and that other similar observations had been made from the Equator to Greenland. When, during November 1834, the swarm would reappear and would again come out of the constellation Leo, it would become apparent that this was an annual phenomenon although the intensity of the swarm had been varying from year to year. By 1837, Heinrich Wilhelm Matthias Olbers would be able to combine the available data and establish that the Leonid swarm had a period of 33 or 34 years, and would be able to accurately predict a strong return during November 1867.

SKY EVENT

May 26, Monday: A multi-plate series of Daguerreotypes was made, by William and Frederick Langenheim, of an eclipse of the sun.

SKY EVENT

August 8, Friday: After observing a spectacular meteor shower, Professor John Locke (1792-1856) of Ohio Medical College reported that all the streaks of light had seemed to be originating from a point near the star Algol in the constellation Perseus. –But the annual nature of this August phenomenon, the Perseid shower, would not become clear for some years.

SKY EVENT

Friend Stephen Wanton Gould wrote in his journal:

> *6th day was the General School committee Many of the committee attended. among them was our dear friends Edw & Elizabeth Wing who left in the Afternoon, for Elizabeth to finish her family visit in Greenwich Monthly Meeting —*

RELIGIOUS SOCIETY OF FRIENDS

November 30, Sunday: There was a total eclipse of the sun (#7251) from Alaska to Virginia.

SKY EVENT

Friend Stephen Wanton Gould wrote in his journal:

> *1st day 11th M 30th 1834 / Attended our Meetings in Newport - In the Morning Father Rodman was engaged in testimony & supplication & in the Afternoon in testimony - The Meetings were well attended and there seems some encouragement to hold on & endeavour to keep up our Meetings - for tho' they are much smaller & changed from what they were in the early part of my life, yet it seems as if there was some life remaining & yet solid attenders. —*

RELIGIOUS SOCIETY OF FRIENDS

1835

August 28: Benjamin Day's New-York Sun ran the fourth and last installment of its moon hoax announcing that Sir John Herschel was sighting, on the moon through his new telescope, furry, winged creatures resembling giant bats — and Day was able to print and vend an unprecedented 19,360 copies of his newspaper:

> We counted three parties of these creatures, of twelve, nine and fifteen in each, walking erect towards a small wood... Certainly they were like human beings, for their wings had now disappeared and their attitude in walking was both erect and dignified... About half of the first party had passed beyond our canvas; but of all the others we had perfectly distinct and deliberate view. They averaged four feet in height, were covered, except on the face, with short and glossy copper-colored hair, and had wings composed of a thin membrane, without hair, lying snugly upon their backs from the top of the shoulders to the calves of their legs.
> The face, which was of a yellowish color, was an improvement upon that of the large orangutan... so much so that but for their long wings they would look as well on a parade ground as some

> of the old cockney militia. The hair of the head was a darker color than that of the body, closely curled but apparently not woolly, and arranged in two circles over the temples of the forehead. Their feet could only be seen as they were alternately lifted in walking; but from what we could see of them in so transient a view they appeared thin and very protuberant at the heel...We could perceive that their wings possessed great expansion and were similar in structure of those of the bat, being a semitransparent membrane expanded in curvilinear divisions by means of straight radii, united at the back by dorsal integuments. But what astonished us most was the circumstance of this membrane being continued from the shoulders to the legs, united all the way down, though gradually decreasing in width. The wings seemed completely under the command of volition, for those of the creatures whom we saw bathing in the water spread them instantly to their full width, waved them as ducks do theirs to shake off the water, and then as instantly closed them again in a compact form.

The Sun having become the newspaper with the largest circulation in the world, later stories would tell of a sapphire Temple of the Moon with a yellow roof resembling gold, supported on pillars seventy feet high and six feet thick. Then the newspaper would announce that, unfortunately, the new telescope had been left facing the east and that the rays of the sun, concentrated through the lenses, had burned a hole "15 feet in circumference" entirely through the reflecting chamber — quite putting the observatory out of commission.

October: Regular as clockwork, the return of the comet which had been observed by the Reverends Increase Mather and Cotton Mather through Harvard College's "3 foote and a halfe with a concave ey-glasse" reflecting telescope in 1682, the comet which is known as "Halley's" to commoners and as "P/Halley" to others.

> Halley has caught the attention of mankind so often because only it has long durations of visibility, **and** great brightness outside twilight and often at large elongations from the sun, **and** only brief interruptions of visibility by the sun's glare, **and** occasional spectacular approaches to the earth For all this to be possible its natural adequate brightness is requisite but not sufficient (some of its comrades may have more of it); the real key is a combination, unique to it, of orbital features.
>
> HARVARD OBSERVATORY

It would be during this appearance of Halley's Comet that it would first be hypothesized that the outgassing from comets must be shoving them around, perturbing their orbital motion, and also, Newton to the contrary notwithstanding, causing them to lose mass toward their eventual disintegration.[10]

This time, Maria Mitchell and her father recorded the movements of this periodic comet.

10. All the initial calculations of the magnitude and directionality of this phenomenon, however, would prove to have been way, way off.

THOREAU AND TELESCOPES

HALLEY'S COMET

This is what Halley's Comet looked like, the last time it passed us. We have records of the appearances of this comet on each and every one of its past 30 orbits, which is to say, we have spotty records of observations before that, in 1,404 BCE, 1,057 BCE, 466 BCE, 391 BCE, and 315 BCE, but then on the 240 BCE return the sightings record begins to be complete. The Babylonians recorded seeing it in 164 BCE and again in 87 BCE, and then it was recorded as being seen in 12 BCE, 66 CE, 141 CE, 218 CE, 295 CE, 374 CE, 451 CE, 530 CE, 607 CE, 684 CE, 760 CE (only by Chinese), 837 CE, 912 CE, 989 CE, 1066, 1145, 1222, 1301, 1378, 1456, 1531, 1607, 1682, 1758, 1835, 1910, and 1986 — and we are confidently awaiting sightings in 2061 and 2134 even though due to a close conjunction with the earth we are presently unable to calculate what orbit it will have by the date of that approach. Each time P/Halley orbits in out of the Kuiper belt beyond the planets Neptune and Pluto and whips around the sun, it has been throwing off about one 10,000ths of its mass into a streaming tail, which means that this comet which we know to have been visiting us for at the very least the past 3,000 years or so is only going to be visiting us for perhaps another half a million years or so!

EDMOND HALLEY

This magazine illustration would undoubtedly have been somewhat exaggerated:

October 27, Tuesday: Records of the "Institute of 1770":

> *Lecture on "Astronomy." Debated: "Should the people ever inflict punishment upon an individual without granting him a regular trial?"*

HARVARD COLLEGE

November 16, Monday: Halley's Comet whipped around the sun and was, for more than a week, lost to view.[11]

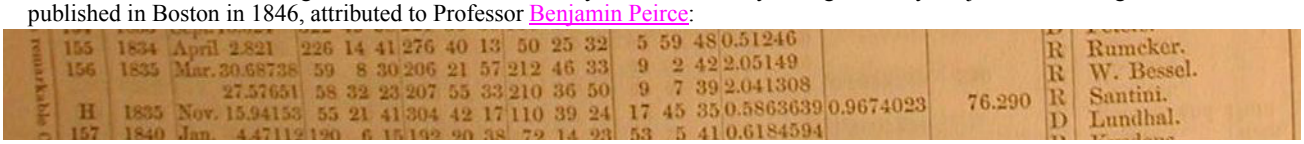
SKY EVENT

Friend Stephen Wanton Gould wrote in his journal:

> *2nd day 16th of 11th M / Thos Anthony has spent a little time with us this morning but has gone to Wm Nichols's to dine by invitation The Wind being high, he could not get up the River & lodged again with us. —*

RELIGIOUS SOCIETY OF FRIENDS

11. "P/HALLEY, (1P=1835 III). Viewed with the unaided eye from September 23 until February 18th, T=1835 November 16. First detected without optical aid on September 23 when situated in the morning sky in eastern Auriga. Moved swiftly to the northeast. By October 5 already 3rd magnitude. Beginning October 8, visible all night as a 1-2 magnitude object in Ursa Major. Passed through solar conjunction far north of the Sun, entering the evening sky. On October 14 located in northernmost Bootes, 1st magnitude with a 20 degree tail. By October 20 situated in Ophiuchus, magnitude 1-2 and still with an impressive tail. In the first half of November about 2nd magnitude, drifting slowly to the southwest and then entering the evening twilight. Following solar conjunction reported as about 2nd magnitude at the very end of January 1836 — about 30-50 times brighter than expected! Comet situated a little southwest of Antares. Throughout the first half of February seen as a steadily fading naked eye object." According to a comet list published in Boston in 1846, attributed to Professor Benjamin Peirce:



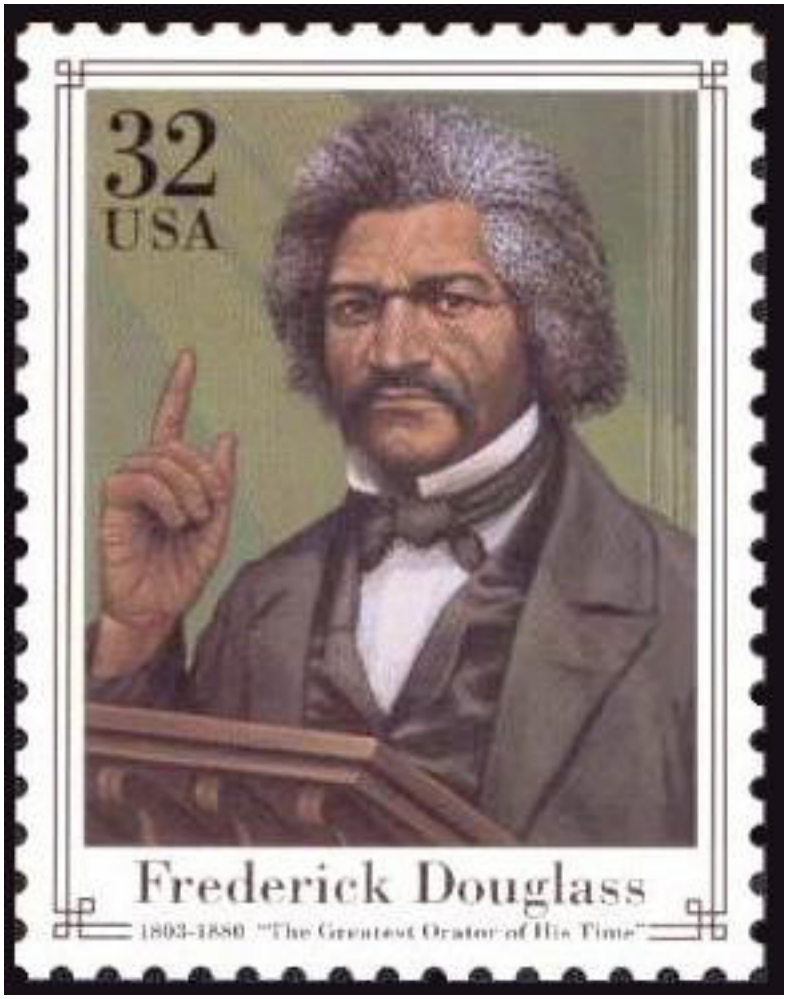
155	1834	April	2.821	226	14	41	276	40	13	50	25	32	5	59	48	0.51246			R Rumcker.
156	1835	Mar.	30.68738	59	8	30	206	21	57	212	46	33	9	2	42	2.05149			R W. Bessel.
			27.57651	58	32	23	207	55	33	210	36	50	9	7	39	2.041308			R Santini.
H	1835	Nov.	15.94153	55	21	41	304	42	17	110	39	24	17	45	35	0.5863639	0.9674023	76.290	D Lundhal.
157	1840	Jan.	4.47112	190	6	15	192	20	38	72	14	23	53	5	41	0.6184594			

1836

January 1: During this general period Halley's Comet was in the constellation of Scorpius. As the comet would recede in the heavens, Sir John Herschel from his South Africa location would be well positioned to observe and sketch an entirely unexpected and most blazing amazing display. As the comet fled, Frederick Douglass made a new years resolution:

SKY EVENT

"By this date next year I will be a free man!"



Friend Stephen Wanton Gould wrote in his journal, mentioning that he was in the process of writing to Friend Moses Brown:

> *6th day 1st of 1st M 1836 / It has been a pleasant day as to the outward, & norm* [?] *in the inward to render it otherwise -called in the Afternoon to visit my cousins Henry & Thos Gould in their respective Mills - & this evening wrote a letter to my dear Ancient friend Moses Brown.*[12]

Last week in January: During the last week in January Halley's Comet rose away from the sun and past the earth and arrived at about the orbit of Mars. Suddenly there was a magnificent outburst and the comet began sending out an expanding halo. With its tail no longer visible even by telescope, this halo was dramatic, and could be watched as within about three weeks it would expand to at least a million miles in diameter. Sir John Herschel would write of the expanding halo as resembling "a transparent gauze or alabaster vase illuminated from within." (It has been suggested that such a surge as this comet exhibited in 1836 may also have happened in 607 CE, 1066 CE, and 1145 CE, due to some volatile spot on the body of the comet that was becoming turned toward the sun at this precise point between 63 and 77 days after perihelion.)

SKY EVENT

12. Stephen Wanton Gould Diary, 1833-1838: The Gould family papers are stored under control number 2033 at the Division of Rare and Manuscript Collections of Cornell University Library, Box 9 Folder 15: January 1, 1833-August 28, 1836; Box 9 Folder 16: September 1, 1836-September 20, 1838; also on microfilm, see Series 7

February 2, Tuesday: By a decree of the government, Gaetano Donizetti was made a chevalier of the French Legion of Honor.

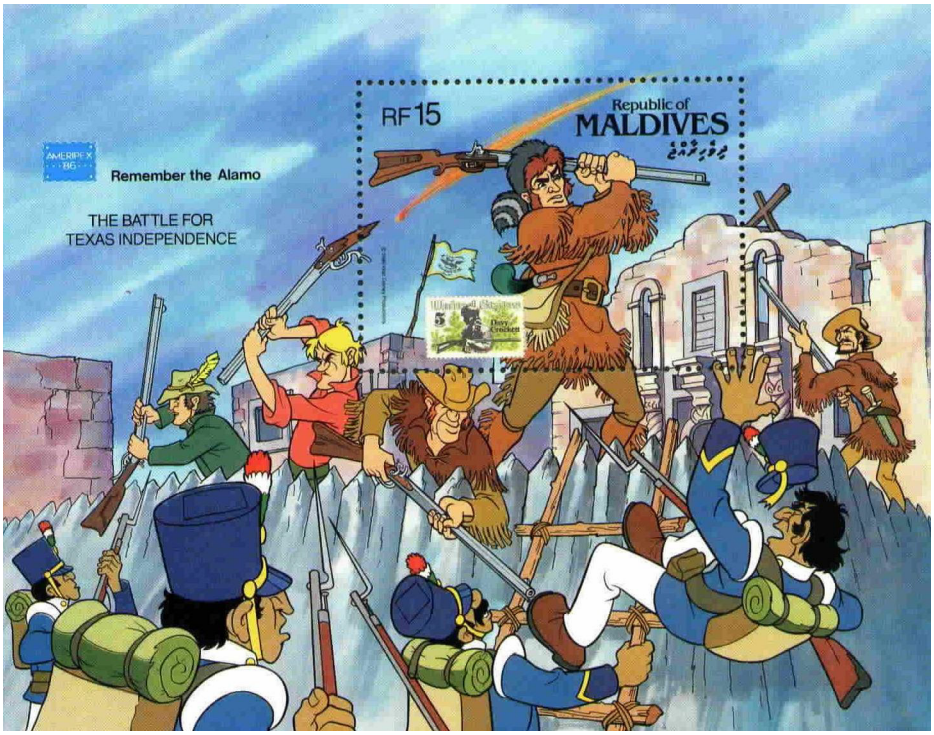
Defeated as a delegate to the Constitutional Convention from his home town of Nacogdoches, Sam Houston was elected from the Refugio District.

TEXAS

At the Alamo, Colonel James Bowie and Neill vowed that they would "rather die in these ditches than give it up to the enemy." (Were not these defenders noticing the strange glowing ball of the departing Halley's Comet in the southern skies, and wondering what this comet had tried to tell them?)

SKY EVENT

Lieutenant Colonel William B. Travis arrived at the Alamo with 30 brave, self-sacrificing white men.



March 27, Palm Sunday: Friend Stephen Wanton Gould wrote in his journal:

> *1st day 27th of 3 M / Our Meetings were silent, but solid good seasons. Father yet confined with a very havy cold & lame back —*

RELIGIOUS SOCIETY OF FRIENDS

In Kirtland, Ohio, the 1st Mormon temple began to be dedicated (this would be a drawn-out process).

At Fort Defiance (Presidio La Bahia) in the town of Goliad, General Jose de Urrea, acting reluctantly under repeated direct orders of President of Mexico Antonio Lopez de Santa Anna, who considered these foreigners to have the same legal standing as pirates, had 303 Texian prisoners of war marched out in three columns in three different directions, and then gunned down. Of the 40 who had been unable to walk, 39 were killed inside the fort. The commanding officer, Colonel James W. Fannin, was the last to be executed, and asked the firing squad to shoot him in the heart rather than in the face — so of course they shot him in the face. Of the 303 men in the three columns, 28 were able to feign death and escape.[13]

> Now I tell what I know in Texas in my early youth,
> (I tell not the fall of Alamo,
> Not one escaped to tell the fall of Alamo,
> The hundred and fifty are dumb yet at Alamo,)
> 'Tis the tale of the murder in cold blood of four hundred and twelve young men.
>
> Retreating they had form'd in a hollow square with their baggage for breastworks,
> Nine hundred lives out of the surrounding enemy's, nine times their number, was the price they took in advance,
> Their colonel was wounded and their ammunition gone,
> They treated for an honorable capitulation, receiv'd writing and seal, gave up their arms and march'd back prisoners of war.
>
> They were the glory of the race of rangers,
> Matchless with horse, rifle, song, supper, courtship,
> Large, turbulent, generous, handsome, proud, and affectionate,
> Bearded, sunburnt, drest in the free costume of hunters,
> Not a single one over thirty years of age.
>
> The second First-day morning they were brought out in squads and massacred, it was beautiful early summer,
> The work commenced about five o'clock and was over by eight.
>
> None obey'd the command to kneel,
> Some made a mad and helpless rush, some stood stark and straight,
> A few fell at once, shot in the temple or heart, the living and dead lay together,
> The maim'd and mangled dug in the dirt, the new-comers saw them there,
> Some half-kill'd attempted to crawl away,
> These were despatch'd with bayonets or batter'd with the blunts of muskets.

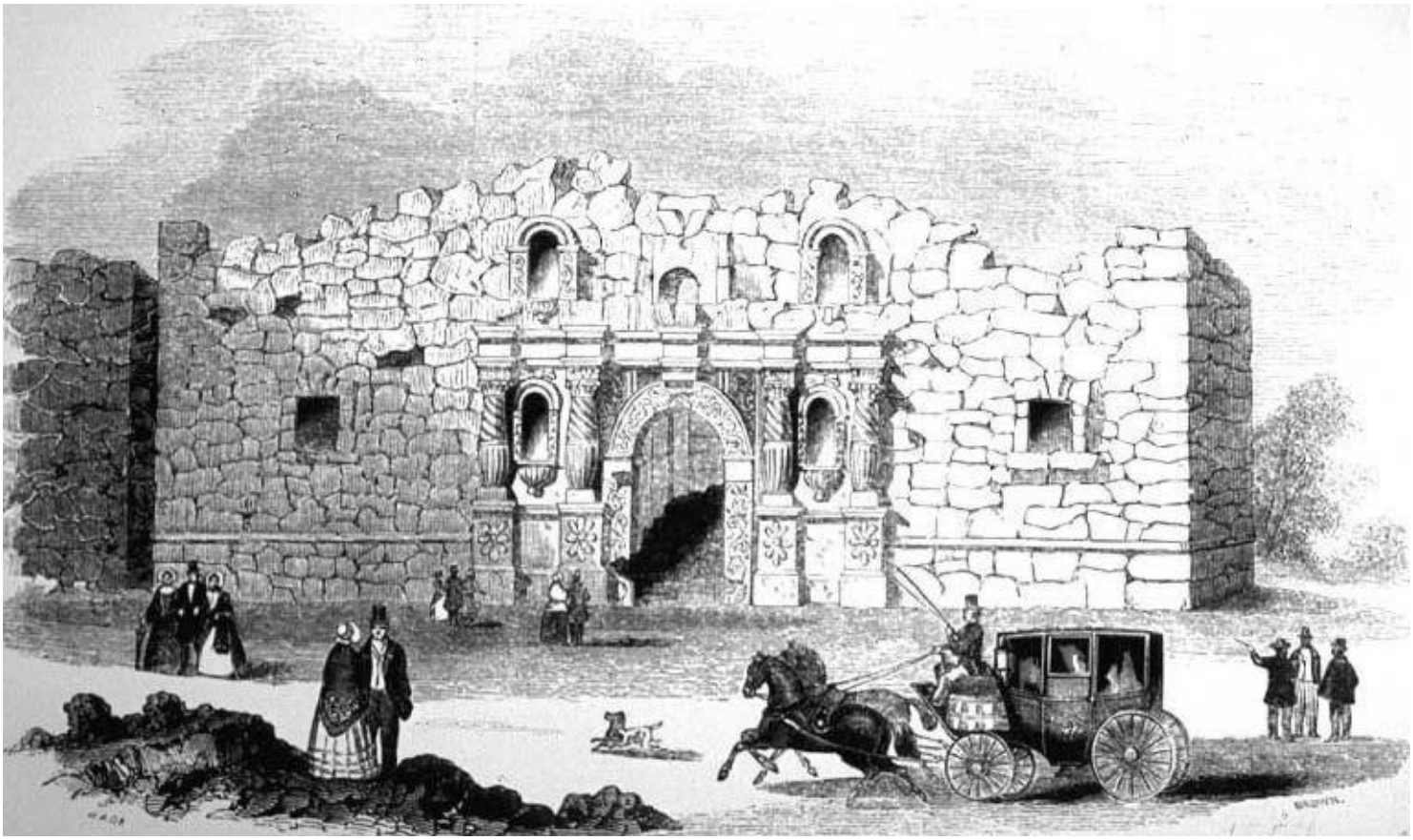
13. Some 100 others were also executed (by the way, at this point Halley's Comet was finally fading from being visible to the naked eye).

SKY EVENT

A youth not seventeen years old seiz'd his assassin till two more came to release him,
The three were all torn and cover'd with the boy's blood.

At eleven o'clock began the burning of the bodies;
That is the tale of the murder of the four hundred and twelve young men.

— Walt Whitman, SONG OF MYSELF, 34



May 15, Sunday: There was an annular eclipse of the sun (#7254) visible on this day at the tip of Florida. The astronomer Francis Bailey, viewing from southern Scotland where the eclipse was more total, witnessed light from the limb of the sun shining like a string of beads thought the valleys on the limb of the moon — "Bailey's Beads" was quite a sight.

1836 May 15 14:02 A 135 0.470 0.951 45.1N 44.4W 62 203 04m47s

Back in 1824 at Harvard College, Edward Bliss Emerson's exercise in mathematics (25 ¾ x 38 ¾ in., Thesis #285, HUC 8782.514) had consisted of a calculation and projection predicting the path across the face of the earth of the shadow of a solar eclipse that would be occurring during May 1836. Question: was this the one? Another question: how accurate did this undergraduate's mathematical projection turn out to be?

Friend Stephen Wanton Gould wrote in his journal:

> *1st day 15th of 5th M 1836 / We did not attend Meeting this Morning as Aunt Stantons funeral was to be spoken of in my name -Attended the funeral at 1 OC at the house which was a silent & Serious setting the funeral was got through with in season, for us to attend the Afternoon Meeting which was silent & pretty good time. -*

RELIGIOUS SOCIETY OF FRIENDS

1837

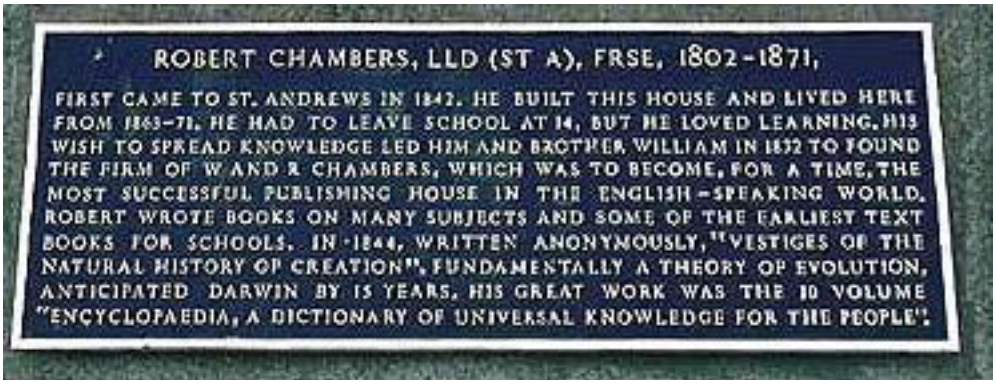
The Reverend William Kirby's ON THE POWER, WISDOM AND GOODNESS OF GOD AS MANIFESTED IN THE CREATION OF ANIMALS AND IN THEIR HISTORY, HABITS AND INSTINCTS; (Second American Edition. Philadelphia: Carey, Lea & Blanchard).

ON THE POWER, WISDOM, ...

ON THE POWER, WISDOM, ...

A copy of this was gifted to Harvard College by the Class of 1837 on 31 July, 1837.

There had been hardly enough at Harvard during those years to set a student scheming about other worlds to interrogate. However, during this final year in college would be published John Pringle Nichol's VIEWS OF THE ARCHITECTURE OF THE HEAVENS, the book that was currently inspiring Robert Chambers to begin the drafting of his phenomenal bestseller, VESTIGES OF THE NATURAL HISTORY OF CREATION.



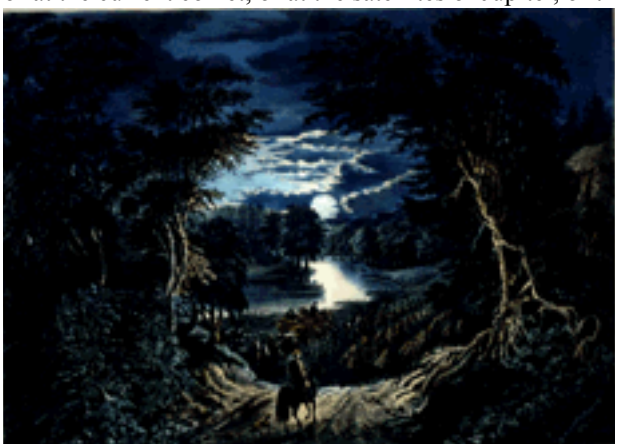
Soon Professor William Whewell, in his HISTORY OF THE INDUCTIVE SCIENCES, FROM THE EARLIEST TO THE PRESENT TIME, would be indicting a couple of guys who were clearly guilty of living in late Roman times, Lactantius and Cosmas Indicopleustes, as guilty also of belief in a flat earth.

During the period of David Henry Thoreau's residency in Harvard Yard, according to a later record made by Professor Joseph Lovering,

> *the College did not possess a single instrument which was adapted to making an astronomical observation which would have any scientific value.*
>
> HARVARD OBSERVATORY

there having been merely one unreliable astronomical clock, one small and quite useless transit compass "far below the average of such instruments," and three telescopes not appropriate to any "nice observation," (61-inch reflecting telescope, 15-inch and 12-inch refracting telescopes) by which the students might gaze at

the face of the moon, or at the current comet, or at the satellites of Jupiter, or the rings of Saturn.



(Whewell was determined that he was going to uncover evidence for such a belief, and thus produce grounds for his easy scorn toward "the flat earthers," and he could discover this nowhere else: Aristotle, the venerable Bede, Roger Bacon, Thomas Aquinas, John Buriden, Nicholas Oresme, and all other reputable commentators had declared the earth, flatly, to be a globe.)

Photographic proof...
(The four corners have been arbitrarily numbered clockwise.)

(It is to be noted that David Henry Thoreau was studying "Mathematics" and "Natural Philosophy" –which is to say, using the word that was at that time a neologism, "Science"– under this physicist and astronomer, Professor Joseph Lovering, and was studying Entomology and Botany under Dr. Thaddeus William Harris.)

From this year into 1842, during the vacancy of the natural history professorship, Dr. Harris would be lecturing on natural history at Harvard. This was the sole course that Harvard had to offer on the general topic of natural history, and it was taken as Thoreau took it, at the end of the senior year. Harris also was teaching a private class on Entomology and in this year prepared A REPORT ON THE INSECTS OF MASSACHUSETTS, INJURIOUS TO VEGETATION. He would be building up a carefully described and arranged insect collection, while compiling painstaking indexes to major works on entomology, and over the course of his life would publish something like a hundred articles on insects and insect-related diseases. He was hoping against hope that he would be appointed as the college's professor of natural history — but that would be a recognition which he would never be granted. When Thoreau took this course, it was in the first year in which it was being offered and consisted of 17 of Harris's lectures on Botany.

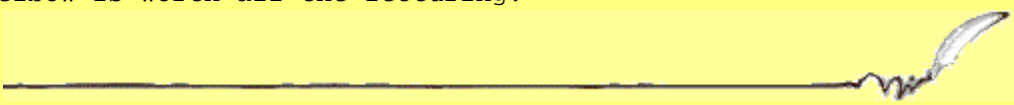
1838

There was a strong Andromedid meteor shower during this year, as there had been in 1798 — this is a shower which we connect with the now-disintegrated periodic Biela's comet.

SKY EVENT

February 17, Saturday: Waldo Emerson to his journal:

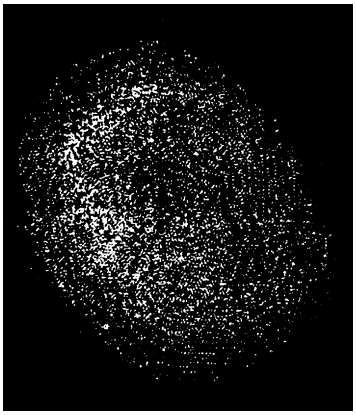
> My good Henry Thoreau made this else solitary afternoon sunny with his simplicity & clear perception. How comic is simplicity in this doubledealing quacking world. Every thing that boy says makes merry with society though nothing can be graver than his meaning. I told him he should write out the history of his College life as Thomas Carlyle has his tutoring. We agreed that the seeing the stars through a telescope would be worth all the Astronomical lectures. Then he described Mr Quimby's electrical lecture here & the experiment of the shock & added that "College Corporations are very blind to the fact that that twinge in the elbow is worth all the lecturing."



August 9, Thursday: The 1st Perseid meteor shower to have been correctly anticipated and predicted, showed up exactly on schedule. Edward Claudius Herrick had deduced the autumnal nature of this phenomenon from reports of August showers in the years 1781, 1798, 1823, 1833, and 1836, and had inferred that the showers were annual from the fact that Irish peasants had fallen into the habit of referring to these meteors as the burning tears of St. Lawrence, whose annual festival is on the 10th of August.

ASTRONOMY
SKY EVENT

August 13, Monday: A comet visible on this night appeared to contemporary observers as a restful kernel in the magazine of the universe, roughly like this:



Henry Thoreau's journal remark of this date, which I suppose may well have been prompted by this apparition, has been utilized in the following manner by Barbara Novak on pages 27-28 of a survey volume edited by John Wilmerding, AMERICAN LIGHT: THE LUMINIST MOVEMENT 1850-1875; PAINTINGS, DRAWINGS, PHOTOGRAPHS (National Gallery of Art, Washington DC: Harper & Row, 1980), in an attempt to define Luminism:

On Silence

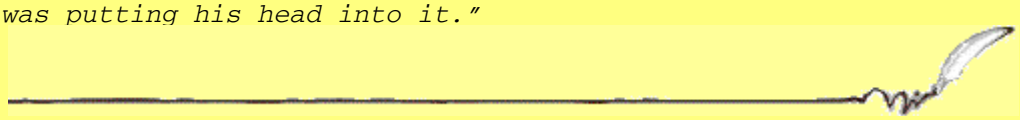
We can also say that stroke, carrying action, implies sound. A key correlative of luminism is silence. Luminist silence, like luminist time, depends on measured control. Without movement between strokes or between units of form, we hear nothing. Luminist silence implies presence through the sense of **thereness** rather than through activity. Inaudibility is a correlative of immobilized time and objects. Contemporary critics spoke of Kensett's **repose**. Yet luminist silence, in the repose of inaction, represents not a void but a palpable space, in which everything happens while nothing does. We have here a visual analogue of Eckhart's "central silence," and Thoreau's "restful kernel in the magazine of the universe."

ASTRONOMY

September 18, Tuesday: Waldo Emerson to his journal in regard to the annular (partial) solar eclipse (#7260) that passed from Hudson Bay down across northern New England:

SUN

> *This P.M. the Eclipse. Peter Howe did not like it for his rowan would not make hay: and he said "the sun looked as if a nigger was putting his head into it."*



Well, in some sense Peter Howe of Concord was right, black people were indeed raising their head into the sunshine. For on this day of eclipse Frederick Douglass and Anna Murray Douglass, as free Mr. and Mrs. Frederick Johnson, were arriving in their new hometown, New Bedford:

> We arrived at Newport the next morning, and soon after an old fashioned stage-coach, with "New Bedford" in large yellow letters on its sides, came down to the wharf. I had not money enough to pay our fare, and stood hesitating what to do. Fortunately for us, there were two Quaker gentlemen who were about to take passage on the stage, —Friends William C. Taber and Joseph Ricketson,— who at once discerned our true situation, and, in a peculiarly quiet way, addressing me, Mr. Taber said: "Thee get in." I never obeyed an order with more alacrity, and we were soon on our way to our new home. When we reached "Stone Bridge" the passengers alighted for breakfast, and paid their fares to the driver. We took no breakfast, and, when asked for our fares, I told the driver I would make it right with him when we reached New Bedford. I expected some objection to this on his part, but he made none. When, however, we reached New Bedford, he took our baggage, including three music-books, —two of them collections by Dyer, and one by Shaw,— and held them until I was able to redeem them by paying to him the amount due for our rides. This was soon done, for Mr. Nathan Johnson not only received me kindly and hospitably, but, on being informed about our baggage, at once loaned me the two dollars with which to square accounts with the stage-driver. Mr. and Mrs. Nathan Johnson reached a good old age, and now rest from their labors. I am under many grateful obligations to them. They not only "took me in when a stranger" and "fed me when hungry," but taught me how to make an honest living. Thus, in a fortnight after my flight from Maryland, I was safe in New Bedford, a citizen of the grand old commonwealth of Massachusetts....

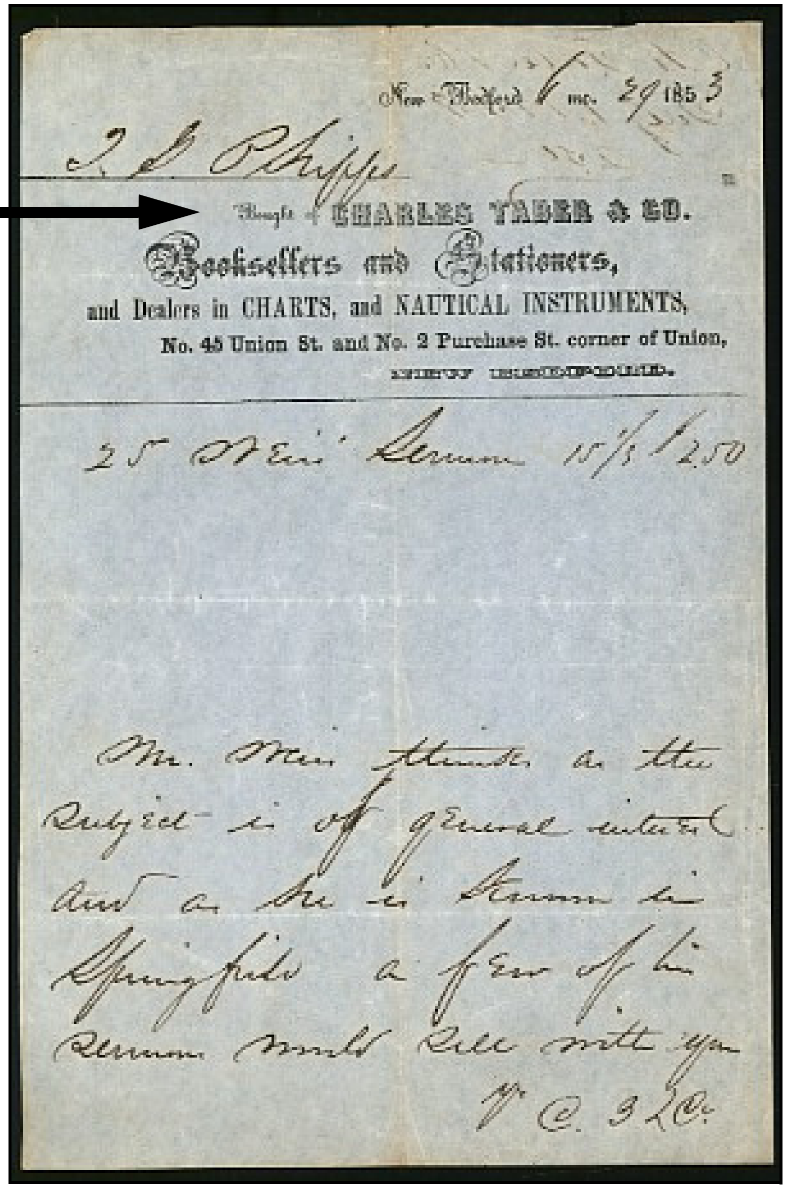
WILLIAM C. TABER
JOSEPH RICKETSON
NATHAN JOHNSON

Mary J. Tabor would allege in 1907 something that does not jibe with the popular appreciation of Frederick Douglass that is gathered from reading of his NARRATIVE, to wit, that at this point, with him arriving at

freedom in New Bedford, he was not yet able to read, let alone to write. She would allege that in New Bedford after his escape from slavery, it had been her relative William C. Taber who had found for Douglass the stevedoring work he mentions on the wharves (help not acknowledged in Douglass's written account), and she would allege that at this point Douglass had been taught to read by her relative, the New Bedford bookseller Charles Taber:

> Owing to the anti-slavery principles of Friends, New Bedford early became a station on the "underground railroad," and if a fugitive slave could once reach this haven of rest, he felt almost safe from pursuit, public opinion being so strong that in the days of the Fugitive Slave Law it would have been impossible to capture a runaway slave in this town.
> Frederick Douglass, one of the most remarkable of colored men, passed some time here in safety, and always retained a most grateful recollection of his sojourn among the Quakers. It happened on this wise: Having made his escape from slavery and reached Newport after many perils, he was very anxious to come to New Bedford, that place being known among the slaves as a heaven upon earth.
> Hearing the name called out, he peeped shyly around the corner of a building and gazed longingly at the state coach which was filled with "women Friends" on their way home from New England Yearly Meeting. William C. Taber, sitting on the top of the coach, observed the pleading eyes, and said, "Yes, friend, it is all right, climb up here beside me."
> No sooner said than done, William C. Taber paid his fare, brought him to his own house, and found work for him on the wharves, as he had been a stevedore at the South. While in New Bedford, he was taught to read by Charles Taber.
> Thus the distinguished orator was launched on the road to fame.

New Bedford bookseller Charles Taber, who taught Frederick Douglass to read


New Bedford 6 mo. 29 1853

Bought of CHARLES TABER & CO.

Booksellers and Stationers,

and Dealers in CHARTS, and NAUTICAL INSTRUMENTS,

No. 45 Union St. and No. 2 Purchase St. corner of Union,

NEW BEDFORD.

What we have, above, is essentially an assertion that when Douglass arrived in New Bedford aboard that stage from Newport, Rhode Island, he could not yet read, let alone write. —That that is importantly discordant with the fulsome manner in which the NARRATIVE is now conventionally read, is something that goes without saying.

For their wedding document, the newlyweds had adopted the family name Johnson, but soon this came to seem an unwise selection. At the time the Douglasses were there, New Bedford had the highest per capita income in America. When the fugitive slave Freddy Bailey, then calling himself Frederick Johnson, arrived at the home of Nathan Johnson and Mary "Polly" Johnson in New Bedford (the Douglasses are not the only guests

This is the recent dedication of a plaque at the site, attended by descendants of the original participants:

documented to have found refuge for a time at 21 Seventh Street, next door to the Friends meetinghouse),

Nathan was reading Robert Burns, and within a day or two Johnson would rename him after the hero Douglas

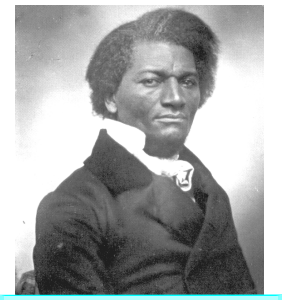
in LADY OF THE LAKE, as Frederick Douglas. (Frederick decided to spell it "Douglass" because there were some black families in New Bedford who were spelling their name that way.)[14]

14. But why did Freddy Bailey *alias* Fred Johnson **accept** the proffered name "Douglass"? Merely because it had been suggested to him? I think not! The Following is from a collection of Douglass's speeches entitled LECTURES ON AMERICAN-SLAVERY, which would be published in 1851:

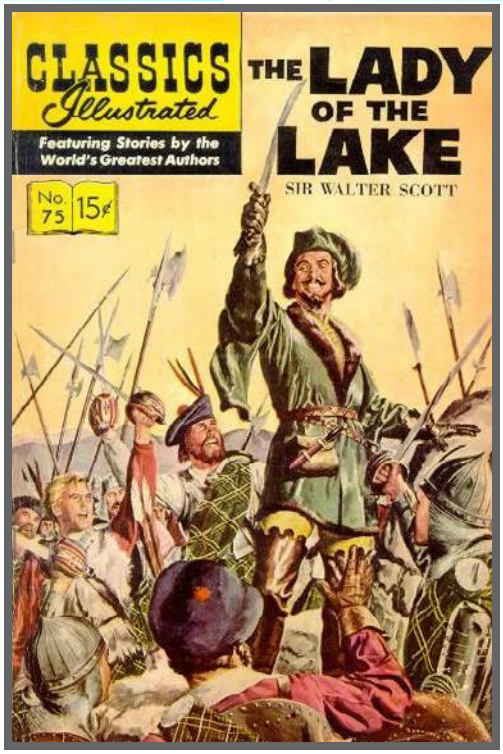
> It is often said, by the opponents of the Anti-slavery cause that, the condition of the people of Ireland is more deplorable than that of the American slaves. Far be it from me to underrate the sufferings of the Irish people. They have been long oppressed; and the same heart that prompts me to plead the cause of the American bondman, makes it impossible for me not to sympathize with all the oppressed of all lands. Yet I must say that there is no analogy between the two cases. The Irishman is poor, but he is not a slave. He may be in rags, but he is not a slave. He is still the master of his own body and can say with the poet,
>
> "The hand of Douglass is his own."

Thus in all probability the name was chosen because although it was intentionally opaque it nevertheless suggested, at least to its bearer, in the idea that "The hand of Douglass is his own," the same sort of thing that was suggested in that time by the more usual name "Freeman" meaning "the free man."

ANNA MURRAY DOUGLASS



FREDERICK DOUGLASS



The first thing these Douglasses with a wedding certificate in the name of Johnson, but with no manumission papers to produce for the husband whether he was named "Mr. Douglas" or "Mr. Johnson," discovered in "free" New Bedford was that racial prejudice would prevent the husband from using his skills as a ship calker. It was explained that all the white calkers would quit. Work was found for him, by Friend William C. Taber, as a stevedore, carrying oil aboard a vessel, and he then had to saw wood, shovel coal, sweep chimneys, and roll casks in an oil refinery. However, accounts of such Jim Crow experiences would not fit into the narrative he later needed to tell to righteous Northern abolition audiences, for whom South=Them=Evil meant North=Us=Good, and so Douglass ordinarily suppressed this experience of racial prejudice in New Bedford.[15]

> Finding my trade of no immediate benefit, I threw off my calking habiliments, and prepared myself to do any kind of work I could get to do.

Although a skilled craftsman could not get work in his craft in that city at that time, due entirely to the color of his skin, Frederick Douglass did not speak of this until 1881, when in a reference to "the test of the

real civilization of the community," he suggested that the New Bedford of the 1840s had failed that test:

> I am told that colored persons can now get employment at calking in New Bedford.

15. If "French" innocence consists in the refusal to be shamed by the nature of one's pleasures, and if the "German" variety consists in an awareness that so long as one is sacrificing oneself, no-one has a right to object to one's sacrificing them as well, and if the "English" consists in a principled refusal to take responsibility for one's obedience to improper instructions from one's betters, and the "Italian" in not happening to notice where you have your hand, then the innocence of the USer must consist in a refusal or a failure to recognize evil of which we ourselves are the beneficiaries.

In fuller detail:

> ... The name given me by my dear mother was no less pretentious and long than Frederick Augustus Washington Bailey. I had, however, while living in Maryland, dispensed with the Augustus Washington, and retained only Frederick Bailey. Between Baltimore and New Bedford, the better to conceal myself from the slave-hunters, I had parted with Bailey and called myself Johnson; but in New Bedford I found that the Johnson family was already so numerous as to cause some confusion in distinguishing them, hence a change in this name seemed desirable. Nathan Johnson, mine host, placed great emphasis upon this necessity, and wished me to allow him to select a name for me. I consented, and he called me by my present name—the one by which I have been known for three and forty years—Frederick Douglass. Mr. Johnson had just been reading the "Lady of the Lake," and so pleased was he with its great character that he wished me to bear his name. Since reading that charming poem myself, I have often thought that, considering the noble hospitality and manly character of Nathan Johnson —black man though he was— he, far more than I, illustrated the virtues of the Douglas of Scotland. Sure am I that, if any slave-catcher had entered his domicile with a view to my recapture, Johnson would have shown himself like him of the "stalwart hand." ...My "Columbian Orator," almost my only book, had done nothing to enlighten me concerning Northern society. I had been taught that slavery was the bottom fact of all wealth. With this foundation idea, I came naturally to the conclusion that poverty must be the general condition of the people of the free States. In the country from which I came, a white man holding no slaves was usually an ignorant and poverty-stricken man, and men of this class were contemptuously called "poor white trash." Hence I supposed that, since the non-slave-holders at the South were ignorant, poor, and degraded as a class, the non-slave-holders at the North must be in a similar condition. I could have landed in no part of the United States where I should have found a more striking and gratifying contrast, not only to life generally in the South, but in the condition of the colored people there, than in New Bedford. I was amazed when Mr. Johnson told me that there was nothing in the laws or constitution of Massachusetts that would prevent a colored man from being governor of the State, if the people should see fit to elect him. There, too, the black man's children attended the public schools with the white man's children, and apparently without objection from any quarter. To impress me with my security from recapture and return to slavery, Mr. Johnson assured me that no slave-holder could take a slave out of New Bedford; that there were men there who would lay down their lives to save me from such a fate.

September 22, Saturday: Shortly after the total solar eclipse of the afternoon of September 18th had been visible in New England, Nathaniel Peabody Rogers published the following article in Concord NH's anti-slavery paper Herald of Freedom:

ECLIPSE OF THE SUN.

We had a fine opportunity, on our way from Plymouth to Concord, to witness this grand conjunction of the mighty orbs of the sky –this conflict of the "greater and lesser lights"– the lesser obscuring the greater, as is sometimes the case among *sub*lunary bodies, by force of position. The glorious sun was indeed "sick almost to doomsday," –and it was pitiful to see his regal distress, and with what dignity and decency he drew around him his robe of clouds, to hide his disaster and shame from the smoked-glass gaze of mortals. The atmosphere and the landscape sombered at his obscuration, and he looked, as the foul intrusion overshadowed his disk, like a noble nature seized upon, darkened, marred and smothered to blackness and darkness, by the Genius of slavery. The envious eclipse passes off, and the released luminary shines on gloriously again in mid heaven. Slavery is perpetual eclipse –sickness *to* "doomsday" –eternal obscuration. May God in his mercy rectify the erring orbs of life, to prevent and remove such fatal moral *conjunctions*.

All animate creation seemed to apprehend and notice instinctively the malady of the heavens. The few birds that remain extant at this unmusical season, gave token of their apprehension of night-fall by betaking themselves to the topmost boughs of the trees — to get as late a good-night as they could, from the blessed luminary whose good morrow they hail with such choral gladness, in that joyous season when "the time of the singing of birds is come." The cricket and the grasshopper, in the fields by the road side, set up, as night came down, their twilight hum, and blew their "drowsy bugle." A drove of cattle, through which we passed, on the way to Brighton –like a coffle from the city of WASHINGTON to Alabama– halted, as the drover told us, as if the hour for putting up at night had come. And our own good steed, refreshed by the coolness of the temperature, and warned by the deepening shadows, set up his evening trot, in full remembrance, as well as his master, of Concord hospitality –for he has a "memory like a horse"– and had every visible and ostensible reason to believe, that stable-time and release from the harness were at hand. Would that the poor human cattle of the republic could realize such a season! But neither night nor eclipse brings respite to them. THEY ARE SLAVES.

At the height of the obscuration, the sky wore the appearance of real sunset — a sunset far up from the horizon, with blue sky below, between it and the hills. The passing off of the eclipse was invisible, by reason of the thick, hard, night-looking clouds, and the sun did not reappear to give assurance of his recovery. May it not be emblematic of the extinction of slavery in this country amid the gloomy shadowings and night of insurrection, which our friend, the Observer, deprecates with such deep shuddering — while the prospect of *eternal slavery* he can look on with most serene composure.

The "specious twilight" of the eclipse gradually put on evening's *bona fide* enshroudings, and settled into —— but we forget that our eclipse was seen by all our readers, and will leave them, with the wish, that the sun may rise upon them again on the morrow, all unmarred and unscathed by his conflict with the "dirty planet," and light them all on the way to a day of anti-slavery gratitude and duty.

(We may trust that in particular this will be true for one new black family in New Bedford.)

1839

October: President Josiah Quincy, Sr. of Harvard College had managed to attract William Cranch Bond to bring his home astronomical equipment from Dorchester to Cambridge, and set it up as the official Harvard Observatory to belatedly replace the telescopes and chronometers which had been lost in the great Harvard Yard fire of 1764. During this month, Bond having already been "drawn to Cambridge by the strong hand of President Quincy," approval for this was sought of the Board of Overseers of the Corporation.

ASTRONOMY

September 4, Wednesday: According to the journal of Friend Thomas B. Hazard or Hafsard or Hasard of Kingstown, Rhode Island, also known as "Nailer Tom,"[16] there had been "strange Northern lights last night."

AURORA BOREALIS

Sept 4th [Wednesday of WEEK] As we shoved away from this rocky coast, before sunrise, the smaller bittern, the genius of the shore, was moping along its edge, or stood probing the mud for its food, with ever an eye on us, though so demurely at work, or else he ran along over the wet stones like a wrecker in his storm-coat, looking out for wrecks of snails and cockles. Now away he goes, with a limping flight, uncertain where he will alight, until a rod of clear sand amid the alders invites his feet; and now our steady approach compels him to seek a new retreat. It is a bird of the oldest Thalesian school, and no doubt believes in the priority of water to the other elements; the relic of a twilight antediluvian age which yet inhabits these bright American rivers with us Yankees. There is something venerable in this melancholy and contemplative race of birds, which may have trodden the earth while it was yet in a slimy and imperfect state. Perchance their tracks, too, are still visible on the stones. It still lingers into our glaring summers, bravely supporting its fate without sympathy from man, as if it looked forward to some second advent of which he has no assurance. One wonders if, by its patient study by rocks and sandy capes, it has wrested the whole of her secret from Nature yet. What a rich experience it must have gained, standing on one leg and looking out from its dull eye so long on sunshine and rain, moon and stars! What could it tell of stagnant pools and reeds and dank night fogs! It would be worth the while to look closely into the eye which has been open and seeing at such hours, and in such solitudes its dull, yellowish, greenish eye. Methinks my own soul must be a bright invisible green. I have seen these birds stand by the half dozen together in the shallower water along the shore, with their bills thrust into the mud at the bottom, probing for

16. He was called "Nailer Tom" because his trade was the cutting of nails from scrap iron, and in order to distinguish him from a relative known as "College Tom," from another relative known as "Shepherd Tom," and from his own son who –because he had fits– was known as "Pistol-Head Tom."

food, the whole head being concealed, while the neck and body formed an arch above the water.

> Thoreau's smaller bittern, the Green Heron, like all members of the heron family, catches its food with quick stabs of its bill. It does not probe the mud as do many species of shorebird. Since Green Herons often feed in still, shallow water, reflections may have caused Thoreau to think their bills were thrust into the mud. It must be remembered that Thoreau had no optical equipment at this time to aid his observations. –Cruickshank, Helen Gere. THOREAU ON BIRDS (New York: McGraw-Hill Book Company, 1964)

 Sept 4th Wednesday. Hooksett east bank 2 or 3 miles below the village, opposite mr. Mitchels.

> On Thursday, Thoreau and his brother halted at a point east of Uncannunuc Mountain near Manchester, New Hampshire. They hung their tent and buffalo robes in a farmer's barn to dry and then continued on foot up the Merrimack until it became the Pemigewasset and then the Wild Amonoosuck to its very fountainhead. This part of the adventure is not included in the book. However, Thursday morning as the brothers lay in their tent listening to the rain, they found such enjoyment in birds as those who never venture into a wet world can never know. –Cruickshank, Helen Gere. THOREAU ON BIRDS (New York: McGraw-Hill Book Company, 1964)

A WEEK: The small houses which were scattered along the river at intervals of a mile or more were commonly out of sight to us, but sometimes, when we rowed near the shore, we heard the peevish note of a hen, or some slight domestic sound, which betrayed them. The lock-men's houses were particularly well placed, retired, and high, always at falls or rapids, and commanding the pleasantest reaches of the river, –for it is generally wider and more lake-like just above a fall,– and there they wait for boats. These humble dwellings, homely and sincere, in which a hearth was still the essential part, were more pleasing to our eyes than palaces or castles would have been. In the noon of these days, as we have said, we occasionally climbed the banks and approached these houses, to get a glass of water and make acquaintance with their inhabitants. High in the leafy bank, surrounded commonly by a small patch of corn and beans, squashes and melons, with sometimes a graceful hop-yard on one side, and some running vine over the windows, they appeared like beehives set to gather honey for a summer. I have not read of any Arcadian life which surpasses the actual luxury and serenity of these New England dwellings. For the outward gilding, at least, the age is golden enough. As you approach the sunny doorway, awakening the echoes by your steps, still no sound from these barracks of repose, and you fear that the gentlest knock may seem rude to the Oriental dreamers. The door is opened, perchance, by some Yankee-Hindoo woman, whose small-voiced but sincere hospitality, out of the bottomless depths of a quiet nature, has travelled quite round to the opposite side, and fears only to obtrude its kindness. You step over the white-scoured floor to the bright "dresser" lightly, as if afraid to disturb the devotions of the household, –for Oriental dynasties appear to have passed away since the dinner-table was last spread here,– and thence to the frequented curb, where you see your long-forgotten, unshaven face at the bottom, in juxtaposition with new-made butter and the trout in the well. "Perhaps you would like some molasses and ginger," suggests the faint noon voice. Sometimes there sits the brother who follows the sea, their representative man; who knows only how far it is to the nearest port, no more distances, all the rest is sea and distant capes, — patting the dog, or dandling the kitten in arms that were stretched by the cable and the oar, pulling against Boreas or the trade-winds. He looks up at the stranger, half pleased, half astonished, with a mariner's eye, as if he were a dolphin within cast. If men will believe it, *sua si bona norint*, there are no more quiet Tempes, nor more poetic and Arcadian lives, than may be lived in these New England dwellings. We thought that the employment of their inhabitants by day would be to tend the flowers and herds, and at night, like the shepherds of old, to cluster and give names to the stars from the river banks.

CAT

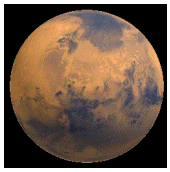
[The full Latin expression that goes with "*sua si bona norint*" is "*O fortunatos nimium, sua si bona norint*," which means "0 more than happy, if they only knew their advantages," and was used by Virgil to describe those who led the rustic bucolic agricultural life. We can say, therefore, that Virgil is a presence not only in Thoreau's WALDEN, but also in A WEEK.]

December 31, Tuesday: William Cranch Bond made his first astronomical observations in Cambridge. Pending funds for construction, the cupola of the existing Dana house[17] would have to serve until 1844 as the Harvard Observatory.

ASTRONOMY

1840

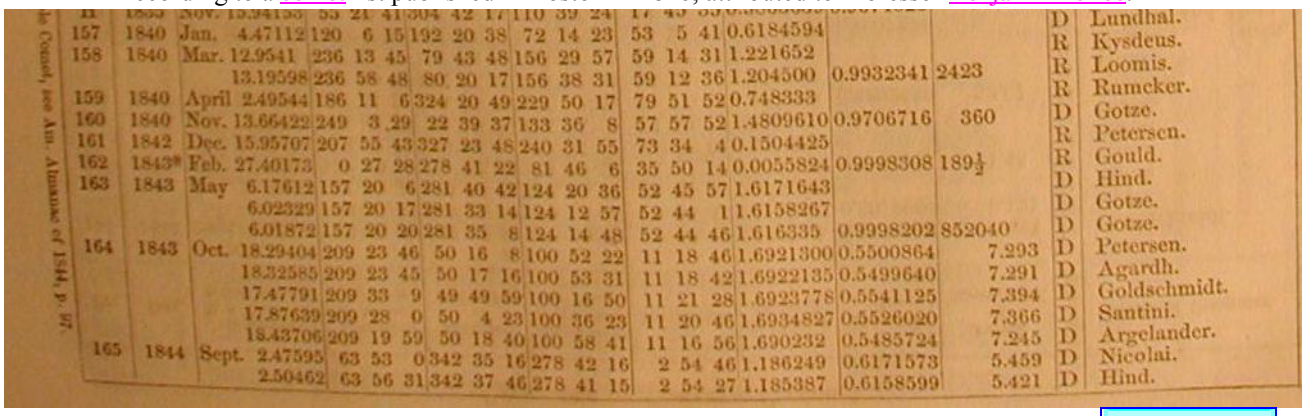
The first map of the surface features of the planet Mars was prepared.



ASTRONOMY

March 23, Monday: Doctor John Draper obtained a "representation of the moon's image" an inch in diameter, with noticeable detail, by a 20-30 minute exposure of a Daguerreotype plate. (Unfortunately, this image, and a similar image made by Daguerre that had been made on the night of January 2, 1839, have been lost to fire over the years. The earliest surviving image of the moon is now the one at Harvard University, on a plate that was exposed on the night of September 1, 1849 without the assistance of a telescope.)

According to a comet list published in Boston in 1846, attributed to Professor Benjamin Peirce:



157	1840	Jan.	4.47112	120	6	15	192	20	38	72	14	23	53	5	41	0.6184594			D	Lundhal.
158	1840	Mar.	12.9541	236	13	45	79	43	48	156	29	57	59	14	31	1.221652			R	Kysdeus.
			13.19598	236	58	48	80	20	17	156	38	31	59	12	36	1.204500	0.9932341	2423	R	Loomis.
159	1840	April	2.49544	186	11	6	324	20	49	229	50	17	79	51	52	0.748333			R	Rumcker.
160	1840	Nov.	13.66422	249	3	29	22	39	37	133	36	8	57	57	52	1.4809610	0.9706716	360	D	Gotze.
161	1842	Dec.	15.95707	207	55	43	327	23	48	240	31	55	73	34	4	0.1504425			R	Petersen.
162	1843*	Feb.	27.40173	0	27	28	278	41	22	81	46	6	35	50	14	0.0055824	0.9998308	189½	R	Gould.
163	1843	May	6.17612	157	20	6	281	40	42	124	20	36	52	45	57	1.6171643			D	Hind.
			6.02329	157	20	17	281	33	14	124	12	57	52	44	1	1.6158267			D	Gotze.
			6.01872	157	20	20	281	35	8	124	14	48	52	44	46	1.616335	0.9998202	852040	D	Gotze.
164	1843	Oct.	18.29404	209	23	46	50	16	8	100	52	22	11	18	46	1.6921300	0.5500864	7.293	D	Petersen.
			18.32585	209	23	45	50	17	16	100	53	31	11	18	42	1.6922135	0.5499640	7.291	D	Agardh.
			17.47791	209	33	9	49	49	59	100	16	50	11	21	28	1.6923778	0.5541125	7.394	D	Goldschmidt.
			17.87639	209	28	0	50	4	23	100	36	23	11	20	46	1.6934827	0.5526020	7.366	D	Santini.
			18.43706	209	19	59	50	18	40	100	58	41	11	16	56	1.690232	0.5485724	7.245	D	Argelander.
165	1844	Sept.	2.47595	63	53	0	342	35	16	278	42	16	2	54	46	1.186249	0.6171573	5.459	D	Nicolai.
			2.50462	63	56	31	342	37	46	278	41	15	2	54	27	1.185387	0.6158599	5.421	D	Hind.

SKY EVENT

17. At that time the Dana house was located where Lamont Library is now located — not on Quincy Street where it is now.

1841

September: George Phillips Bond matriculated at Harvard College.

HARVARD OBSERVATORY

NEW "HARVARD MEN"

1842

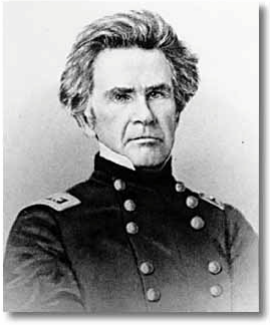
George Phillips Bond began to regularly assist his father William Cranch Bond at Harvard College's observatory.

HARVARD OBSERVATORY
ASTRONOMY

Benjamin Peirce, son and namesake of the previous Harvard College librarian, became the Perkins Professor of Astronomy and Mathematics.

HARVARD OBSERVATORY
HARVARD LIBRARY

The initial printing of Ormsby McKnight Mitchel, A.M.'s revision to Elijah Hinsdale Burritt, A.M.'s THE GEOGRAPHY OF THE HEAVENS, AND CLASS BOOK OF ASTRONOMY, ACCOMPANIED BY A CELESTIAL ATLAS. BY ELIJAH H. BURRITT, A.M. REVISED AND CORRECTED BY O. M. MITCHEL, A.M., DIRECTOR OF THE CINCINNATI OBSERVATORY (Huntington and Savage/H.W. Derby. New York/Cincinnati), the edition which began the process of omitting mythology and horoscopes, and establishing astronomy as a separate science (in the Civil War, this Ormsby McKnight Mitchel would be a Union general).



July 8, Friday: Many astronomers went to the south of France to observe a total solar eclipse.

SKY EVENT
SUN

1843

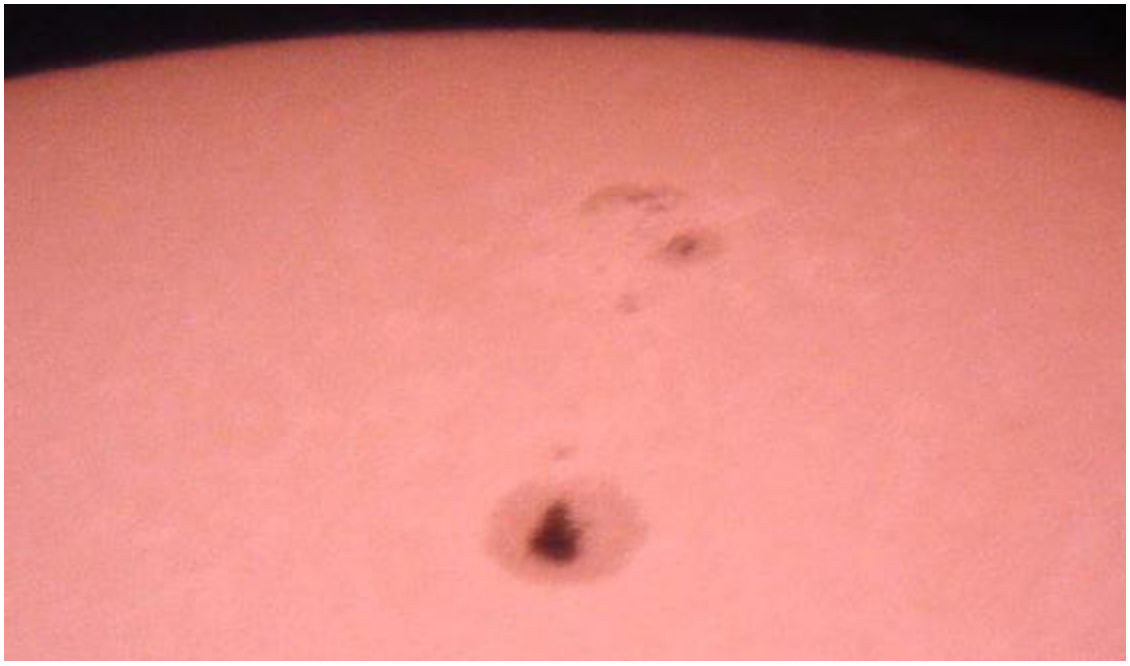
In 1664, it had been coming to be understood that there were such things as spots on the face of the sun. At this point, after 17 years of study, Samuel Heinrich Schwabe announced that there was a cycle to such sunspot activity, the cycle beginning again about once a decade (actually, this has been averaging about eleven years).

SUNSPOTS

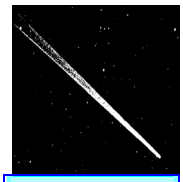
SKY EVENT

The Sunspot Cycle 1798-1894

MIN / MAX
1798 - 1804
1810 - 1817
1823 - 1830
1834 - 1837
1843 - 1849
1857 - 1860
1867 - 1872
1879 - 1884
1889 - 1894

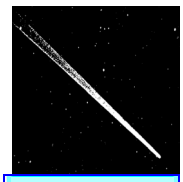


February 5, Sunday evening: From the southern hemisphere, a new comet was observed, diving toward the sun. This observation would be reported in a New-York newspaper.



SKY EVENT

February 27, Monday, 11AM: Captain Peleg Ray near Concepcion, Chile saw a comet a little east of the sun. The new comet was on this date whipping around the sun and had become so incredibly bright that it could be made out by the naked eye as little as one degree away from the edge of the sun during broad daylight, for instance by the entire population of Waterbury CT, as a sharp extra point of light. (We know also that at some point during this period a Chinese record was made of a "broom-star" that was visible "in the day time.")



SKY EVENT

February 28, Tuesday: People in New Bedford saw a comet as bright as Venus, with a tail 3× long. In the Ile-de-France this comet was seen during the day. A "large part of the adult population" of Waterbury, Connecticut first observed it at 7:30AM "east of and below the sun," with G.L. Platt, M.C. Leavenworth, S.W. Hall, Alfred Blackman, and N.J. Buel noting that the comet remained visible until the skies clouded up at 3PM. They described it as a round coma with a pale tail extending 2× to 3× and "melting away into the brilliant sky." The nucleus was detected with the naked eye and was distinctly round, "its light equal to that of the moon in midnight in a clear sky; and its apparent size about one eighth the area of the full moon." Giovanni Battista Amici of Florence, Italy described it at noon as "the mass, examined by an opera glass, to be like a flame, badly defined, three times as long as it was wide, very luminous towards the sun, and a little smoky at the east." At noon an observer in Woodstock, Vermont saw the comet and compared it to a small, white cloud, 3× long, adding that when viewed with a telescope, "it presented a distinct and most beautiful appearance,-exhibiting a very white and bright nucleus, and a tail dividing near the nucleus into two separate branches, with the outer sides of each branch convex, and of nearly equal length, apparently 8× or 10×, and a space between their extremities of 5× or 6×." Captain J.G. Clarke of Portland, Maine observed the comet in broad daylight and determined that the nearest limb of the nucleus was situated 4× 06' 15" from the sun's farthest limb and the nucleus and tail appeared as well-defined "as the moon on a clear day," adding that the comet looked like "a perfectly pure white cloud, without any variation, except a slight change near the head, just sufficient to distinguish the nucleus from the tail at that point." Bowring, in Chihuahua, Mexico, positioned the comet at a distance of 3× 53' 20" from the sun.

SKY EVENT

This quite unexpected and quite bright and quite fast comet passed the face of the sun in but a little over two hours, its phenomenally long tail stretching across a quarter of the night sky and seeming like "a torch agitated by the wind." This particular comet would be termed a "sun-grazer," that is, its course took it so close to the sun, within some 80,000 miles, that it would have accelerated to approximately 1,270,000 miles per hour

before being whipped out again into cold slow floating in the outer darkness. Harvard Observatory staff in the cupola of the Richard Henry Dana, Sr. house would watch for six nights as this comet receded. Even though the equipment was inadequate, William Cranch Bond was the first to detect the nucleus of the comet. New England newspapers printed reports of worldwide panic.

SKY EVENT

During our time we have not been favored by great comets; our Hale-Bopp was a disappointment and even our Halley's Comet was this time quite unspectacular. To understand the 19th Century, we have to imagine a period of rather frequent and indeed very spectacular sky ghosts and apparitions. This Great Comet of February 1843 actually was merely another fragment of a single gigantic comet that had been regularly lighting up the earth's sky since some point between 18,000BCE and 8,000BCE. Later, the Great September Comet of 1882 would be merely another fragment of this same comet, and would cast a light upon the earth two orders of magnitude brighter than that cast by a full moon — it would be easily visible in broad daylight!

As Moncure Daniel Conway has presented the *geist* of the period,

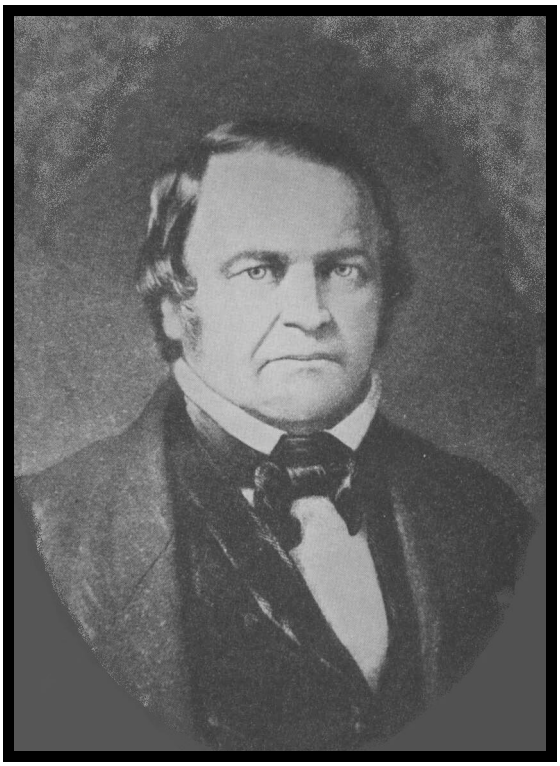
> Once the seventeen-year locusts swarmed in our woods, devouring the green tissue in every leaf. On each wing was the letter "W" betokening "War," and their united cry of "Pharaoh" prophesied the plagues of Egypt. The locusts came near enough to the Mexican War and to the deadly Spotted Tongue plague that scourged our county, to appear prophetic. But the greatest sensation was caused by the comet of 1843. There was a widespread panic, similar, it was said, to that caused by the meteors of 1832. Apprehending the approach of Judgment Day, crowds besieged the shop of Mr. Petty, our preaching tailor, invoking his prayers. Methodism reaped a harvest from the comet. The negroes, however, were not disturbed; – they were, I believe, always hoping to hear Gabriel's trump.

AUTOBIOGRAPHY | VOLUME II

At this point early in the year 1843, over and above "the negroes," above, who were "always hoping to hear Gabriel's trump," there were more than 50,000 white Millerite true believers, each eagerly awaiting the

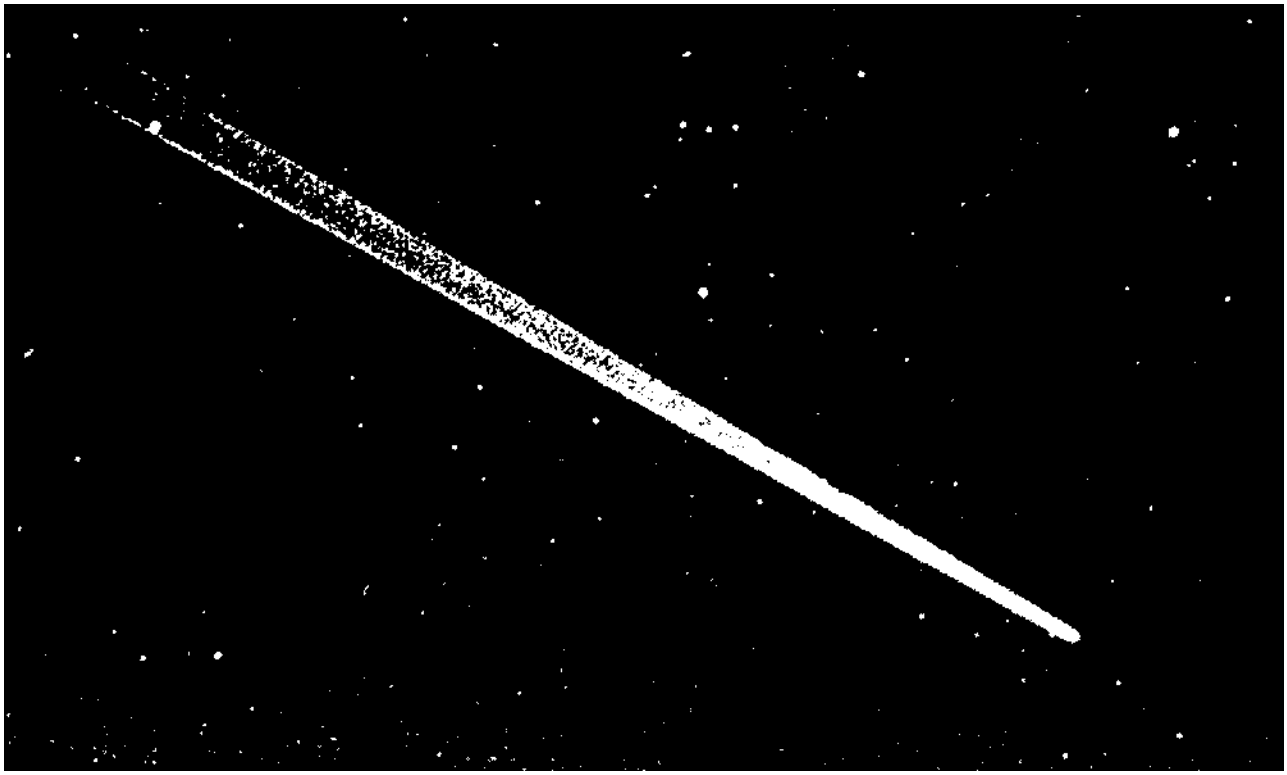
termination of the world as we all then knew it. Well, but Henry knew what to make of this phenomenon:

> SEEDS: Who could believe in prophecies of Daniel or of Miller that the world would end this summer, while one milkweed with faith matured its seeds?



Europe was in a decade dim:
Upon the future's trembling rim
The comet hovered.
— Herman Melville, CLAREL

Early March: The great comet was at this point low in the southwest evening skies and as bright as the brightest of the stars, seemingly even brighter than the comet of 1811. Its tail stood upward, straight and narrow, and was 50° in length, extending over a quarter of the sky. Europeans needed to make long journeys in order to be able fully to view this comet in its region of the sky. As the comet approached the sun, it proved to be a sun-grazer, achieving a perihelion, a closest point, of a mere 500,000 miles.[18] This comet, and the one of 1880 that would be known as the "great Southern" comet, may possibly be the two pieces of a sun-grazing comet which had been seen to be splitting apart as it sped past the sun, by Ephorus in the year 372 BCE. Even so, it was a bright comet, noticeable although it was appearing at noontime only a few degrees from the sun.



SKY EVENT

The Millerites, upon the appearance of such a phenomenon in the heavens, of course at once worked it into their Biblical prophecy of the end of time.

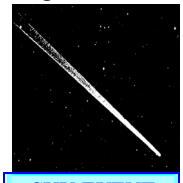
MILLENNIALISM

The Reverend Adin Ballou of Hopedale had a comment about this sort of attitude: "The millennium and kingdom must be **within** men, before it can ever be **around** them. Let us have the spirit of the millennium,

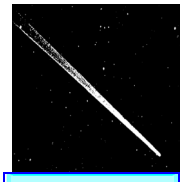
18. By way of contrast, the perihelion of Halley's comet is 55,000,000 miles, and the perihelion of Enke's is 31,000,000 miles. Since the diameter of the sun is some 840,000 miles, and since this perihelion measurement is made from the sun's center of gravity, what this means is that the comet grazed along, a snowball in hell, only some 80,000 miles above the outside surface of the sun. Since the closer the graze of the sun the quicker the trip past the sun, this comet must have passed three-quarters of the way around the sun in less than a day, and must have reached a peak speed of some 1,270,000 miles per hour.

and do the works of the millennium. Then will the millennium have already come."[19]

March 1, Wednesday: Only the tail of the new comet was visible above the horizon in the northern hemisphere after sunset. A passenger aboard the *Lawrence* at sea in south latitudes, however, would describe it as "a white streak of light, inclined at an angle of 40× to the horizon, and was imagined to be the zodiacal light."



March 2, Thursday: Captain P.P. King of the British Royal Navy, stationed at Port Stephens in New South Wales, noticed that the view of the tail of the comet was "producing great alarm among the natives." The Bishop of Australia made distinct notes about the comet's appearance and noted, "my attention was drawn to the remarkable spectacle of a definite portion of the tail being deflected from the axis, or direction in which the general body of light continued to proceed. Perhaps, about one-sixth of the train might be thus drawn aside from that which may be termed the natural direction, so as to form therewith, at the point of separation, an angle which I should calculate to be about three degrees...."

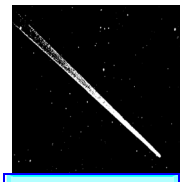


19."GREAT MARCH COMET, (C/1843 D1=1843 I). Followed with the unaided eye from Feb. 5 until Apr. 3, T=1843 February 27. Object a member of the Kreutz sungrazing group of comets. Spotted on February 5 low in the southwestern sky following evening twilight, magnitude perhaps 3 or 4. Moved rapidly to conjunction with the Sun. On the 28th, visible throughout the day in both Europe and America as a brilliant object immediately adjacent to the Sun; incredibly bright (-6 to -8) and displaying a 3 degree tail against the blue sky! For the next two weeks visible mainly from the Southern Hemisphere. In the first week of March, of magnitude 1 or 2 with a 35-40 degree tail. About March 13, tail 45 degrees long, head 3rd magnitude. By mid month comet once again easily visible from northern latitudes, its head situated near the Cetus/ Eridanus border, the tail extending to the south of the star Rigel. Proceeded steadily eastward. On March 20 the head had faded to about magnitude 4 but the long, straight tail could be traced about 65 degrees. At the end of March tail still nearly 40 degrees long. Comet's head last detected with the naked eye on April 3 but a good portion of the tail was still apparent."

March 3, Friday: With the closing of the 3d (lame duck) session of the House of Representatives, Whig control over the federal government of the USA came to an end.

Samuel F.B. Morse received a grant of $30,000 from the US Congress to construct an electric telegraph link between Washington and Baltimore. Morse's line would be completed and used for the first time in 1844.

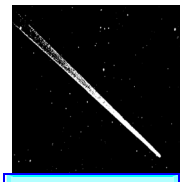
Piazzi Smyth of the Royal Observatory at the Cape of Good Hope, South Africa, saw the nucleus of the comet to be "a planetary disk, from which rays emerged in the direction of the tail." He added that "To the naked eye there appeared a double tail, about 25° in length, the two streamers making with each other an angle of about 15°, and proceeding from the head in perfectly straight lines. From the end of the forked tail, and on the north side of it, a streamer diverged at an angle of 6° or 7° towards the north, and reached a distance of upwards of 65° from the comet's head; a similar, though much fainter, streamer was thought to turn off south of the line of direction of the tail." King observed the main tail, as well as "a second ray [which] extended obliquely from it...making with it an angle of 10°."



SKY EVENT

March 4, Saturday: Joseph Smith, Jr. "got married with" his family's 19-year-old maidservant Emily Dow Partridge.

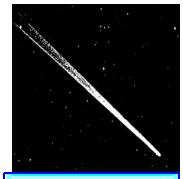
Commander Close of the *Ellenborough* saw the nucleus of the comet as equal to a star of magnitude 2-3. He would add that its "tail had a darkish line from its nucleus through the centre to the end; it was occasionally brilliant enough to throw a strong light on the sea. The tail was observed to have considerable curvature." King observed the nucleus with a refractor and described it as a "reddish stellar spot" with well-defined edges and about 1' in diameter. The comet was 8° above the horizon. H.A. Cooper in Pernambuco, Brazil described the comet "as particularly small, without any nebulosity, but of extreme brightness, of a golden hue, and a line of the same bright color may be distinctly traced, running directly from it into the tail, for 4° or 5°; the tail is perhaps 30° in length, and is of a brilliant silver color, perfectly opaque, but becoming less and less dense until it is lost in space."



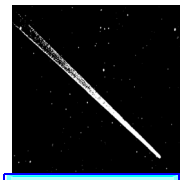
SKY EVENT

March 5, Sunday: On this night, Emily Dow Partridge Smith would later affidavit, she "roomed" with her new husband Joseph Smith, Jr. and they had "carnal intercourse."[20]

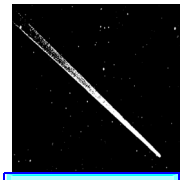
Piazzi Smyth of the Royal Observatory at the Cape of Good Hope, South Africa reported that since March 3rd "the appearance of the comet was considerably changed; the angle of the north streamer with the direction of the tail had been diminishing, and was now south; it had also diminished in brightness. The total length was about 35×. All the rays proceeding from the head were now of uniform brightness, excepting one bright streak, which could be traced along the tail."



March 6, Monday: The tail of the new comet was measured at 36° in length and a 7.5-foot focal length telescope showed "The nucleus of the head presented rather a well-defined planet-like disc, the diameter of which I estimated to be about 12°, and that of the nebulosity surrounding it at about 45°. The tail had a dark appearance along its axis, as if hollow; and at about half way from the head, it even appeared to separate slightly into two parts, the upper one being rather longer than the other." A report from St. Helena in the South Atlantic had the tail as 42.9° long. Another calculation estimated the tail length as 23.3°. A passenger aboard the *Lawrence* at sea in south latitudes said the tail was 50° long and was composed of "two streams of light, the outside edges being clear and well-defined."

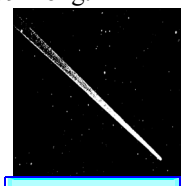


March 7, Tuesday: Observers estimated tail lengths for the new comet ranging from 26° to 43°. An observer in New Haven CT, despite observational difficulties created by a 6-day-old moon, described the comet's tail as "a long, narrow, and brilliant beam, slightly convex upwards, the lower end being apparently below the horizon."



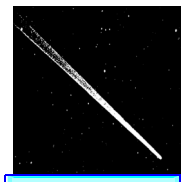
20. Commonly considered the best kind.

March 9, Thursday: One estimate of the tail of the new comet had it at 35.2° long, another had it at 39° long.



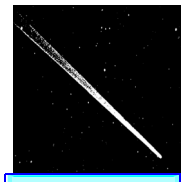
SKY EVENT

March 11, Saturday: An observer of the new comet noted that its tail was no longer stellar in appearance but rather had the appearance "of a large star covered with a thin film of cloud, or viewed through a telescope which had not been adjusted to focus." Tail lengths were reported ranging from 20° to 45° in length.



SKY EVENT

March 12, Sunday: Edward Cooper of Nice, France observed the comet in the evening sky when his servant called his attention to it, and recorded it as "a long white light near the western horizon which had somewhat the appearance of that kind of cloud commonly called cirrostratus. Sears Cooke Walker and E. Otis Kendall of the Central High School Observatory in Philadelphia PA first detected the nucleus in their comet searcher as a "well-defined disc larger than Jupiter in the same instrument."

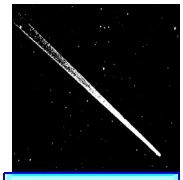


SKY EVENT

March 13, Monday: The diameter of the "bright part or disc of the head" of the comet was measured with a parallel wire micrometer and determined to be at 11". The observer added that the nebulosity surrounding this nucleus was "about four times the diameter" of the disc. Tail lengths were still in the 30° to 45° range.

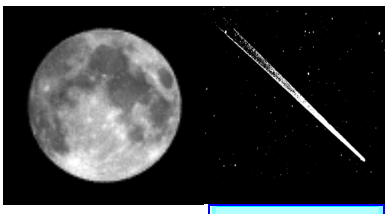
SKY EVENT

March 17, Friday: John Frederick William Herschel reported that the new comet appeared as a "vivid luminous streak," adding that the tail exhibited no bifurcation, and was nearly parallel to the equator, although a slight curvature was suspected. Captain John Grover at Pisa, Italy reported that he "saw a luminous arc in the heavens, extending from a spot about a degree to the south of Rigel to some clouds which bounded the western horizon. It was about 40 minutes in width; the edges sharply and clearly defined." Tail lengths reports generally were ranging from 30° to 43°.



SKY EVENT

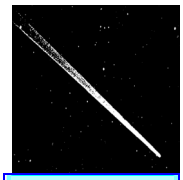
March 18, Saturday: Tail lengths reports for the new comet generally were ranging from 34° to 40°. By this point the comet had come far enough north that its entire tail was visible in the evening skies over most of Europe and the United States. In Naples, one Peters noted that straight above Vesuvius some 40° to 45° of tail were visible despite competition from the light of a full moon. (A tail like this you would be able to view even from the streets of one of today's immense, light-polluted cities.)



SKY EVENT

March 20, Monday: The first free public high school in Providence, Rhode Island opened its doors for education. At this point the public school system of Providence consisted of six public grammar schools, ten public primary schools, and one public high school. In the first high school classes there would be a few black students, but then racial segregation of educational opportunity would be imposed. Although this school was nominally coeducational, girls were to enter through a separate door into a separated area for instruction — we can see that, interestingly, the problem in regard to race relations was handled in one manner, the problem in regard to gender relations in a distinctly different manner.

Tail lengths reports for the new comet generally were ranging from 40° to 48°.



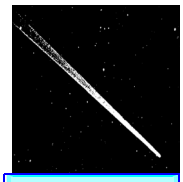
SKY EVENT

March 22, Wednesday: Benjamin Peirce, the Perkins Professor of Astronomy and Mathematics, lectured on the topical topic of superstition and comets before a crowd of 1,000 in the Odeon Theatre in Boston. He jested that to some of us, such as the Millerite followers of the Reverend William Miller, such a new comet could be seen as prophesying "the end of all things to all of us," at least to the enlightened persons of his audience, "the generous spirits of Boston," it might be seen as prophesying the purchase of a decent telescope for Harvard College and a decent observatory in which to house it.[21]

HARVARD OBSERVATORY

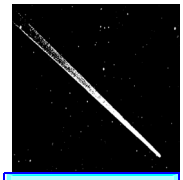
The 15-inch telescope known as "The Great Refractor" that would be installed on Concord Avenue in Cambridge in 1847 would be ordered from Merz & Mahler of München, Germany during this year. For two decades this would be the largest and most significant telescope in the United States, equal to the finest in the world.[22]

An observer of the comet noted that "although the sky was very clear, the nucleus was with difficulty perceptible, from which it appeared that the comet was increasing its distance from us with immense rapidity." He indicated the tail extended about 37°.



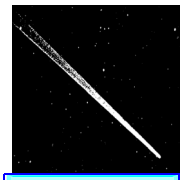
SKY EVENT

March 23, Thursday: The crew of the *Dublin* estimated the tail of the new comet to be about 36.4° long, while another observer found the tail to be 38° long.



SKY EVENT

March 24, Friday: An observer estimated the tail of the new comet to be 35.2° long. Another observer said the tail was 39° long.



SKY EVENT

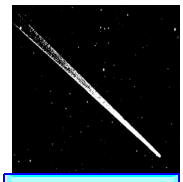
21. Safe thoughts to contemplate, as this great comet which had been taken by some to prophesy the end of time was even then fading quickly into invisibility, with matters here on earth continuing to go on pretty much as before.

ASTRONOMY

22. It would be through detecting errors in the making of this fine instrument that the Clark firm of Boston would be emboldened to embark upon their career in telescope making.

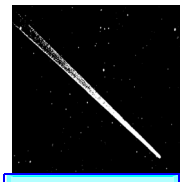
ALVAN CLARK

March 26, Sunday: An observer estimated the tail of the new comet to be about 35° long. He added, "Through ordinary land-glasses it still appeared as if there was a condensation of brighter matter in the centre of the head."



SKY EVENT

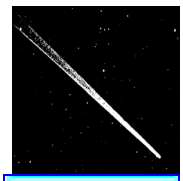
March 27, Monday: An observer estimated the tail of the new comet to be 35° long.



SKY EVENT

Late in March, after a courtship that had lasted more than 12 years, Mary Tyler Peabody announced to her intimate relatives, she had gotten her man. –Finally she had sprinkled adequate salt on the tail of a widower named Horace Mann, who lived at her boarding house.

March 31, Friday: Occasionally, through breaks in the clouds, the tail of the comet could be glimpsed.



SKY EVENT

April: Although Edmond Halley had cataloged the star Eta Carinae in 1677 as one of only the 4th magnitude, and during the early 19th century, Eta Carinae had been a run-of-the-mill variable star, sometimes appearing at 4th magnitude, sometimes at 2d, in 1827, in 1832, and in December 1837 it had risen to 1st magnitude, at this point it suddenly brightened so remarkably, to a magnitude of -1, as to become the 2d brightest star in the sky, outshone only by Sirius. For the next two decades, Eta Carinae would be one of the brightest stars in the galaxy. This would be the only nova event that would be visible during Henry Thoreau's lifetime. Accompanying this brightening was an expulsion of materials two to three times the weight of our sun from Eta Carinae's polar regions. This material was forming the two lobes now seen in the Hubble view. The glow from these lobes comes mainly from light radiated by Eta Carinae that reflects off the dust of the lobes. The clouds that surround Eta Carinae obscure it from our direct visual observation. According to observations, the Great Eruption appeared to end in 1863 when the star faded in spurts to below naked-eye visibility, stabilizing at about 7th magnitude. Eta Carinae then brightened to 6th and faded back to a dim 8th magnitude. By 1868 it was no longer visible to the naked eye. From 1950 to 1992 the star brightened by a full magnitude, and it is continuing to brighten. In November 1999 its brightness was 4.8 magnitudes, something not seen in this star since the Great Eruption of April 1843.

SKY EVENT

April 2, Sunday: Joseph Smith, Jr. was at the home of Benjamin Johnson and spent the night in the bed of his sister Almera Woodward Johnson, and asked Benjamin if he might also have his youngest sister, Esther M. Johnson (the record does not indicate whether his request was fulfilled).

Frederick Douglass lectured for the Rhode Island Anti-Slavery Society in Providence on the topic "The Progress of the Cause."

An observer reported that the comet had become very faint and that the nucleus was no longer being observed.

SKY EVENT

From Concord, Henry Thoreau did his duty by offering some golden reflections to the young Richard F. Fuller at Harvard College.

> *What I was learning in college was chiefly, I think, to express myself, and I see now, that as the old orator prescribed, 1st, action; 2d, action; 3d, action; my teachers should have prescribed to me, 1st, sincerity; 2d, sincerity; 3d, sincerity. The old mythology is incomplete without a god or goddess of sincerity, on whose altars we might offer up all the products of our farms, our workshops, and our studies. It should be our Lar when we sit on the hearth, and our Tutelar Genius when we walk abroad. This is the only panacea. I mean sincerity in our dealings with ourselves mainly; any other is comparatively easy. But I must stop before I get to 17thly. I believe I have but one text and one sermon.*

To: Richard Fuller
From: HDT
Date: 4/2/43

Concord April 2nd 1843

Dear Richard,
I was glad to receive a letter
from you, so bright and cheery. You
speak of not having made any conquests
with your own spear or quill as yet,
but if you are tempering your spear-
head during these days, and fitting a
straight and tough shaft thereto,
will not that suffice? We are
more pleased to consider the hero in the
forest cutting cornel or ash for his
spear, than marching in triumph
with his trophies. The present
hour is always wealthiest when it is
poorer than the future ones, as that
is the pleasantest site which affords
the pleasantest prospects.
What you say about your studies
furnishing you with a "mimic idiom" only,
reminds me that we shall all do
well if we learn so much as to talk —
to speak truth. The only fruit which
even much living yields seems to be often
only some trivial success — the ability
to do some slight thing better. We
make conquest only of husks and
shells for the most part — at least
apparently — but sometimes there are
cinnamon and spice, you know. Even
the grown hunter you speak of slays
a thousand buffaloes and brings off only
their hides and tongues. What im-
mense sacrifices — what hecatombs and
holocausts the gods exact for very slight
favors! How much sincere life be-

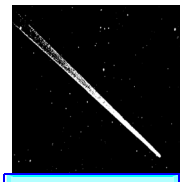
fore we can even utter one sincere word —
What I was learning in College
was chiefly, I think, to express myself,
and I see now that as the old orator
prescribed 1st action, 2nd action, 3d action,
my teachers should have prescribed to
me 1st sincerity 2nd sincerity, 3d sincerity.
The old mythology is incomplete
without a god or goddess of sincerity, on

Page 2
whose altars we might offer up all
the products of our farms, our work-
shops, and our studies. It should be
our Lar when we sit on the hearth,
and our Tutelar Genius when we walk
abroad. This is the only panacea. I
mean sincerity in our dealings with our-
selves mainly — any other is compari-
tively easy — but I will stop before
I get to 17thly — I believe I have
but one text and one sermon.
Your rural adventures beyond
the W. Cambridge hills, have
probably lost nothing by dis-
tances of time or space — I used
to hear only the sough of the wind in
the woods of ~~cong~~ Concord, when I was
striving to give my attention to a page
of Calculus. — But depend upon it
you will love your native hills the better
for being separated from them.
I expect to leave Concord, which is my
Rome — and its people, who are my Romans,
in May, and go to N. york to be a tutor
in Mr William Emerson's family. — So
I will bid you good bye till I see
you or hear from you again.
Yr friend H.D. Thoreau

P.S. Will you take the trouble to carry the inclosed
letter to Richardson for me — and the vol.
which Bartlett (Robert) took from
the library for me — either to Samuel Long-
fellow, who I believe attends to his concerns,
or to the librarian?

April 3, Monday: Joseph Smith, Jr. "got married with" Almera Woodward Johnson.

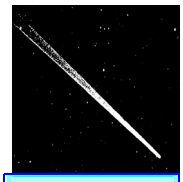
An observer in New Haven, Connecticut was the last to be able to detect in the heavens the Great Comet of 1843 with the naked eye, noting it as "barely discernible."



SKY EVENT

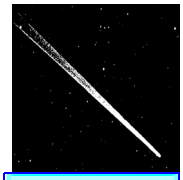
April 6, Thursday: Joseph Smith, Jr. called a special conference at Nauvoo, Illinois challenging those of the Mormon faith either to accuse him of sin directly — or shut up.

An attempt was made to view the retreating Great Comet of 1843 with an equatorially-mounted, 7.5-foot focal length refractor, but nothing could be made out.



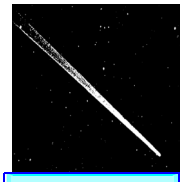
SKY EVENT

April 11, Tuesday: A report on the retreating comet from F.T. Rusden's telescope station near Gwydir Falls in New South Wales: "by straining my eyes, I could just make out the last faint glimmer of it...."



SKY EVENT

April 19, Wednesday: The last observation of the great comet of 1843.



SKY EVENT

In the collection of manuscript which has now been published as THE DISPERSION OF SEEDS, on what has become page 87, Henry Thoreau mused interestingly on this comet:

> When lately the comet was hovering in our northwest horizon, the thistledown received the greater share of my attention.... Astronomers can calculate the orbit of that thistledown called the comet, conveying its nucleus, which may not be so solid as a thistle seed, somewhither....

HARVARD OBSERVATORY

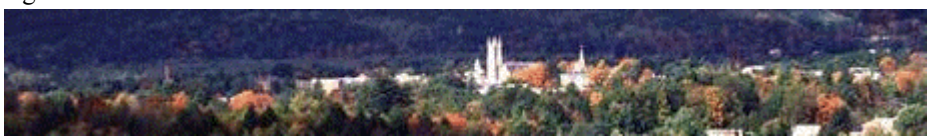
1844

Midsummer: Henry Thoreau joined up with Ellery Channing where he was waiting for him in the railroad station in Pittsfield MA at the foot of Saddleback (Mount Greylock, that is) after coming up from New-York, and the two young men went on a midsummer walking tour of the Berkshires and the Catskills. While in the Catskill Mountains, Thoreau would notice an attractive little habitation not unlike William Cowper's 18th-Century English "Peasant's Nest" along the River Ouse, that would figure large in his later thoughts and plans:

> WALDEN: To my imagination it [the shanty on Walden Pond] retained throughout the day more or less of this auroral character, reminding me of a certain house on a mountain which I had visited the year before. This was an airy and unplastered cabin, fit to entertain a travelling god, and where a goddess might trail her garments. The winds which passed over my dwelling were such as sweep over the ridges of mountains, bearing the broken strains, or celestial parts only, of terrestrial music. The morning wind forever blows, the poem of creation is uninterrupted; but few are the ears that hear it. Olympus is but the outside of the earth every where.

BERKSHIRE, MASS.

Franklin Benjamin Sanborn would allege in 1905 that much of the material Thoreau would insert into his account of his adventure with his brother John Thoreau, Jr. on the Concord and the Merrimack rivers into the mountains of southern New Hampshire in 1849 actually had originated during this 1844 hiking tour with Channing into the mountains of western Massachusetts and New York state: “This journey Thoreau in WEEK breaks into two parts, printing the last first, near the beginning of his “Tuesday,” where it runs on for fourteen pages. Then ... he takes up the tale of his tramp from Shelburne Falls on the Deerfield River, up the valley of that stream, and over the Hoosac Mountain, through which the railroad has since bored its way.” This is the famous chronicle in which Thoreau is attracted by a young lady intimately combing out her long black hair while attired merely in her housedress: “Its mistress was a frank and hospitable young woman, who stood before me in a dishabille, busily and unconcernedly combing her long black hair while she talked, giving her head the necessary toss with each sweep of the comb, with lively sparkling eyes, and full of interest in that lower world from which I had come, talking all the while as familiarly as if she had known me for years, and reminding me of a cousin of mine.”



Thoreau supposed he could view Williams College from at or near the summit of Mount Greylock, or “Saddleback.” Correcting some of the details, the central campus is not visible from the peak itself, the

college was never named Williamstown, and the summit of Greylock is at 3491 feet rather than 3600:

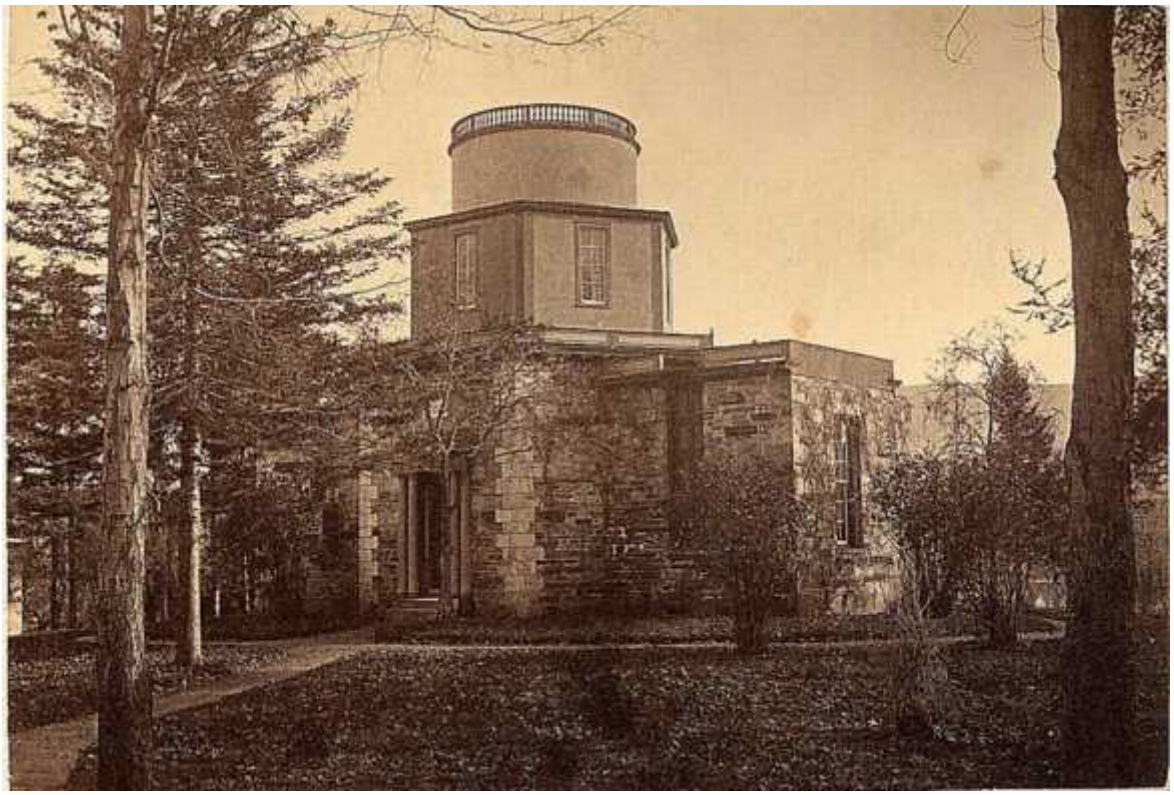
> A WEEK: I had come over the hills on foot and alone in serene summer days, plucking the raspberries by the wayside, and occasionally buying a loaf of bread at a farmer's house, with a knapsack on my back which held a few traveller's books and a change of clothing, and a staff in my hand. I had that morning looked down from the Hoosack Mountain, where the road crosses it, on the village of North Adams in the valley three miles away under my feet, showing how uneven the earth may sometimes be, and making it seem an accident that it should ever be level and convenient for the feet of man. Putting a little rice and sugar and a tin cup into my knapsack at this village, I began in the afternoon to ascend the mountain, whose summit is three thousand six hundred feet above the level of the sea, and was seven or eight miles distant by the path. My route lay up a long and spacious valley called the Bellows, because the winds rush up or down it with violence in storms, sloping up to the very clouds between the principal range and a lower mountain. There were a few farms scattered along at different elevations, each commanding a fine prospect of the mountains to the north, and a stream ran down the middle of the valley on which near the head there was a mill. It seemed a road for the pilgrim to enter upon who would climb to the gates of heaven. Now I crossed a hay-field, and now over the brook on a slight bridge, still gradually ascending all the while with a sort of awe, and filled with indefinite expectations as to what kind of inhabitants and what kind of nature I should come to at last. It now seemed some advantage that the earth was uneven, for one could not imagine a more noble position for a farm-house than this vale afforded, farther from or nearer to its head, from a glen-like seclusion overlooking the country at a great elevation between these two mountain walls.

THOREAU AND TELESCOPES

Thoreau has recently been accused of a plagiarism. He must have been carrying along in his knapsack, according to Lauren Stevens (a tour guide who has coauthored a history of Mount Greylock), not only sugar, rice, and a change of clothes, but also the Reverend Timothy Dwight's TRAVELS IN NEW ENGLAND AND NEW YORK –to plagiarize from– for Dwight had described a view from Mount Greylock and had described Williamstown, and Thoreau wrote that he could view Williamstown from the peak although that is simply not possible. Stevens, reading between the lines, sees in this sufficient evidence to allege, in his history which has been reviewed in the Boston Globe in 1998 by B.J. Roche, that he has caught Thoreau red-handed.

Upon reaching the summit Thoreau read some stock price quotations in a castoff newspaper and lay down to sleep next to the outside wall of the only building, an observatory, on the summit:

> A WEEK: This observatory was a building of considerable size, erected by the students of Williamstown College, whose buildings might be seen by daylight gleaming far down in the valley. It would be no small advantage if every college were thus located at the base of a mountain, as good at least as one well-endowed professorship. It were as well to be educated in the shadow of a mountain as in more classical shades. Some will remember, no doubt, not only that they went to the college, but that they went to the mountain. Every visit to its summit would, as it were, generalize the particular information gained below, and subject it to more catholic tests.



THOREAU AND TELESCOPES

After hiking in Massachusetts mountains, Thoreau and Channing boarded an excursion boat on the Hudson River and went on into the Catskill Mountains of New York state.

According to Channing, the sentence I have emphasized here from WALDEN pertains not to the shanty on the pond but to his boat ride on the Hudson River with Thoreau of this summer:

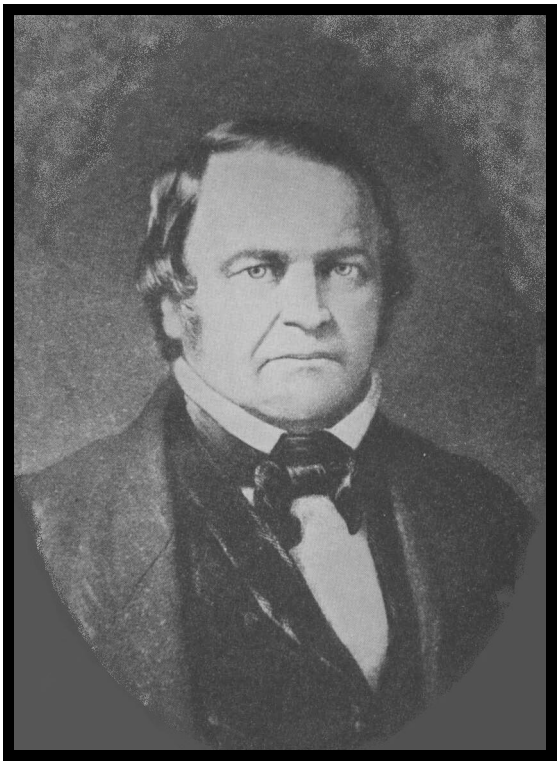
> WALDEN: I left the woods for as good a reason as I went there. Perhaps it seemed to me that I had several more lives to live, and could not spare any more time for that one. It is remarkable how easily and insensibly we fall into a particular route, and make a beaten track for ourselves. I had not lived there a week before my feet wore a path from my door to the pond-side; and though it is five or six years since I trod it, it is still quite distinct. It is true, I fear that others may have fallen into it, and so helped to keep it open. The surface of the earth is soft and impressible by the feet of men; and so with the paths which the mind travels. How worn and dusty, then, must be the highways of the world, how deep the ruts of tradition and conformity! I did not wish to take a cabin passage, but rather to go before the mast and on the deck of the world, for there I could best see the moonlight amid the mountains. I do not wish to go below now.

Because the moon was bright, they spent the night in the bow of the excursion boat.

Thoreau would be back in Concord by August 1st.

March 21, Thursday: The 1st "Great Disappointment." Perhaps a hundred thousand Millerite "adventists" were kept waiting all day and all night in white nightshirts and bedsheets, on hills and on their rooftops and on specially constructed roofless church platforms, for the Second Coming of Christ that the Reverend William Miller of Pittsfield had been predicting since 1831. At the rosy rays of dawn the earth had not ceased to exist, fancy that.

SEEDS: Who could believe in prophecies of Daniel or of Miller that the world would end this summer, while one milkweed with faith matured its seeds?



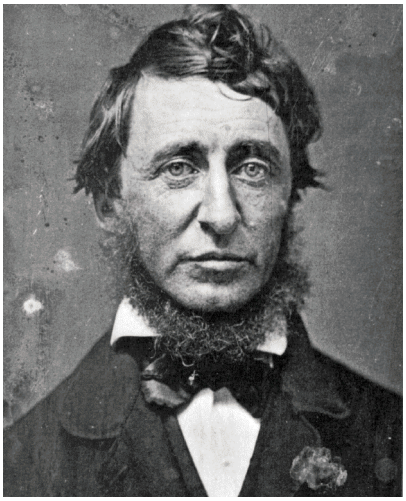
THOREAU AND TELESCOPES

(Gould, Stephen Jay. QUESTIONING THE MILLENNIUM. NY: Harmony Books, 1997, page 49;
Festinger, Leon et al. WHEN PROPHECY FAILS. Minneapolis MN: U of Minnesota P, 1956, page 16-17)

MILLENNIALISM

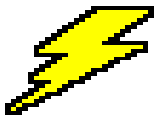
The earth did not cease to exist, so their leader recalculated and reset the event to October 22. One disciple, according to Waldo Emerson, stated that although they expected the second advent of the Lord in 1843, "if there is any error in his computation, –he shall look for him until he comes."

"I would not run round a corner
to see the world blow up."
— Henry Thoreau,
"LIFE WITHOUT PRINCIPLE"



On October 22nd, believers donned their robes. A large gathering lived in or around Groton. Believing that Christ would return on a mountaintop, they climbed up Mt. Wachusett to await the coming of the Lord. One respectable but arthritic old man from Harvard who could not make it up the mountain stationed himself at the very top of the tallest apple tree in his orchard and waited out the night. In New Bedford, a whole family perched on the branches of an apple tree dressed in their white robes. According to one story, a man accosted Ralph Waldo Emerson and the Reverend Theodore Parker on a Concord road and excitedly asked if they realized that the world was going to end that day. "Mr. Parker said: 'It does not concern me, for I live in Boston.' And Mr. Emerson said: 'The end of the world does not affect me; I can get along without it.'"

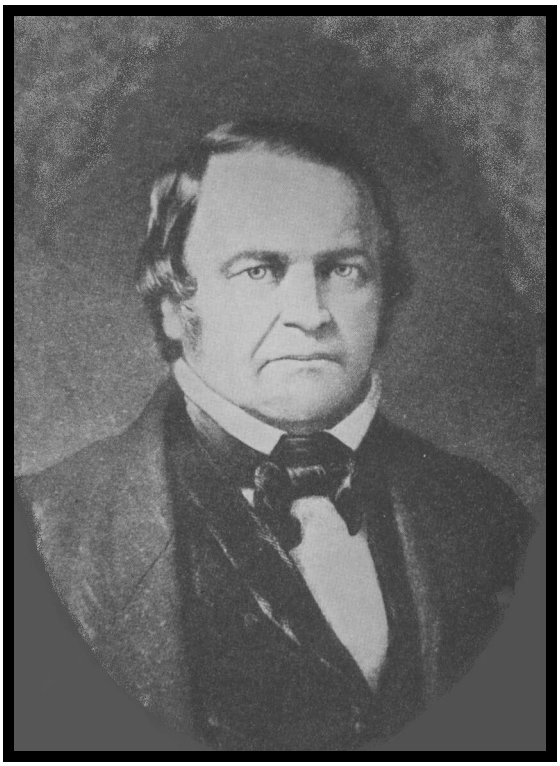
October 22: Sarah Bernhardt, "the Divine Sarah," was born as Rosine Bernard in Paris.



The 2nd "Great Disappointment" for the Reverend William Miller of Pittsfield's Millerite "adventists." The Reverend Samuel S. Snow, an influential Millerite, had predicted the Second Coming on this day. The date had then been accepted by Miller himself. After the inevitable no-show, the event would become known as the "Great Disappointment" (Gould, Stephen Jay. QUESTIONING THE MILLENNIUM. NY: Harmony Books, 1997, page 49, Festinger, Leon et al. WHEN PROPHECY FAILS. Minneapolis MN: U of Minnesota P, 1956, page 17). Although they would be been kept waiting dressed in white robes all day and all night, on their rooftops and

on specially constructed roofless church platforms — this earth was refusing to cease to exist.

SEEDS: Who could believe in prophecies of Daniel or of Miller that the world would end this summer, while one milkweed with faith matured its seeds?



MILLENNIALISM

1845

George Phillips Bond, George Frisbie Hoar, son of Concord's Squire Samuel Hoar, and Gorham Bartlett, son of Concord's Dr. Josiah Bartlett, graduated from Harvard College.

NEW "HARVARD MEN"

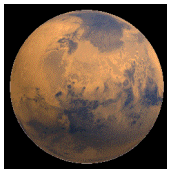
Benjamin Apthorp Gould went to Germany to study mathematics and astronomy under Johann Carl Friedrich Gauss at the University of Göttingen (he would make himself the 1st American to earn a doctorate in this field).

The following tabulation would be Horace Rice Hosmer's sarcastic take on a Franklin Benjamin Sanborn piece of eugenic engineering (and piece of typical Concord conceit), to wit, "Perpetuity, indeed, and hereditary transmission of everything that by nature and good sense can be inherited, are among the characteristics of Concord":

The Harvard Apples that do or do not fall far from the Tree

CLASS	NAME	FATHER	SON
1834	George Moore	Abel Moore, the county sheriff in Concord, "came from Sudbury a rich farmer"	"Mason by trade and rich"
1835	Hiram Barrett Dennis	"came from Boston because he was a drunkard"	"died a drunkard's death when about 30"
1835	Ebenezer Rockwood Hoar	Judge Samuel Hoar	"came from Lincoln a rich lawyer"
1837	Henry D. Thoreau	"little, deaf pencil maker"	"never free from pecuniary difficulties the greater part of his life"
1841	John Shepard Keyes	John Keyes, founder of The Republican during the 1840 election, "came from Westford"	"Lawyer" [State Senator, District Judge]
1844	George M. Brooks	"came from Lincoln"	"Lawyer" [Judge]
1844	Edward Sherman Hoar	"came from Lincoln a rich lawyer"	"brother of Ebenezer R. Hoar"
1845	Gorham Bartlett	Dr. Josiah Bartlett, the Thoreau family physician, "came from Chelmsford"	[a pupil in Concord Academy who became a] "Doctor"
1846	George Frisbie Hoar	"came from Lincoln a rich lawyer"	"brother of Ebenezer R. Hoar"
1847	George Haywood	Dr. Abiel Heywood, long term town clerk and chairman of the Concord Board of Selectmen	"was a Doctor, and wealthy, of Concord"
1849	Joseph Boyden Keyes	"brother of Thomas L. Keyes"	became a lawyer
1851	Nathan H. Barrett	Captain Nathan Barrett "was a rich farmer of Concord"	Nathan Henry Barrett became a government clerk

August 18, Monday: Ormsby MacKnight Mitchel of the Cincinnati Observatory established that an area of the rim of the south polar cap of the planet Mars was detaching itself each year, and gradually afterward disappearing.



ASTRONOMY

December 8, Monday: Discovery of a 5th asteroid.

December 29, Monday: The Republic of Texas became the 28th state of the United States of America. In protest Mexico severed relations with the United States of America.

The comet Biela which had been recorded in 1772, in 1805, in 1826, in 1832, and in 1839 was already, during its pass by the sun in this year, beginning its disintegration.

SKY EVENT

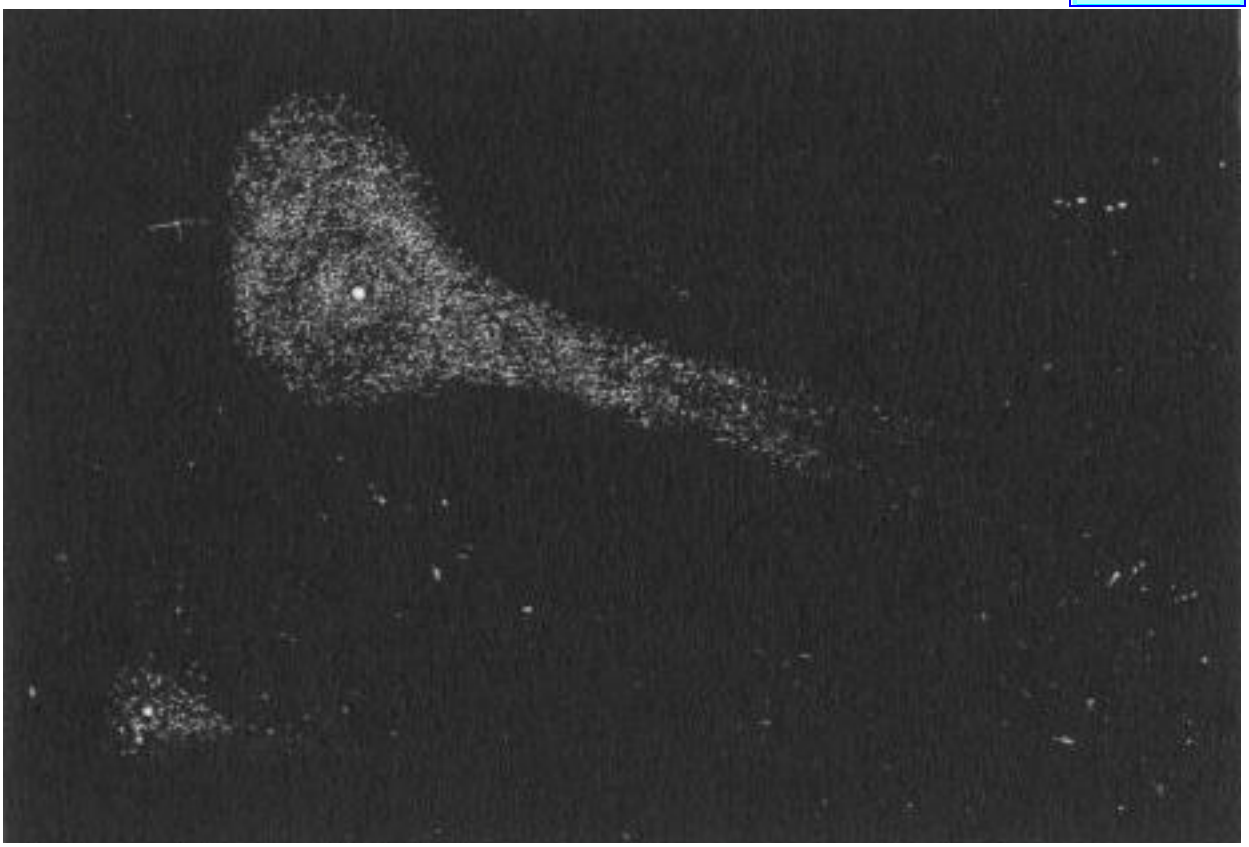
1846

George Phillips Bond became an "assistant observer," officially, as he assisted his father William Cranch Bond at Harvard Observatory.

ASTRONOMY

February: The comet that had been discovered by Austrian astronomer Wilhelm, Baron von Biela (1782-1856), with an orbital period of 6 years and 9 months, appeared again, and this time it was noticed to have split into two halves, each with its own tail.According to a list published in Boston in 1846, attributed to Professor Benjamin

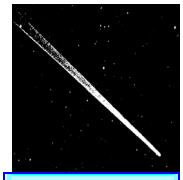
SKY EVENT



Peirce

No.	Date.	Greenwich M. S. T. of Perihelion Passage.	Longitude of Ascending Node.	Longitude of Perihelion.	Angle betw. Perihelion and Node.	Inclination.	Perihelion Distance.	Eccentricity.	Period of Revolution.	Direction.	Name of Computer.
	A. D.	N. S.	° ′ ″	° ′ ″	° ′ ″	° ′ ″			y.		
165	1844	Sept. 2.45431	63 53 20	342 34 10	278 40 50	2 55 2	1.186545	0.6186103	5.488	D	Goldschmidt.
		2.59311	63 47 18	342 56 5	279 8 47	2 54 46	1.182616	0.6019600	5.121	D	Faye.
166	1844	Oct. 17.33613	31 43 16	180 28 21	211 14 55	48 36 22	0.8552995			R	Hind.
167	1844	Dec. 13.75660	119 39 44	294 10 6	174 30 22	45 7 8	0.2351532	0.9804300	41.46	D	Hind.
		13.68294	118 27 35	296 4 43	177 37 8	45 36 34	0.2512598			D	Hind.
168	1845	Jan. 8.15588	336 44 30	91 19 39	114 35 9	46 50 30	0.905189			D	Gotze.
169	1845	Apr. 22.99687	347 51 28	194 58 52	207 7 24	54 17 40	1.233490	0.8802689	33.07	D	Clausen.
		21.03290	347 10 47	192 37 26	205 26 39	56 24 6	1.254706			D	Hind.
		21.04124	347 11 10	192 38 25	205 27 15	56 22 51	1.254544			D	Gotze.
		20.97094	347 9 48	192 33 17	205 27 29	56 27 18	1.255323	1.0039886		D	Jeniker and Hom- [stein.
170	1845	June 5.68701	337 53 0	262 4 44	75 48 16	48 55 8	0.401077			R	d'Arrest.
		5.67743	337 53 7	262 7 9	75 45 58	48 41 59	0.401615	0.9898745	250	R	d'Arrest.
		5.35779	341 9 52	265 7 39	76 2 13	49 37 4	0.397809			R	Kendall.
		5.5395	339 56 53	263 44 25	76 12 38	49 0 21	0.400226			R	Peirce.
171	1846	Jan. 22.01124	111 7 50	89 1 48	337 53 58	47 31 23	1.482166			D	Hind.
B	1846	Feb. 10.99547	246 0 18	109 9 8	223 8 49	12 34 14	0.8562966	0.7554707	6.553	D	Brunow and d'Ar- [rest.
B^1		11.02331	245 47 51	109 5 31	223 17 40	12 39 45	0.8566714	0.7563402	6.592	D	Coffin.
B^2		11.27164	245 50 7	108 59 38	223 9 31	12 43 15	0.8569306	0.7591178	6.710	D	Coffin.
172	1846	Feb. 25.29903	102 54 35	116 31 23	13 36 48	30 48 37	0.6503798	0.789249	5.421	D	Goujou.
173	1846	Mar. 5.5376	77 52 50	89 54 35	12 51 46	84 46 33	0.6673			D	G. P. Bond.
		5.5500	77 40 47	90 33 59	12 59 52	85 5 7	0.6635001	0.960823	70.	D	G. P. Bond.
		5.54775	77 36 47	90 30 40	12 53 57	85 6 12	0.663735	0.9622465	73.715	D	Peirce.
174	1846	June 5.33194	261 58 27	162 25 26	99 33 1	29 18 57	0.634431			R	Peirce.
		5.3486	261 58 0	162 26 27	99 31 37	29 19 10	0.634399				Walker.

April: Edward Claudius Herrick reported in the American Journal of Science that: "It appears quite probable that the train of this comet was seen in the evening before the perihelion passage, at Bermuda, Philadelphia, and Porto Rico, on the 19th, 23d and 26th of February."

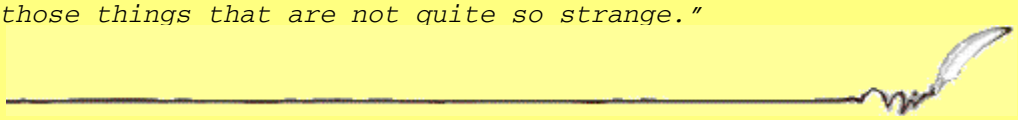


SKY EVENT

April: During this month or the next one, Waldo Emerson would jot down something about the activities of Henry Thoreau in his JOURNAL:

ASTRONOMY

> *Queenie came it over Henry last night when he taxes the new astronomers with the poverty of their discoveries & showings — not strange enough. Queenie wished to see with eyes some of those strange things which the telescope reveals, the satellites of Saturn, &c. H. said that stranger things might be seen with the naked eye. "Yes," said Queenie "but I wish to see some of those things that are not quite so strange."*



HARVARD OBSERVATORY

Here is the beginning of this April, and the Purple Martin *Progne subis*, in the WALDEN manuscript:

> WALDEN: For a week I heard the circling groping clangor of some solitary goose in the foggy mornings, seeing its companion, and still peopling the woods with the sound of a larger life than they could sustain. In April the pigeons were seen again flying express in small flocks, and in due time I heard the martins twittering over my clearing, though it had not seemed that the township contained so many that it could afford me any, and I fancied that they were peculiarly of the ancient race that dwelt in hollow trees ere white men came. In almost all climes the tortoise and the frog are among the precursors and heralds of this season, and birds fly with song and glancing plumage, and plants spring and bloom, and winds blow, to correct this slight oscillation of the poles and preserve the equilibrium of Nature.

ASTRONOMY

April 30, Thursday: The diary of William Cranch Bond of Harvard Observatory reports

> *a happy day for Cambridge … a day of as pure and unallowed enjoyment as perhaps the world ever gave its votaries.*

ASTRONOMY

The occasion was the inauguration dinner and fireworks in honor of a new president for Harvard College, Edward Everett.[23] It had been the chemistry professor of Harvard Medical College, the convivial Doctor John White Webster, who had insisted that they must have fireworks.

23. President-elect Everett might have felt like Nanky-Poo in the opera "Madame Butterfly." His three years in this office would later be characterized as the "most wretched" of his life.

May 15, Friday: This is the inscription Mr. William Simms of London and Mr. Joseph Cranch of London had engraved by a diamond, at the factory of Merz and Mahler in München, Germany, on the rim of the 15-inch objective lens for the Great Refractor of Harvard Observatory, a piece of glass which was at that time the largest and most precise in the world:[24]

Harvard College W.S. J. Cranch Munich May 15, 1846

May 15th: Capt. Fremont describes the prairies as covered with sun-flowers –and traversed occasionally by a clear & shallow creek
At the approach of evening I hear the note of the tree toad –and the veery & wood thrush –and sometimes late in the night some small bird in the forest the pine warbler? or the tree sparrow? sings aloud a distinct and pleasant strain as if awakened by its dreams. What should impel it to such an expression of its happiness
I think that an important difference between men of genius or poets and men not of Genius –is in the inability of the later to grasp and confront the thought that visits them. It is too faint for expression or even conscious impression– What merely quickens or retards the blood in their veins –and fills their afternoons with pleasure they know not whence –conveys a distinct assurance to the finer organization of the poet
How to make my life of finer quality –to transplant it into futurity that is a question
Chapman seems to have come to his task the translation of Homer with the right spirit –to supply a want to England–

> "O! 'tis wondrous much
> (Though nothing prized) that the right virtuous touch
> Of a well-written soul, to virtue moves,
> Nor have we souls to purpose, if their loves
> Of fitting objects be not so inflam'd:
> How much then were this kingdom's main soul maimed
> To want this great inflamer of all powers
> That move in human souls? – –
> being so far from cause
> Of prince's light thoughts, that their gravest laws
> May find stuff to be fashioned by his lines;
> Through all the pomp of kingdoms still he shines
> And graceth all his gracers."
> He says of those who had translated him into other languages
> They fail'd to search his deep & treasurous heart,
> The cause was, since they wanted the fit key
> Of Nature, in their downright strength of Art;
> With poesy to open poesy.

When my friends reprove me for not devoting myself to some trade or profession, and acquiring property I feel not the reproach– I am guiltless & safe comparatively on that score– But when they remind me of the advantages of society of worthy and earnest helpful relations to people I am convicted –and yet not I only but they also.
But I am advised by thee Friend of friends to strive singly for the highest –without concern for the lower – The integrity of life is otherwise sacrificed to factitious virtues –and frittered away in morbid efforts & despair.
Disturb not the sailor with too much details –but let him be sure that he keep his guiding star in his eye. It is by a mathematical point that we are wise –but there is a sufficient guidance for all our lives– The blind are led by the slightest clue.
When I am reproved for being what I am I find the only resource is being still more entirely what I am.
Carry yourself as you should and your garments will trail as they should.
I am useless for keeping flocks & herds, for I am on the trail of a rarer game.

24. It would appear, since the color of William Simms is not given in the historical record and since the default presumption in our historical records is for whiteness, that this William Simms of London would have been unrelated to the Thomas Simms (Sims) of the Cornhill Coffee House. (Except, of course, for the possibility, always to be taken account of in those days, that this man might have been related to a Simms family down in the American southlands that held title to Thomas.)

To the mariner the faint star is the chief light though he will avail himself of the light in the binnacle.
In may the pollen of the pine (pitch) began to cover the pond with its yellow dust.

August: Lord Ross, in Ireland, examined the moon by means of a powerful new telescope and informed us all that he could detect no vestiges of the sorts of architectural remnants which would indicate that our companion had ever been colonized by intelligent life. He detected no greens of vegetation or blues of water: "all seemed desolate," reported Scientific American.[25]

ASTRONOMY

A minor machine politician in New-York, Jonathan Drake Stevenson, had gone to Washington DC and gotten himself appointed a Colonel to raise a detachment of troops and carry Americanism around the Horn to California. The men of Stevenson's regiment, "Stevenson's California B'hoys" recruited from the immigrant crowds on the New-York streets, would reach California in time to desert and join the 1849 gold rush, and

would then become California's legislators, mayors, sheriffs, judges, county clerks, customs officers, tax collectors, and millionaires. A large number of the street of San Francisco would be named after them. At this point a few companies had been formed, and were assembling on Governors Island in the harbor, being issued their muskets and their bayonets, for their journey around the Horn. Most of them were getting diarrhea. Over the next two months, on this island, desertion and recruitment would approach the 100% level, despite the fact that the men were surrounded by a perimeter of armed guards with ammunition and a password.

September: At the Harvard Observatory, double rings were described surrounding Saturn.[26]

25. While this Lord had been looking up into the heavens the die-off of his Irish population was accelerating; had he directed his powerful new telescope toward one of his local potato fields all would have seemed desolate there as well — had he been utilizing instead a powerful new microscope he would have been able to watch the *Phytophthora infestans* potato blight microorganism as it multiplied itself endlessly.
26. In a certain sense, they were getting ahead of themselves. For, during this period, much of the attention of astronomers everywhere was being soaked up in an effort to ascertain the exact center of the universe. —It stands to reason that a universe has to have a center, right?

ASTRONOMY

September 23: Based upon perceived perturbations in the orbit of the 7th planet, Uranus, Urbain-Jean-Joseph Le Verrier (1811-1877) of the Paris Observatory, and one other astronomer, a Brit, were predicting the point in the heavens at which another, 8th, planet would seem to be just waiting to be first observed. That predicted planetary small blue disk was indeed first observed, by Johann Gottfried Galle (1812-1910) of the Breslau Observatory near Berlin, on this night, at less than one degree of arc from its predicted position: "That star is not on the map!" announced assisting student Heinrich Louis d'Arrest. The new planet would be temporarily assigned the name "Le Verrier" and eventually assigned the Roman version of the name of the Greek god of the sea Poseidon, to wit, Neptune. The English, because they are English, would arbitrarily assign credit for the discovery to the Brit who also was doing these calculations, John Couch Adams. A few weeks later, on October 10th, William Lassell (1799-1880) would discover that this new planet, just like our own, had a moon circling about it, a moon which eventually would receive the name Triton:

ASTRONOMY

> WALDEN: If I wished a boy to know something about the arts and sciences, for instance, I would not pursue the common course, which is merely to send him into the neighborhood of some professor, where any thing is professed and practised but the art of life; -to survey the world through a telescope or a microscope, and never with his natural eye; to study chemistry, and not learn how his bread is made, or mechanics, and not learn how it is earned; to discover new satellites to Neptune, and not detect the motes in his eyes, or to what vagabond he is a satellite himself; or to be devoured by the monsters that swarm all around him, while contemplating the monsters in a drop of vinegar. Which would have advanced the most at the end of a month, -the boy who had made his own jack-knife from the ore which he had dug and smelted, reading as much as would be necessary for this, -or the boy who had attended the lectures on metallurgy at the Institute in the mean while, and had received a Rodgers' penknife from his father? Which would be most likely to cut his fingers? -To my astonishment I was informed on leaving college that I had studied navigation! -why, if I had taken one turn down the harbor I should have known more about it.

ASTRONOMY

November 28: The *Margaret Evans* arrived in New York harbor with a heavy package that looked for all the world like a 5-foot bale of old cotton rags destined for a paper mill. Inside this bale were two tow bags of straw, cushioning a bundle of straw with a 3-foot square deal box inside, and inside this deal box was yet another box — and inside this one, reclining on a lining of jet-black velvet, was the largest and most precise astronomical lens in the world, destined for the new Harvard Observatory being constructed on Concord Road in Cambridge MA. The old observatory in the cupola of the Dana house was being relocated to the 11 acres of the Craigie estate on the Concord Road, then known as "Summer-House Hill." This location was appropriate because of "its unobstructed prospect, and it freedom from all liability of having its range of vision obstructed in the future."[27] A massive stone tower was being constructed, sufficient to dampen any conceivable vibration.

ASTRONOMY

27. When we pass that way today, this is harder to imagine.

December: In an issue of Scientific American, the discovery of the planet Neptune on the basis of perturbations in the orbit of the planet Uranus was described: "Urbain Leverrier's new planet is two hundred and thirty times as large as the earth, being the largest of the system. This discovery is perhaps the greatest triumph of science on record. A young French astronomer set himself at work to ascertain the cause of the aberrations of the planet Herschel in its orbit. He finds that another planet of a certain size placed at nearly twice the distance of Herschel from the sun would produce precisely the same effects he noted. He calculates its place in the heavens, with such precision, that astronomers, by directing the telescope to the point where its place for that evening is indicated, have all succeeded in finding it."

In that magazine, also, the development of a new variety of powered machine was being described: "The Clay and Rosenborg type setting machine is expressly adapted to all kinds of plain composition, poetry or prose. Power is applied by means of a revolving crank and may be driven by steam power, being in effect, a **steam type setting machine**! The machine is in the form of a cottage piano-forte, with two rows of keys. To work one of these machines it requires one man and four boys and, when the machine is in full operation, will set up as much as eight compositors." The illustration accompanying this machinery description depicts two very well dressed young gentlemen in what appears to be a drawing-room setting. Frock coat with tails, shirts and ties, boots. Only some wheels and pulleys at one point in the image indicate that it is not a piano recital which is in progress.

1847

There was a strong Andromedid meteor shower during this year, as there had been in 1798 and in 1838 — this is a shower which we connect with the now-disintegrated periodic Biela's comet.[28]

SKY EVENT

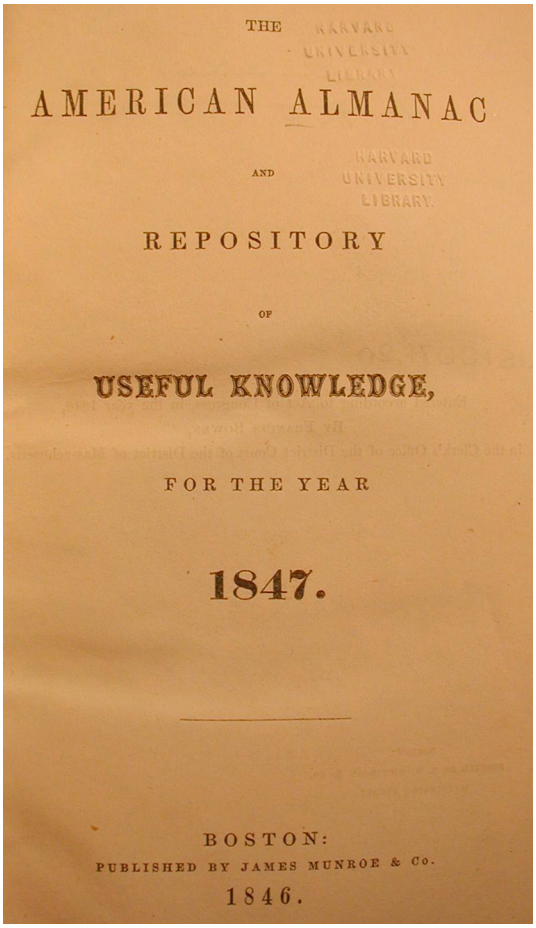
28. "COMET HIND, (C/1847 C1=1847 I). Span of naked eye visibility was from late Feb. until late Mar., T=1847 March 30. Comet distinctive for its telescopic daytime visibility rather than its display in a dark sky. Reportedly first detected with the unaided eye on February 19. At that time visible all night as a circumpolar object in Cepheus. Moved steadily toward the southeast, crossing Cassiopeia during first week of March. At mid month, when situated in the evening sky in Andromeda, 3rd or 4th magnitude with a tail over 3 degrees long. Last pre-perihelion observation made on March 24th in bright evening twilight at magnitude +1 or +2. On March 30 the comet was visible telescopically at noon, magnitude perhaps as bright as -4. Following perihelion the comet remained in conjunction with the Sun until it had faded below naked eye visibility."

THE PROVIDENCE ALMANAC FOR 1847.

THE RHODE-ISLAND ALMANAC FOR 1847. By Isaac Bickerstaff. Providence, Rhode Island: Hugh H. Brown.

The Boston almanac for this year contained a comet list attributed to Professor Benjamin Peirce of Harvard College. This list contained no predictions of future returns, listing only previous visits and orbital calculations.

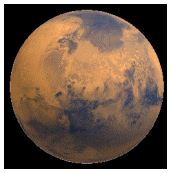
ASTRONOMY



(Professor Peirce's list ends with a comet seen during 1846 and thus does not include the comet discovered by Maria Mitchell on October 1st, 1847.)

May: In Scientific American there appeared an interesting summary of what was being discovered about the planets:

> It is ascertained that the planets, like our own, roll in regular periods around the sun, have nights and days, are provided with atmosphere, supporting clouds, and agitated by winds. Notwithstanding the dense atmosphere and thick clouds by which Venus and Mercury are constantly enveloped, the telescope has exhibited to us great irregularities on their surfaces, and thus proved the existence of mountains and valleys. On Mars, the geographical outlines of land and water have been made apparent, and in its long polar winters snows accumulate in the desolation of the higher latitudes.



ASTRONOMY

"Mars is essentially in the same orbit ... somewhat the same distance from the Sun, which is very important. We have seen pictures where there are canals, we believe, and water. If there is water, that means there is oxygen. If oxygen, that means we can breathe."
— J. Danforth Quayle

The magazine also carried a notice about a recent development in transportation, the tube, which was not, as yet, protected by being an inner tube inside a hollow tire:

> A number of cabs with newly invented wheels have just been put on the road in London. Their novelty consists in the entire absence of springs. A hollow tube of India rubber about a foot in diameter, inflated with air, encircles each wheel in the manner of a tire, and with this simple but novel appendage the vehicle glides noiselessly along, affording the greatest possible amount of cab comfort to the passenger.

July 1: Discovery of a 6th asteroid.

ASTRONOMY

August 1, Friday: Herman Melville got married with Elizabeth Shaw, daughter of Lemuel Shaw, the Chief Justice of Massachusetts. That night, coincidentally of course, there would be a brilliant display of northern lights over the city of Boston.[29]

SKY EVENT

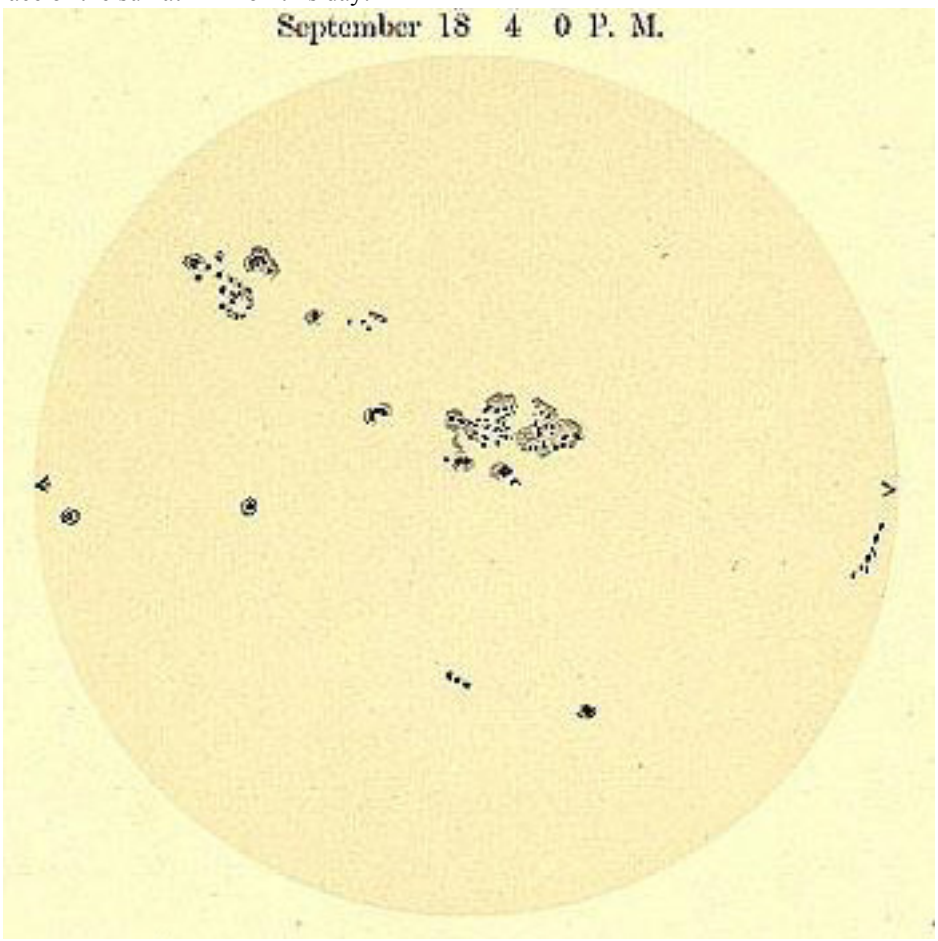
AURORA BOREALIS

August 13: Discovery of a 7th asteroid.

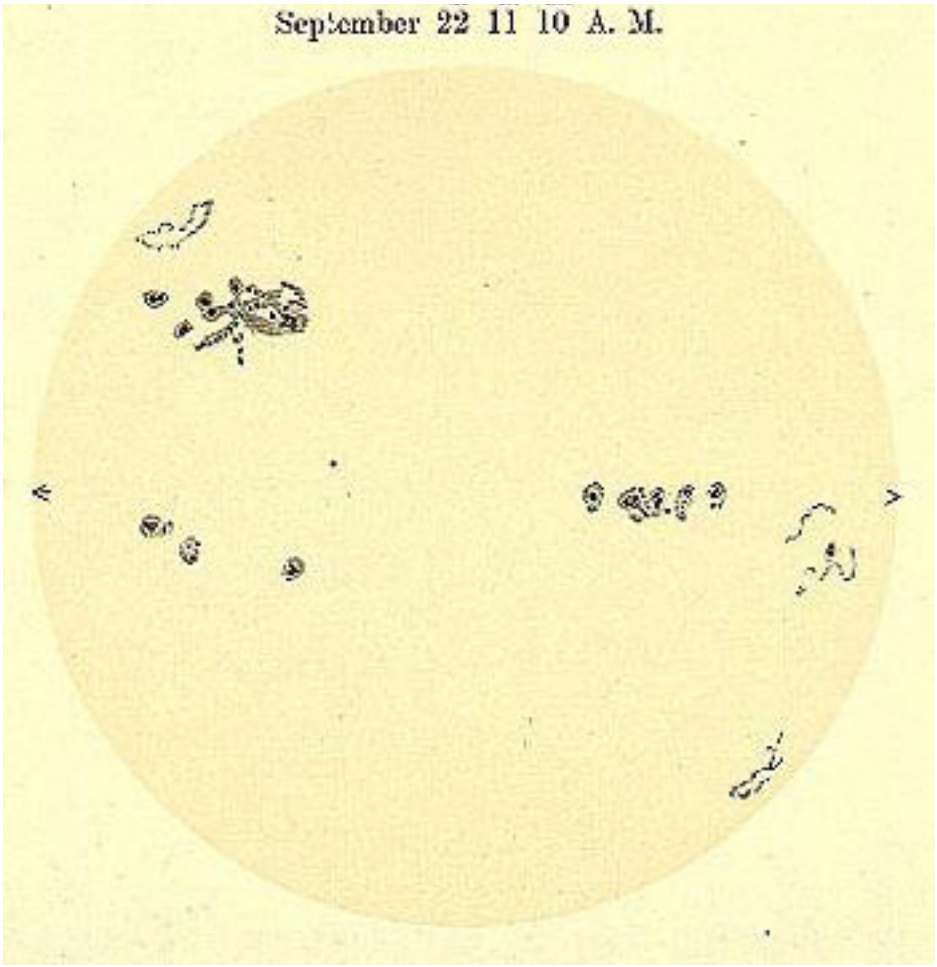
ASTRONOMY

29. If the earth moved for these newlyweds, that of course would need to be put down also as coincidence. Nuptials being transacted, the couple would settle in New-York, where the groom was to write reviews for the Literary World under Evert Augustus Duyckinck. During this year, publication of *OMOO*: A NARRATIVE OF ADVENTURES IN THE SOUTH SEAS, a narrative found by its audience to be titillatingly suggestive of its creator's sexual adventurousness. There seems to be no evidence that Henry Thoreau ever glanced at this or any of Melville's later works, after his initial perusal of *TYPEE* in the fall of 1846 (Thoreau seems to have stepped past Melville into more original sources such as William Ellis's POLYNESIAN RESEARCHES).

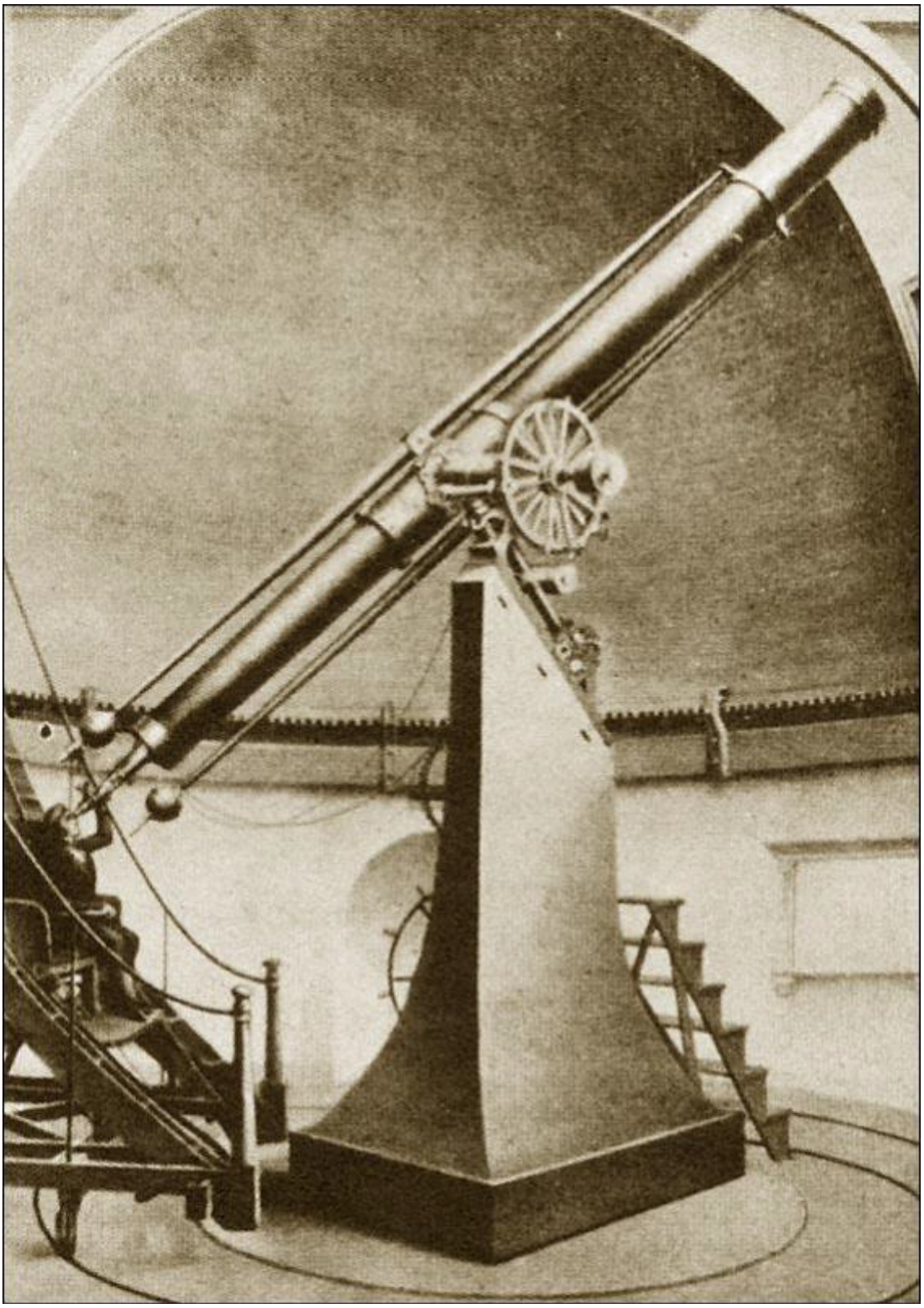
September 18, Saturday: In the previous month William Cranch Bond had begun making drawings of sunspots as they moved across the face of the sun, by eyepiece projection from his new 15-inch refractor telescope in the Harvard College observatory on Concord Road, and he would be continuing to record these phenomena until December 1849. In all, he would create more than 200 such records. Here, as an example, is the sketch he made of the face of the sun at 4PM on this day:



September 22, Wednesday: At 11:10AM in the Harvard Observatory on Concord Road, William Cranch Bond made another record by eyepiece projection from his refractor telescope of sunspots as they were moving across the face of the sun:



The telescope known as "The Great Refractor" that had been ordered in 1843 had arrived from Merz & Mahler of München, Germany and was at this point being installed on Concord Avenue in Cambridge. For two decades this would be the largest and most significant telescope in the United States, equal to the finest in the world. All day there had been frantic activity in preparing this new 15-inch telescope, under the dome at the top of the tower, for its first real observations of deep space.



At 4PM the astronomers had managed to fasten the great object glass into its mounting and obtain a glimpse of the moon, and then:

> *At 3 1/2 AM Turned the Great Telescope upon the Nebula in Orion — with a power of 180 — … the revelation was sublime … the whole appearance of this nebula was altogether different from the representations given in Books.…*

All the cloudiness of this nebula seemed to have been resolved, in the eye or in the imagination of these astronomers, into a discrete sparkle of pinpricks of light.[30]

> *There is a grandeur, an almost overpowering sublimity in the scene that no language can fully express.*

Visitors from the community began standing in line for an hour in order merely to look at Saturn for 30 seconds. The astronomers became concerned that with 400 people crowding into a 30-foot room there would be so much dust raised as eventually to damage this new instrument. Soon the observatory would be closed to the general public, and open only to astronomers, their assistants, and occasional specially invited guests such as Jenny Lind, Henry Thoreau, and Albert Edward, Prince of Wales.

ASTRONOMY

October 18, Monday: Discovery of a 8th asteroid.

ASTRONOMY

Margaret Fuller reported to the New-York Tribune from Rome about Italian patriotism:

> Rome, October 18, 1847.
> In the spring, when I came to Rome, the people were in the intoxication of joy at the first serious measures of reform taken by the Pope. I saw with pleasure their childlike joy and trust. With equal pleasure I saw the Pope, who has not in his expression the signs of intellectual greatness so much as of nobleness and tenderness of heart, of large and liberal sympathies. Heart had spoken to heart between the prince and the people; it was beautiful to see the immediate good influence exerted by human feeling and generous designs, on the part of a ruler. He had wished to be a father, and the Italians, with that readiness of genius that characterizes them, entered at once into the relation; they, the Roman people, stigmatized by prejudice as so crafty and ferocious, showed themselves children, eager to learn, quick to obey, happy to confide.
> Still doubts were always present whether all this joy was not premature. The task undertaken by the Pope seemed to present insuperable difficulties. It is never easy to put new wine into old bottles, and our age is one where all things tend to a great crisis; not merely to revolution, but to radical reform. From the people themselves the help must come, and not from princes;

30. Unfortunately, later observations with higher power instruments have indicated that this nebula in Orion, although it is indeed lighted from inside by individual stars, is quite gaseous and cloudy. These 1847 astronomers were being carried away by their hope for the penetrating power of their big instruments. (It's a guy thing, right?)

in the new state of things, there will be none but natural princes, great men. From the aspirations of the general heart, from the teachings of conscience in individuals, and not from an old ivy-covered church long since undermined, corroded by time and gnawed by vermin, the help must come. Rome, to resume her glory, must cease to be an ecclesiastical capital; must renounce all this gorgeous mummery, whose poetry, whose picture, charms no one more than myself, but whose meaning is all of the past, and finds no echo in the future. Although I sympathized warmly with the warm love of the people, the adulation of leading writers, who were so willing to take all from the hand of the prince, of the Church, as a gift and a bounty, instead of implying steadily that it was the right of the people, was very repulsive to me. The moderate party, like all who, in a transition state, manage affairs with a constant eye to prudence, lacks dignity always in its expositions; it is disagreeable and depressing to read them.

Passing into Tuscany, I found the liberty of the press just established, and a superior preparation to make use of it. The *Alba*, the *Patria*, were begun, and have been continued with equal judgment and spirit. Their aim is to educate the youth, to educate the lower people; they see that this is to be done by promoting thought fearlessly, yet urge temperance in action, while the time is yet so difficult, and many of its signs dubious. They aim at breaking down those barriers between the different states of Italy, relics of a barbarous state of polity, artificially kept up by the craft of her foes. While anxious not to break down what is really native to the Italian character, — defences and differences that give individual genius a chance to grow and the fruits of each region to ripen in their natural way, — they aim at a harmony of spirit as to measures of education and for the affairs of business, without which Italy can never, as one nation, present a front strong enough to resist foreign robbery, and for want of which so much time and talent are wasted here, and internal development almost wholly checked.

There is in Tuscany a large corps of enlightened minds, well prepared to be the instructors, the elder brothers and guardians, of the lower people, and whose hearts burn to fulfil that noble office. Before, it had been almost impossible to them, for the reasons I have named in speaking of Lombardy; but during these last four months that the way has been opened by the freedom of the press, and establishment of the National Guard, — so valuable, first of all, as giving occasion for public meetings and free interchange of thought between the different classes, — it is surprising how much light they have been able to diffuse.

A Bolognese, to whom I observed, "How can you be so full of trust when all your hopes depend, not on the recognition of principles and wants throughout the people, but on the life of one mortal man?" replied: "Ah! but you don't consider that his life gives us a chance to effect that recognition. If Pius IX. be spared to us five years, it will be impossible for his successors ever to take a backward course. Our nation is of a genius so vivacious, — we are unhappy, but not stupid, we Italians, — we

can learn as much in two months as other nations in twenty years." This seemed to me no brag when I returned to Tuscany and saw the great development and diffusion of thought that had taken place during my brief absence. The Grand Duke, a well-intentioned, though dull man, had dared, to declare himself "*an* ITALIAN *prince*" and the heart of Tuscany had bounded with hope. It is now deeply as justly felt that *the* curse of Italy is foreign intrusion; that if she could dispense with foreign aid, and be free from foreign aggression, she would find the elements of salvation within herself. All her efforts tend that way, to re-establish the natural position of things; may Heaven grant them success! For myself, I believe they will attain it. I see more reason for hope, as I know more of the people. Their rash and baffled struggles have taught them prudence; they are wanted in the civilized world as a peculiar influence; their leaders are thinking men, their cause is righteous. I believe that Italy will revive to new life, and probably a greater, one more truly rich and glorious, than at either epoch of her former greatness. During the period of my absence, the Austrians had entered Ferrara. It is well that they hazarded this step, for it showed them the difficulties in acting against a prince of the Church who is at the same time a friend to the people. The position was new, and they were probably surprised at the result, — surprised at the firmness of the Pope, surprised at the indignation, tempered by calm resolve, on the part of the Italians. Louis Philippe's mean apostasy has this time turned to the advantage of freedom. He renounced the good understanding with England which it had been one of the leading features of his policy to maintain, in the hope of aggrandizing and enriching his family (not France, he did not care for France); he did not know that he was paving the way for Italian freedom. England now is led to play a part a little nearer her pretensions as the guardian of progress than she often comes, and the ghost of La Fayette looks down, not unappeased, to see the "Constitutional King" decried by the subjects he has cheated and lulled so craftily. The king of Sardinia is a worthless man, in whom nobody puts any trust so far as regards his heart or honor; but the stress of things seems likely to keep him on the right side. The little sovereigns blustered at first, then ran away affrighted when they found there was really a spirit risen at last within the charmed circle, — a spirit likely to defy, to transcend, the spells of haggard premiers and imbecile monarchs.

I arrived in Florence, unhappily, too late for the great fête of the 12th of September, in honor of the grant of a National Guard. But I wept at the mere recital of the events of that day, which, if it should lead to no important results, must still be hallowed for ever in the memory of Italy, for the great and beautiful emotions that flooded the hearts of her children. The National Guard is hailed with no undue joy by Italians, as the earnest of progress, the first step toward truly national institutions and a representation of the people. Gratitude has done its natural work in their hearts; it has made them better. Some days before the fête were passed in reconciling all strifes, composing all differences between cities, districts, and individuals. They wished to drop all petty, all local

differences, to wash away all stains, to bathe and prepare for a new great covenant of brotherly love, where each should act for the good of all. On that day they all embraced in sign of this, — strangers, foes, all exchanged the kiss of faith and love; they exchanged banners, as a token that they would fight for, would animate, one another. All was done in that beautiful poetic manner peculiar to this artist people; but it was the spirit, so great and tender, that melts my heart to think of. It was the spirit of true religion, — such, my Country! as, welling freshly from some great hearts in thy early hours, won for thee all of value that thou canst call thy own, whose groundwork is the assertion, still sublime though thou hast not been true to it, that all men have equal rights, and that these are *birth*-rights, derived from God alone.

I rejoice to say that the Americans took their share on this occasion, and that Greenough — one of the few Americans who, living in Italy, takes the pains to know whether it is alive or dead, who penetrates beyond the cheats of tradesmen and the cunning of a mob corrupted by centuries of slavery, to know the real mind, the vital blood, of Italy — took a leading part. I am sorry to say that a large portion of my countrymen here take the same slothful and prejudiced view as the English, and, after many years' sojourn, betray entire ignorance of Italian literature and Italian life, beyond what is attainable in a month's passage through the thoroughfares. However, they did show, this time, a becoming spirit, and erected the American eagle where its cry ought to be heard from afar, — where a nation is striving for independent existence, and a government representing the people. Crawford here in Rome has had the just feeling to join the Guard, and it is a real sacrifice for an artist to spend time on the exercises; but it well becomes the sculptor of Orpheus, — of him who had such faith, such music of divine thought, that he made the stones move, turned the beasts from their accustomed haunts, and shamed hell itself into sympathy with the grief of love. I do not deny that such a spirit is wanted here in Italy; it is everywhere, if anything great, anything permanent, is to be done. In reference to what I have said of many Americans in Italy, I will only add, that they talk about the corrupt and degenerate state of Italy as they do about that of our slaves at home. They come ready trained to that mode of reasoning which affirms that, because men are degraded by bad institutions, they are not fit for better.

As to the English, some of them are full of generous, intelligent sympathy; — indeed what is more solidly, more wisely good than the right sort of Englishmen! — but others are like a gentleman I travelled with the other day, a man of intelligence and refinement too as to the details of life and outside culture, who observed, that he did not see what the Italians wanted of a National Guard, unless to wear these little caps. He was a man who had passed five years in Italy, but always covered with that non-conductor called by a witty French writer "the Britannic fluid."

Very sweet to my ear was the continual hymn in the streets of Florence, in honor of Pius IX. It is the Roman hymn, and none of the new ones written in Tuscany have been able to take its

place. The people thank the Grand Duke when he does them good, but they know well from whose mind that good originates, and all their love is for the Pope. Time presses, or I would fain describe in detail the troupe of laborers of the lower class, marching home at night, keeping step as if they were in the National Guard, filling the air, and cheering the melancholy moon, by the patriotic hymns sung with the mellow tone and in the perfect time which belong to Italians. I would describe the extempore concerts in the streets, the rejoicings at the theatres, where the addresses of liberal souls to the people, through that best vehicle, the drama, may now be heard. But I am tired; what I have to write would fill volumes, and my letter must go. I will only add some words upon the happy augury I draw from the wise docility of the people. With what readiness they listened to wise counsel, and the hopes of the Pope that they would give no advantage to his enemies, at a time when they were so fevered by the knowledge that conspiracy was at work in their midst! That was a time of trial. On all these occasions of popular excitement their conduct is like music, in such order, and with such union of the melody of feeling with discretion where to stop; but what is wonderful is that they acted in the same manner on that difficult occasion. The influence of the Pope here is without bounds; he can always calm the crowd at once. But in Tuscany, where they have no such idol, they listened in the same way on a very trying occasion. The first announcement of the regulation for the Tuscan National Guard terribly disappointed the people; they felt that the Grand Duke, after suffering them to demonstrate such trust and joy on the feast of the 12th, did not really trust, on his side; that he meant to limit them all he could. They felt baffled, cheated; hence young men in anger tore down at once the symbols of satisfaction and respect; but the leading men went among the people, begged them to be calm, and wait till a deputation had seen the Grand Duke. The people, listening at once to men who, they were sure, had at heart their best good, waited; the Grand Duke became convinced, and all ended without disturbance. If they continue to act thus, their hopes cannot be baffled. Certainly I, for one, do not think that the present road will suffice to lead Italy to her goal. But it *is* an onward, upward road, and the people learn as they advance. Now they can seek and think fearless of prisons and bayonets, a healthy circulation of blood begins, and the heart frees itself from disease.

I earnestly hope for some expression of sympathy from my country toward Italy. Take a good chance and do something; you have shown much good feeling toward the Old World in its physical difficulties, — you ought to do still more in its spiritual endeavor. This cause is OURS, above all others; we ought to show that we feel it to be so. At present there is no likelihood of war, but in case of it I trust the United States would not fail in some noble token of sympathy toward this country. The soul of our nation need not wait for its government; these things are better done by individuals. I believe some in the United States will pay attention to these words of mine, will feel that I am not a person to be kindled by a childish, sentimental enthusiasm, but that I must be sure I have seen something of

Italy before speaking as I do. I have been here only seven months, but my means of observation have been uncommon. I have been ardently desirous to judge fairly, and had no prejudices to prevent; beside, I was not ignorant of the history and literature of Italy, and had some common ground on which to stand with, its inhabitants, and hear what they have to say. In many ways Italy is of kin to us; she is the country of Columbus, of Amerigo, of Cabot. It would please me much to see a cannon here bought by the contributions of Americans, at whose head should stand the name of Cabot, to be used by the Guard for salutes on festive occasions, if they should be so happy as to have no more serious need. In Tuscany they are casting one to be called the "Gioberti," from a writer who has given a great impulse to the present movement. I should like the gift of America to be called the AMERIGO, the COLUMBO, or the WASHINGTON. Please think of this, some of my friends, who still care for the eagle, the Fourth of July, and the old cries of hope and honor. See if there are any objections that I do not think of, and do something if it is well and brotherly. Ah! America, with all thy rich boons, thou hast a heavy account to render for the talent given; see in every way that thou be not found wanting.

ARTHUR FULLER'S BOOK

October 23, Saturday: A first attempt was made at the Harvard Observatory to take a Daguerreotype of the sun and moon. The astronomer burned a hole through his "coat sleve" and felt a stab of heat "so intense that we consider'd it most prudent to refrain for the present."

ASTRONOMY

October 24, Sunday: Henry Thoreau wrote to Sophia Elizabeth Thoreau.

Concord Oct 24th —47
Dear Sophia
I thank you for those letters about Ktadn and hope you will save and send me the rest and anything else you may meet with relating to the Maine woods. That Dr Young is both young and green too at travelling in the woods. However I hope he got "yarbs" enough to satisfy him.— I went to Boston the 5th of this month to see Mr Emerson off to Europe. He sailed in the Washington Irving packet ship, the same in which Mr Hedge went before him. Up to this trip, the first mate aboard this ship, was as I hear, one Stephens, a Concord boy — son of Stephens the carpenter who used to live above Mr. Dennis'— Mr E's state-room was like a carpeted dark closet, about six feet square, with a large key-hole for a window. The window was about as big as a saucer and the glass 2 inches thick. —not to mention another skylight over head in the deck, of the size of an oblong doughnut and about as opaque; of course it would be in vain to look up if any contemplative promenader had his foot upon it. Such will be his lodgings for two or three weeks — and instead of a walk in Walden

woods, he will take a promenade on deck, where the few trees you know are stript of their bark. The steam tug carried the ship to sea against a head wind, without a rag of sail being raised.
I dont remember whether you have heard of the new telescope at Cambridge or not. They think it is the best one in the world — and have already seen more than Lord Ross or Herschel. I went to see Perez Blood's some time ago with Mr E. He had not gone to bed, but was sitting in the wood shed in the dark alone, in his astronomical chair, which is all legs and rungs, with a seat which can be inserted at any height, we saw Saturn's ring, and the mountains in the moon, and the shadows in their craters and the sun light on the spurs of the Mts in the dark portion. &c &c When I asked him the power of his glass, he said it was 85 But what is the power of the Cambridge glass? 2000!!! The last is about 23 feet long.
I think you may have a grand time this winter pursuing some study —keeping a Journal, or the like— while the snow lies deep with out— Winter is the time for study, you know, and the colder it is the more studious we are.
Give my respects to the whole Penobscot tribe, and tell them that I trust we are good brothers still, and endeavor to keep the chain of friendship bright — though I do dig up a hatchet now & then.
—I trust you will not stir from your comfortable winter quarters — Miss Bruin— or even put your head out of your hollow tree, till the sun has melted the snow in the Spring, and "the green buds, they are a swellin."
from your
Brother Henry.

ASTRONOMY
HARVARD OBSERVATORY

November 14: Henry Thoreau, living in the Emerson home in Emerson's absence, wrote to Waldo Emerson terming himself a transplanted hermit:

> *It is a little like joining a community -this life- to such a hermit as I am - and as I dont keep the accounts I dont know whether this experiment will succeed or fail finally. At any rate, it is good for society- & I do not regret my transient - nor my permanent share in it.*

Thoreau included news of the beanfield and Emerson's shanty, and of Hugh Whelan:

> *Hugh still has his eyes on the Walden agellum, and orchards are waving there in the windy future for him. That's-the-where-I'll- go-next thinks he—but no important steps are yet taken. He reminds me occasionally of this open secret of his with which the very season seems to labor, and affirms sincerely that as to his wants, wood, stone, or timber—I know better than he. That is a clincher which I shall have to consider how to avoid to some extent, but I fear* [see MS page for drawing] *that it is a wrought nail and will not break. Unfortunately the day after Cattle-show—the day after small beer, he was among the missing, but not long this time. The Ethiopian cannot change his skin, nor the leopard his spots—nor indeed Hugh his—Hugh.*

(Eventually, after the shanty would tip backward into the cellar hole that Hugh had dug, cracking its plaster, this man would be seen on the road out of town — and he would be crying.)

Thoreau described an encounter with Sophia Foord which would be suppressed by Franklin Benjamin Sanborn

when it was initially printed in The Atlantic Monthly:

> *I have had a tragic correspondence, for the most part all on one side, with Miss Ford. She did really wish to—I hesitate to write—marry me—that is the way they spell it. Of course I did not write a deliberate answer—how could I deliberate upon it? I sent back as distinct a No, as I have learned to pronounce after considerable practice, and I trust that this No has succeeded. Indeed I wished that it might burst like hollow shot after it had struck and buried itself, and make itself felt there. There was no other way. I really had anticipated no such foe as this in my career.*

We note that this letter, which is often quoted simply because it reveals a titillating love incident, more importantly reveals also a positive interest by Thoreau in abstract science, and in particular with the astronomical discoveries that were being made with the assistance of the powerful new telescope at the Harvard Observatory:

[Perez Blood] *and his company have at length seen the stars through the great telescope, and he told me that he thought it was worth the while.* [Professor Benjamin Peirce] *made them wait till the crowd had dispersed (it was a Saturday evening) & then was quite polite. He conversed with him & showed him the Micrometer &c— He said that Mr* [Blood]*'s glass was large enough for all ordinary astronomical work.* [The Reverend Barzillai Frost] *& [Dr. Josiah Bartlett] seemed disappointed that there was no greater difference between the Cambridge glass and the Concord one. They used only a power of four hundred. Mr* [Blood] *tells me that he is too old to study the Calculus or higher mathematics They think that they have discovered traces of another satellite to Neptune— They have been obliged to exclude the public altogether at last — the very dust which they raised "which is filled with minute crystals &c &c" as professors declare, having to be wiped off the glasses, would ere long wear them away. It is true enough. Cambridge college is really beginning to wake up and redeem its character & overtake the age. I see by the new catalogue that they are about establishing a Scientific school in connexion with the University — at which any one above eighteen, on paying one hundred dollars annually — (Mr Lawrence's 50000 will probably diminish this sum) may be instructed in the highest branches of Science — in Astronomy theoretical and practical, with the use of the instruments — so the great Yankee Astronomer may be born without delay — in Mechanics and Engineering to the last degree —* [Professor Louis Agassiz] *will ere long commence his lectures in the zoological department — a Chemistry Class has already been formed, and is under the direction of* [Professor Eben N. Horsford] *— A new and adequate building for these purposes is already being erected.*

Concord Nov 14th 1847.
Dear Friend,
I am but a poor neighbor to you here — a very poor companion am I— I understand that very well — but that need not prevent my writing to you now. I have almost never written letters in my life, yet I think I can write as good ones as I frequently see, so I shall not hesitate to write this such as it may be, knowing that you will welcome anything that reminds you of Concord.
I have banked up the young trees against the winter and the mice, and I will look out in my careless way to see when a pale is loose, or

a nail drops out of its place. The broad gaps at least I will occupy. I heartily wish that I could be of good service to this household — but I who have used only these ten digits so long to solve the problem of a living — how can I? This world is a cow that is hard to milk—

Life does not come so easy — and ah! how thinly it is watered ere we get it— But the young bunting calf — he will get at it. There is no way so direct. This is to earn one's living by the sweat of his brow. It is a little like joining a community –this life– to such a hermit as I am — and as I dont keep the accounts I dont know whether this experiment will succeed or fail finally. At any rate, it is good for society –& I do not regret my transient– nor my permanent share in it.

Lidian and I make very good housekeepers — she is a very dear sister to me— Ellen & Edith & Eddy & Aunty Brown keep up the tragedy & comedy & tragi-comedy of life as usual. The two former have not forgotten their old acquaintance — even Edith carries a young memory in her head, I find. Eddie can teach us all how to pronounce. If you should discover any new and rare breed of wooden or pewter horses I have no doubt he will know how to appreciate it. He occasionally surveys mankind from my shoulders as widely & wisely as ever Johnson did. I respect him not a little, though it is I that lift him up there so unceremoniously— And sometimes I have to set him down again in a hurry, according to his "mere will & good pleasure." He very seriously asked me the other day— "Mr Thoreau — will you be my father?" I am occasionally Mr Rough-and-Tumble with him — that I may not miss him, and lest he should miss you too much — so you must come back soon, or you will be superseded. Alcott has heard that I laughed & so set the people a laughing at his arbor, though I never laughed louder than when on the ridge pole. But now I have not laughed for a long time, it is so serious. He is very grave to look at. But not knowing all this I strove innocently enough the other day to engage his attention to my mathematics. "Did you ever study geometry?"— "The relation of straight lines to curves — the transition from the finite to the infinite?"— "Fine things about it in Newton & Leibnitz."— But he would hear none of it.—

Men of taste preferred the natural curve— Ah! he is a crooked stick himself. He is getting on now so many knots an hour— There is one knot at present occupying the point of highest elevation —the present highest point— and as many knots as are not handsome, I presume, are thrown down & cast into the pines. Pray show him this if you meet him anywhere in London, for I cannot make him hear much plainer words here. He forgets that I am neither old, nor young, nor anything in particular, and behaves as if I had still some of the animal heat in me. As for the building I feel a little oppressed when I come near it, it has so great a disposition to be beautiful. It is certainly a wonderful structure on the whole, and the fame of the architect will endure as long— —as it shall stand. I should not show

you this side alone if I did not suspect that Lidian had done ample justice to the other.
Mr Hosmer has been working at a tannery in Stow for a fortnight, though he has just now come home sick— It seems that he was a tanner in his youth—& So he has made up his mind a little at last. This comes of reading the New Testament. Was'nt one of the apostles a tanner? Mrs Hosmer remains here, and John looks stout enough to fill his own shoes and his father's too.
Mr. Blood and his company have at length seen the stars through the great telescope, and he told me that he thought it was worth the while. Mr Peirce made them wait till the crowd had dispersed (it was a Saturday evening) & then was quite polite. He conversed with him & showed him the Micrometer &c— He said that Mr B's glass was large enough for all ordinary astronomical work. Mr Frost & Dr Bartlett seemed disappointed that there was no greater difference between the Cambridge glass and the Concord one. They used only a power of four hundred. Mr B tells me that he is too old to study the Calculus or higher mathematics
They think that they have discovered traces of another satellite to Neptune— They have been obliged to exclude the public altogether at last — the very dust which they raised "which is filled with minute crystals &c &c" as professors declare, having to be wiped off the glasses, would ere long wear them away. It is true enough. Cambridge college is really beginning to wake up and redeem its character & overtake the age. I see by the new catalogue that they are about establishing a Scientific school in connexion with the University — at which any one above eighteen, on paying one hundred dollars annually — (Mr Lawrence's 50000 will probably diminish this sum) may be instructed in the highest branches of Science — in Astronomy theoretical and practical, with the use of the instruments — so the great Yankee Astronomer may be born without delay — in Mechanics and Engineering to the last degree— Agassiz will ere long commence his lectures in the zoological department — a Chemistry Class has already been formed, and is under the direction of Prof. Horsford— A new and adequate building for these purposes is already being erected. They have been foolish enough to put at the end of all this earnest the old joke of a diploma. Let every sheep keep but his own skin, I say.
I have had a tragic correspondence, for the most part all on one side, with Miss Ford. She did really wish to — I hesitate to write — marry me — that is the way they spell it. Of course I did not write a deliberate answer — how could I deliberate upon it? I sent back as distinct a <u>No</u>, as I have learned to pronounce after considerable practice, and I trust that this No has succeeded. Indeed I wished that it might burst like hollow shot after it had struck and buried itself, and make itself felt there. <u>There was no other way</u>. I really had anticipated no such foe as this in my career.

I suppose you will like to hear of my book — though I have nothing worth writing about it — indeed for the last month or two I have forgotten it — but shall certainly remember it again. Wiley & Putnam — Munroe — The Harpers — & Crosby & Nichols — have all declined printing it with the least risk to themselves — but Wiley & Putnam will print it in their series — and any any of them anywhere at my risk. If I liked the book well enough I should not delay, but for the present I am indifferent. I believe this is after all the course you advised — to let it lie.

I do not know what to say of myself. I sit before my green desk in the chamber at the head of the stairs — and attend to my thinking, sometimes more, sometimes less distinctly. I am not unwilling to think great thoughts if there are any in the wind, but what they are I am not sure. They suffice to keep me awake while the day lasts, at any rate. Perhaps they will redeem some portion of the night ere long.

—I can imagine you astonishing — bewildering — confounding and sometimes delighting John Bull with your Yankee notions — and that he begins to take a pride in the relationship at last — introduced to all the stars of England in succession after the lectures, until you pine to thrust your head once more into a genuine & unquestionable nebula — if there be any left. I trust a common man will be the most uncommon to you before you return to these parts. I have thought there was some advantage even in death, by which we "minghle with the herd of common men."

Hugh still has his eyes on the Walden agellum, and orchards are waving there in the windy future for him. That's-the-where-I'll- go-next thinks he — but no important steps are yet taken. He reminds me occasionally of this open secret of his with which the very season seems to labor, and affirms sincerely that as to his wants, wood, stone, or timber — I know better than he. That is a clincher which I shall have to consider how to avoid to some extent, but I fear [see MS page for drawing] *that it is a wrought nail and will not break. Unfortunately the day after Cattle-show — the day after small beer, he was among the missing, but not long this time. The Ethiopian cannot change his skin, nor the leopard his spots — nor indeed Hugh his — Hugh.*

As I walked over Conantum the other afternoon I saw a fair column of smoke rising from the woods directly over my house that was, as I judged, and already began to conjecture if my deed of sale would not be made invalid by this. But it turned out to be John Richardson's young wood on the S E of your field— It was burnt nearly all over & up to the rails and the road. It was set on fire no doubt by the same Lucifer that lighted Brooks' lot before. So you see that your small lot is comparatively safe for this season, the back fires having been already set for you.

They have been choosing between John Keyes & Sam Staples if the world wants to know it as representatives of this town — and Staples

is chosen. The candidates for Governor –think of my writing this to you– were Gov. Briggs & Gen Cushing — & Briggs is elected, though the Democrats have gained. Aint I a brave boy to know so much of politics for the nonce? but I should'nt have known it if Coombs[31] had'nt told me. They have had a Peace meeting here— I should'nt think of telling you of it if I did'nt know that anything would do for the English market, and some men —Dea Brown at the head– have signed a long pledge swearing that they will "treat all mankind as brothers" henceforth. I think I shall wait and see how they treat me first. I think that nature meant kindly when she made our brothers few. However, my voice is still for peace.

So Good-bye and a truce to all joking — My Dear Friend — from H.D.T.

LOUIS AGASSIZ

October 1, Friday: On Nantucket Island, the parents of former Friend Maria Mitchell, who had been read out of her monthly Quaker meeting in 1843 at the age of 25 on account of her tendency toward "questioning," had a noisy party going with their friends and Maria couldn't sleep, so she went up onto the roof of the Pacific National Bank of which her dad was head cashier, to look at the sky through her telescope. Five degrees from Polaris, the north star, she detected a spot which did not belong on the standard star map. She had discovered a telescopic comet (Comet 1847 VI, the modern designation of which is C/1847 T1). The only previous woman to discover a comet had been Caroline Herschel, who had noticed one that was visible to the naked eye. Maria would be honored in America and Europe, with the King of Denmark presenting her with a gold medal.

ASTRONOMY

1848

January: When the eclipses of the moons of Jupiter had been carefully timed, it became possible to derive a rule from which could be predicted the precise instant at which each moon was to glide into the shadow of the planet and wink out of our view, and the precise instant at which it was to make its reappearance. The rule had it that these disappearances and appearances happened $16^{1}/_{2}$ minutes sooner while the planet Jupiter was on our side of the solar system than when it was beyond the sun, on the far side of the solar system. It was possible on this basis to ascertain that the light from the sun travels for $8^{1}/_{4}$ minutes to reach the earth.

ASTRONOMY

April 25, Tuesday night: A 9th asteroid was discovered.

ASTRONOMY

31. This was probably not Eseek Coombs, but perhaps was his father or some other relative.

$200 Reward.

RANAWAY from the subscriber, on the night of Thursday, the 30th of Sepember,

FIVE NEGRO SLAVES,

To-wit: one Negro man, his wife, and three children.

The man is a black negro, full height, very erect, his face a little thin. He is about forty years of age, and calls himself *Washington Reed*, and is known by the name of Washington. He is probably well dressed, possibly takes with him an ivory headed cane, and is of good address. Several of his teeth are gone.

Mary, his wife, is about thirty years of age, a bright mulatto woman, and quite stout and strong.

The oldest of the children is a boy, of the name of FIELDING, twelve years of age, a dark mulatto, with heavy eyelids. He probably wore a new cloth cap.

MATILDA, the second child, is a girl, six years of age, rather a dark mulatto, but a bright and smart looking child.

MALCOLM, the youngest, is a boy, four years old, a lighter mulatto than the last, and about equally as bright. He probably also wore a cloth cap. If examined, he will be found to have a swelling at the navel.

Washington and Mary have lived at or near St. Louis, with the subscriber, for about 15 years.

It is supposed that they are making their way to Chicago, and that a white man accompanies them, that they will travel chiefly at night, and most probably in a covered wagon.

A reward of $150 will be paid for their apprehension, so that I can get them, if taken within one hundred miles of St. Louis, and $200 if taken beyond that, and secured so that I can get them, and other reasonable additional charges, if delivered to the subscriber, or to THOMAS ALLEN, Esq., at St. Louis, Mo. The above negroes, for the last few years, have been in possession of Thomas Allen, Esq., of St. Louis.

WM. RUSSELL.

ST. LOUIS, Oct. 1, 1847.

September 16, Saturday: Pope Pius IX appointed Pellegrino Rossi as prime minister to deal with certain republican tendencies of the citizenry.

Faced by Prussian pressure, the Frankfurt Assembly reversed itself and endorsed the armistice with Denmark.

William Cranch Bond's son George Phillips Bond, one of the "assistant observers" at the Harvard Observatory, discovered the 8th satellite of Saturn, now named Hyperion.[32]

ASTRONOMY

1849

In this year William Brewster linked the stereoscope, invented in 1838 by Charles Wheatstone, with the new science of photography, so that eventually it might become possible to make 3-dimensional photographs of the moon.

ASTRONOMY

In this year, discovery of a 10th asteroid.

ASTRONOMY

Armand Hypolite Louis Fizeau of France, by means of a rotating toothed wheel that broke up a light beam into a regular series of pulses, was able to make the 1st non-astronomical approximation of the speed of light through air. A value of 313,300 kilometers/second^{-1} was obtained.

HISTORY OF OPTICS

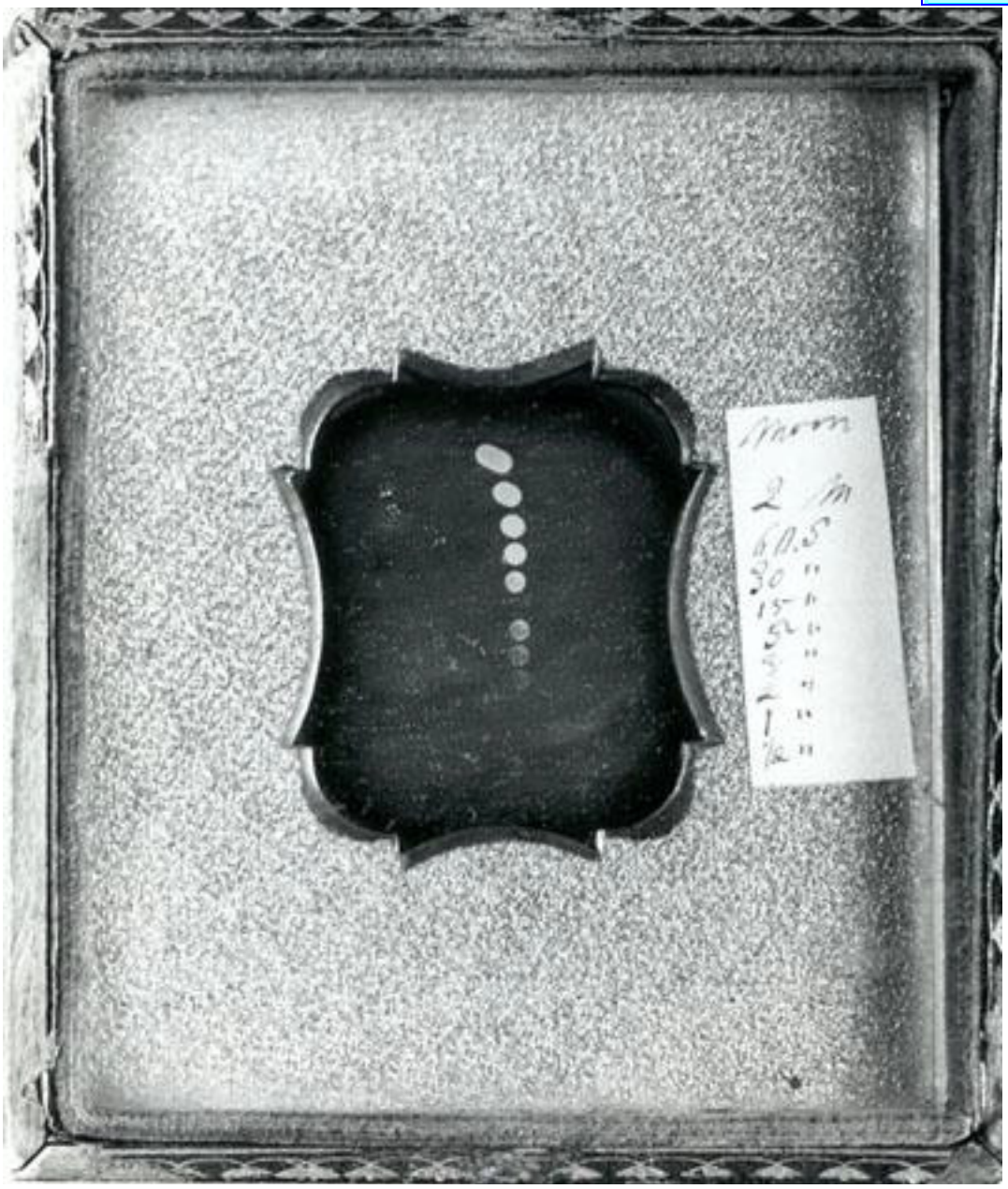
32.We now refer to him not as the son of the father but as "the father of celestial photography."
(In England, William Lassell of Liverpool was independently discovering this Hyperion satellite, which was the 2d moon of Saturn to be identified from Earth.)

ASTRONOMY

September 1, Saturday: A California Constitutional Convention was held in Monterey.

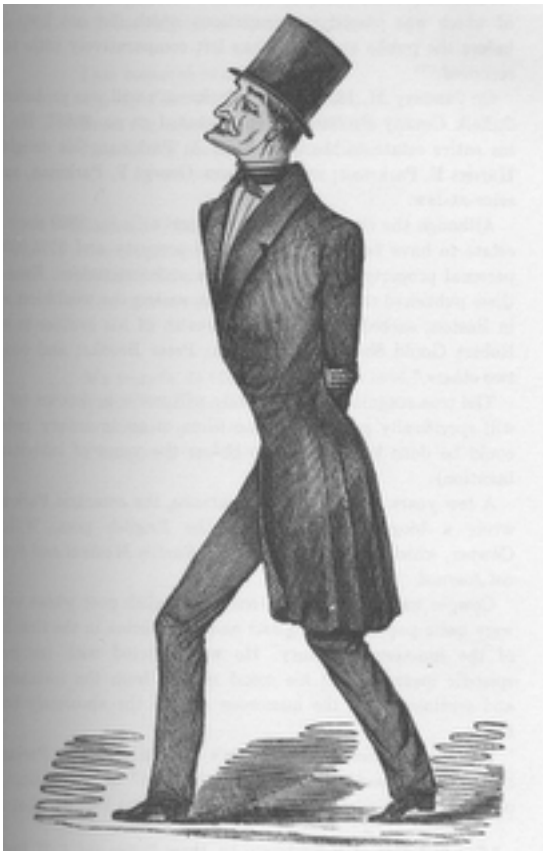
The 1st surviving astronomical photograph, several images of the full moon made without the assistance of a telescope, was made by S.D. Humphrey at Canandaigua, New York. The multiple exposures were made at 1/2, 1, 2, 3 (the best), 5, 15, 30, and 60 seconds, and the elongated image at the top is an exposure of 2 minutes.

ASTRONOMY



(Earlier images, the one made by Daguerre on the night of January 2, 1839, and the one made by Dr. John Draper during March 1840, have been lost to fire.)

November 23, Friday afternoon: Doctor George Parkman had called at the clock shop of William Bond and Son to pay part of a bill, and had promised to return in the afternoon but did not do so.



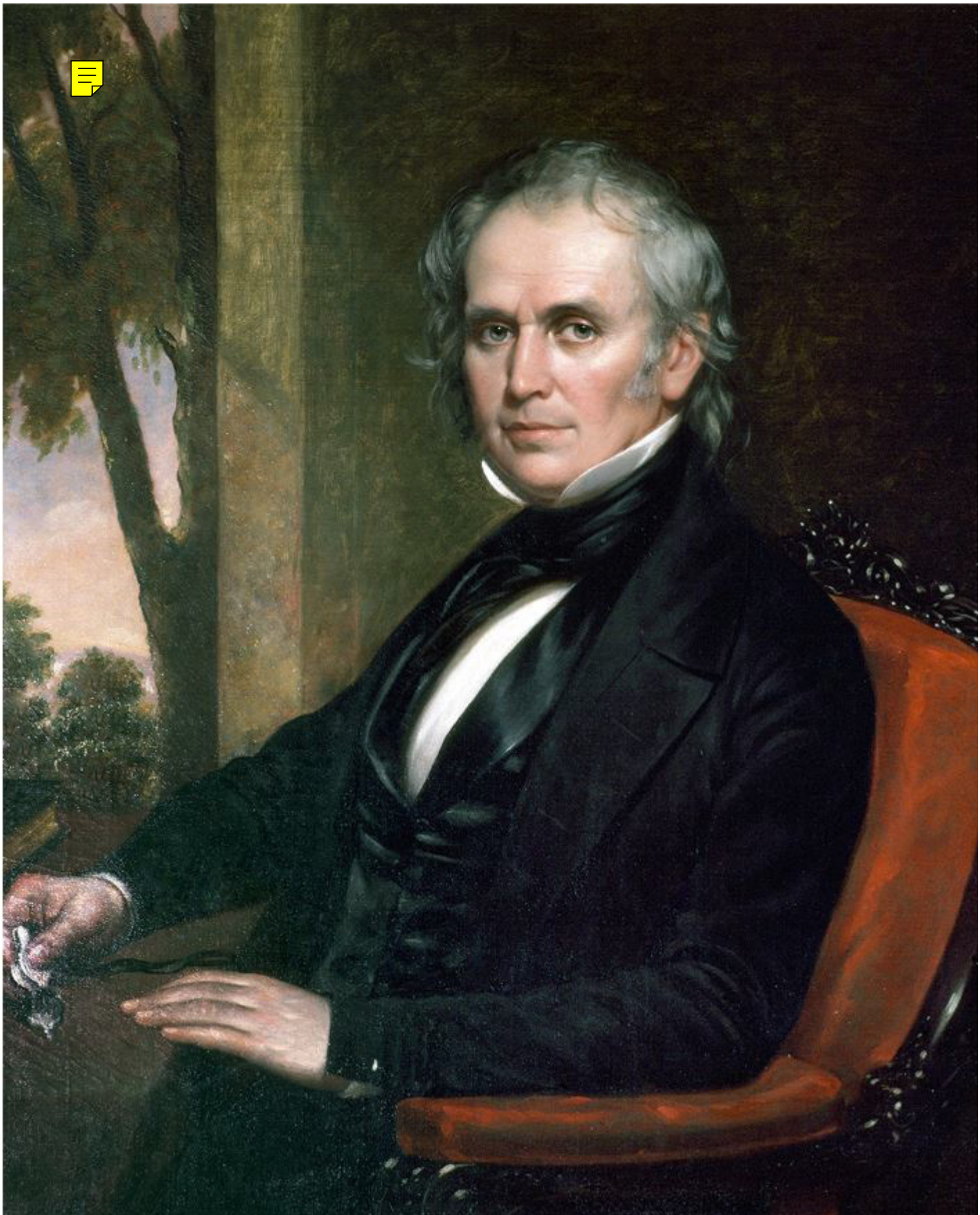
ASTRONOMY

This was the shop which was producing the cash flow which was enabling the Bonds to run the Harvard Observatory without any salaries. When it later turned out to be his friend and colleague Professor John White Webster the chemistry professor of the medical college who was arrested for the murder of Doctor Parkman, however, William Cranch Bond was defensive and incredulous:

> *We who are intimately acquainted with Doctor Webster cannot harbor a suspicion of the kind for an instant.*

Doctor Parkman was then seen at the Massachusetts Hospital on Allen Street (now Massachusetts General), and that was the last recorded sighting. From the later bill of indictment, we learn that one account of what happened that Friday afternoon at the Harvard Medical College was that "John White Webster with a certain knife which he then and there in his right hand had held, the said George Parkman then and there feloniously willfully and of his malice aforethought did strike, beat and kick upon the head, breast, back and belly, sides and other parts of him, the said George Parkman and then and there feloniously willfully and with malice aforethought did cast and throw the said George Parkman down unto and upon the floor with great force and violence there giving unto the said George Parkman then and there as well as by the beating, stabbing, striking and kicking of him several mortal wounds and bruises in and upon the head, breast, belly and other sides of

THOREAU AND TELESCOPES



the body … of which said mortal strokes, wounds and bruises he the said George Parkman then and there instantly died." From the "confession" which the Unitarian minister, the Reverend George Putnam said that Professor John White Webster had made to him in his jail cell after being condemned to death by hanging, we learn that another account of what happened that Friday afternoon at the Harvard Medical College was that Doctor Parkman was waving a copy of the letter of recommendation which he had originally prepared to help Doctor Webster obtain an appointment on the Harvard faculty many years before, and had said to Doctor Webster "I got you into your position and now I will get you out of it." Whereupon Doctor Webster became enraged and fearful and, grabbing up a stump of grapevine from the stovewood, whacked Doctor George Parkman once solidly along the side of the head, killing him instantly.

TRIAL

OF

PROFESSOR JOHN W. WEBSTER,

FOR THE

MURDER

OF

DOCTOR GEORGE PARKMAN.

REPORTED EXCLUSIVELY FOR THE N. Y. DAILY GLOBE.

PROF. J. W. WEBSTER.

NEW YORK:

STRINGER & TOWNSEND, 222 BROADWAY.

PRINTED AT THE GLOBE OFFICE

1850.

December 18, Tuesday, evening: "On the evening of the 18th just as we were commencing observations on Mars, Messrs [John Adams] Whipple[33] and [William B.] Jones came to take a Daguerreotype of the Moon."

ASTRONOMY

(This is the first surviving exposure made of the moon with the assistance of a telescope, although there is in existence a Daguerreotype exposure made on the night of September 1, 1849 that was without the assistance of a telescope.)

1850

May 11, Saturday: The *Roscius* came to dock in New-York, bringing Robert Collyer and Ann Longbottom Collyer as emigrants from Yorkshire.

Discovery of a 11th asteroid. (From this point forward, one or more would be being discovered each year.)

ASTRONOMY

An issue of Chambers' Edinburgh Journal:

CHAMBERS' EDINBURGH JOURNAL

ISSUE OF MAY 11

June 16, Sunday night: From the observatory notebook of Harvard College: "Daguerreotyped α Lyrae."[34] This first photograph of a star (other, of course, than Sol) required an open shutter for 100 seconds, and the primary problem which had had to be solved by these clockmakers-turned-unpaid-astronomers, William Cranch Bond and his assistant/son George Phillips Bond, had been the problem of creating a mechanism sufficiently precise and smooth to keep the 38-cm telescope exactly tracking that bright star for the required exposure.[35]

HARVARD OBSERVATORY

ASTRONOMY

33. The inventor John Adams Whipple had been born in Grafton, Massachusetts on September 10, 1822. Having studied chemistry, when the Daguerreotype process came along, he went into the business of manufacturing the requisite chemicals. Having damaged his health through this chemical work, he devoted himself to making improvements in the photographic process. He used steam to prepare his plates and bring out their images, invented crayon daguerreotypes and daguerreotypes on glass, and, with the aid of the staff of the Harvard Observatory and its 15-inch equatorial telescope, made state-of-the-art Daguerreotypes of the Moon and of the star Alpha Lyra.
34. A professional Daguerreotypist named Whipple had attached a daguerrotype plate to the eyepiece of the 38-cm telescope.
35. Another source alleges that the significant event occurred on July 16th and that it was the star Vega which was first placed on record in this new manner.

September: Jenny Lind was given a private pretty-girl tour of the Harvard Observatory and was lucky enough to glimpse a "fireball."

SKY EVENT

1851

March 12-14: Harvard Observatory Daguerreotyped "a better representation of the Lunar surface than any engraving."

ASTRONOMY

March 22: Father Isaac Hecker, C.SS.R. wrote to Orestes Augustus Brownson, Esq.

At the Harvard Observatory, George Phillips Bond succeeded in making a series of Daguerreotype exposures of Jupiter which seemed to him to include a faint suggestion of the planet's belts as visible by the eye directly through the telescope lens. The planet seemed, despite its great distance, to be of approximately the same brightness as the moon — an early indication of a difference in albedo among the various heavenly bodies.

ASTRONOMY

June 2: Henry David Thoreau went to Boston and conversed with John Downes, who was connected with the Coast Survey and was printing tables for Astronomical Geodesic & other uses. Downes would have been visiting Boston at the time, not living there. "He tells me that he once saw the common sucker in numbers piling up stones as big as his fist. (like the piles which I have seen) taking them up or moving them with their mouths."

On his way, Thoreau stopped by Cambridge to check out, from Harvard Library, François André Michaux's *Voyage à l'Ouest des Monts Alléghanys dans les États de l'Ohio, du Kentucky et du Tennessée, et Retour a Charleston* (1804).

"There is no Frigate like a Book
To take us Lands away"
— Emily Dickinson

THOREAU AND TELESCOPES

July 7, Monday: Henry Thoreau went with Sexton Anthony Wright to view the universe through Perez Blood's telescope. Just for the fun of it, I will illustrate this with a depiction, prepared in this very year by H. Dassel, which is not of Thoreau peering through Blood's telescope but of the astronomer Maria Mitchell, peering presumably through her father's telescope on the roof of his bank at the comet she had discovered **(see following screen)**.

July 7, Monday: The intimations of the night are divine methinks. men might meet in the morning & report the news of the night.– What divine suggestions have been made to them I find that I carry with me into the day often some such hint derived from the gods Such impulses to purity –to heroism –to literary effort even as are never day-born.

One of those morning's which usher in no day –but rather an endless morning –a protracted auroral season –for clouds prolong the twilight the livelong day–

And now that there is an interregnum in the blossoming of the flowers so is there in the singing of the birds– The golden robin is rarely heard –& the bobolink &c.

I rejoice when in a dream I have loved virtue & nobleness.

Where is Grecian History? It is when in the morning I recall the intimations of the night.

The moon is now more than half full.[36] When I come through the village at 10 o'clock this cold night –cold as in May –the heavy shadows of the elms covering the ground with their rich tracery impress me as if men had got so much more than they had bargained for –not only trees to stand in the air, but to checquer the ground with their shadows– At night they lie along the earth. They tower –they arch –they droop over the streets like chandeliers of darkness. In my walk the other afternoon I saw the sun shining into the depths of a thick pine wood, checkering the ground like moonlight –and illuminating the lichen-covered bark of a large white-pine, from which it was reflected Through the surrounding thicket as from another sun–; This was so deep in the woods that you would have said no sun could penetrate thither.

I have been tonight with Anthony Wright to look through Perez Bloods Telescope a 2nd time.[37] A dozen of **his** Bloods neighbors were swept along in the stream of our curiosity. One who lived half a mile this side said that Blood had been down that way within a day or two with his terrestrial or day glass looking into the eastern horizon the hills of Billerica Burlington –and Woburn– I was amused to see what sort of respect this man with a telescope had obtained from his neighbors –something akin to that which savages award to civilized men – though in this case the interval between the parties was very slight. Mr Blood with his scull cap on his short figure –his north European figure made me think of Tycho Brahe– He did not invite us into his house this cool evening –men nor women– Nor did he ever before to my knowledge

TYCHO BRAHE

I am still contented to see the stars with my naked eye Mr Wright asked him what his instrument cost He answered – "Well, that is something I dont like to tell. (stuttering or hesitating in his speech a little, as usual) It is a very proper question however" – "Yes," said I, "and you think that you have given a very

36. The moon would have been half full on the 4th.
37. I don't know when the first time was.

proper answer."
Returning my companion Wright the sexton told me how dusty he found it digging a grave that afternoon for one who had been a pupil of mine –for two feet he said, notwithstanding the rain, he found the soil as dry as ashes.
With a certain wariness, but not without a slight shudder at the danger oftentimes, I perceive how near I had come to admitting into my mind the details of some trivial affair, as a case at court– And I am astonished to observe how willing men are to lumber their minds with such rubbish –to permit idle rumors tales incidents even of an insignificant kind –to intrude upon what should be the sacred ground of the thoughts Shall the temple of our thought be a public arena where the most trivial affair of the market & the gossip of the teatable is discussed –a dusty noisy trivial place –or shall it be a quarter of heaven itself –a place consecrated to the service of the gods –a hypaethral temple. I find it so difficult to dispose of the few facts which to me are significant that I hesitate to burden my mind with the most insignificant which only a divine mind could illustrate. Such is for the most part the news –in newspapers & conversation. It is important to preserve the mind's chastity in this respect Think of admitting the details of a single case at the criminal court into the mind –to stalk profanely through its very sanctum sanctorum for an hour –aye for many hours– –to make a very bar-room of your mind's inmost apartment –as if for a moment the dust of the street had occupied you –aye the very street itself with all its travel passed through your very mind of minds –your thoughts shrine –with all its filth & bustle [possibly "hustle"]– Would it not be an intellectual suicide? By all manner of boards & traps threatening the extreme penalty of the divine law excluding trespassers from these grounds it behoves us to preserve the purity & sanctity of the mind. It is so hard to forget what it is worse than useless to remember. If I am to be a channel or thorough [thoroughfare] –I prefer that it be of the mountain springs –& not the town sewers– The Parnassian streams There is inspiration –the divine gossip which comes to the ear of the attentive mind –from the Courts of Heaven –there is the profane & stale revelation of the barroom & the police Court. The same ear is fitted to receive both communications –only the character of the individual determines to which source chiefly it shall be open & to which closed. I believe that the mind can be profaned by the habit of attending to trivial things so that all our thoughts shall be tinged with triviality. They shall be dusty as stones in the street– Our very minds shall be paved and macadamized as it were –its foundation broken into fragments for the wheels of travel to roll over. If we have thus desecrated ourselves the remedy will be by circumspection –& wariness by our aspiration & devotion to consecrate ourselves –to make a fane of the mind. I think that we should treat ourselves as innocent & ingennuous [ingenuous] children whose guardians we are –be careful what objects & what subjects we thrust on its attention[38]
Even the facts of science may dust the mind by their dryness –unless they are in a sense effaced each morning or rather rendered fertile by the dews of fresh & living truth. Every thought that passes through the mind helps to wear & tear it & to deepen the ruts which as in the streets of Pompeii evince how much it has been used. How many things there are concerning which we might well deliberate whether we had better know them. Routine –conventionality manners &c &c –how insensibly and undue attention to these dissipates & impoverishes the mind –robs it of its simplicity & strength emasculates it. Knowledge doe[s] not cone [come] to us by details but by lieferungs from the gods. What else is it to wash & purify ourselves? Conventionalities are as bad as impurities. Only thought which is expressed by the mind in repose as it wer[e] lying on its back & contemplating the heaven's –is adequately & fully expressed– What are side long –transient passing half views? The writer expressing his thought –must be as well seated as the astronomer contemplating the heavens –he must not occupy a constrained position. The facts the experience we are well poised upon –! Which secures our whole attention![39]
The senses of children are unprofaned their whole body is one sense –they take a physical pleasure in riding on a rail –they love to teter –so does the unviolated –the unsophisticated mind derive an inexpressable pleasure from the simplest exercise of thoughts.
I can express adequately only the thought which I *love* to express.– All the faculties in repose but the one you are using –the whole energy concentrated in that.
Be ever so little distracted –your thoughts so little confused– Your engagements so few –your attention so free your existence so mundane –that in all places & in all hours you can hear the sound of crickets in those seasons when they are to be heard. It is a mark of serenity & health of mind when a person hears this sound much –in streets of cities as well as in fields. Some ears never hear this sound –are called deaf. Is it not because they have so long attended to other sounds?

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38. Henry Thoreau would use some of the material from this day in regard to his "we should live in eternity rather than in time" theme, in his early lecture "WHAT SHALL IT PROFIT":

> [Paragraph 81] If we have thus desecrated ourselves,—as who has not?—the remedy will be by wariness and circumspection, by devotion and aspiration to reconsecrate ourselves—and make once more a fane of the mind. We should treat our minds—that is, ourselves—as innocent and ingenuous children, whose guardians we are, and be careful what objects and what subjects we thrust on their attention. Read not the Times.[1] Read the Eternities.[2] Even the facts of science may dust the mind by their dryness, unless they are in a sense effaced each morning, or rather rendered fertile by the dews of fresh and living truth. Knowledge does not come to us by details, but in flashes of light from heaven. Yes, every thought that passes through the mind helps to wear and tear it, and to deepen the ruts, which, as in the streets of Pompeii, evince how much it has been used. How many things there are concerning which we might well deliberate whether we had better know them—had better let their peddling carts be driven even at the slowest trot or walk—over that bridge of glorious span by which we trust to pass at last from the furthest brink of time to the nearest shore of eternity. Conventionalities are as bad as impurities. By an undue attention to routine, manners, and so forth,[3] the mind is insensibly dissipated and impoverished—robbed of its simplicity and strength and, in short, emasculated.
>
> 1.["The Times" was presumably the London Times.]
> 2.I [Bradley P. Dean] emend the essay copy-text by omitting 'Conventionalities are at length as bad as impurities.', which appears after this sentence in the essay but which appears without the words 'at length' as the penultimate sentence of this paragraph in the extant reading-draft manuscript.
> 3.I [Bradley P. Dean] emend the manuscript copy-text by expanding '&c' to 'and so forth'.

The poet W.H. Auden has in 1962 brought forward a snippet from this day's entry as:

THE VIKING BOOK OF APHORISMS, A PERSONAL SELECTION BY W.H. AUDEN...

Pg	Topic	Aphorism Selected by Auden out of Thoreau
353	**Reason and Thought**	We should treat our minds as innocent and ingenious children whose guardians we are — be careful what objects and what subjects we thrust on their attention.

39. Thoreau would later use this comment pertaining to his "different drummer" theme, in his early lecture "WHAT SHALL IT PROFIT":

> [Paragraph 79] Not without a slight shudder at the danger, I often perceive how near I had come to admitting into my mind the details of some trivial affair,—the news of the street; and I am astonished to observe how willing men are to lumber their minds with such rubbish,—to permit idle rumors and incidents of the most insignificant kind to intrude on ground which should be sacred to thought. Shall the mind be a public arena, where the affairs of the street and the gossip of the tea-table chiefly are discussed? Or shall it be a quarter of heaven itself,—an hypæthral temple, consecrated to the service of the gods?[1] I find it so difficult to dispose of the few facts which to me are significant, that I hesitate to burden my attention with those which are insignificant, which only a divine mind could illustrate. Such is, for the most part, the news in newspapers and conversations. It is important to preserve the mind's chastity in this respect. Think of admitting the details of a single case of the criminal court into our thoughts, to stalk profanely through their very *sanctum sanctorum* for an hour, ay, for many hours! to make a very bar-room of the mind's inmost apartment, as if for so long the dust of the street had occupied us,—the very street itself, with all its travel, its bustle, and filth had passed through our thoughts' shrine! Would it not be an intellectual and moral suicide?
>
> [Paragraph 80] By all kinds of traps and sign-boards, threatening the extreme penalty of the divine law, exclude such trespassers from the only ground which can be sacred to you. It is so hard to forget what it is worse than useless to remember! If I am to be a thoroughfare, I prefer that it be of the mountain-brooks, the Parnassian streams, and not the town-sewers. There is inspiration, that gossip which comes to the ear of the attentive mind from the courts of heaven. There is the profane and stale revelation of the bar-room and the police court. The same ear is fitted to receive both communications. Only the character of the hearer determines to which it shall be open, and to which closed. I believe that the mind can be permanently profaned by the habit of attending to trivial things, so that all our thoughts shall be tinged with triviality. Our very intellect shall be macadamized, as it were,—its foundation broken into fragments for the wheels of travel to roll over; and if you would know what will make the most durable pavement, surpassing rolled stones—spruce blocks—and asphaltum—you have only to look into some of our minds which have been subjected to this treatment so long.

1. Compare I Corinthians 3:16.

DIFFERENT DRUMMER

assistant observer George Phillips Bond, six years out of Harvard College, who would have been providing

such a public relations service, and that the director would have been reserving himself for occasional visitors who thought they had cachet and who might be more easily offended, such as Prince Albert. My reasons for suspecting this are that I can't believe the astronomers would have taken Thoreau seriously, plus George was more of Henry's own age group, plus George is known to have had an abiding interest in nature and in particular in ornithology.[40]

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Thoreau stopped by the Boston Society of Natural History and checked out Volume I of the MEMOIRS OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES, new series.

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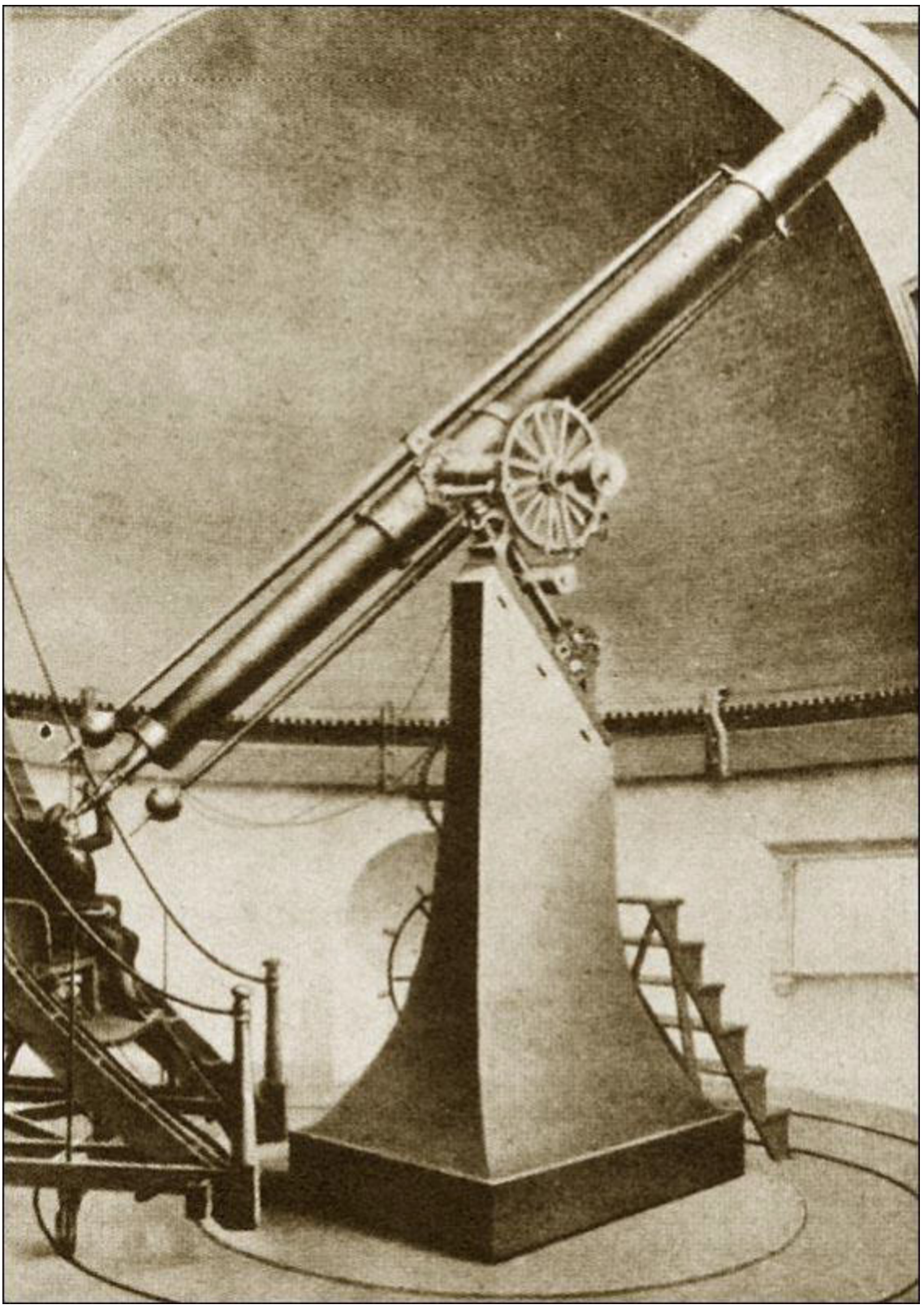
In fact, Thoreau's visit was quite serious, and bore directly upon the struggle the current director was having as a volunteer "gentleman" researcher with the likes of Professors Louis Agassiz and Benjamin Peirce, and all the other ideologs of scientific bureaucracy whose primary objective then as now was not discovery itself, but rather their seizure of control over all processes of discovery. I suppose I am saying that since we cannot expect serious people to take Thoreau seriously today, we can have no reason to assume that serious people would take Thoreau seriously in his own day — certainly not to the extent of extending VIP treatment to **someone who was not acting in any manner as VIPs should act!**



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- I have noticed with regret, your sentiments on two subjects, - the church - & African Colonization - & with the more regret, because I think you have a considerable share of reason for your feelings on both these subjects - but I would willingly if I could modify your views on both points.
After all my brother, the strength & hope of your oppressed race does lie in the church - In hearts united to Him ... Every thing is against you - but Jesus Christ is for you - & He has not forgotten his church misguided & erring though it be.... This movement must & will become a purely religious one ... christians north & south will give up all connection with [slavery] & later up their testimony against it - & thus the work will be done -

July 9, Wednesday: When I got out of the cars at Porter's Cambridge this morning –I was pleased to see the handsome blue flowers of the Succory or Endive Cichorium intybus –which reminded me that within the hour I had been whirled into a new botanical region. They must be extremely rare, if they occur at all in Concord. This weed is handsomer than most garden flowers. Saw there also the Cucubalus behen or Bladder Campion. also The Autumnal dandelion Apargia Autumnalis.

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Coming out of town –willingly as usual –when I saw that reach of Charles River just above the Depot –the fair still water this cloudy evening suggesting the way to eternal peace & beauty –whence it flows –the placid lake-like fresh water so unlike the salt brine –affected me not a little– I was reminded of the way in which Wordsworth so coldly speaks of some natural visions or scenes "giving him pleasure". This is perhaps the first vision of elysium on this rout from Boston.

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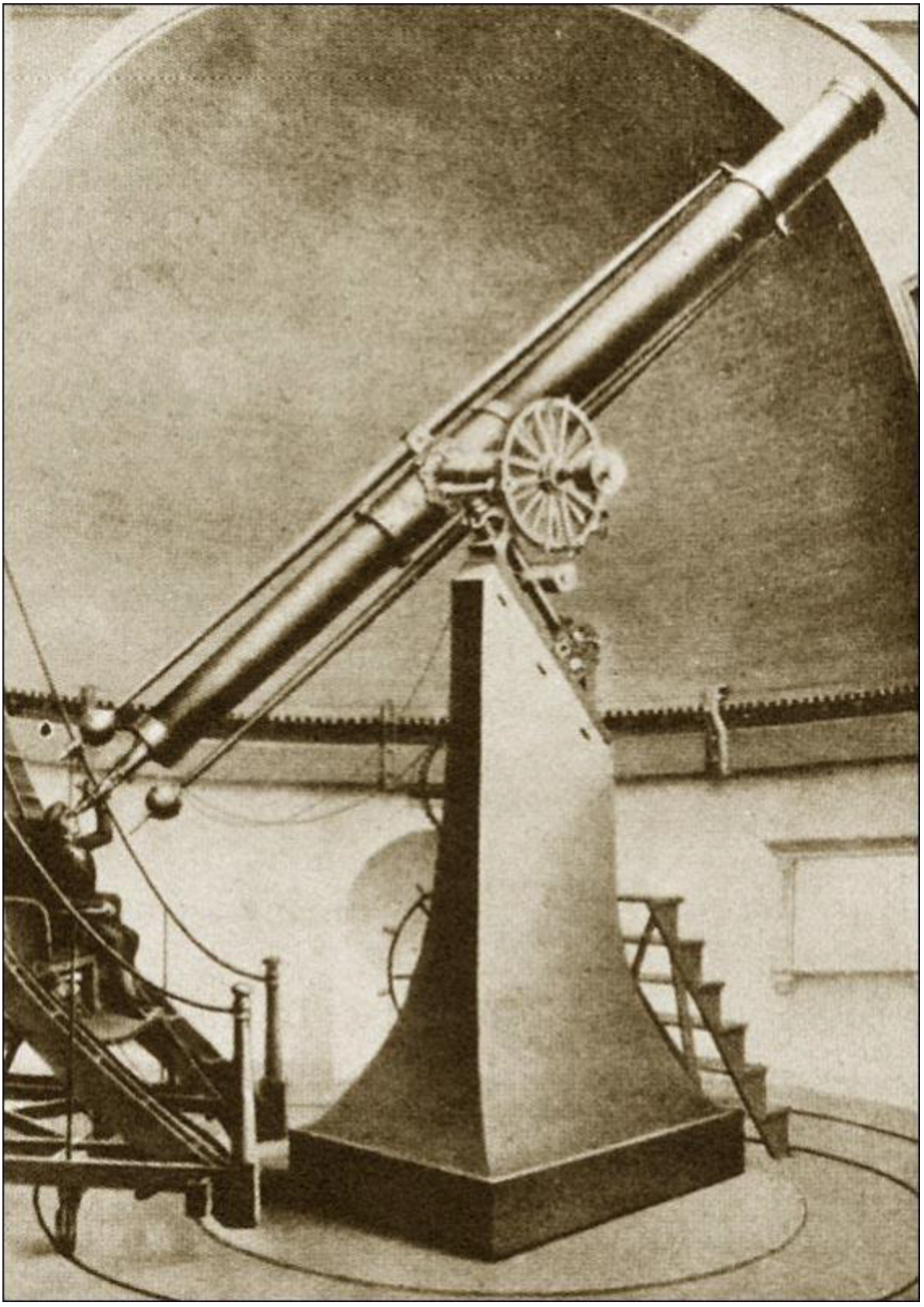

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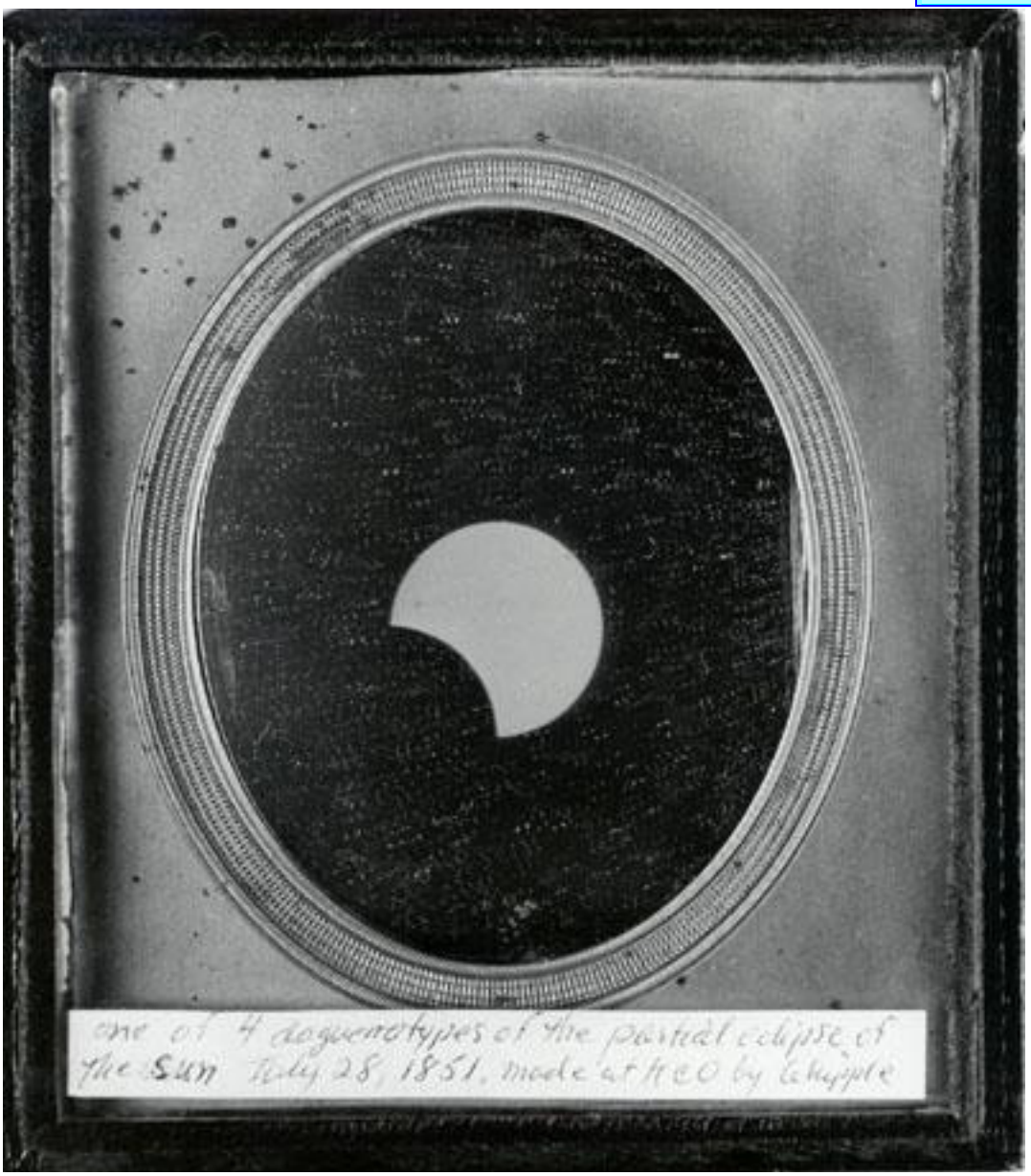
July 28, Monday: Harvard Observatory managed to make a series of four Daguerreotypes of the succeeding phases of a total eclipse of the sun (#7292) which passed from west to east across upper Canada but was, from their off-path viewpoint in Cambridge, Massachusetts, viewable and photographable only as if it had been a mere partial eclipse.

PHOTOGRAPHY



This eclipse, however, continued on and was also total along its path over Königsberg, Prussia, where Berkowski was able also to expose Daguerreograph plates, and on down to Persia — it would be Berkowski who would obtain credit for the 1st Daguerreotype of a total eclipse.

July 28, Monday: morn
Sailed the Gurnet. which runs down seven miles into the bay from Marshfield. Heard the *peep* of the *beach*

bird –saw some ring-necks in company with peeps. They told of eagles [Bald Eagle *Haliaeetus Leucocephalus*] which had flown low over the island lately– went by Saquish.– Gathered a basket full of Irish-moss bleached on the beach. Saw a field full of pink-blossomed potatoes at the light house –remarkably luxuriant & full of blossoms –also some French barley. Old fort & barracks by light house. Visited lobster houses or huts there where they use lobsters to catch bait for lobsters Saw on the shanties signs from ships as "Justice Story" & "Margueritta". To obtain bait is sometimes the main thing.– Samphire [*Salicornia*] which they pickle –also a kind of prickly samphire which I suppose is Salt-wort or *Salsola Caroliniana*. Well at C. Island [Clark's Island] 27 3/4 ft deep. Cut the rock weed on the rocks at low tide once in 2 or 3 years –very valuable more than they have time to save.
Uncle Ned told of a man who went off fishing from back of Welfleet in calm weather & with great difficulty got ashore through the surf. Those in the other boat who had landed were unwilling to take the responsibility of telling them when to pull for shore –the one who had the helm was inexperienced. They were swamped at once– So treacherous is this shore –before the wind comes perchance the sea may run so as to upset & drown you on the shore. At first they thought to pull for Provincetown but night was coming on & that was distant many a long mile. Their case was a desperate one –when they came near the shore & saw the terrific breakers that intervened they were deterred. They were thoroughly frightened.
Were troubled with skunks on this Island –they must have come over on the ice. Foxes they had seen –had killed one woodchuck –even a large *mud-turtle* –which they *conjectured some bird must have dropped* muskrats they had seen & killed 2 raccoons once. I went a clamming just before night. this the clam-digger–

"UNCLE NED" WATSON
"UNCLE BILL" WATSON

Borrowed of uncle Bill (Watson) in his schooner home The clams nearly a foot deep –but I broke many in digging said not to be good now –but we found them good eaten fresh. No sale for them now –fetch 25 cts a bucket in their season. Barry caught squids as bait for bass. We found many dead clams –the shells full of sand –called sand clams– By a new clam law any one can dig clams here. Brown's Island so called –a shoal off the Gurnet thought to have been an isle once –a dangerous place. Saw here fences the posts set in cross sleepers made to be removed in winter.

The finest music in a menagerie its wildest strains have something in them akin to the cries of the tigers & leopards around in their native forests– Those strains are not unfitted to the assemblage of wild beasts– They express to my ear what the Tigers stripes & the leopards spots express to my eye –& the they appear to grin with satisfaction at the sound. That nature has any place at all for music is very good.

September 7, Sunday, 1851: ... You sit twenty feet above the still river–see the sheeny pads. & the moon & some bare tree tops in the distant horizon. Those bare tree tops add greatly to the wildness.
Lower down I see the moon in the water as bright as in the heavens–only the water bugs disturb its disk– and now I catch a faint glassy glare from the whole river surface which before was simply dark. This is set in a frame of double darkness on the east i.e. the reflected shore of woods & hills & the reality–the shadow & the substance bipartite answering to each. I see the northern lights over my shoulder to remind me of the Esquimaux & that they are still my contemporaries on this globe–that they too are taking their walks on another part of the planet.– in pursuit of seals perchance.

November 10, Monday: Henry Thoreau made a journal entry he was later to copy into his early lecture "WHAT SHALL IT PROFIT" as:

BRAD DEAN'S COMMENTARY

> [Paragraph 63] In our science and philosophy even there is no true and absolute account of things—but a petty reference to classes of men and their affairs—often falsely to christianity. At every bush that trips or pricks us—as the problem whether the stars are inhabited or not—we turn and tear one another like fret-ful wild-cats; as if telescopes and microscopes were the tools of a party. Why must we daub the heavens as well as the earth? It was an unfortunate discovery surely that Dr. Kane was a Mason,[1] and that Sir John Franklin was another.[2] But it was a more cruel suggestion that possibly that was the reason why the former went in search of the latter.

1. Bradley P. Dean has emended the manuscript copy-text from "mason."
2. Dr. Elisha Kent Kane was the US Navy medical officer who became famous in the early 1850s by leading an expedition to the Arctic in search of Sir John Franklin, the British explorer who was believed to be lost there but who actually had died there in 1847. Kane joined the Order of the Masons just before his expedition set out from New-York on May 31, 1851 (see George W. Corner, DOCTOR KANE OF THE ARCTIC SEAS [Philadelphia: Temple UP, 1972], page 129).

ASTRONOMY
FREEMASONRY
PARANOIA

More than a decade after teaching the boy Cyrus Warren in the Concord Academy, Henry Thoreau encountered him as a grown man walking along the sidewalk.

November 10, Monday, 1851: … In relation to politics – to society – aye to the whole out-ward world I am tempted to ask–Why do **they** lay such stress on a particular experience which you have had?– That after 25 years you should meet Cyrus Warren again on the sidewalk! Haven't I budged an inch then?–[42] This daily routine should go on then like those–it must be conceded–vital functions of digestion–circulation of the blood &c which in health we know nothing about. A wise man is as unconscious of the movements in the body politic as he is of digestion & the circulation of the blood in the natural body. …

I will include here a list of those who attended this Concord Academy. I do not know why the name of Cyrus Warren is absent from the list:

42. Henry Thoreau was later to copy this into his early lecture "WHAT SHALL IT PROFIT" as:

BRAD DEAN'S COMMENTARY

> [Paragraph 61] In relation to politics, to what is called society—aye, often to the whole outward world, I am often tempted to ask—why such stress is laid on a particular experience which you have had?—that after twenty-five years you should meet Hobbins—registrar of deeds, again on the side-walk?[1] Haven't I budged an inch then?

1. There were no County Registrars of Deeds by the name of Hobbins in Massachusetts from 1823 to 1862.

ROSS/ADAMS COMMENTARY

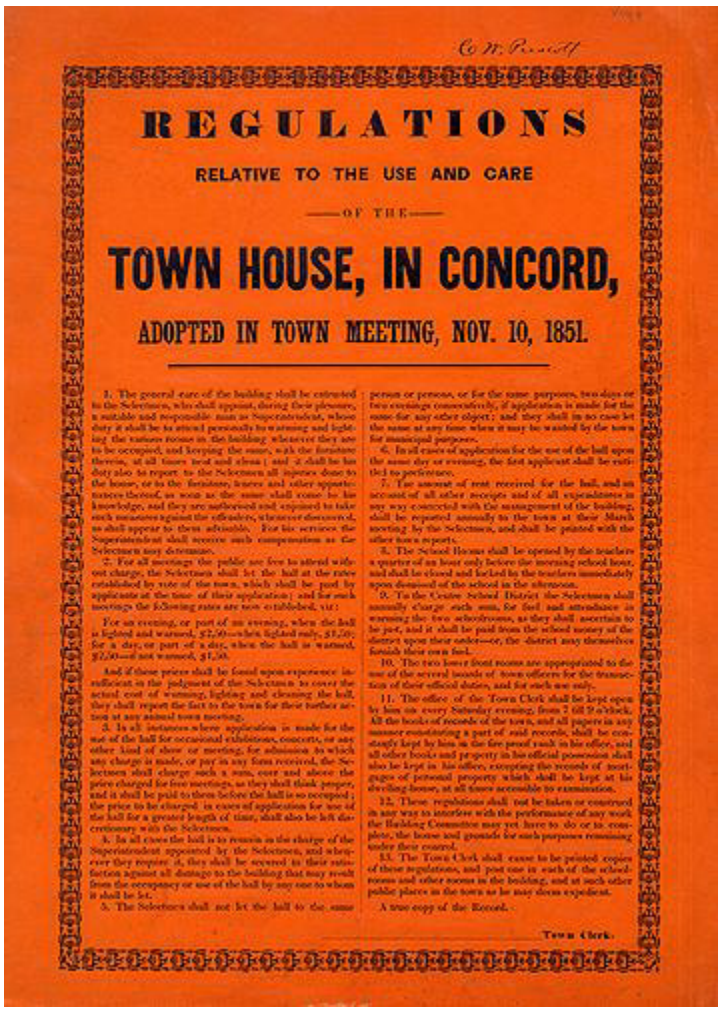
Martha Adams	
Mary Ball	
Elizabeth W. Barrett	
Martha Barrett	
Hannah Reed Batcheller	Grafton
Sarah Stone Batcheller	Grafton
Mary Bowers	Chelmsford
Helen Bowers	Boston
Caroline Brooks	
Sarah Brown	
Sarah Davis Clarke	Brookline
Susan Colburn	Clairborn, Alabama
Nancy Conant	Littleton
Eliza A. Cutler	Lexington
Abby Hubbard Davis	
Agusta Davis	
Mary Davis	
Cynthia F. Dennis	
Martha Field	Lincoln
Lucy Fiske	Lincoln
Elizabeth Gates	Ashby
Elizabeth Hoar	
Sarah S. Hoar	
Ann P. Hosmer	
Helen M. Hosmer	
Rebecca P. Hubbard	
Susan H. Hubbard	
Lucy M. Mann	
Lucy Miles	

Harriet N. Pratt	
Martha Prescott	
Amelia M. Prichard	
Elizabeth H. Prichard	
Frances J. Prichard	
Lucia M. Rice	
Sarah E. Shattuck	
Sarah Dodge Sitwell	Boston
Maria Smith	Lincoln
Eliza B. Stacy	
Mary Stow	
Jane Tarbell	Lincoln
Sophia Thoreau	
Mary Wetherby	Acton
Louisa J. Whiting	
Ann M. Whiting	
Eliza Woodward	
Susan H. Wyman	
William Baker	
Jonathan F. Barrett	
Gorham Bartlett	
Edwin Bent	
Alber W. Bridge	
George M. Brooks	
John Brown	
Leonard Brown	
Elbridge Clark	
Asabel Dakin	
Hiram Dennis	
Josiah G. Davis	

William Derby	
Isaac Fiske	
Deming J. Hastings	
George Heywood	
Stephen Hidden	
Ebenezer R. Hoar	
Edward S. Hoar	
George F. Hoar	
Samuel Hoar	
James Hosmer	
Silas T. Jewell	
B.F. Johnson	
John S. Keyes	
Rufus B. Lawrence	Groton
George Loring	
Elbridge Marshal	Littleton
John Maynard	
Richmond Nichles	Carlisle
S.S. Niles	
Nathaniel Parker	
Owen Peabody	
Samuel Pierce	
Charles Prescott	
Moses Prichard	
William Prichard	
Agustus Robbins	Harvard
Henry Shattuck	
William Shepherd	
John D. Sherman	Lincoln
Francis Smith	Lincoln

Edward Stearns	Lincoln
Daniel Stedman	Boston
Nathan Brooks Stow	
William Thayer	
Isaac Thayer	
John Thoreau	
Henry Thoreau	
William Tuttle	Littleton
Agustus Tuttle	
Henry Vose	Boston
Amiel Whipple	
William Whiting	
James Barrett Wood	

The Town Meeting of Concord adopted regulations relative to the use and care of the new Town House:



REGULATIONS

RELATIVE TO THE USE AND CARE

—OF THE—

TOWN HOUSE, IN CONCORD,

ADOPTED IN TOWN MEETING, NOV. 10, 1851.

1. The general care of the building shall be entrusted to the Selectmen, who shall appoint, during their pleasure, a suitable and responsible man as Superintendent, whose duty it shall be to attend personally to warming and lighting the various rooms in the building whenever they are to be occupied, and keeping the same, with the furniture therein, at all times neat and clean; and it shall be his duty also to report to the Selectmen all injuries done to the house, or to the furniture, fences and other appurtenances thereof, as soon as the same shall come to his knowledge, and they are authorized and enjoined to take such measures against the offenders, whenever discovered, as shall appear to them advisable. For his services the Superintendent shall receive such compensation as the Selectmen may determine.

2. For all meetings the public are free to attend without charge, the Selectmen shall let the hall at the rates established by vote of the town, which shall be paid by applicants at the time of their application; and for such meetings the following rates are now established, viz:

For an evening, or part of an evening, when the hall is lighted and warmed, $2,50—when lighted only, $1,50; for a day, or part of a day, when the hall is warmed, $2,50—if not warmed, $1,50.

And if these prices shall be found upon experience insufficient in the judgment of the Selectmen to cover the actual cost of warming, lighting and cleaning the hall, they shall report the fact to the town for their further action at any annual town meeting.

3. In all instances where application is made for the use of the hall for occasional exhibitions, concerts, or any other kind of show or meeting, for admission to which any charge is made, or pay in any form received, the Selectmen shall charge such a sum, over and above the price charged for free meetings, as they shall think proper, and it shall be paid to them before the hall is so occupied; the price to be charged in cases of application for use of the hall for a greater length of time, shall also be left discretionary with the Selectmen.

4. In all cases the hall is to remain in the charge of the Superintendent appointed by the Selectmen, and whenever they require it, they shall be secured to their satisfaction against all damage to the building that may result from the occupancy or use of the hall by any one to whom it shall be let.

5. The Selectmen shall not let the hall to the same person or persons, or for the same purposes, two days or two evenings consecutively, if application is made for the same for any other object; and they shall in no case let the same at any time when it may be wanted by the town for municipal purposes.

6. In all cases of application for the use of the hall upon the same day or evening, the first applicant shall be entitled to preference.

7. The amount of rent received for the hall, and an account of all other receipts and of all expenditures in any way connected with the management of the building, shall be reported annually to the town at their March meeting by the Selectmen, and shall be printed with the other town reports.

8. The School Rooms shall be opened by the teachers a quarter of an hour only before the morning school hour, and shall be closed and locked by the teachers immediately upon dismissal of the school in the afternoon.

9. To the Centre School District the Selectmen shall annually charge such sum, for fuel and attendance in warming the two schoolrooms, as they shall ascertain to be just, and it shall be paid from the school money of the district upon their order—or, the district may themselves furnish their own fuel.

10. The two lower front rooms are appropriated to the use of the several boards of town officers for the transaction of their official duties, and for such use only.

11. The office of the Town Clerk shall be kept open by him on every Saturday evening, from 7 till 9 o'clock. All the books of records of the town, and all papers in any manner constituting a part of said records, shall be constantly kept by him in the fire proof vault in his office, and all other books and property in his official possession shall also be kept in his office, excepting the records of mortgages of personal property which shall be kept at his dwelling-house, at all times accessible to examination.

12. These regulations shall not be taken or construed in any way to interfere with the performance of any work the Building Committee may yet have to do or to complete, the house and grounds for such purposes remaining under their control.

13. The Town Clerk shall cause to be printed copies of these regulations, and post one in each of the schoolrooms and other rooms in the building, and at such other public places in the town as he may deem expedient.

A true copy of the Record.

Town Clerk.

1852

Johann von Lamont of Germany reported on 15 years of observations of the earth's magnetic field, providing the information that it fluctuated on a 10.3-year cycle. He did not notice that this fluctuation of the earth's magnetic field coincided with the sunspot cycle of the sun, but that information was provided in this year, independently, by Sir Edward Sabine in the British Isles, Rudolf Wolf in Switzerland, and Alfred Gautier in France. The study of relationships between solar phenomena and terrestrial phenomena had fairly begun.

ASTRONOMY

At some point during the early 1850s (I will for convenience insert the data element here), Alvan Graham Clark joined the family firm of Alvan Clark & Sons in Cambridge, Massachusetts in the development and manufacture of lenses for large refracting telescopes.

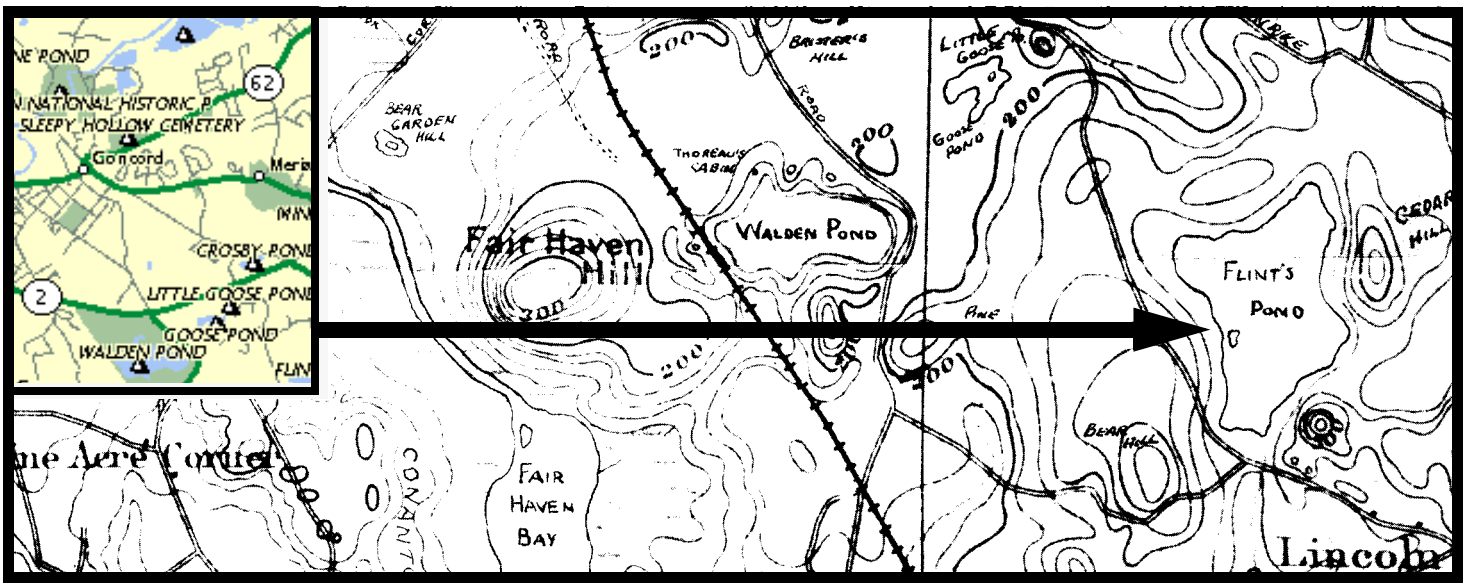
February 26, Thursday: John Harvey Kellogg, the physician who would inspire a flaked-cereal breakfast health industry, was born.

A Daguerreotype was made of the moon by John Adams Whipple through the 15-inch refractor telescope at the Harvard Observatory.

ASTRONOMY

February 26, Thursday: The east side of deep Cut nearly dry–sand has ceased flowing– – West side just beginning– Now begin to see the Cladonia Rangiferina ("reindeer moss") in the dry pastures– Observed for the first time on and about Bear Hill in Lincoln the Parmelia Conspersa? "greenish straw-colored." & what I suppose is P. saxatilis "glaucous-cinerascent" The P. Conspersa is a very handsome & memorable lichen– which every child has admired. I love to find it where the rocks will split into their lamina so that I can easily carry away a specimen. The low hills in the N E beyond Bedford seen from Bear Hill about $4^{1}/_{2}$ P m were remarkably dark blue much more blue than the mts in the N W. The sky was in great part concealed by white

clouds– Had this blue the same cause with the blue in the crevices of the snow?

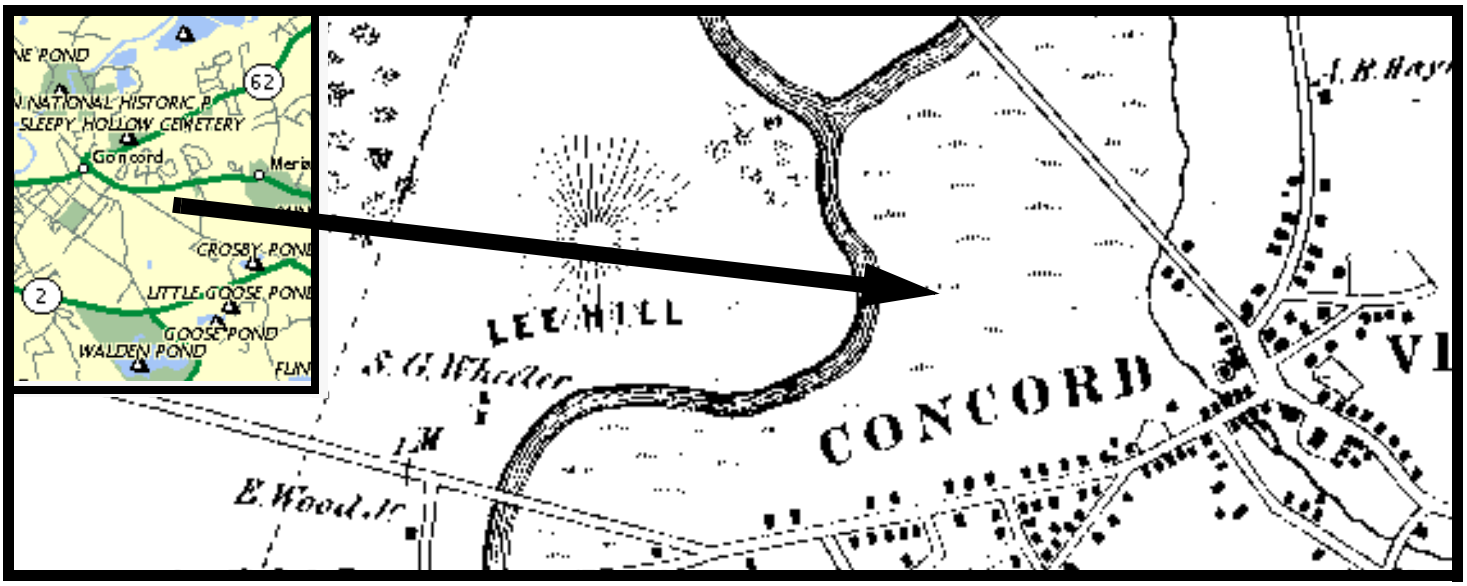


Returned across Flint's Pond. & the wood lot where some Irish man must have tried his first experiment in chopping–his first winter–where the trees were hacked off 2 feet from the ground, as if with a hatchet–stand on every sides of the tree by turns & crossing the carf a hundred ways. The owner can commonly tell when an Irish man has trespassed on his wood lot.

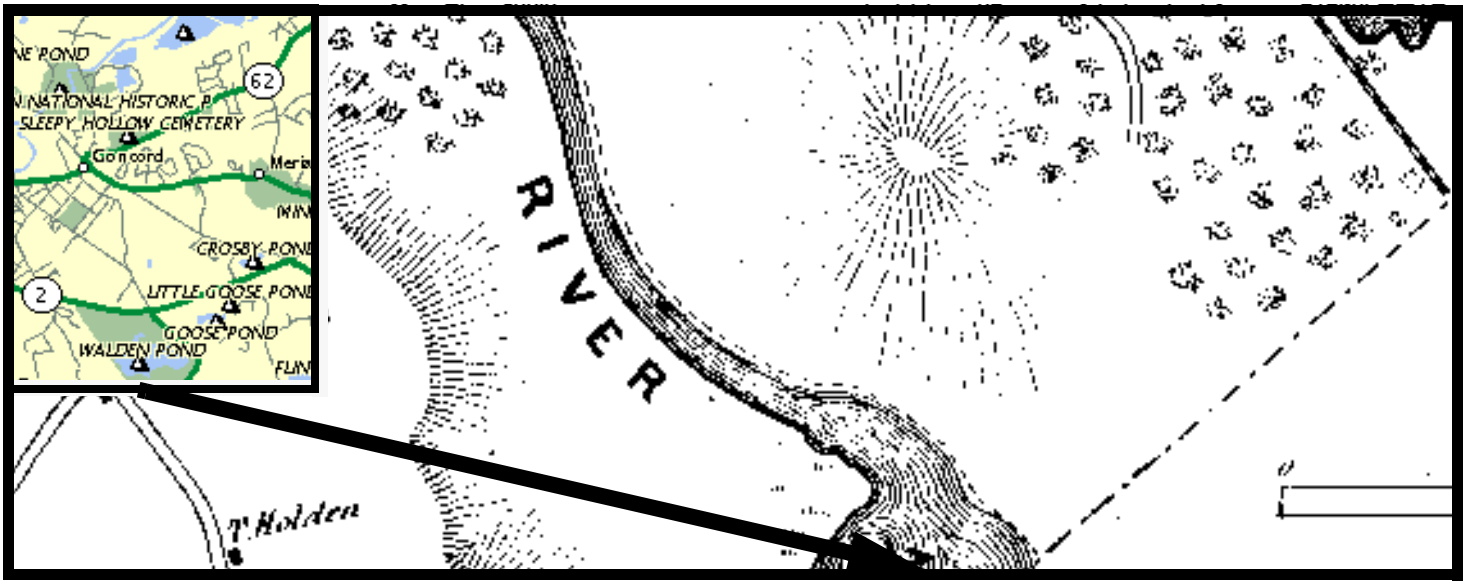
We are told today that civilization is making rapid progress–the tendency is ever upward–substantial justice is done even by human courts– You may trust the good intentions of mankind.– We read to-morrow in the newspapers that the French nation is on the eve of going to war with England to give employment to her army. What is the influence of men of principle–or how numerous are they? How many moral teachers has society? Of course, so many as she has (will) resist her– How many resist her? How many have I heard speak with warning voice? Utter wise warnings? The preacher's standard of morality is no higher than that of his audience. He studies to conciliate his hearers & never to offend them. Does the threatened war between France & England evince any more enlightenment–than a war between two savage tribes–the Irroquois & the Hurons? Is it founded in better reason?

THOREAU AND TELESCOPES

April 2, Friday: At 6AM Henry Thoreau walked north along the river bank to Merrick's Pasture.

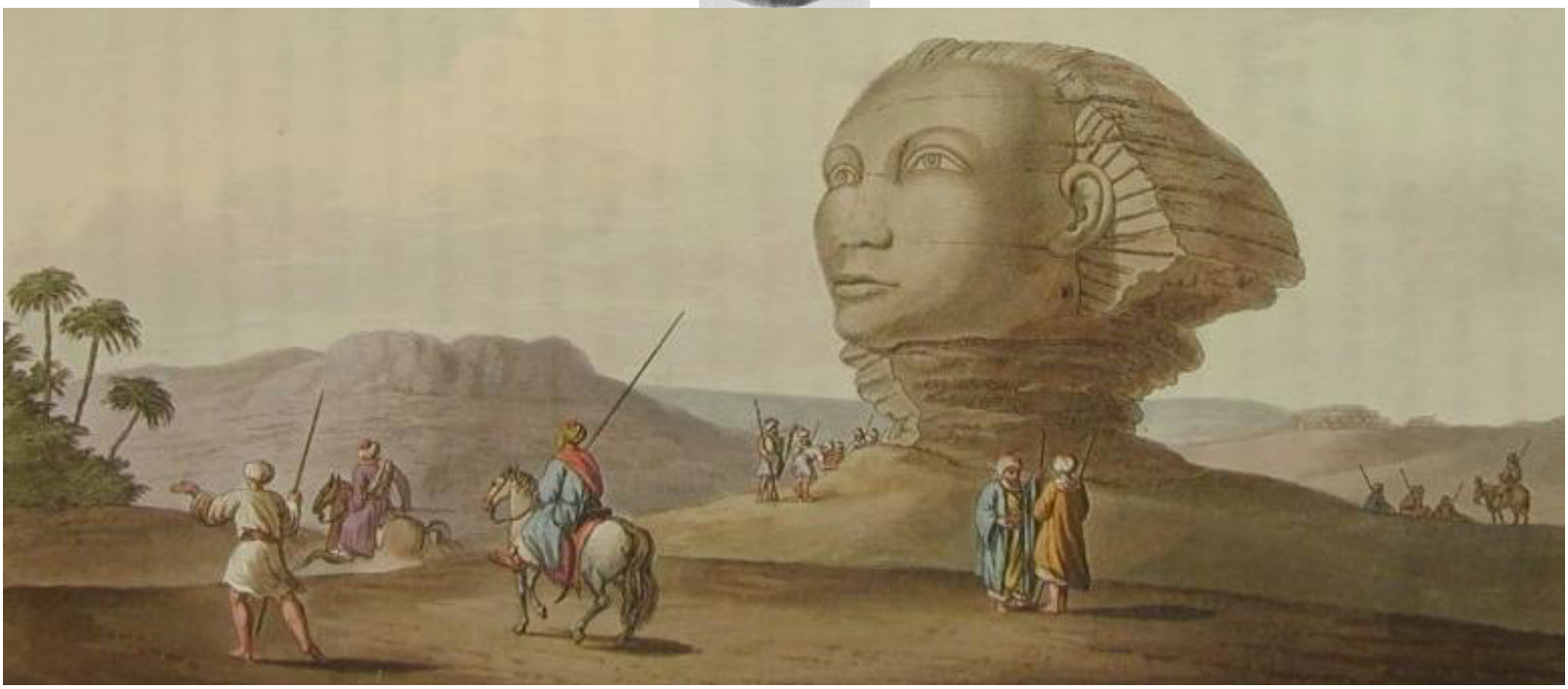


At 9AM he and Ellery Channing rowed a leaky boat south along the Sudbury River to Sudbury Meadows upstream from Lee's Corner Bridge, stopping every half hour or so to tip the boat over and pour out the accumulating leakage.



They returned at 5:30PM, and that evening Thoreau wrote to the Reverend Thomas Wentworth Higginson THOMAS WENTWORTH HIGGINSON to tell him that he could schedule him to lecture on "Realities" in Boston whenever it was most convenient. (This would turn out to be on Tuesday, April 6th, and

would turn out to be during a severe snowstorm.)



"It appears to me that to one standing on the heights of philosophy mankind & the works of man will have sunk out of sight altogether. Man is altogether too much insisted on. The poet says the proper study of mankind is man– I say study to forget all that –take wider views of the universe– That is the egotism of the race. What is this our childish gossipping social literature – mainly in the hands of the publishers? When the poet says the world is too much with us –he means of course that man is too much with us– In the promulgated views of man –in institutions –in the common sense there is narrowness & delusion. It is our weakness that so exaggerates the virtues of philanthropy & charity & makes it the highest human attribute– The world will sooner or later tire of philanthropy –and all religions based on it mainly. They cannot long sustain my spirit.

THOREAU AND TELESCOPES

ROBINSON JEFFERS

In order to avoid delusions I would fain let man go by & behold a universe in which man is but as a grain of sand– I am sure that my thoughts which consist or are contemporaneous with social personal connections – however humane are not the wisest & widest –most universal– What is the village –city state –nation –aye the civilized world – that it should so concern a man? It is a comfortable place to nestle no doubt & we have friends – some sympathizing ones it may be, & a hearth, there – but I have only to get up at midnight – aye to soar – or wander a little in my thought by day – to find them all slumbering– Look at our literature what a poor puny social thing seeking sympathy– The author troubles himself about his readers – would fain have one before he dies.– not satisfied with defiling one another in this world, we would all go to heaven together.– To be a good man (that is a good neighbor in the widest sense) is but little more than to be a good citizen. Mankind is a gigantic institution – it is a community to which most men belong. It is a test I would apply to my companion – can he forget man? Can he see this world slumbering?

I do not value any view of the universe into which man & the institutions of man enter very largely & absorb much of the attention– Man is but the place where I stand & the prospect (thence) hence is infinite. it is not a chamber of mirrors which reflect me –when I reflect myself –I find that there is other than me. man is a past phenomenon to philosophy – the universe is larger than enough for man's abode. Some rarely go outdoors – most are always at home at night – very few indeed have stayed out all night once in their lives – fewer still have gone behind the world of humanity –seen his institutions like toad-stools by the way-side. Now the author stands too near his printer. He corrects the proofs."

–Thoreau's JOURNAL**, April 2, 1852**

April 2, Friday: 6 Am. To the river side & Merrick's Pasture. The sun is up. The water on the meadows is perfectly smooth & placid reflecting the hills & clouds & trees. The air is full of the notes of birds – song sparrows **[*Melospiza melodia*]** – red-wings **[Red-winged Blackbird *Agelaius phoeniceus*]** –robins (singing a strain) blue birds **[Eastern Bluebird *Sialia sialus*]**–& I hear also a lark **[Eastern Meadowlark *Sturnella magna*]**– As if all the earth had burst forth into song. The influence of this April morning has reached them for they live out of doors. all the night, and there is no danger that they will oversleep themselves such a morning. A few weeks ago before the birds had come their came to my mind in the night the twittering sound of birds in the early dawn of a spring morning – a semi prophecy of it – and last night I attended mentally as if I heard the spray-like dreaming sound of the mid summer frog – & realized how glorious & full of revelations it was. Expectation may amount to prophecy. The clouds are **white** watery not such as we had in the winter– I see in this fresh morning the shells left by the muskrats along the shore – & their galleries leading into the meadow–& the bright red cranberries washed up along the shore – in the old water-mark. Suddenly there is a blur on the placid surface of the waters – a rippling mistiness produced as it were by a slight morning breeze.– And I should be sorry to show it to the stranger now– So is it with our minds.

ELLERY CHANNING

As a fair day is promised–& the waters are falling decide to go to the Sudbury meadows with C. 9 AM. Started some woodcocks in a wet place in A Wheeler's stubble field– Saw 6 spotted tortoises (emys guttata) which had crawled to the shore by the side of the Hubbard bridge causeway. Too late now for the morning influence & inspiration.– The birds sing not so earnestly & joyously – there is a blurring ripple on the surface of the lake.– How few valuable observations can we make in youth– What if there were united the susceptibility

of youth with the discrimination of age. Once I was part and parcel of nature – now I am observant of her.
What ails the Pewee's tail **[Eastern Phoebe** ***Sayornis phoebe***]?– It is loosely hung.– pulsating with life. DOG
What mean these wag tail birds? Cats & dogs too express some of their life through their tails. The bridges are a station at this season– They are the most advantageous positions. There I would take up my stand morning & evening looking over the water. CAT
The Charles Miles run full & rumbling– The water is the color of ale – here dark red ale over the yellow sand – there yellowish frothy ale where it tumbles down– Its foam composed of large white bubbles makes a kind of arch over the rill snow white & contrasting with the general color of the stream – while the latter ever runs under it carrying the lower bubbles with it & new ones ever supply their places– at least 18 inches high this stationary arch. I do not remember elsewhere such highly colored water. It drains a swamp near by & is dry the greater part of the year. Coarse bubbles continually bursting – a striped snake by the spring – & a black one. The grass there is delightfully green – while there is no fresh green anywhere else to be seen– It is the most refreshing of all colors– It is what all the meadows will soon be. The color of no flower is so grateful to the eye. Why is the dog black & the grass green? If all the banks were suddenly painted green & spotted with yellow white red – blue purple &c we should more fully realize the miracle of the summer's coloring– Now the snow is off it is pleasant to visit the sandy bean fields covered with last years blue curls & sorrel & the flakes of arrowhead stone– I love these sandy fields which melt the snows & yield but small crops to the farmer.– Saw a striped squirrel in the wall near Lees.– Brigham the wheel-wright building a boat. At the prospect of all this water men build boats if ever. Are those large scarred roots at the bottoms of the brooks now 3 inches in diameter the roots of the pickerel weed.– what vigor what vitality The yellow spots of the tortoise (emys guttata) on his dark shell seen bright through clear water remind me of flowers the houstonias &c when there are no colors on the land– Israel Rices dog stood stock still so long that I took him at a distance for the end of a bench. He looked much like a fox–& his fur was as soft. Rice was very ready to go with us to his boat which we borrowed – as soon as he had driven his cow in to the barn where her calf was – but she preferred to stay out in the yard this pleasant morning– He was very obliging – persisted without regard to our suggestions that we could help ourselves in going with us to his boat – showed us after a larger boat & made no remark on the miserableness of it. Thanks & compliments fell off him like water off a rock. If the king of the French should send him a medal he would have to look in many dictionaries to know what the sending of a medal meant and then he would appreciate the abstract fact merely–& it would fail of its intended effect. Steered across for the oaks opposite the mouth of the Pantry– For a long distance as we paddle up the river we hear the 2 stanzaed lay of the Pewee on the shore– Those are the two obvious facts to eye & ear the river & the pewee. After coming in sight of Sherman's bridge we moored our boat by sitting on a maple twig on the east side to take a leisurely view of the meadow. The eastern shore here is a fair specimen of New Eng. fields & hills sandy & barren but agreeable to my eye– Covered with withered grass on their rounded slopes & crowned with low reddish bushes shrub oaks. There is a picturesque group of 8 oaks near the shore–& through a thin fringe of wood I see some boys driving home an ox-cart load of hay.– I have noticed black oaks within a day or two still covered with oak balls. In upsetting the boat which has been newly tarred I have got some tar on my hands – which imparts to them on the whole an agreeable fragrance. This exercise of the arms and chest after a long winters stagnation – during which only the legs have labored – this pumping off the Lincoln shire fens the Haarlem lakes of wintry fumes & damps and foul blood is perhaps the greatest value of these paddling excursions. I see far in the south the upright black piers of the bridge just rising above the water– They are more conspicuous than the sleepers & rails.– The occasional patches of snow on the hill-sides are unusally bright by contrast.– they are land-marks to steer by– DOG
It seems to be a part of the economy of nature to make dogs make water against upright objects that so her plants may get watered & manurred. It is a part of her husbandry.
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DOG

This hill with its adjuncts is now almost an island – surrounded by broad lakes. The South lakes reflect the most light at present – but the sober surface of the northern is yet more interesting to me.– How novel and original must be each new mans view of the universe – for though the world is so old – & so many books have been written – each object appears wholly undescribed to our experience – each field of thought wholly unexplored – The whole world is an America – a **New World**. The fathers lived in a dark age – & throw no light on any of our subjects. The sun climbs to the zenith daily high over all literature & science – astronomy even concerns us worldlings only – but the sun of poetry & of each new child born into the planet has never been astronomized, nor brought nearer by a telescope. So it will be to the end of time. The end of the world is not yet. Science is young by the ruins of Luxor – unearthing the sphinx – or Ninevah – or between the pyramids. The parts of the meadows nearly surrounded by water form interesting peninsulas & promontories.– Return to our boat– We have to go ashore & upset it every half hour. it leaks so fast – for the leak increases as it sinks in the water in geometrical progression. I see among the phenomena of spring – here and there a dead sucker floating on the surface – perhaps dropped by a fish hawk **[Osprey *Pandion haliaetus*]** or a gull –f or the gulls are circling this way over head to reconnoitre us.– On making the eastward curve in the river we find a strong wind against us – pushing slowly across the meadow in front of the Pantry – the waves beat against the bows and sprinkle the water half the length of the boat. The froth is in long white streaks before the wind – as usual striping the surface.
We land in a steady rain & walked inland by R Rice's barn regardless of the storm toward White Pond. Overtaken by an Irishman in search of work. Discovered some new oaks & pine groves and more New Eng. fields. At last the drops fall wider apart–& we pause in a sandy field near the Great Road of the corner where it was agreeably retired & sandy – drinking up the rain– The rain was soothing – so still & sober – gently beating against & amusing our thoughts – swelling the brooks– The robin now peeps with scared note in the heavy overcast air – among the apple trees– The hour is favorable to thought– Such a day I like a sandy road– Snows that melt & leave bear the corn & grain fields – with Indian relics shining on them & prepare the ground for the farmer– Saw a cow or ox in a hollow in the woods – which had been skinned & look red & striped like those Italian anatomical preparations. Went through a reddish andromeda swamp – where still a little icy stiffness in the crust under the woods keeps us from slumping– The rain now turns to snow with large flakes – so soft many cohere in the air as they fall. They make us white as millers & wet us through Yet it is clear gain. I hear a solitary hyla for the first time– At Hubbards bridge count 8 ducks going over. Had seen one with outstretched neck over the Great meadows in Sudbury. Looking up the flakes are black against the sky. & now the ground begins to whiten. get home at $5^{1}/_{2}$ Pm.
At the bend of the river above the river – I noticed many ferns on the bank where there was much snow – very green.

THOREAU AND TELESCOPES

"It appears to me that to one standing on the heights of philosophy mankind & the works of man will have sunk out of sight altogether. Man is altogether too much insisted on. The poet says the proper study of mankind is man– I say study to forget all that–take wider views of the universe– That is the egotism of the race. What is this our childish gossipping social literature – mainly in the hands of the publishers? When the poet says the world is too much with us–he means of course that man is too much with us– In the promulgated views of man –in institutions –in the common sense there is narrowness & delusion. It is our weakness that so exaggerates the virtues of philanthropy & charity & makes it the highest human attribute– The world will sooner or later tire of philanthropy–and all religions based on it mainly. They cannot long sustain my spirit. In order to avoid delusions I would fain let man go by & behold a universe in which man is but as a grain of sand– I am sure that my thoughts which consist or are contemporaneous with social personal connections – however humane are not the wisest & widest–most universal– What is the village–city state–nation–aye the civilized world – that it should so concern a man? It is a comfortable place to nestle no doubt & we have friends – some sympathizing ones it may be, & a hearth, there – but I have only to get up at midnight – aye to soar – or wander a little in my thought by day – to find

them all slumbering– Look at our literature what a poor puny social thing seeking sympathy– The author troubles himself about his readers – would fain have one before he dies.– not satisfied with defiling one another in this world, we would all go to heaven together.– To be a good man (that is a good neighbor in the widest sense) is but little more than to be a good citizen. Mankind is a gigantic institution – it is a community to which most men belong. It is a test I would apply to my companion – can he forget man? Can he see this world slumbering?

I do not value any view of the universe into which man & the institutions of man enter very largely & absorb much of the attention– Man is but the place where I stand & the prospect (thence) hence is infinite. it is not a chamber of mirrors which reflect me–when I reflect myself–I find that there is other than me. man is a past phenomenon to philosophy – the universe is larger than enough for man's abode. Some rarely go outdoors – most are always at home at night – very few indeed have stayed out all night once in their lives – fewer still have gone behind the world of humanity–seen his institutions like toad-stools by the way-side. Now the author stands too near his printer. He corrects the proofs."

–Thoreau's JOURNAL**, April 2, 1852**

March 18, Thursday: Henry Thoreau was written to by Horace Greeley in New-York.

New York, Mar. 18, 1852.
My Dear Sir:
I ought to have responded before this to yours of the 5th inst. but have been absent–hurried, &c. &c. I have had no time to bestow upon it till to-day.
I shall get you some money for the articles you send me, though not immediately.
As to your longer account of a canadian Tour, I don't know. It looks unmanageable. Can't you cut it into three or four, and omit all that relates to time? The cities are described to death; but I know you are at home with Nature, and that She rarely and slowly changes. Break this up if you can, and I will try to have it swallowed and digested.
Yours,
Horace Greeley.

Henry D. Thoreau, Esq.
Concord, Mass.

March 18, Thursday: This morning the ground is again covered with snow–& the storm still continues. That is a pretty good story told of a London citizen just retired to country life on a fortune who wishing among other novel rustic experiments, to establish a number of bee-communities, would not listen to the advice of his under steward–but asking fiercely "'how he could be so thoughtless as to recommend a purchase of what might so easily be procured on the Downs?' ordered him to hire ten women to go in quest of bees the next morning, and to prepare hives for the reception of the captives. Early the next day the detachment started for the Downs, each furnished with a tin canister to contain the spoil; and after running about for hours, stunning the bees with blows from their straw bonnets, and encountering stings without number, secured about thirty prisoners who were safely lodged in a hive. But, as has been the fate of many arduous campaigns, little advantage accrued from all this fatigue & danger. Next morning the Squire sallied forth to visit his new colony. As he approached, a loud humming assured him that they were hard at work, when to his infinite disappointment, it was found that the bees had made their escape through a small hole in the hive, leaving behind them only an unfortunate humble bee, whose bulk prevented his squeezing himself through the aperture, and whose loud complaints had been mistaken for the busy hum of industry." You must patiently study the method of nature and take advice of the under-steward. in the establishment of all communities, both insect & human–
This afternoon the woods & walls and the whole face of the country wears once more a wintry aspect–though there is more moisture in the snow–and the trunks of the trees are whitened now on a more southerly or S E side– These slight falls of snow which come & go again so soon when the ground is partly open in the spring–perhaps helping to open & crumble and prepare it for the seed are called "the poor man's manure–they are no doubt more serviceable still to those who are rich-enough to have some manure spread on their grass ground–which the melting snow help's dissolve & soak in. & carry to the roots of the grass. At any rate, it is all the poor man has got, whether it is good or bad.. There is more rain than snow now falling–and the lichens (especially the parmelia conspersa) appear to be full of fresh fruit–though they are nearly buried in snow The evernia jubata might now be called even a **very** dark olive green. I feel a certain sympathy with the pine or oak fringed with lichens in a wet day– – They remind me of the dewy & ambrosial vigor of nature and of man's prime. The pond is still very little melted round the shore. As I go by a pile of red oak recently split in the woods & now wet with rain I perceive its strong urine-like scent– I see within the trunks solid masses of worm or ant borings turned to a black or very dark brown mould–purest of virgin mould six inches in diameter & some feet long within the tree. The tree turned to mould again before its fall. But this snow has not driven back the birds– I hear the song-sparrow's [***Melospiza melodia***] simple strain–most genuine herald of the spring. & see flocks of chubby northern birds with the habit of snow birds [**Dark-eyed Junco *Junco hyemalis***] passing north.
A wise man will not go out of his way for information. He might as well go out of nature–or commit suicide.
I am glad to hear that naked eyes are of any use, for I cannot afford to buy a Munich (?) Telescope
Probably the bees could not make industry attractive under the circumstances described above.

April 22, Thursday: In the afternoon Henry Thoreau walked up the Concord River on the east bank, inspecting flood conditions. At 10PM he saw the aurora.

SKY EVENT

AURORA BOREALIS

April 22. It still rains. The water is over the road at Flints Bridge–and, as I am told, has been for some time over the J. Miles road in the corner–& near the further stone Bridge. So that there is now only the Boston road open–unless we regard the walden road as coming from wayland and not from Lee's bridge. At 9 Am it was $5^{1}/_{2}$ inches higher than the E end of the Eastern truss horizontal part on the S side of the stone Bridge. Up

to the top of the lowest stone step on the N side E end of R R bridge. Mr stacy thinks it was higher 30 years ago when a man horse & sleigh were washed off the Red Bridge road & lodged against a tree in the meadow. And Sam. Barrett thinks it was about 1 foot higher some 35 years ago.– Water a foot deep on Woods Bridge road. Abel Hunt saw a flock of geese **[Canada Goose** ***Branta canadensis*****]** this morning
This flood tempts men to build boats I saw two on the stocks this morning. It is pleasant work to see progressing.

P.M. — up river–on E side: It takes this day to clear up gradually–successive sun-showers still make it foul. But the sun feels very warm after the storm. This makes 5 stormy days. Sunday–M–T. W. Thursday. The water slightly agitated looks bright when the sun-shines. Saw 4 hawks soaring high in the heavens over the swamp bridge brook– At first saw 3, said to myself there must be 4 & found the fourth. Glad are they no doubt to be out after being confined by the storm. I hear bees (?) humming near the brook, which reminded me of the telegraph harp.– I love to see the dull gravity even stolidity of the farmer opposed to the fluency of the lawyer or official person. The farmer sits silent not making any pretensions nor feeling any responsibility even to apprehend the other–while the judge or Governor talks glibly and with official despatch all lost on the farmer who minds it not but looks out for the main chance with his great inexpressive face & his 2 small eyes looking the first in the face & rolling a quid in the back part of his mouth. The lawyer is wise in deeds but the farmer who buys land puts the pertinent questions respecting the title. I observe the ***Parmelia saxatilis*** in many places now turned a pinkish red. The Yellow lily leaves appear no more advanced than when I first observed them.
A strange dog accompanied us today–a hunting dog–gyrating about us at a great distance–beating every bush & barking at the birds. with great spead–gyrating his tail too all the while. I thought of what Gilpin says, that he sailed & steered by means of his tail– Sat under Potter's oak, the ground thickly strewn with broken acorn shells & cups & twigs–the short close nibble sward of last year. Our dog sends off a partridge **[Ruffed Grouse** ***Bonasa umbellus*****]** with a whir far across the open field & the river like a winged bullet–

DOG

From Cliffs see much snow on the mts. The Pine on Lee's shore of the Pond seen against the light water this cloudy weather–from part way down the cliff is an agreeable object to me. When **the** outline & texture of white pine is thus seen against the water or the sky it is an affecting sight. The shadow of the cliff on Conantum in the semi-sunshine with indistinct edge & a reddish tinge from bushes here & there!
I want things to be incredible–too good to appear true. C. says "after you have been to the P.O. once you are dammed."– but I answer that it depends somewhat on whether you get a letter or not. If you would be wise learn science & then forget it.[43]
A boat on the river–on the white surface looks black–& the boatman like Charon. I see swarms of gnats in the air. What is that grass with a yellow blossom which I find now on the cliff–? Carex marginata (?) Early Sedge– the earliest grass that flowers. It is the contrast between sunshine & storm that is most pleasing– –the gleams of sunshine in the midst of the storm are the most memorable. Saw that winkle-like fungus ***fresh & green*** covering an oak stump today with concentric marks–spirally arranged sometimes in a circle. very handsome I love this apparent exuberance of nature.
The maples in the side swamp near well meadow are arranged nearly in a circle in the water. This strange dog has good habits for a companion he keeps so distant– He never trusts himself near us though he accompanies us for miles. On the most retired the wildest & craggiest hill side you will find some old road by which the teamster carted off the wood– It is pleasant some times looking 30 or 40 rods into an open wood where the trunks of the trees are plainly seen & patches of soft light on the ground. The hylas peep now in full chorus, but are silent on my side of the pond. The water at 6 Pm is $1^{1}/_{2}$ inches higher than in the morning, ***i.e.*** 7 inches above the iron truss. The strain of the Red wing [**Red-winged Blackbird** ***Agelaius phoeniceus***] on the willow spray over the water to-night is liquid bubbling–watery–almost like a tinkling fountain in perfect harmony with the meadow– It oozes, trickles, tinkles, bubbles from his throat. ***bob-y-lee-e-e*** & then its shrill fine whistle.
The villagers walk the streets & talk of the great rise of waters.
At 10 Pm the northern lights are flashing – like some grain sown broadcast in the sky. I hear the hylas peep on

AURORA

43. Bradley P. Dean says that Henry Thoreau combined this with a reference to MARK 8:36 in the construction of his early lecture "WHAT SHALL IT PROFIT" paragraph number 73:

BRAD DEAN'S COMMENTARY

> [Paragraph 73] When our life ceases to be inward and private, conversation degenerates into mere gossip. I rarely meet a man who can tell me any news which he has not read in a newspaper, and for the most part the only difference between me and my fellow is that he has seen the paper and I have not. But the London Times is not one of the Muses. When a man's inward life fails he begins to go more constantly to the post office, and despatches couriers to the other side of the globe; and so again he gains the whole world and loses his

the meadow as I stand at the door.
The early sedge (?) grows on the side of the Cliffs in little tufts with small yellow blossoms – ***i.e.*** with yellow anthers low in the grass.
Mr Holbrook tells me he heard & saw martins **[Purple Martin** ***Progne subis*****]** yesterday.

September: The periodic comet Biela, which had an orbital period of 6 years and 9 months but had appeared split apart into two pieces in January 1846, made another appearance. By this time the two halves had moved apart, one part slightly ahead of the other. (It would go quite to pieces during its whip around the sun in this month and this particular comet would not be again detected, upon its anticipated orbital periods in 1859 and 1866.)

ASTRONOMY

While visiting the Reverend Theodore Hamberg in Hong Kong, Issachar J. Roberts 罗孝全 came across some documents about the Taiping Rebellion that had broken out in Kwangsi and for the first time learned that its leader was a person he had met and instructed, Hung Hsiu Ch'üan 洪秀全. Well aware that, back home, his Baptist missionary board was ready to dismiss him with "his usefulness to the Christian cause ... seriously questioned," this opportunistic missionary began to dream a grand redemption:

> I have hitherto taken little or no interest in the matter, but henceforward it will be otherwise.... The chief, having been already taught by the missionary, will, I presume, be accessible and teachable, however high his position in the state, which has not been the case hitherto with other high functionaries in China. In this way ... he will learn the truth fully as it is in Jesus, and then co-operating with the missionary in communicating the same to his people....

I will have millions of stars in my crown!

1853

Benjamin Peirce, Perkins Professor of Astronomy and Mathematics at Harvard College, became the president of the American Academy of Arts and Sciences.

HARVARD OBSERVATORY

The 6th and final volume of Richard Hildreth's HISTORY OF THE UNITED STATES OF AMERICA, which had begun publication in 1849. Also, finally, his THEORY OF POLITICS. Hildreth was one of the initial American historians to experiment with a "science" of history, through attempting to present not merely an edifying story with a patriotic moral but instead the state of affairs "exactly as it was." He was in disagreement with the Reverend Professor Francis Bowen, who had written discouragingly in an 1851 review, "it is impossible to write history without seeking, either avowedly or stealthily, or unawares, to verify some hypothesis, or establish some theory, which furnishes a reason and guide for the selection and arrangement of materials."

An attempt to appoint Bowen as McLean Professor of History was blocked when some state office-holders who had been made members of the Harvard Board of Overseers, ex-officio, took offense at the honest plainness of his political agenda.

After Professor Louis Agassiz savaged his assistant Charles Frédéric Girard, the man had obtained a science job at the Smithsonian Institution, working for Spencer Fullerton Baird. Professor Agassiz, outraged that any part of the scientific establishment would make any use of someone of whom he personally had blacklisted, continued relentlessly to pursue his former assistant:

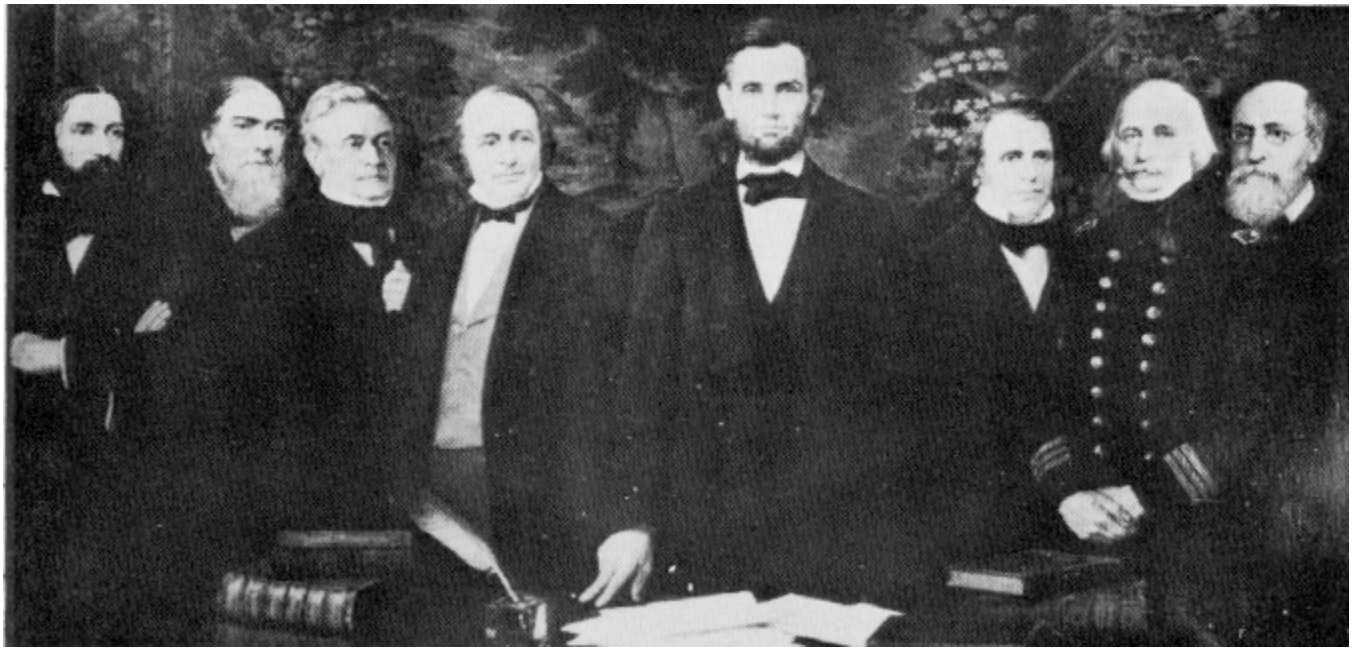
> *If you had been willing to listen to my advise [sic] before, you should have known that Girard, though capable of sustained work and endowed with considerable ability in distinguishing the peculiarities of animals, has no judgement, and is utterly unable to trace original researches without supervision. Moreover he is as obstinate as a mule, if contradicted, which makes it necessary that he should be led with a high hand and kept in an entirely subordinate position. Now this supervision of his work you have not made; you have not tested the value of the characters upon which he has based his generic and specific distinctions. I recognize his hand both in the style of the language used, and in the scientific character of the work. In the hurry of your many engagements you have entrusted to him a task to which he is not equal; and there goes forward from the Smithsonian Instit. a production which in quality is far inferior to what is done elsewhere, though by the quantity of the materials you had the means of surpassing every work of that kind.*

Girard collected specimens in Maine, Massachusetts, and South Carolina. Baird created the CATALOG OF NORTH AMERICAN REPTILES with Girard's assistance. Robert Kennicott, Girard, and other young naturalists were urged to form an informal group, known as the "Megatheria."

It was in approximately this time period that Professor Agassiz of Harvard College began to organize the scientific pressure group of schemers and administrators he referred to as his "Lazzaroni."[44] The work of this group would continue behind the scenes until the creation, in the wee small hours of the 37th Congress, on March 3, 1863, after a decade of plotting and conspiring, of a new disciplinary "jury" (the professor's term) to be known as the National Academy of Sciences. Here they are depicted attempting to acquire respectability

44. The Lazzaroni of Naples are gangs of pickpockets and con artists who work the street crowds for what they can get. (One of them once tried to sell me a Rolex® for like $40, while I was waiting for a boat at the docks, but I pointed out to the man that my wristwatch had an Indiglo® dial which his Rolex® lacked, that my wristwatch had a day-of-the-week indicator which was practically all I ever looked at on the dial which his Rolex® lacked, that my wristwatch had also cost me about $40 on sale at K-Mart when it had been new a number of years before, and besides **the brand name of my wristwatch also ended in "-ex"**! I suggested to this gent "Nevertheless, I will be willing to trade you, even-Steven!" –Meanwhile, I was keeping my arm pressed firmly against my wad of cash in the side pocket of my pants under my comb and handkerchief, just in case he was working as a team.)

by rubbing against a respectable person (or maybe they're just trying to distract him and pick his pocket):



At some point during this year Professor Agassiz wrote from Cambridge to Henry Thoreau among others:

To: HDT
From: Louis Agassiz
Date: [1853]

{No MS — printed copy — Thoreau's copy of this form is at Widener Library}

DEAR SIR,—
Having been engaged for several years in the preparation of a Natural History of the Fishes of the United States, I wish, before beginning the printing of my work, to collect as extensive materials as possible, respecting the geographical distribution of these animals. It has occurred to me, that by means of a circular containing directions for collecting fishes I might obtain the information required. I should, indeed, like to secure separate collections of our fishes from every bay and inlet along the coast, and from every stream, river, creek, lake, and pond upon the mainland, throughout the whole country, and am satisfied that such collections would furnish invaluable information respecting the geographical distribution of our aquatic animals. I would thank you for any assistance and contribution you can furnish from your quarter of the country, and duly acknowledge it in my work; and since I extend my investigations to all the branches of Natural History, any specimens besides fishes, which may be obtained, would be equally acceptable, including geological specimens and fossil remains. In return I would propose exchanges of other specimens if desired, or reciprocate the favor in any other way in my power, and pay the expenses incurred in making collections for me. Specimens from foreign countries are also solicited, especially when their origin is satisfactorily ascertained. Any person into whose hands this circular may come, feeling inclined to correspond with me upon these subjects, is requested to address me under the following direc-

tion:—

L. AGASSIZ,
Professor of Zoology and Geology in the Lawrence Scientific School, at CAMBRIDGE, MASS.

[We may suppose that, in the above, in the original printing, the second "o" of the word Zoology would have had an umlaut over it.]

[include Directions?]

January 21, Friday: It was reported in the Liberator that in a spiritualist seance, a "magnetized woman" had been asked to send the spirit of Nathaniel Peabody Rogers from "beyond the veil," and then those attending the seance in the dark heard the sound of a horn. One of those attending the seance, Henry C. Wright, informed the others that once upon a time he had been with Rogers in the White Mountains, when a hotel keeper had sounded a horn in precisely the same manner!

SPIRITUALISM

January 21st: A fine still warm moonlight evening – we have had 1 or 2 already moon not yet full. To the woods by the deep cut at 9 o'clock. The blueness of the sky at night is an everlasting surprise to me – suggesting the constant presence & prevalence of light in the firmament – the color it wears by day – that we see through the veil of night to the constant blue as by day. The night is not black – when the air is clear – but blue still as by day – the great ocean of light and ether is unaffected by our partial night Night is not universal. At midnight I see into the universal day. Walking at midnight unless it is cloudy still the blue sky o'er arches as by day.

I am somewhat oppressed & saddened by the sameness & apparent poverty of the heavens – that these irregular & few geometrical figures which the constellations make are no other than those seen by the Chaldaean shepherds – I pine for a new World in the heavens as well as on the earth – And though it is some consolation to hear of the wilderness of stars & systems invisible to the naked eye – yet the sky does not make that impression of variety & wildness that even the forest does – as it ought It makes an impression rather of simplicity & and unchangeableness as of eternal laws – This being the same constellation which the shepherds saw & obedient still to the same law – It does not affect me as that unhandselled wilderness which the forest is – I seem to see it pierced with visual rays from a thousand observatories – It is more the domain of science than of poetry. But it is the stars as not known to science that I would know – the stars which the lonely traveller knows. The chaldaean shepherd saw not the same stars which I see, and I am elevated in the least toward the heavens I do not accept their classification of them. I am not to be distracted by the names which they have imposed. The sun which I know is not Apollo – nor is the evening star Venus. The heavens shall be as new at least as the world is new. This classification of the stars is old and musty – it is as if a mildew had taken place in the heavens – as if the stars so closely packed had heated & moulded there. If they appear fixed, it is because that hitherto men have been thus necessitated to see them – I see not merely old but new testaments in the skies. Do not I stand as near the stars as the Chaldaean shepherds? The heavens commonly look as dry & meagre as our astronomies are – mere troops as the latter are catalogues of stars – The milky way yields no milk. A few good anecdotes is our science – with a few imposing facts respecting distance & size – & little or nothing about the stars as they concern man – teaching how he may survey a country or sail a ship – & not how he may steer his life – Astrology contained the germ of a higher truth than this – It may happen that the stars are more significant & truly celestial to the teamster than to the astronomer – Nobody sees the stars now – they study astronomy at the district school – & learn that the sun is 195 millions distant & the like – a statement which never made any impression on me because I never walked it and which I cannot be said to believe – But the sun shines nevertheless. Though observatories are multiplied the heavens receive very little attention. The naked eye may easily see farther than the armed. It depends on who looks through it – No superior telescope to this has been invented – In those big ones the recoil is equal to the force of the discharge. The poet's eye in a fine frenzy rolling ranges from earth to heaven – but this the astronomer's does not often do. It does not see far beyond the dome of Greenwich observatory. Compared with the visible phenomena of the heavens the anecdotes of science affect me as trivial & petty. Mans eye is the true star-finder – the comet-seeker. As I sat looking out the window the other evening just after dark I saw the lamp of a freight train – & nearly just over

VENUS

the train a bright star – which looked exactly like the former as if it belonged to a different part of the same train – It was difficult to realize that the one was a feeble oil lamp – the other a world.[45]
As I walk the RR causeway I am – disturbed by the sound of my steps on the frozen ground – I wish to hear the silence of the night. I cannot walk with my ears covered – The silence is something positive & to be heard. I must stand still & listen with open ear far from the noises of the village that the night may make its impression on me – a fertile & eloquent silence. Sometimes the silence is merely negative an arid & barren waste in which I shudder – where no ambrosia grows. I must hear the whispering of a myriad voices. Silence alone is worthy to be heard. Silence is of various depth & fertility like soil. Now it is a mere Sahara where men perish of hunger & thirst – now a fertile bottom or prairie of the west As I leave the village drawing nearer to the woods – I listen from time to time – to hear the hounds of Silence baying the moon – to know if they are on the track of any game – [46] If there's no Diana in the night – what is it worth? I hark the Goddess Diana. The silence rings – it is musical & thrills me. A night in which the silence was audible – I hear the unspeakable. I easily read the moral of my dreams – Yesterday I was impressed with the rottenness of human relations – they appeared full of death & decay – & offended the nostrils – In the night I dreamed of delving amid the graves of the dead and soiled my fingers with their rank mould. It was **sanitarily** – **morally** – & physically true.
If night is the mere negation of day I hear nothing but my own steps in it – Death is with me & life far away – If the elements are not human – if the winds do not sing or sigh – as the stars twinkle – my life runs shallow – I measure the depth of my own being. I walk with vast alliances. I am the Allied powers The holy alliance – absorbing the European potentates. – I do not get much from this blue sky – these twinkling stars – & bright snow fields reflecting an almost rosaceous light. But when I enter the woods – I am fed by the variety – the forms of the trees above against the blue, with the stars seen through the pines like the lamps hung on them in an illumination – the somewhat indistinct and misty fineness of the pine tops – And the finely divided spray of the oaks &c – And the shadows of all these on the snow – The first shadow I came to I thought was a black place where the wood- choppers had had a fire – These myriad shadows checker the white ground & enhance the brightness of the enlightened portions. See the shadows of these young oaks – which have lost half their leaves – more beautiful than themselves like the shadow of a shandelier – & motionless as if they were fallen leaves on the snow – but shake the tree and all is in motion –
In this stillness & at this distance I hear the 9 o'clock bell in Bedford 5 miles off – which I might never hear in the village but here its music surmounts the village din – and has some- thing very sweet & noble & inspiring in it, associated in part with the hooting of owls.
Returning – I thought I heard the creaking of a wagon – just starting from Hubbards door – & rarely musical it sounded – It was the Telegraph harp. It began to sound but at one spot only. It is Very fitful – & only sounds when it is in the mood – You may go by 20 times both when the wind is high & when it is low – & let it blow which way it will – & yet hear no strain from it – but another time – at a particular spot you may hear a strain rising & swelling on the string – which may at last ripen to something glorious – The wire will perhaps labor long with it before it attains to melody.
Even the creaking of a wagon in a frosty night has music in it which allies it to the highest & purest strain of the muse –
I think it was Jan 20th that I saw that which I think an otter track in path under the Cliffs. no doubt it was A deep trail in the snow 6 or 7 inches wide & 2 or 3 deep in the middle, as if a log had been drawn along – similar to a muskrats only much larger – & the legs evidently short & the steps short sinking 3 or 4 inches deeper still as if it had waddled along It finally turned into my old tracks & went toward the river – & Fair Haven Pond One was killed there last spring.
Israel Rice tells of one shot within the year in a ditch near White Pond – prob. the same He says I saw an otter track Minot says his mother told him she had seen a deer come down the hill behind her house – where J. Moores now is & cross the road & the meadow in front. – thinks it may have been 80 years ago. Otter are very rare here now – I have not heard of any killed here-abouts for 20 or 30 years till within 2 years – 2 or 3 of them. in Sudbury & at Fair Haven Pond.[47]

45.From the sheaf Thoreau collected under the heading "The Moon," from which after Thoreau's death either Ellery Channing or Sophia Thoreau extrapolated the Atlantic Monthly article "Night and Moonlight":

> As I sat looking out the window the other evening just after dark, I saw the lamp of a freight-train, and ~~nearly~~ ^*further along at the same height,* just over the train, a bright star which looked exactly like the former, as if it belonged to a different part of the same train. It was difficult to realize that the one was a feeble oil lamp, ^*and* the other ^*perhaps* a world.

January 31, day: Henry Thoreau quoted from "System of the Heavens as Revealed by Lord Rosse's Telescopes" on pages 2-47 of Volume II of the NARRATIVE AND MISCELLANEOUS PAPERS of Thomas De Quincey, which had just been published in Boston by the firm of Ticknor, Reed, and Fields:

NARRATIVE MISC. VOL. II

January 31st: –Found an Ind. adze in the Bridle-Road at the brook just beyond Daniel Clark Jr's house. A man is wise with the wisdom of his time only & ignorant with its ignorance– Observe how the greatest minds yield in some degree to the superstitions of their age.
De Quincy (whose pains to prove that was not Christ's mission to teach men science though he **of course** (!) knew it all,–suggested the above–) says– "This downward direction of the eyes, however, must have been worse in former ages: because, else it never **could** have happened that, until Queen Ann's days, nobody ever hinted in a book that there **was** such a thing, or **could** be such a thing, as the Aurora Borealis; and in fact, Halley had

AURORA

46. William M. White's version of the journal entry is:

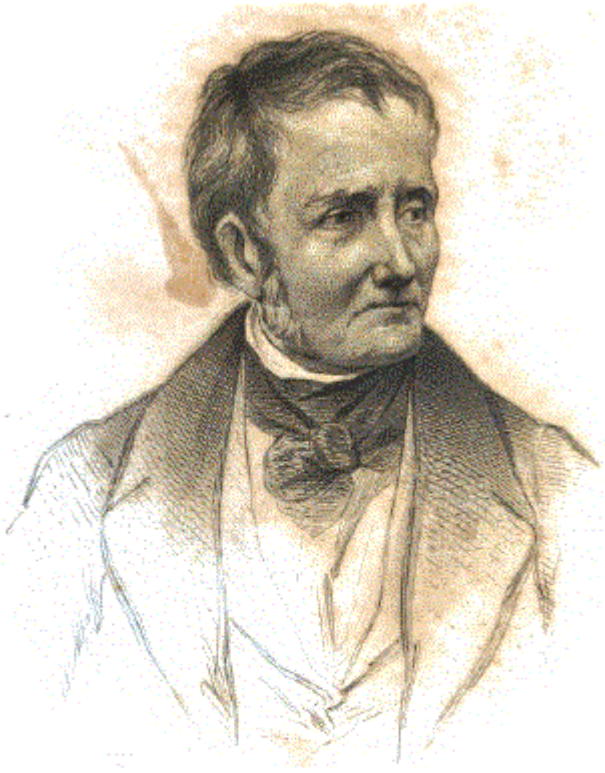
Silence alone is worthy to be heard.
Silence is of various depth and fertility,
Like soil.

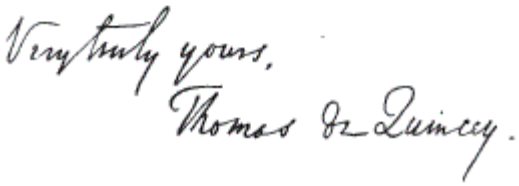
Now it is a mere Sahara,
Where men perish of hunger and thirst,
Now a fertile bottom, or prairie,
Of the West.

As I leave the village,
Drawing nearer to the woods,
I listen from time to time
To hear the hounds of Silence baying the Moon,—
To know if they are on the track of any game.

the credit[48] of discovering it."

SKY EVENT





ATTITUDES ON DE QUINCEY

March 18, Friday: We now have a complete on-line source for the contents of the issue of Frederick Douglass' Paper for this date:

ON-LINE RESOURCE

47.The poet W.H. Auden has in 1962 brought forward a snippet from this day's entry as:

THE VIKING BOOK OF APHORISMS, A PERSONAL SELECTION BY W.H. AUDEN...

Pg	Topic	Aphorism Selected by Auden out of Thoreau
263	Science	It is the stars as not known to science that I would know – the stars which the lonely traveller knows.

THOREAU AND TELESCOPES

March 18: The season is so far advanced that the sun, every now and then promising to shine out through this rather warm rain, lighting up transiently with a whiter light the dark day and my dark chamber, affects me as I have not been affected for a long time. I must go forth.

P.M. — To Conantum.
I find it unexpectedly mild. It appears to be clearing up but will be wet underfoot.
Now, then, spring is beginning again in earnest after this short check. Is it not always thus? Is there not always an early promise of spring, something answering to the Indian summer, which succeeds the summer, so an Indian or false spring preceding the true spring, — first false promise which merely excites our expectations to disappoint them, followed by a short return of winter? Yet all things appear to have made progress, even during these wintry days, for I cannot believe that they have thus instantaneously taken a start. I no sooner step out of the house than I hear the bluebirds in the air, and far and near, everywhere except in the woods, throughout the town you may hear them, –the blue curls of their warblings,– harbingers of serene and warm weather, little azure rills of melody trickling here and there from out the air, their short warble trilled in the air reminding of so many corkscrews assaulting and thawing the torpid mass of winter, assisting the ice and snow to melt and the streams to flow. Everywhere also, all over the town, within an hour or two have come out little black two-winged gnats with plumed or fuzzy shoulders. When I catch one in my hands, it looks like [a] bit of black silk ravelling. They have suddenly come forth everywhere.
How eagerly the birds of passage penetrate the northern ice, watching for a crack by which to enter! Forthwith the swift ducks will be seen winging their way along the rivers and up the coast. They watch the weather more sedulously than the teamster. All nature is thus forward to move with the revolution of the seasons. Now for some days the birds have been ready by myriads, a flight or two south, to invade our latitudes and, with this mild and serener weather, resume their flight.
Bells and the lowing of cows have acquired I know not what new melody in this air, for a change has come over all things, as well as our spirits. They sound more limpid, as, in this sun just bursting forth, the drops of water on the sprays, are prismatic. The geiropodium has bleached all white.
I stand still now and listen if I may hear the note of any new bird, for the sound of my steps hinders, and there are so few sounds at this season in a still afternoon like this that you are pretty sure to detect one within a considerable distance. Hark! Did I not hear the note of some bird then? Methinks it could not have been my own breathing through my nose. No, there it is again, –a robin; and we have put the winter so much further behind us. What mate does he call to in these deserted fields? It is, as it were, a scared note as he whisks by, followed by the familiar but still anxious *toot*, *toot*, *toot*. He does not sing as yet. There were one or two more fine bird-like tinkling sounds I could not trace home, not to be referred to my breathing.
It is decidedly clearing rip. At Conantum Cliff the columbines have started and the saxifrage even, the former as conspicuously as any plant, particularly any on dry ground. Both these grow there in high and dry chinks in the face of the cliff, where no soil appears, and the sunnier the exposure the more advanced. Even if a fallen fragment of the rock is so placed as to reflect the heat upon it, it has the start of its neighbors, These plants waste not a day, not a moment, suitable to their development. I pluck dry sprigs of pennyroyal, which I love to put in my pocket, for it scents me thoroughly and reminds me of garrets full of herbs.
With regard to my seringo-bird (and others), I think that my good genius withheld his name that I might learn his character.
I came forth expecting to hear new birds, and I am not disappointed. We know well what to count upon. Their coming is more sure than the arrival of the sailing and steaming packets. Almost while I listen for this purpose, I hear the *chuck*, *chuck* of a blackbird in the sky, whom I cannot detect. So small an object is lost in the wide expanse of the heavens, though no obstacle intervenes. When your eye has detected it, you can follow it well enough, but it is difficult to bring your sight to bear on it, as to direct a telescope to a particular star. How many hawks may fly undetected, yet within sight, above our heads! And there's the great gull I came to see, already fishing in front of Bittern Cliff. Now he stoops to the water for his prey, but sluggishly, methinks. He requires a high and perhaps a head wind to make his motions graceful. I see no mate. He must have come up, methinks, before the storm was over, unless he started when I did. I believe it is only an easterly wind or storm brings him

ASTRONOMY

48. De Quincey is of course mistaken, since the aurora borealis had already been seen, and named as such, by Galileo Galilei, before Edmond Halley fils was even a gleam in the eye of Edmond Halley pere.

AURORA BOREALIS

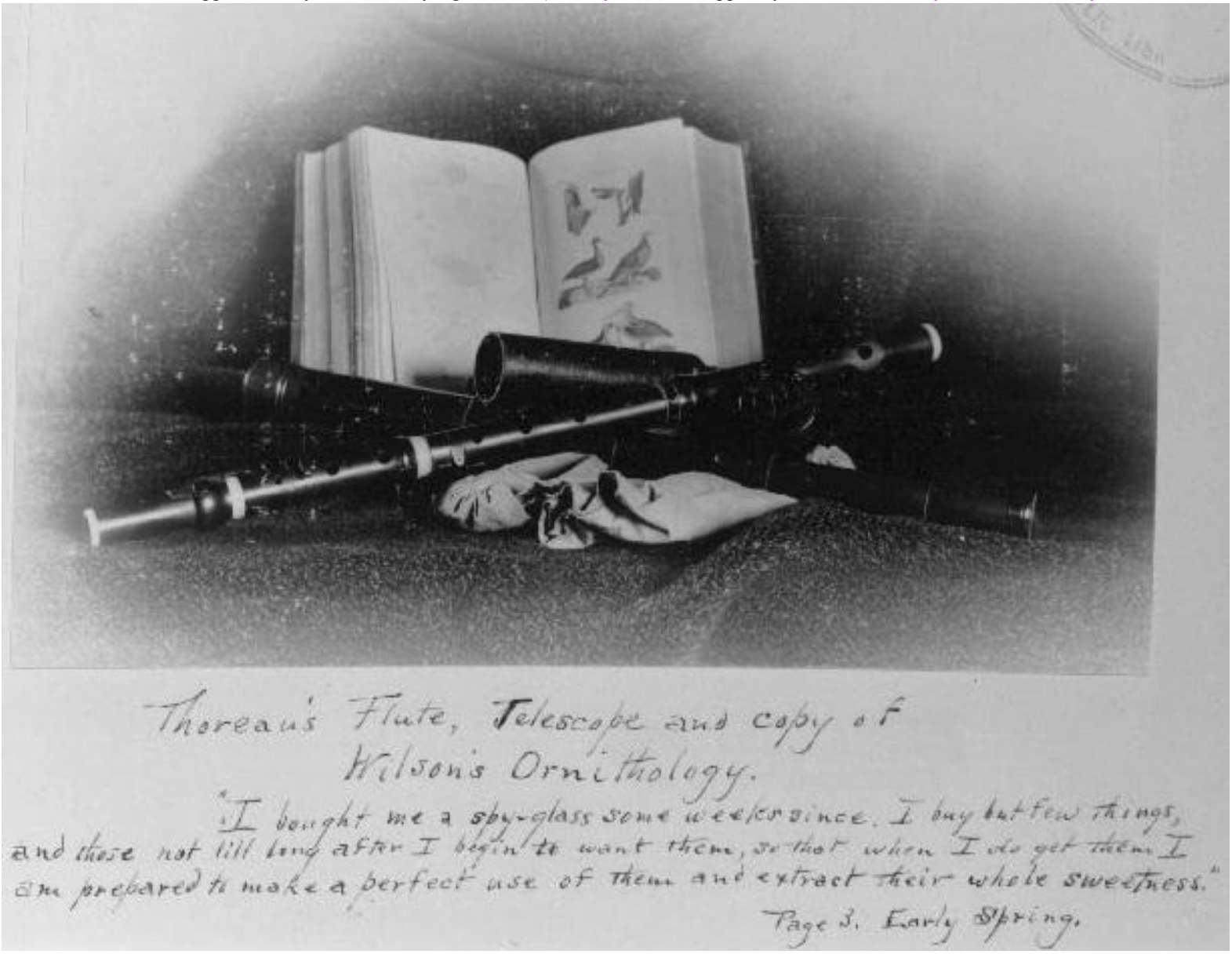
up.
The ice in Fair Haven is more than half melted, and now the woods beyond the pond, reflected in its serene water where there has been opaque ice so long, affect me as they perhaps will not again this year.[49] The oaks have not yet lost their leaves. The thistles, which keep their heads so low they do not feel the wind, show their green faces everywhere. It grows more and more fair. Yesterday at this hour it was more raw and blustering than the past winter; to-day it seems more mild and balmy than summer. I have rarely known a greater contrast. There is a little cap of dark and angry cloud on Wachusett, not so wide as the mountain's base, while all the rest of the horizon there is clear.
Several times I hear and see blackbirds flying north singly, high overhead, chucking as if to find their mates, migrating; or are they even now getting near their own breeding-place? Perchance these are blackbirds that were hatched here – that know me! I saw a silent sparrow lurking amid the hazels and other shrubs by a wall and picking worms or what-not, — brownish gray with a forked tail, two triangular black spots on the breast, and black stripes lengthwise there, altogether a gray, much striped bird, two brownish stripes with a lighter-colored one on the center of the head. Soon after I heard a song sparrow distinctly. Could it have been this?[50] I think not. The bluebird and song sparrow sing immediately on their arrival, and hence deserve to enjoy some prominence. They give expression to the joy which the season inspires. But the robin and blackbird only *peep* and *chuck* at first, commonly, and the lark is silent and flitting. The bluebird at once fills the air with his sweet warbling, and the song sparrow from the top of a rail pours forth his most joyous strain. Both express their delight at the weather which permits them to return to their favorite haunts. They are the more welcome to man for it.
Hearing a faint quack, I looked up and saw two apparently dusky ducks winging their swift way northward over the course of the river. Channing says he saw some large white-breasted ducks to-day, and also a frog. I have seen dead frogs, as if killed while dormant.
The sun is now declining, with a warm and bright light on all things, a light which answers to the late afterglow of the year, when, in the fall, wrapping his cloak closer about him, the traveller goes home at night to prepare for winter. This the foreglow of the year, when the walker goes home at eve to dream of summer.
To-day first I smelled the earth.

49. The tapping of the woodpecker about this time.
50. Think now (March 24) it must have been the song sparrow. *Vide* Apr. 1st.

1854

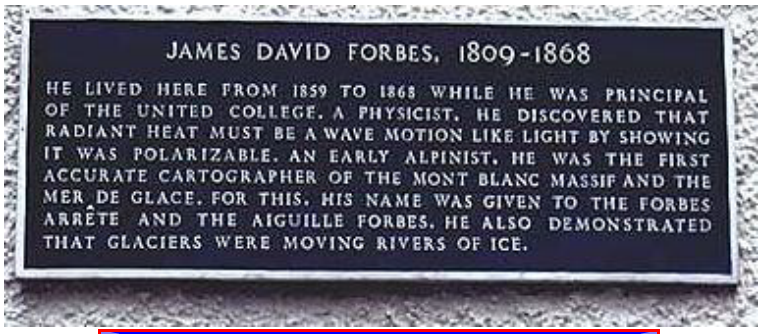
March 13, Monday: Documentation of the international slave trade, per W.E. Burghardt Du Bois: "Message from the President ... communicating ... the correspondence between Mr. Schenck, United States Minister to Brazil, and the Secretary of State, in relation to the African slave trade." –SENATE EXECUTIVE DOCUMENT, 33 Cong. 1 sess. VIII. No. 47.

Besides purchasing a telescope for eight dollars (more than a week's total wages, order of magnitude approximately $800 in today's greenbacks), Henry Thoreau stopped by the Boston Society of Natural History



and checked out:

— James David Forbes (1809-1868)'s TRAVELS THROUGH THE ALPS OF SAVOY AND OTHER PARTS OF THE PENNINE CHAIN, WITH OBSERVATIONS ON THE PHENOMENA OF GLACIERS (1843)



THE ALPS OF SAVOY, ETC.

and stopped by the Harvard Library and checked out:

— Louis Agassiz's *ÉTUDES SUR LES GLACIERS* (Neuchâtel, aux frais de l'auteur, August 20, 1840, with atlas)

— Edward Johnson's A HISTORY OF NEW-ENGLAND. FROM THE ENGLISH PLANTING IN THE YEERE 1628. UNTILL THE YEERE 1652: DECLARING THE FORM OF THEIR GOVERNMENT, CIVILL, MILITARY, AND ECCLESIASTIQUE: THEIR WARS WITH THE INDIANS, THEIR TROUBLES WITH THE GORTONISTS, AND OTHER HERETIQUES: THEIR MANNER OF GATHERING OF CHURCHES, THE COMMODITIES OF THE COUNTRY, AND DESCRIPTION OF THE PRINCIPALL TOWNS AND HAVENS... (London: Printed for Nath. Brooke ..., 1654)[51]


A
HISTORY
OF
New-England.
From the English planting in the Yeere 1628. until the Yeere 1652.
Declaring the form of their Government,

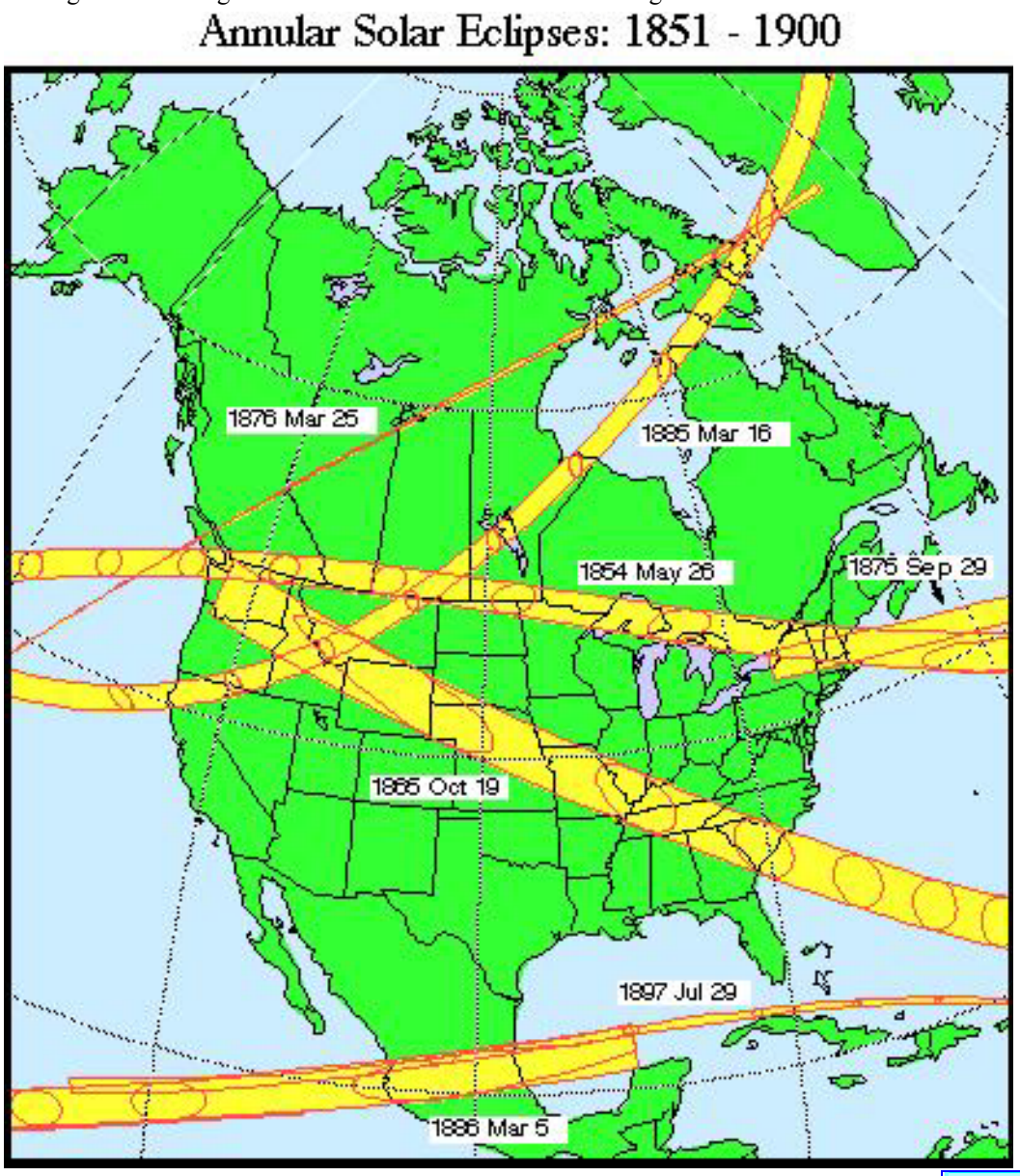
— The Reverend Thomas Shepard's THE CLEAR SUNSHINE OF THE GOSPEL BREAKING OUT ON THE INDIANS OF NEW ENGLAND (1648)[52]

Mar. 13th To Boston— C. says he saw skater insects today. Harris tells me that those gray insects within the little log forts under the bark of the dead Wht pine — which I found about a week ago — are Rhagium lineatum. Bought a telescope today for 8 dollars — Best military spyglass with 6 slides which shuts up to about same size, 15 dols & very powerful Saw the squares of achromatic glass from Paris which Clark-(e?) uses — 50-odd dols apiece the larger— It takes 2 together — one called the flint— These French glasses all one quality of glass. My glass tried by Clark & approved — only a part of the object glass available. Bring the edge of the

51. The popular title of this work is WONDER-WORKING PROVIDENCE OF SION'S SAVIOR IN NEW ENGLAND. Thoreau would place his notes in his Indian Notebook #8.
52. The Reverend Shepard was a founder of Harvard College.

diaphragm against middle of the light & your nail on object glass in line with these shows what is cut off— Sometimes may enlarge the hole in diaphragm— But if you do so you may have to enlarge the hole in diaphragm near small end — which must be exactly as large as the pencil of light there. As the diameter of the pencil is to the diameter of the available portion of the object glass so is the power — so many times it magnifies— A good glass because the form of the blurred object is the same on each side of the focus *i.e* shoved in or drawn out. C. was making a glass for Amherst Col.

May 26, Friday: An annular solar eclipse (#7298) was visible (local weather conditions permitting) in a path from Washington state along the Canadian border and across New England and Nova Scotia:



ASTRONOMY

In Boston, the solar eclipse was precluded by clouds and rain. However, in Roxbury, Caroline Barrett White got a view and was able to mark down the totality as occurring precisely at 5:40 PM. In Cambridge, Henry Wadsworth Longfellow wrote in his journal that "*Yesterday a fugitive slave was arrested in Boston! To-day there is an eclipse of the sun. 'Hung be the heavens in black!*"

At 5:30 AM Henry Thoreau visited the climbing ivy, and in the afternoon he went to Walden Pond. Presumably he caught no glimpse of the eclipse through the clouds.

Moncure Daniel Conway heard the Reverend Theodore Parker's incendiary oration at Faneuil Hall:

> *There is a means, and there is an end; liberty is the end, and sometimes peace is not the means toward it.*

Hey, that's not bad, coming from a white man who believed his own Caucasian race to be uniquely humane, civilized, and progressive, never enslaved because able to conquer by use of the head as well as by use of the hand. (Yeah, that's just about a quote unquote, for the Reverend Parker besides being a warmonger was also a racist.) Let's have a war so that superior and inferior races can live together in harmony!

The lawyer Seth Webb, Jr. managed to persuade Judge Daniel Wells of Boston's Court of Common Pleas to issue to Boston's coroner, Charles Smith, a writ of personal replevin according to which US Marshal Watson Freeman was to surrender "the body of Anthony Burns." Freeman, however, refused to comply with this writ. Meanwhile, there were maneuvers to raise $1,200 to purchase the escaped slave in order directly to manumit him.[53]

MANUMISSION

This Anthony Burns affair made Conway (among others) into an abolitionist, by forcing him to choose sides. As the industrialist Amos Lawrence of the Secret "Six" conspiracy commented,

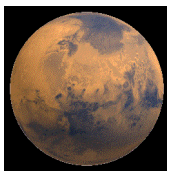
> *We went to bed one night old-fashioned, conservative, Compromise Union Whigs and waked up stark mad Abolitionists.*

Bronson Alcott took the train from Boston for Worcester on a mission for the Boston Vigilance Committee. He was to attract the Reverend Thomas Wentworth Higginson, who had organized the guerrilla action of 1851 which had failed to rescue Thomas Simms (Sims), to head the Vigilance Committee and to take action in regard to the kidnapping of Burns.[54]

53. It would have been at best problematic, for such a sale of Burns to the abolitionists for $1,200 to have gone through. Under Massachusetts law, the sale of a slave within the Commonwealth would have been a criminal offense committed by the seller and punishable by a fine of $1,000 plus ten years in prison. Even if Mr. Charles Francis Suttle were to carefully phrase the transaction as a manumission financed by others rather than as a financial transaction for gain, he very well knew that this would provide his enemies with a pretext for indefinite legal harassment — a pretext upon which in the utter absence of all good will they would be quite likely to act.

1856

Walter De la Rue made an improved map of the surface features of Mars.



ASTRONOMY

June 2, Monday: Per Waldo Emerson this was "the finest day, high noon of the year." He and Henry Thoreau rode in a wagon to Perez Blood's auction and found his telescope sold for $55.00 which had "cost ninety-five plus ten."[55]

Thoreau noted that according to Professor Louis Agassiz, the intestinal worms in the mouse are not developed except in the stomach of the cat.[56]

He also noted that according Sir David Brewster's biography of Sir Isaac Newton, with one of the early telescopes it had been possible to read from Philosophical Transactions at a distance of five hundred feet.

BREWSTER'S NEWTON

ASTRONOMY

June 2. *Carum*, i.e. caraway, in garden. Saw most hummingbirds when cherries were in bloom, — on them.
P. M. — With R.W. E. to Perez Blood's auction.
Telescope sold for fifty-five dollars; cost ninety-five plus ten. See Camilla on rye, undulating light and shade; not 19th of April.[57] Returned by bridle-road. *Myrica cerifera*, possibly yesterday. Very few buds shed pollen yet; more, probably, to-day. Leaves nearly an inch long, and shoot and all no more. English hawthorn will open apparently in two days.
Agassiz tells his class that the intestinal worms in the mouse are not developed except in the stomach of the cat.
5 P.M. — To *Azalea nudiflora*, which is in prime. *Ranunculus recurvatus* the same; how long? White maple keys conspicuous.
In the first volume of Brewster's "Life of Newton" I read that with one of the early telescopes they could read the "Philosophical Transactions" at five hundred feet distance.

1857

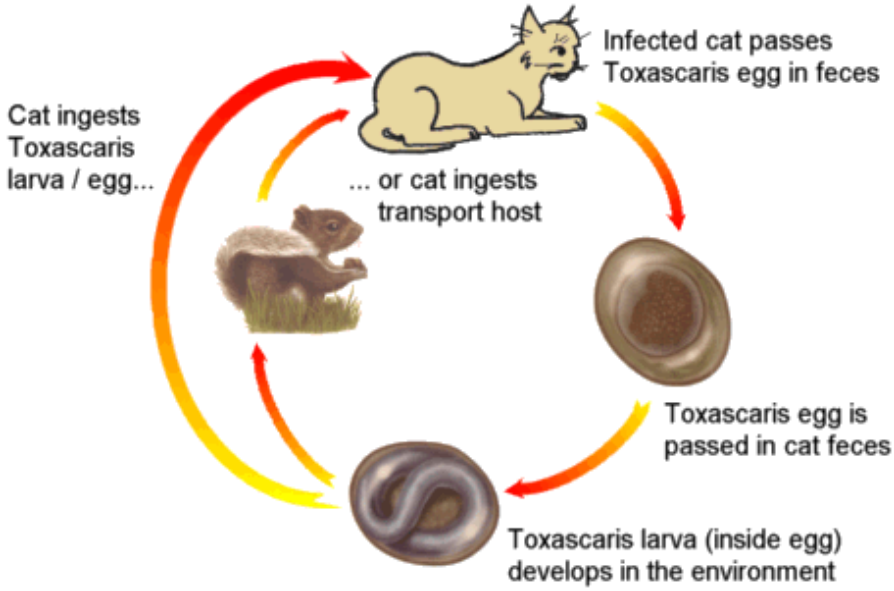
May 8, Friday: Harvard Observatory produced a collodion photograph of the surface of the moon.

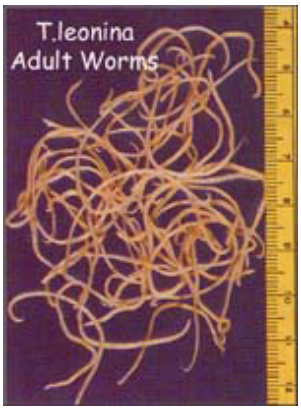
ASTRONOMY

54. For the attempt at rescuing Anthony Burns, see the Reverend Thomas Wentworth Higginson's CHEERFUL YESTERDAYS (Boston: Houghton Mifflin, 1898).
55. A couple of years earlier, Henry's telescope had cost him $8, more than a week's wages, the equivalent of perhaps $800 today. Blood's telescope would in today's money have been a device costing in the range of $10,000, a number of months' salary.

May 8, Friday: A third fine day.
The sugar maple at Barrett's is now in full bloom.
I finish the arbor to-night. This has been the third of these remarkably warm and beautiful [days]. I have worked all the while in my shirt-sleeves. Summer has suddenly come upon us, and the birds all together. Some boys have bathed in the river.
Walk to first stone bridge at sunset. *Salix alba*, possibly the 6th. It is a glorious evening. I scent the expanding willow leaves (for there are very few blossoms yet) fifteen rods off. Already hear the cheerful, sprightly note of the yellowbird amid them. It is perfectly warm and still, and the green grass reminds me of June. The air is full of the fragrance of willow leaves. The high water stretches smooth around. I hear the sound of Barrett's sawmill with singular distinctness. The ring of toads, the note of the yellowbird, the rich warble of the red-wing, [**Red-winged Blackbird** *Agelaius phoeniceus*] the thrasher on the hillside, the robin's evening song, the woodpecker tapping some dead tree across the water; and I see countless little fuzzy gnats in the air, and dust over the road, between me and the departed sun. Perhaps the evenings of the 6th and 7th were as pleasant. But such an evening makes a crisis in the year. I must make haste home and go out on the water.
I paddle to the Wheeler meadow east of hill after sundown. From amid the alders, etc., I hear the mew of the catbird and the *yorrick* of Wilson's thrush. One bullfrog's faint *er-er-roonk* from a distance. (Perhaps the *Amphibia*, better than any creatures, celebrate the changes of temperature.) One *dump* note. It grows dark around. The full moon rises, and I paddle by its light. It is all evening for the soft-snoring, purring frogs (which I suspect to be *Rana palustris*). I get within a few feet of them as they sit along the edge of the river and meadow, but cannot see them. Their croak is very fine or rapid, and has a soft, purring sound at a little distance. I see them paddling in the water like toads.
Within a week I have had made a pair of corduroy pants, which cost when done $1.$\frac{60}{}$. They are of that peculiar clay-color, reflecting the light from portions of their surface. They have this advantage, that, beside being very strong, they will look about as well three months hence as now,—or as ill, some would say. Most of my friends are disturbed by my wearing them. I can get four or five pairs for what one ordinary pair would cost in Boston, and each of the former will last two or three times as long under the same circumstances. The tailor said that the stuff was not made in this country; that it was worn by the Irish at home, and now they would not look at it, but others would not wear it, durable and cheap as it is, because it is worn by the Irish. Moreover, I like the color on other accounts. Anything but black clothes. I was pleased the other day to see a son of Concord return after an absence of eight years, not in a shining suit of black, with polished boots and a beaver or silk hat, as if on a furlough from human duties generally,—a mere clothes-horse,—but clad in an honest clay-colored suit and a snug every-day cap. It showed unusual manhood. Most returning sons come home dressed for the occasion. The birds and beasts are not afraid of me now. A mink came within twenty feet of me the other day as soon as my companion had left me, and if I had had my gray sack on as well as my corduroys, it would perhaps have come

56. When a carnivore ingests an infected prey animal, the larvae of the *Toxascaris leonina* roundworms mature within the walls and lumen of the predator's small intestine. When the female worm becomes an adult, it lays eggs which pass with the feces. The eggs become infective some 3-6 days after defecation, and rodents such as mice and squirrels become infected when they consume something that has been in contact with these feces. The the eggs hatch within the rodent's digestive system and the larvae migrate through its tissues. When the rodent is consumed, larvae are released in the digestive system of the carnivore and the cycle repeats.





quite up to me. Even farmers' boys, returning to their native town, though not unfamiliar with homely and dirty clothes, make their appearance on this new stage in a go-to-meeting suit.

That was the spring of 1857, and I've got a story for you from the fall of 1957. In the passage of a calendar century some things change, and some things not. I was in Corpus Christi, Texas trying out living with my father instead of my mother in Indiana, the weather turned a bit chilly one day and I didn't have anything warm, so I stopped by a Goodwills and for fifty cents picked up a very nice, clean sports jacket. I thought its bold contrasting colors were fetching. My father saw this jacket and then it just disappeared. I went looking around the house for it endlessly, and finally he put his hand on my shoulder and, in a low tone, explained "With you having grown up with your mother, it's OK that you don't understand — but that's from the local nigger high school. I can't let you wear something like that — because you're my son." Now isn't that interesting! We have Henry David Thoreau forever being accused of being prejudiced against the Irish yet there he was, the only person in his Concord 19th-Century ambience who wasn't being very careful not to dress like an Irishman.

November 8, Sunday: A warm cloudy, rain-threatening morning. About 10 A.M. a long flock of geese **[Canada Goose** ■ ***Branta canadensis*****]** are going over from northeast to southeast, or parallel with the general direction of the coast and great mountain-ranges. The sonorous, quavering sounds of the geese are the voice of this cloudy air, —a sound that comes from directly between us and the sky; an aerial sound, and yet so distinct, heavy, and sonorous, a clanking chain drawn through the heavy air. I saw through my window some children looking up and pointing their tiny bows into the heavens, and I knew at once that the geese were in the air. It is always an exciting event. The children, instinctively aware of its importance, rushed into the house to tell their parents. These travellers are revealed to you by the upward-turned gaze of men. And though these undulating lines are melting into the southwestern sky, the sound comes clear and distinct to you as the clank of a chain in a neighboring smithy. So they migrate, not flitting from hedge to hedge, but from latitude to latitude, from State to State, steering boldly out into the ocean of the air. It is remarkable how these large objects, so plain when your vision is rightly directed, may be lost in the sky if you look away for a moment, —as hard to hit as a star with a telescope. It is a sort of encouraging or soothing sound to assuage their painful fears when they go over a town, as a man moans to deaden physical pain. The direction of their flight each spring and autumn reminds us inlanders how the coast trends. In the afternoon I met Flood, who had just endeavored to draw my attention to a flock of geese in the mizzling air, but encountering me he lost sight of them, while I, at length, looking that way, discerned them though he could not. This was the third flock to-day. Now if ever, then, we may expect a change in the weather.

1858

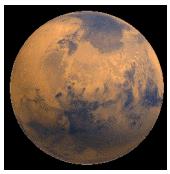
Using the Merz comet-seeker of the Harvard Observatory, assistant astronomer Horace P. Tuttle (1837-1923) would discover three new comets in this year and win for himself the Lalande Prize in astronomy offered by the Academy of Sciences in Paris.

There was a new edition of Hiram Mattison's edition of Elijah Hinsdale Burritt's A PLAN OF THE SOLAR SYSTEM EXHIBITING ITS RELATIVE MAGNITUDES AND DISTANCES (New York: Mason Brothers).

ASTRONOMY

57. Thoreau here alludes to the Concord memory that on the memorable day of April 19th, 1775, the spring having been exceptionally early, grass and grain were already high enough to be bending with the breeze.

May 7, Friday: Angelo Secchi supposed that he could make out on the surface of Mars a “large triangular patch, blue in color,” and this astronomer considered therefore that he had conclusively established the existence of seas and continents on the planet. He designated this blue triangular patch by the name “Atlantic Canale,” which is, very significantly, the first occurrence of a usage similar to “canal” in any context dealing with the planet Mars. In the Italian language this term “Canale,” it should be born in mind, can mean not only “canal,” i.e., a fabricated object, but also “channel,” i.e. a nonfabricated object.



ASTRONOMY

June 2, Wednesday: Giovanni Battista Donati (1826-1873) detected what would become the 3rd great new comet of this century, one with several irregular tails that would slowly be changing shape. This would receive the name VI Donati in his honor. Its coma would be seen to be distorted: **imperfections**, and in the **heavens** yet!

> Forebodings of a coming storm were in the air, in everyone’s hearts and minds and mouths. Every natural phenomenon was clothed with peculiar significance. The great comet that flamed across the heavens was taken as a sign of approaching war. Strange celestial lights, which nightly illuminated the heavens for weeks with a lurid brazen glow, the like of which had never been seen before by the people; filled their minds with morbid dread. Every one seemed on an intense strain. The slightest incident shattered the nerves.

ASTRONOMY

August 19, Thursday: On this night the Great Comet of 1838, which had been being observed through telescopes since June 2nd, began to be visible to the naked eye. The comet would reach its point of greatest visibility on October 13th.

> Forebodings of a coming storm were in the air, in everyone’s hearts and minds and mouths. Every natural phenomenon was clothed with peculiar significance. The great comet that flamed across the heavens was taken as a sign of approaching war. Strange celestial lights, which nightly illuminated the heavens for weeks with a lurid brazen glow, the like of which had never been seen before by the people; filled their minds with morbid dread. Every one seemed on an intense strain. The slightest incident shattered the nerves.

ASTRONOMY

August 19: P.M.–Sail to Baker Farm shore.
It is cool with a considerable northwesterly wind, so that we can sail to Fair Haven. The dog-day weather is suddenly gone and here is a cool, clear, and elastic air. You may say it is the first day of autumn. You notice the louder and clearer ring of crickets, and the large, handsome red spikes of the *Polygonum amphibium* are now generally conspicuous along the shore. The *P. hydropiperoides* fairly begins to show. The front-rank polygonum is now in prime.
We scare up a stake-driver [**American Bittern** ***Botaurus lentiginosus***] several times. The blue heron has within a week reappeared in our meadows, and the stake-driver begins to be seen oftener, and as early as the 5th I noticed young summer ducks about; the same of hawks, owls, etc. This occurs as soon as the young birds can take care of themselves, and some appear to be very early on the return southward, with the very earliest prospect of fall. Such birds are not only more abundant but, methinks, more at leisure now, having reared their family, and perhaps they are less shy. Yes, bitterns are more frequently seen now to lift themselves from amid the pontederia or flags, and take their sluggish flight to a new resting-place, – bitterns which either have got through the labors of breeding or are now first able to shift for themselves. And likewise blue herons [**Great Blue Heron** ***Ardea herodias***] which have bred or been bred not far from us (plainly), are now at leisure, or are impelled to revisit our slow stream. I have not seen the last since spring.
When I see the first heron, like a dusky blue wave undulating over our meadows again, I think, since I saw them going northward the other day, how many of these forms have been added to the landscape, complete from bill to toe while, perhaps, I have idled! I see two herons. A small bird is pursuing the heron as it does a hawk. Perhaps it is a blackbird and the herons gobble up their young!
I see thistle-down, grayish-white, floating low quite across Fair Haven Pond. There is wont to be just water [*sic*] enough above the surface to drive it along. The heads of the wool-grass are now brown and, in many meadows, lodged. The button-bush is about done. Can hardly see a blossom. The mikania not yet quite in prime. Pontederia has already begun to wane; i. e., the fields of them are not so dense, many seed-vessels having turned down; and some leaves are already withered and black, but the remaining spikes are as fair as ever. It chances that I see no yellow lilies. They must be scarce now. The water is high for the season. Water cool to bather.
We have our first green corn to-day, but it is late. The saw-grass (*Paspalum*?) of mown fields, not long.
I noticed the localities of black willows as far up as the mouth of the river in Fair Haven Pond, but not so carefully as elsewhere, and from the last observations I infer that the willow grows especially and almost exclusively in places where the drift is most likely to lodge, as on capes and points and concave sides of the river, though I noticed a few exceptions to my rule.
It is so cool, some apprehend a frost to-night.

JAMES BAKER

September 23: ...When the moon rose, what had appeared like immense boulders half a mile off in the horizon now looked by contrast no larger than nutshells or buri-nut against the moon's disk, and she was the biggest boulder of all. When we had put out our bayberry fire, we heard a squawk, and, looking up, saw five geese fly low in the twilight over our heads. We then set out to find our way to Gloucester over the hills, and saw the comet very bright in the northwest. After going astray a little in the moonlight, we fell into a road which at length conducted us to the town....

COMET

September 27, Monday: The 1st successful photograph of a comet, VI Donati, by a portrait artist named Usherwood upon Walton Common in England. He exposed a collodion plate for 7 seconds through a f/2.4 fixed ratio portrait lens, and captured not only the inner coma but also the tail.

> Forebodings of a coming storm were in the air, in everyone's hearts and minds and mouths. Every natural phenomenon was clothed with peculiar significance. The great comet that flamed across the heavens was taken as a sign of approaching war. Strange celestial lights, which nightly illuminated the heavens for weeks with a lurid brazen glow, the like of which had never been seen before by the people; filled their minds with morbid dread. Every one seemed on an intense strain. The slightest incident shattered the nerves.

ASTRONOMY

September 28, Tuesday: The second photograph of the comet VI Donati, but not so successful as the first. George Phillips Bond exposed a Daguerreotype plate for six minutes through the f/15 refractor at the Harvard Observatory and got an image of the inner coma but no hint of the tail.

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ASTRONOMY

 September 28, Tuesday: P. M.–To Great Fields *via* Gentian Lane.
The gentian (*Andrewsii*), now generally in prime, loves moist, shady banks, and its transcendent blue shows best in the shade and suggests coolness; contrasts there with the fresh green; — a splendid blue, light in the shade, turning to purple with age. They are particularly abundant under the north side of the willow-row in Merrick's pasture. I count fifteen in a single cluster there, and afterward twenty at Gentian Lane near Flint's Bridge, and there were other clusters below. Bluer than the bluest sky, they lurk in the moist and shady recesses of the banks.
Acalypha is killed by frost, and rhexia.
Liatris done, apparently some time. When Gosnold and Pring and Champlain coasted along our shores, even then the small shrub oak grew on the mainland, with its pretty acorns striped dark and light alternately.[58]

58. The black oak acorns also slightly marked thus.

 September 29, Wednesday: ...On our way, near the Hosmer moraine, let off some pasture thistle-down. One steadily rose from my hand, freighted with its seed, till it was several hundred feet high, and then passed out of sight eastward. Its down was particularly spreading or open. Is not here a hint to balloonists? Astronomers can calculate the orbit of that thistle-down called the comet, now in the northwest sky, conveying its nucleus, which may not be so solid as a thistle's seed, somewhither, but what astronomer can calculate the orbit of my thistle-down and tell where it will deposit its precious freight at last? It may still be travelling when I am sleeping....

October: A brilliant comet that would be known to astronomers as VI Donati and to the general public as the Great Comet of 1858, which had been being observed through telescopes since June 2nd and had been visible to the naked eye since August 19th, reached its point of greatest visibility on October 13th. Measurements indicated that the plane of polarization of the light of VI Donati intersected the comet and the sun — which amounted to a confirmation that at least some of the reflected light of a comet originated with the sun, thus destroying the theory that comets were entirely self-luminous like the sun rather than merely reflecting light like our moon.

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ASTRONOMY

 October 1: ...The cat sleeps on her head! What does this portend? It is more alarming than a dozen comets. How long prejudice survives! The big-bodied fisherman asks me doubtingly about the comet seen these nights in the northwest,–if there is any danger to be apprehended from that side! I would fain suggest that only he is dangerous to himself.

COMET

October 2, 1858: Donati's comet was at this point brighter than the star Arcturus, which it was approaching, and its tail was 25 degrees in length.

October 5, 1858: The false nucleus of Donati's Comet passed only 20 arc-minutes to the south of the star Arcturus, of similar brightness, and it would be noticed that that star would continue to shine unimpeded through the tenuous 35-degree tail of this comet. The broad dust tail was curving like a scimitar across the heavens, while two delicate straight streaks, evidently of its gas trail, were of similar length.

 October 5: ...The little chips [of phosphorescent wood which he has collected] which remain in the water or sink to the bottom are like so many stars in the sky. The comet makes a great show these nights. Its tail is at least as long as the whole of the Great Dipper, to whose handle, till within a night or two, it reached, in a great curve, and we plainly see stars through it.[59]...

59.It finally reaches between one fourth and one third from the horizon to the zenith.

October 10, Sunday: At this point Donati's comet was closest to the earth, at half an astronomical unit in distance. Its dust trail, also of about half an astronomical unit in length, reached 60 degrees across the sky.

SKY EVENT

Henry Thoreau was far from the only one staring at this magnificent object in the heavens. John Hedges from Hampstead, London, aboard a ship sailing from England toward Australia, had been keeping a journal which upon arrival he would copy out in ink and mail as a letter to his mother back home. He and his wife and children had left the Mersey River in September, in a berth right next to a gang of Irish. On Christmas Day the body of a 12-year-old passenger would be consigned to the sea, and the coast of Australia would be sighted. On the 4th of January, 1859, his own son would die, and his first task ashore would be the burial of this child. But on this day, a Sunday, John was jotting down news of the comet VI Donati to which Thoreau had been referring on September 23d, September 29th, October 1st, and October 5th, and to which he would again be referring on November 1st: "A beautiful day, we have averaged $8^1/_2$ miles per hour since yesterday. (A nautical day commences at noon and ends at noon the next day.) Captain read prayers today. We still see the Comet every night but we cannot see it so many hours as we could a week ago, the Mate told me today that we were 1800 miles on our voyage...."

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ASTRONOMY

October 10, Sunday: P. M. — To Annursnack.

November has already come to the river with the fall of the black willow and the button-bush, and the fall and blackening of the pontederia. The leaves of the two former are the greater part fallen, letting in the autumn light to the water, and the ducks have less shelter and concealment.

As I go along the Groton road, I see afar, in the middle of E. Wood's field, what looks like a stone jug or post, but my glass reveals it a woodchuck, a great, plump gray fellow, and when I am nearly half a mile off, I can still see him nibbling the grass there, and from time to time, when he hears, perchance, a wagon on the road, sitting erect and looking warily around for approaching foes. I am glad to see the woodchuck so fat in the orchard. It proves that is the same nature that was of yore.

The autumnal brightness of the foliage generally is less, or faded, since the fading of the maples and hickories, which began about the 5th.[60] Oak leaves generally (perhaps except scarlet?) begin to wither soon after they begin to turn, and large trees (except the scarlet) do not generally attain to brilliancy.[61]

Apparently *Fringilla pusilla* yet.

The *Salix humilis* leaves are falling fast in Wood Turtle Path (A. Hosmer's), a dry wood-path, looking curled and slaty-colored about the half-bare stems. Thus each humble shrub is contributing its mite to the fertility of the globe. I find the under sides of the election-cake fungi there covered with pink-colored fleas, apparently poduras, skipping about when it is turned up to the light.

The simplest and most lumpish fungus has a peculiar interest to us, compared with a mere mass of earth, because

60. But the oaks became brighter. *Vide* 15th.
61. [Queried in pencil.]

it is so obviously organic and related to ourselves, however mute. It is the expression of an idea; growth according to a law; matter not dormant, not raw, but inspired, appropriated by spirit. If I take up a handful of earth, however separately interesting the particles may be, their relation to one another appears to be that of mere juxtaposition generally. I might have thrown them together thus. But the humblest fungus betrays a life akin to my own. It is a successful poem in its kind. There is suggested something superior to any particle of matter, in the idea or mind which uses and arranges the particles.
Genius is inspired by its own works; it is hermaphroditic.
I find the fringed gentian abundantly open at 3 and at 4 P. M., — in fact, it must be all the afternoon, — open to catch the cool October sun and air in its low position. Such a dark blue! surpassing that of the male bluebird's back, who must be encouraged by its presence.[62]
The indigo-weed, now partly turned black and broken off, blows about the pastures like the flyaway grass.
I find some of those little rooty tubers (?), now woody, in the turtle field of A. Hosmer's by Eddy Bridge.
Pulling up some *Diplopappus linariifolius*, now done, I find many *bright-purple* shoots, a half to three quarters of an inch long, freshly put forth underground and ready to turn upward and form new plants in the spring.

October 13, Wednesday: On this night the Great Comet of 1838, which had visible to the naked eye for some time, reached its point of greatest general visibility. However, it was raining in Concord.

ASTRONOMY

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 October 13: Rain, all day, more or less, which the cloudy and rather still yesterday threatened. Elm leaves thickly strew the street now and rattle underfoot,–the darkbrown pavement. The elms are at least half bare.

 November 1: ...How many things can you get away from? They see the comet from the northwest coast just as plainly as we do, and the same stars through its tail. Take the shortest way round and stay at home. A man dwells in his native valley like a corolla in its calyx, like an acorn in its cup. **Here**, of course, is all that you love, all that you expect, all that you are. Here is your bride elect, as close to you as she can be got. Here is all the best and all the worst you can imagine. What more do you want? Bear here-away then! Foolish people imagine that what they imagine is somewhere else. That stuff is not make in any factory but their own.

November 8, Sunday: Last naked-eye observation of Donati's comet.

SKY EVENT

 November 8: P. M. – To Boulder Field.
Goodwin, laying wall at Miss Ripley's, observed to me going by, "Well, it seems that ——— thought that he had lived long enough." He committed suicide within a week, at his sister's house in Sudbury. A boy slept in

62. Inclosing it in a mass of the sphagnum near or in which it often grows, I carry it home, and it opens for several days in succession.

the chamber with him, and, hearing a noise, got [up] and found on the floor with both his jugular veins cut, but his windpipe whole. He said to the boy, "Take the razor and cut deeper," but the boy ran, and ——— died, and Garfield said it was about time, for ———, in revenge for being sent to the house of correction, had set fire to a pile of wood of his, that long pile by the roadside beyond William Wheeler's, that I stood under in a rain once. ——— probably burned Witherell's house too, and perhaps Boynton's stable.

The red osier at Mrs. Simmons's is quite bare; how long? Her hawthorn is still quite leafy and pretty, yellow-brown, dotted. A thorn at Hall's fence is dark scarlet and pretty. There are many leaves on the buckthorn still.

Common thorn bushes, long since bare, when many grow together in clumps, make another such a smoke, though smaller, as the maples, – the same color. I can often distinguish the bush by this. Alders are a very dark gray, sort of iron gray, and, if near enough, you see dark lines (the stems) and specks (the fruit) like cinders, like a very dense, dark, and unconsumed uliginous smoke, in which many cinders rise.

Those trees and bushes which grow in dense masses and have many fine twigs, being bare, make an agreeable misty impression where there are a myriad retreating points to receive the eye, not a hard, abrupt wall; just as, in the sky, the visual ray is cushioned on clouds, unless it is launched into the illimitable ether. The eye is less worn and wearied, not to say wounded, by looking at these mazes where the seer is not often conscious of seeing anything. It is well that the eye is so rarely caught and detained by any object in one whole hemisphere of its range, *i.e.* the sky. It enjoys everlasting holiday on this side. Only the formless clouds and the objectless ether are presented to it. For they are nervous who see many faces in the clouds. Corresponding to the clouds in the sky are those mazes now on the earth. Nature disposes of her naked stems so softly as not to put our eyes out. She makes them a smoke, or stationary cloud, on this side or that, of whose objective existence we rarely take cognizance. She does not expect us to notice them. She calls our attention to the maple swamp more especially in October.

There is also the coarse maze produced by an oak wood (when nearly all the leaves are fallen), in which, however, the large boughs reflecting the light have considerable distinctness, and that of the forest in general. I thought, from a small specimen, that the brushy yellow birch tops were of the same hue with the alders. [*Vide* November 11th] Nature has many scenes to exhibit, and constantly draws a curtain over-this part or that. She is constantly repainting the landscape and all surfaces, dressing up some scene for our entertainment. Lately we had a leafy wilderness, now bare twigs begin to prevail, and soon she will surprise us with a mantle of snow.[63] Some green she thinks so good for our eyes, like blue, that she never banishes it entirely, but has created evergreens.

It is remarkable how little any but a lichenist will observe on the bark of trees. The mass of men have but the vaguest and most indefinite notion of mosses, as a sort of shreds and fringes, and the world in which the lichenist dwells is much further from theirs than one side of this earth from the other. They see bark as if they saw it not. These objects which, though constantly visible, are rarely looked at are a sort of eye-brush.

Each phase of nature, while not invisible, is yet not too distinct and obtrusive. It is there to be found when we look for it, but not demanding our attention. It is like a silent but syrnpathizing companion in whose company we retain most of the advantages of solitude, with whom we can walk and talk, or be silent, naturally, without the necessity of talking in a strain foreign to the place.

I know of but one or two persons with whom I can afford to walk. With most the walk degenerates into a mere vigorous use of your legs, ludicrously purposeless, while you are discussing some mighty argument, each one having his say, spoiling each other's day, worrying one another with conversation, hustling one another with our conversation. I know of no use in the walking part in this case, except that we may seem to be getting on together toward some goal; but of course we keep our original distance all the way. Jumping every wall and ditch with vigor in the vain hope of shaking your companion off. Trying to kill two birds with one stone, though they sit at opposite points of [the] compass, to see nature and do the honors to one who does not.

Animals generally see things in the vacant way I have described. They rarely see anything but their food, or some real or imaginary foe. I never saw but one cow looking into the sky.

Lichens as they affect the scenery, as picturesque objects described by Gilpin or others, are one thing; as they concern the lichenist, quite another.

These are the various grays and browns which give November its character. There are also some red mazes, like the twigs of the white maple and our Cornu~ sericea, etc. (the red osier, too, further north), and some distinct yellow ones, as willow twigs, which are most interesting in spring. The silvery abeles are steadily falling nowadays. The chalky white under side of these leaves is remarkable. None of our leaves is so white.

I think I admire again about this time the still bright-red or crimson fruit of the sumach, now when not only its own but most other leaves have fallen and there are few bright tints, it is now so distinct on its twigs. Your attention is not distracted by its brilliant leaves now.

I go across N. Barrett's land and over the road beyond his house. The aspect of the Great Meadows is now nearly uniform, the new and exposed grass being nearly as brown and sere as that which was not cut. Thus Nature has been blending and harmonizing the colors here where man had interfered.

I wandered over bare fields where the cattle, lately turned out, roamed restless and unsatisfied with the feed; I

63. I read that snow fell two or three inches deep in Bangor yesterday morning.

dived into a rustling young oak wood where not a green leaf was to be seen; I climbed to the geological axis of elevation and clambered over curly-pated rocks whose strata are on their edges, amid the rising woods; and again I thought, They are all gone surely, and left me alone. Not even a man Friday remains. What nutriment can I extract from these bare twigs? Starvation stares me in the face. "*Nay, nay!*" said a nuthatch, making its way, head downward, about a bare hickory close by. "The nearer the bone the sweeter the meat. Only the superfluous has been swept away. Now we behold the naked truth. If at any time the weather is too bleak and cold for you, keep the sunny side of the trunk, for there is a wholesome and inspiring warmth such as the summer never afforded. There are the winter mornings, with the sun on the oak wood tops. While buds sleep, thoughts wake." ("Hear! hear!" screamed the jay from a neighboring copse, where I had heard a tittering for some time.! "Winter has a concentrated and nutty kernel if you know where to look for it." And then the speaker shifted to another tree, further off, and reiterated his assertions, and his mate at a distance confirmed them; and I heard a suppressed chuckle from a red squirrel that heard the last remark, but had kept silent and invisible all the while. Is that you? "Yes-sir-ee," said he. Then, running down a slanting bough, he called out rather impudently, "Look here! just get a snug-fitting fur coat and a pair of fur gloves like mine, and you may laugh at a northeast storm," and then he wound up with a slang phrase, in his own lingo, accompanied by a flourish of his tail, just as a newsboy twirls his fingers with his thumb on his nose and inquires, "Does your mother know you are out?"

The wild pear tree on Ponkawtasset has some yellow leaves still. The now more noticeable green radical leaves of the buttercup in the russet pastures remind me of the early spring to come, of which they will offer the first evidence. Now, too, I can *see* (for the same reason) where grows our only patch of broom, a quarter of a mile off, it [is] such a distinct, somewhat yellowish, green. Already the creeping juniper is a ripe glaucous green, with a distinct ruddy tinge to the upper surface, – the whole bush a ripe tint like a fruit.

I stand in Ebby Hubbard's yellow birch swamp, admiring some gnarled and shaggy picturesque old birches there, which send out large knee-like limbs near the ground, while the brook, raised by the late rain, winds fuller than usual through the rocky swamp. I thought with regret how soon these trees, like the black birches that grew on the hill near by, would be all cut off, and there would be almost nothing of the old Concord left, and we should be reduced to read old deeds in order to be reminded of such things, – deeds, at least, in which some old and revered bound trees are mentioned. These will be the only proof at last that they ever existed. Pray, farmers, keep some old woods to match the old deeds. Keep them for history's sake, as specimens of what the township was. Let us not be reduced to a mere paper evidence, to deeds kept in a chest or secretary, when not so much as the bark of the paper birch will be left for evidence, about its decayed stump.

The sides of the old Carlisle road where it is low and moist are (and have for a long time been), for many rods together and a rod in width, brown or cinnamon-colored with the withered dicksonia fern, not-like the brown of trees (their withered leaves), but a peculiar cinnamon-brown. The bare huckleberry bushes and the sweet-ferns are draped with them as a kind of mourning.

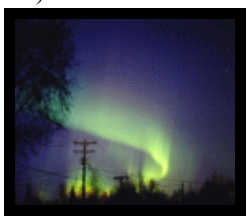
Solidago puberula still out, for you see a few bright-yellow solidago flowers long after they are generally turned to a dirty-white fuzzy top. Pratt says he saw a few florets on a *Polygala sanguinea* within a week. He shows me samphire, plucked three weeks ago in Brighton, when it was a very brilliant crimson still.

Looking from Pratt's window at sunset, I saw that purple or rosy light reflected from some old chestnut rails on the hilltop before his house. Methinks it is pinkish, even like the old cow-droppings in the pastures. So universally does Nature blush at last. The very herbage which has gone through the stomachs and intestines of the cow acquires at last a faint pinkish tinge.

The button-bush balls are now blackish (really dark-brown) and withered, looking much blacker against the light than a month ago.

1859

Professor Benjamin Peirce made the prescient suggestion that the development and change of the tails of comets, and the Aurora Borealis that flickered at the poles of the earth, might be due to one common and as yet undetected solar cause. (Now, of course, we are aware of the high-velocity streams of ionized particles being thrown off by the corona of the sun.)



SKY EVENT

January 29, Saturday: William Cranch Bond died in Cambridge, Massachusetts.

HARVARD OBSERVATORY
ASTRONOMY

Harper's Weekly offered a woodcut having to do with opium, the poor child's nurse:

February 26, Saturday: In the midst of a storm of controversy, the Board of Overseers of the Corporation promoted George Phillips Bond to fill his father's shoes as Director of the Harvard Observatory, and appointed him to

be the Phillips Professor of Astronomy. The nominee of the "Lazzaroni," a pressure group in science which has been sarcastically referred to as "the sacred brotherhood," had been not Bond but Benjamin Peirce, the Perkins Professor of Astronomy and Mathematics at Harvard College.[64]

ASTRONOMY

In the evening William John Broderip FRS was writing "On the Shark" for Fraser's Magazine and broke off in the middle of a sentence.

64.The core group of the "Lazzaroni" consisted of Professors Louis Agassiz and Benjamin Peirce of Harvard, and Professor Benjamin Athorp Gould (1824-1896) of Dudley Observatory in Albany NY, plus Alexander Dallas Bache of the American Academy of Arts and Sciences in Washington DC. According to Edward Lurie, Agassiz's biographer (LOUIS AGASSIZ. Chicago IL: U of Chicago P, 1960), what they were trying to do was "control the institutional forms of science in America." The core agenda of this group was to set itself astride all channels of funding in such a manner as to take charge of what research was feasible and important and who could be relied upon to dependably perform this research. They were playing hardball: their machinations included spreading invidious and false whispers about the accuracy of the observations of the Bonds, wherever possible boycotting their membership in scientific bodies, wherever possible alleging the priority of the discoveries of others, and by the back door seizing control of government funding. For one instance, the cheap secret processes of the creation of the National Academy of Sciences in 1863. The prime offense committed at the Harvard Observatory, which so enraged the "sacred brotherhood," seem to have consisted in the fact that since these astronomers were working to all intents and purposes for free, by financing themselves out of the cash drawer of the timekeeper manufacturing firm of William Bond & Son in Boston, therefore, practically, they had unwittingly placed themselves outside the ordinary spheres of influence of these conspirators and were in a position to treat most of their machination with Christian condescension, as if they amounted to nothing more than "water off a duck's back." The machinations of this group had at one point come close to destroying the Dudley Observatory.

September 1/2 night: At the Royal Observatory in Greenwich, London, England, Richard C. Carrington (1826-1875) and R. Hodgson were timing the drift of sunspots on a projected image of the sun at 11:18AM Greenwich Mean Time, when "two patches of intensely bright and white light broke out" and persisted for some five minutes (this was not only the initial recorded observation of a solar flare, but also the initial observation of a solar flare of this peculiar white-light variety).[65] In the skies over Texas on that night, an auroral display great magnificence was being viewed by Caleb G. Forshey, and his observations would be published in the American Journal of Science, along with accounts by Lieutenant Albert Miller Lea at Corpus Christi, Major Benjamin Franklin Rucker at Washington-on-the-Brazos, Francis Kellogg at Wheelock, and Dr. William Henry Gantt at Union Hill, in addition to a report from Dallas by its Mayor, John McClannahan Crockett.

What was happening all over the earth would need to be described as a magnetic storm. When the pulse of energy arrived from the sun, it interrupted telegraph service and created visible Aurora Borealis as far south as Havana, Hawaii, and Rome. Similar events occurred in the skies of the Southern Hemisphere. In the state of their knowledge at the time, these scientists of course refrained from instantly leaping to a causal relationship — but we now have a much better estimate of the major sun event that had just happened.

SUNSPOTS
SKY EVENT

 September 1: P.M.–To Saw Mill Brook and Flint's Pond.
That reach in the road this side Britton's Camp might be called Nabalus Road, they are so abundant there. Some of them are fully six feet high, – a singularly tall and slender plant.
See, I think, my first tobacco-pipe this afternoon, now that they are about done, and have seen no pinesap this year, abundant as both the above were last year. Like fungi, these plants are apparently scarce in a dry year, so that you might at first think them rare plants. This is a phenomenon of drought.
I see in different places small grubs splitting leaves now, and so marking them curiously with light brown or whitish on the green. Here are two at work in a Rhus Toxicodendron leaf. They appear to have been hatched within the leaf at the apex, and each has eaten upward on its own side of the midrib and equally fast, making a light-colored figure shaped like a column of smoke in the midst of the green. They perfectly split the leaf, making no visible puncture in it, even at the ribs or veins. Some creatures are so minute that they find food enough for them between the two sides of a thin leaf, without injuring the cuticle. The ox requires the meadows to be shorn for him, and cronches both blade and stalk, even of the coarsest grass, as corn; but these grubs do their browsing in narrower pastures, pastures not so wide as their own jaws, between fences (inviolable to them) of their own establishing, or along narrow lanes. There, secure from birds, they mine, and no harm can they do now that the green leaf has so commonly done its office.
If you would study the birds now, go where their food is, i. e. the berries, especially to the wild black cherries, elder-berries, poke berries, mountain-ash berries, and ere long the barberries, and for pigeons the acorns. In the sprout-land behind Britton's Camp, I came to a small black cherry full of fruit, and then, for the first time for a long while, I see and hear cherry-birds [**Cedar Waxwing** ***Bombycilla cedrorum***] – their shrill and fine seringo–and the note of robins, which of late are scarce. We sit near the tree and listen to the now unusual sounds of these birds, and from time to time one or two come dashing from out the sky toward this tree, till, seeing us, they whirl, disappointed, and perhaps alight on some neighboring twigs and wait till we are gone. The cherry-birds and robins seem to know the locality of every wild cherry in the town. You are as sure to find them on them now, as bees and butterflies on the thistles. If we stay long, they go off with a fling, to some other cherry tree, which they know of but we do not. The neighborhood of a wild cherry full of fruit is now, for the notes of birds, a little spring come back again, and when, a mile or two from this, I was plucking a basketful of elder-berries (for which it was rather early yet), there too, to my surprise, I came on a flock of golden robins and of bluebirds, apparently feeding on them. Excepting the vacciniums, now past prime and drying up, the cherries and elderberries are the two prevailing fruits now. We had remarked on the general scarcity and silence of the birds, but when we came to the localities of these fruits, there again we found the berry-eating birds assembled, – young (?) orioles and bluebirds at the elder-berries.
Green white pine cones are thrown down. An unusual quantity of these have been stripped for some time past, and I see the ground about the bases of the trees strewn with them.
The spikenard berries in the shade at Saw Mill have but just begun to turn. The Polygonatum biflorum with its row of bluish-green berries (the blue a bloom), pendulous from the axils of the recurved stem, apparently now

65. Richard C. Carrington's "Description of a Singular Appearance seen in the Sun on September 1, 1859," Monthly Notices of the Royal Astronomical Society, XX (November 11, 1859), 13-15.

in its prime. Red choke-berry ripe. Smooth sumach probably hardly ripe yet generally.
The fruit of the arum is the most remarkable that I see this afternoon, such its brilliancy, color, and form; perhaps in prime now. It is among the most easily detected now on the floor of the swamp, its bright-scarlet cone above the fallen and withered leaves and amid its own brown or whitish and withering leaves. Its own leaves and stem perhaps soft and decaying, while it is perfectly fresh and dazzling. It has the brightest gloss of any fruit I remember, and this makes the green ones about as remarkable as the scarlet. With, perchance, a part of the withered spathe still investing and veiling it. The scarlet fruit of the arum spots the swamp floor.
Now, also, bright-colored fungi of various colors on the swamp floor begin to compete with these fruits. I see a green one.
The elder-berry cyme, held erect, is of very regular form, four principal divisions drooping toward each quarter around an upright central one. Are said to make a good dye. They fill your basket quickly, the cymes are so large and lie up so light.
The autumnal dandelion is a prevailing flower now, but since it shuts up in the afternoon it might not be known as common unless you were out in the morning or in a dark afternoon. Now, at 11 A. M., it makes quite a show, yet at 2 P. M. I do not notice it.
Bought a pair of shoes the other day, and, observing that as usual they were only wooden-pegged at the toes, I required the seller to put in an extra row of iron pegs there while I waited for them. So he called to his boy to bring those zinc pegs, but I insisted on iron pegs and no zinc ones. He gave me considerable advice on the subject of shoes, but I suggested that even the wearer of shoes, of whom I was one, had an opportunity to learn some of their qualities. I have learned to respect my own opinion in this matter. As I do not use blacking and the seller often throws in a box of blacking when I buy a pair of shoes, they accumulate on my hands.
Saw this afternoon, on a leaf in the Saw Mill woodpath, a very brilliant beetle a quarter or a third of an inch in length with brilliant green and copper reflections. [Vide June 28th 1860.] The same surface, or any part of the upper surface, of the bug was green from one point of view and burnished copper from another. Yet there was nothing in its form to recommend this bug.
You must be careful not to eat too many nuts. I one winter met a young man whose face was broken out into large pimples and sores, and when I inquired what was the matter, he answered that he and his wife were fond of shagbarks, and therefore he had bought a bushel of them, and they spent their winter evenings eating them, and this was the consequence.

September 2, night: On the night of this day gas street lighting was being introduced to the Hawaiian Islands. Did the attention being paid to this new gas lighting interfere at all with the local experience of an unusual event, the aurora borealis? On this night the aurora borealis Northern Lights were being seen as far south as Rome and Cuba — and there are reports from Hawaii (there were similar effects around the South Pole). Despite the fact that the telegraph, as an invention, was only 15 years old, and thus the number of wires stretched across the landscape was still really minimal, telegraph lines were shorting out both in the United States and in Europe, and causing wildfires. What had happened was “the perfect space storm” — the strongest by far of which we presently have any knowledge, three times more powerful than any we have recently had the opportunity to measure. The sun had erupted and sent charged particles racing outward at an exceptionally high speed, in an expanding bubble of hot gas plasma, and the coronal mass ejection had been aimed straight at the earth. The magnetic field was exceptionally intense, and happened in this case to be aligned in such a manner as not to be neutralized at all by the earth’s normal magnetic field. Although your typical solar storm that we have been able to study using modern instruments needs 3 or 4 days to move from the sun to Earth, in this case the solar wind of plasma particles arrived very soon indeed after a strange powerful event involving numerous sunspots had been observed to be taking place on the surface of the sun on August 28th. Between August 28th and September 2d several solar flares had been observed, and then on September 1st, there was this truly massive flare. The amount of light normally put out in that region on the sun’s surface actually, for one minute, doubled.

Since light itself takes about 8 minutes to make the 93,000,000-mile journey from the sun, we calculate that the hot plasma particles made the journey in but 17 hours and 40 minutes! In March 1989 a relatively minor such bubble of sun plasma has shut down the Hydro-Quebec power to an entire Canadian province for more than 9 hours. In 1994 a solar storm caused two of our communications satellites to malfunction in a major way, disrupting newspaper, network television, and nationwide radio service throughout Canada. Other such storms have disrupted cellphone service and GPS systems. We have no grasp of how extensive the damage would be, in our present era of interconnectedness, should such a perfect storm occur again now, nor do we have any theoretical framework by which we might guesstimate either the occurrence or the magnitude of such solar events. All we know for sure is that an event of this magnitude is possible — because one such has already occurred.

AURORA BOREALIS
SKY EVENT

1860

January 7, night of the full moon in January/April 6, night after the night of the full moon: Harvard Observatory produced a stereoscopic[66] collodion[67] photograph of the surface of the moon. For the first time one could get some direct sense of curvature and of depth, and mountains and valleys. The trick is, stare at this and let your eyes cross until the four images merge to produce a row of three images, and then transfer your attention to the middle image and inspect it as if you were inspecting someone's face:[68]

ASTRONOMY

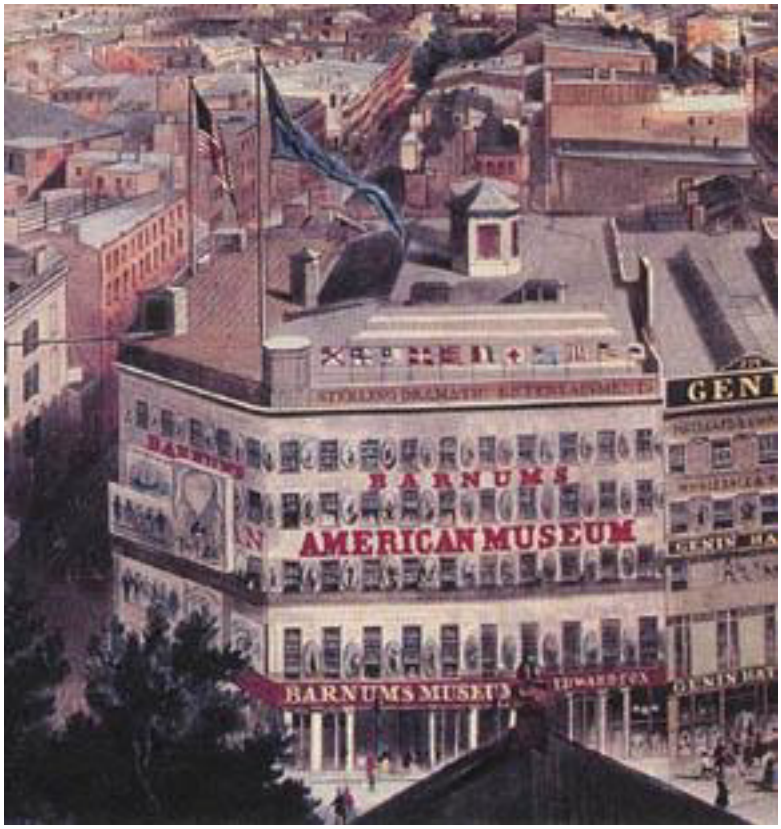
In San Francisco, California, "Grizzly" Adams took passage aboard the *Golden Fleece*, with his menagerie, to sail around Cape Horn and back to New-York, where he would provide one of the exhibits in Phineas Taylor Barnum's American Museum. By this point Adams could offer not only bears, cougars and other large land animals, but also a sea-lion. Barnum would be an equal partner in the ownership of the collection. Adams's wounds were being dressed every day by a Dr. Johns, and his wife came down from Massachusetts to nurse

66. Sir Charles Wheatstone had experimented with simple stereoscopic drawings in 1832 and obtained a patent for a stereoscope device in 1838. Since the more popular Victorian device designed by Oliver Wendell Holmes, the Holmes Stereo Viewer, would not be patented until 1861, we may infer that this stereoscopic collodion of the moon was being prepared for the Wheatstone viewer rather than for the Holmes viewer. In all probability it was being created in order to provide the public with visual proof that the moon is indeed a sphere rather than a flat disk.

67. Collodion, meaning "gluelike," is a highly flammable, colorless or yellowish syrupy solution of pryoxylin, ether, and alcohol which has been found useful as an adhesive to close small wounds and hold surgical dressings, and for the creation of photographic plates.

68. OK, it takes practice, but once you know how it will be as easy as reciting the first 27 digits of π.

him.



February 27, Monday: From this point until March 14th a double comet I Liais or Olinda, would be traversing the skies. It had a 20° tail. This double comet, together with 1861's comet I Thatcher, would become contributors to our Andromedid meteor showers.

SKY EVENT

Feb. 27. 2 P. M.—Thermometer 50.

To Abner Buttrick's Hill.

The river has been breaking up for several days, and I now see great cakes lodged against each of the bridges, especially at Hunt's and the North Bridge, where the river flows with the wind. For a week or more you could not go to Ball's Hill by the south side of the river. The channel is now open, at least from our neighborhood all the way to Ball's Hill, [Yes, and upward as far as Cardinal Shore, the reach above Hubbard's Bridge being open; thence it is mackerelled up to the pond.] except the masses of ice moving in it; but the ice generally rests on the bottom of the meadows,—such as was there before the water rose,—and the freshet is for the most part covered with a thin ice except where the wind has broke[N] it up. The high wind for several days has prevented this water from freezing hard.

There are many cranberries washed far on to a large cake of ice which stretches across the river at Hunt's Bridge. The wind subsiding leaves them conspicuous on the middle of the cake.

I noticed yesterday that the skunk-cabbage had not started yet at Well Meadow, and had been considerably frost-bitten.

Heywood says that when the ground is regularly descending from the north to the railroad, a low fence a quarter of a mile off has been found to answer perfectly; if it slopes upward, it must be very near the road.

I walk down the river below Flint's on the north side. The sudden apparition of this dark-blue water on the surface of the earth is exciting. I must now walk where I can see the most water, as to the most living part of nature. This is the blood of the earth, and we see its blue arteries pulsing with new life now. I see, from far over the meadows, white cakes of ice gliding swiftly down the stream,—a novel sight. They are whiter than ever in

this spring sun.
The abundance of light, as reflected from clouds and the snow, etc., etc., is more springlike than anything of late. For several days the earth generally has been bare. I see the tawny and brown earth, the fescue- and lichen-clad hills behind Dakin's and A. Buttrick's.
Among the radical leaves most common, and therefore early-noticed, are the veronica and the thistle,—green in the midst of brown and decayed; and at the bottom of little hollows in pastures, now perhaps nearly covered with ice and water, you see some greener leafets of clover.
I find myself cut off by that arm of our meadow sea which makes up toward A. Buttrick's. The walker now by the river valley is often compelled to go far round by the water, driven far toward the farmers' door-yards.
I had noticed for some time, far in the middle of the Great Meadows, something dazzlingly white, which I took, of course, to be a small cake of ice on its end, but now that I have climbed the pitch pine hill and can overlook the whole meadow, I see it to be the white breast of a male sheldrake accompanied perhaps by his mate (a darker one). They have settled warily in the very midst of the meadow, where the wind has blown a space of clear water for an acre or two. The aspect of the meadow is sky-blue and dark-blue, the former a thin ice, the latter the spaces of open water which the wind has made, but it is chiefly ice still. Thus, as soon as the river breaks up or begins to break up fairly, and the strong wind widening the cracks makes at length open spaces in the ice of the meadow, this hardy bird appears, and is seen sailing in the first widened crack in the ice, where it can come at the water. Instead of a piece of ice I find it to be the breast of the sheldrake, which so reflects the light as to look larger than it is, steadily sailing this way and that with its companion, who is diving from time to time. They have chosen the opening farthest removed from all shores. As I look I see the ice drifting in upon them and contracting their water, till finally they have but a few square rods left, while there are forty or fifty acres near by. This is the first bird of the spring that I have seen or heard of.
C. saw a skater-insect on E. Hubbard's Close brook in woods to-day.

June 18, Monday: The Democratic Party adopted a platform.

READ THE FULL TEXT

A new comet of the 1st magnitude was discovered in the evening twilight on the northwestern horizon, situated in Auriga (C/1860 M1=1860 III). It had flipped around the sun on June 16th and it would be possible to follow its recession with the unaided eye until about the end of July. It would develop a tail up to 20 degrees long. At the opening of July, located in Lynx and of 1st or 2nd magnitude, it would display a 15 degree tail. Between July 6 and 12, it would be crossing western Leo, passing near Regulus on the night of the 10th with a brightness of about 3rd magnitude, its tail rapidly decreasing in length. After mid-month the comet would move across Crater and Corvus. It would become a Southern Hemisphere object and there it would independently be discovered with the naked eye, before as it receded it dropped below that threshold of brightness.

SKY EVENT

Thoreau as Ornithologist

 June 18: The tumultuous singing of birds, a burst of melody, wakes me up (the window being open) these mornings at dawn. What a *matinade* to have poured into your slumber!

July 18: Wet-plate photographs were made of a total solar eclipse (#7313), as it passed from Washington state up across Hudson Bay, and this type of photograph required only 1/30th of the exposure time which would have been required for a Daguerreotype.

SKY EVENT
SUN

 July 18, Wednesday: 2 P.M.–To Second Division.
The Asclepias Cornuti is abundantly visited nowadays by a large orange-brown butterfly with dark spots and with silver spots beneath. Wherever the asclepias grows you see them.
The Second Division juncus is already withering and is considerably browned, so early is it. It appears not to ripen any seed.


November 5. P.M.–To Blood's oak lot.

Measure the great white oak near the bars of the bridle-road just beyond the northeast comer of the Holden (?) farm. At the ground it is about nineteen feet in circumference. At three feet from the ground it is eleven feet and seven inches in circumference, and the same at five feet and apparently more above this. It is about sixteen feet to the lowest limb. The whole trunk standing aslant. It has a black and quite rough bark, not at all like that of the white oaks of Wetherbee's and Blood's lots. There is a large open space amid the huckleberry bushes beneath it, covered with a short and peculiarly green sward, and this I see is the case with other oaks a quarter of a mile off.

There is a large chestnut in the lot east of this, and I observe that its top is composed of many small branches and twigs disposed very regularly and densely, brush-wise, with a firm, distinct, more than semicircular edge against the horizon, very unlike the irregular, open, and more scraggy-twigged oak.

Blood's oak lot may contain about a dozen acres. It consists of red, black, white, and swamp white oaks, and a very little maple. The following are some of the largest that I saw. I measured one black oak which was, at three feet high, four feet eight inches in circumference; another, five feet six inches; and another the same. A red oak was six feet three inches; another, seven feet four inches; another, seven feet four inches; another, seven feet. One swamp white oak was six feet four inches. A white oak was seven feet seven inches, and another the same. The diameter of a third at one foot from ground (sawed off) was thirty-one and a half inches average.

This is quite a dense wood-lot, even without considering the size of the trees, and I was rather surprised to see how much spread there was to the tops of the trees in it, especially to the white oaks. The trees here rise far higher before branching, however, than in open land; some black oaks (if not others) were very straight and thirty to forty feet high without a limb. I think that there was not so much difference in color between the trunks of black and red oaks as commonly. The red oaks were oftener smooth, or smoothish, the largest of them. I saw very little decay. Considering their number and closeness, the trees were on the whole larger than I should have expected, though of course not nearly so large as the largest pasture oaks,–one to two and a half feet in diameter, or say generally (the sizable trees) a foot and a half in diameter. This will probably do for a specimen of a primitive oak forest hereabouts. Such probably was the size and aspect of the trees.

As for its age, I saw the stump of a white oak (not quite so large as those I measured) which had been sawed off at about one foot from the ground within four or five years, perfectly level and sound to the core, and thirty-one and a half inches in diameter. The first thirty-three (?) rings were so close and indistinct as to be impossible to count exactly (occupying three quarters of an inch of the centre); the rest was perfectly distinct. In all one hundred and forty-seven rings; or, by inches from middle, thirty-nine, nine, six, seven, five, eleven, six, four, four, five, six, nine, ten, twelve, and then three quarters of an inch left. From which it appears that it grew much the fastest at about the age of eighty-nine years and very much the slowest for the first thirty-three years.

I am struck by the fact that the more slowly trees grow at first, the sounder they are at the core, and I think that the same is true of human beings. We do not wish to see children precocious, making great strides in their early years like sprouts, producing a soft and perishable timber, but better if they expand slowly at first, as if contending with difficulties, and so are solidified and perfected. Such trees continue to expand with nearly equal rapidity to an extreme old age.

Another white oak stump, not so large but somewhat decayed, had one hundred and sixty and more rings. So that you may say this wood is a hundred to a hundred and sixty years old.

I was struck by the orderly arrangement of the trees, as if each knew its own place; and it was just so at Wetherbee's lot. This being an oak wood, and like that, somewhat meadow [SIC] in the midst, the swamp white oaks with a very few maples occupied that part, and I think it likely that a similar selection of the ground might have been detected often in the case of the other oaks, as the white compared with the red. As if in the natural state of things, when sufficient time is given, trees will be found occupying the places most suitable to each, but when they are interfered with, some are prompted to grow where they do not belong and a certain degree of confusion is produced. That is, our forest generally is in a transition state to a settled and normal condition.

Many young white pines–the largest twenty years old–are distributed through this wood, and I have no doubt that if let alone this would in a hundred years look more like a pine wood than an oak one.

Hence we see that the white pine may introduce itself into a primitive oak wood of average density.

The only sounds which I heard were the notes of the jays, evidently attracted by the acorns, and the only animal seen was a red squirrel, while there were the nests of several gray squirrels in the trees.

AURORA

Last evening, the weather being cooler, there was an arch of northern lights in the north, with some redness. Thus our winter is heralded.

It is evident that the pasture oaks are commonly the survivors or relics of old oak woods,–not having been set out of course, nor springing up often in the bare pasture, except sometimes along fences. I see that on the outskirts of Wetherbee's and Blood's lots are some larger, more spreading and straggling trees, which are not to be distinguished from those. Such trees are often found as stragglers beyond a fence in an adjacent lot. Or, as an old oak wood is very gradually thinned out, it becomes open, grassy, and park-like, and very many owners are inclined to respect a few larger trees on account of old associations, until at length they begin to value them for shade for their cattle. These are oftenest white oaks. I think that they grow the largest and are the hardiest.

This final arrangement is in obedience to the demand of the cow. She says, looking at the oak woods: "Your tender twigs are good, but grass is better. Give me a few at intervals for shade and shelter in storms, and let the grass grow far and wide between them."
No doubt most of those white pines in pastures which branch close to the ground, their branches curving out and upward harpwise without one erect leading shoot, were broken down when young by cows. The cow does not value the pine, but rubs it out by scratching her head on it.

1861

Daniel Kirkwood theorized that periodic meteor swarms were produced by fragments left behind by disintegrating comets, distributed along their antique orbits. (However, it would not be until 1867 that this recognition of the nature of this phenomenon would be generally appreciated.)

LEONID METEOR SHOWER

May 11, day: A boy brought Henry Thoreau a salamander from S. Mason's and Thoreau sent it on to Horace Mann, Jr.

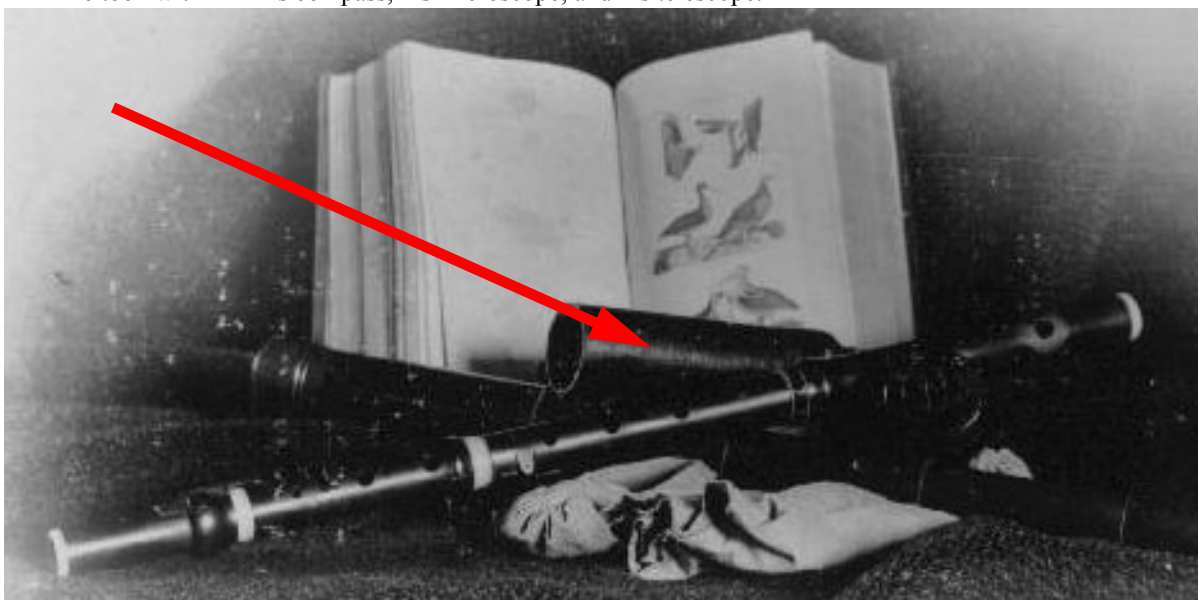

May 11. A boy brings me a salamander from S. Mason's. Sent it to Mann. What kind?

Thoreau was being written to by Waldo Emerson, suggesting a number of people he might seek out on his trip west.

Concord, Mass^{tts}
11 May, 1861.
My dear Thoreau,
I give you a little list of names of good men whom you may chance to see on your road. If you come into the neighborhood of any of these, I pray you to send this note to them, by way of introduction, praying them, from me, not to let you pass by, without salutation, & any aid & comfort they can administer to an invalid traveller, one so dear & valued by me & all good Americans.
Yours faithfully,
R.W. Emerson
Henry D. Thoreau.

In starting out by rail from Concord to Albany and then to Niagara Falls, Henry Thoreau knew that he was generally retracing the "great central trail of the Iroquois," some 12 to 18 inches in width, that had stretched from Albany to Buffalo. He had once made extensive excerpts from Lewis Henry Morgan's LEAGUE OF THE *HO-DE-NO-SAU-NEE*, OR *IROQUOIS*, and was aware that this path had been "so judiciously selected, that the turnpike was laid out mainly on [its] line."

He took with him his compass, his microscope, and his telescope.



He set out on this Iroquois Trail with $178.10 on his person, about half a year's income. As a precaution against theft and being left entirely without funds on this journey, he carried $78.10 of this in his left pants pocket, $60.00 in his right pants pocket, and $40.00 in his "bosom" garment. (Bear in mind that this was presumably almost all in gold coins, and that a dollar then was worth a hundred-dollar bill now.) They spent the evening chatting with H.G.O. Blake in Worcester, and slept at his home. Here is a raw "OCR" scan, which needs to be checked, of the list Thoreau made of things to take with him on his long trip:

> .arpet oar & unbrella; 1) half—thick coat; 2) plant book, blot[tin~l ¥ aper ~ hritin~ dr ittlo; 3) waist coat; 4) smoke cap; 7) boteny; 8) twine & cards, pencils, buttons, scissors, &c.; S) thin coat; 9) trochees; 8) envelopes; 10) tape; 11) dipper & bo. sles.
>
> In pocket~ 5~c: [word], pins, needles, thread, stamps, & money, Jack[knife, watch, ticket, guidebook &c., shoestring, map of U.S., notebook, matches, letters.
>
> l) best pants; 2) 3 pr socks; 3) flannel shirt; 2) 1 p[air] drawers; 4) cotton batting; 6) 5 handkerchiefs Sc 2; 8) towel & soap; 13) medicine; 14) compass & microscope; 10) spy glass; 15) insect boxes; 11) clothes brush; 15) 1 slippers; 7) 2 neckerchiefs, ribbon; 3

shirts; 9) 5 (& 1) bosoms.

Left pocket, $78.10

Right 60.

Bosom 40.

178.10

Send home smoke ~, 1 pair drawers or 2.

According to the Madison, Wisconsin Weekly Patriot:

Now Let Slip the Dogs of War.
The President's twenty days of grace is exhausted, and unless we soon witness the most decided military action against the rebels, the most intense distrust and excitement will prevail. We cannot now afford to permit the rebels, to maintain an armed defensive, to block our commerce, insult and hang our citizens, and annoy us in all manner of ways. No, the President has given ample time for all lawless bands to disperse, and it should not be sufficient for him to know the capital is merely safe, with 30,000 troops, at enormous expense, surrounding it. It will not be enough to keep what forts and arsenals we now holds by force of arms — It will not satisfy the law-abiding north to merely keep the Potomac, the Chesapeake, the Delaware — the railroad and telegraph communications free for government use and occupation by the force of 150,000 troops, at a cost of millions. No, these things are not enough — They must not be the sine qua non of the object for which 153,000 troops were marshaled into service at the tap of the drum.
The great north-west, and the upper Mississippi Valley are in a blaze of excitement. Here we are, cut off from the Gulf by piratical bandits, who not only hinder and menace our commerce, but threaten our lives. This state of thing's cannot — Must not — shall not long continue. If the powers that be do not give the word of command, the Mississippi — Civilians will "assume the responsibility," and in mighty phalanx of 200,000 strong, will swarm like clouds of Saharan locusts, overrunning the lower Mississippi, until every Bayou is free from piratical obstruction. All the captured forts must be retaken — All the stolen property must be restored — all menace must be withdrawn or the southern rebels will see such an outpouring of Hoosiers, Wolverines, Buckeyes, Badgers, Gophers and Hawkeye's as will overwhelm them in dismay.
Our commercial pathway to the Gulf must be kept free from the thorns and debris of rebellion or the Mississippi will be crimsoned from Cairo to the delta. This we believe to be the determined sentiment of every 999 out of a thousand who inhabit the Great West. We all prefer to have the government act — to take the lead, and to say "come, boys" but if we are not called out our volunteers will Go Out. They cannot and will not lie

idle, so long as there is a foe in the field.
We must not merely stand on the defensive now – we must punch on the aggressive. That is, we must follow up the retreating foe – give him battle until he shall cry enough and be content to live under the good old stars and stripes – We say to the President and Cabinet, that the people of the great north-west are not satisfied with this apparent tardy movement. Our troops are anxious to be led on.
They must and they will go. No power can keep them in check much longer and if the President don't soon give the word of command, the western battalions will put themselves under marching orders, and will be after the scalps of the free-booters.
The Power of the United North
We have during the past three weeks had the most convincing evidence that an army can be assembled in the course of twenty or thirty days of seven hundred thousand men, devoted to the union. Here are the figures:

- Maine 18,000
- New Hampshire 12,000
- Vermont 10,000
- Massachusetts 40,000
- Rhode Island 5,000
- Connecticut 15,000
- New York 150,000
- New Jersey 20,000
- Pennsylvania 135,000
- Delaware 4,000
- Ohio 100,000
- Indiana 50,000
- Illinois 65,000
- Michigan 20,000
- Wisconsin 20,000
- Iowa 15,000
- Minnesota 8,000
- Kansas 3,000
- California 10,000

Total 700,000

But a well appointed army of half this number, giving Wisconsin the privilege of furnishing 10,000 good men, would beyond all question be amply sufficient to conquer a permanent peace, and bury secession so deep that it would never be heard of again. We want to see an army called into the field on a scale of such magnitude, that Jeff. Davis and his crew, like Crockett's coon will be willing to come down and stay down, until it shall please the insulted laws to run them up as high as Human's gallows.
The Printers
No trade or craft in the country has turned out an equal number of volunteers with the printers, in proportion

to numbers. They are accustomed to the use of the "shooting stick" and no one would be "justified" in questioning their bravery in the "matter" of war. The printers have given a "proof" of patriotism, that all may "copy" after, with perfect "justification" So walk up and "register" your names in "large caps."

June 11, Tuesday: The great comet of this year, although at this point its tail was 40 degrees in length, was lost in the glare of the sun.

SKY EVENT

June 12, Wednesday: The great comet of this year completed its voyage toward the sun and began its trip outward. It had still not become visible from the northern hemisphere, nor had the news of its existence yet arrived by steamer from its southern-hemisphere observers — the astronomers of the earth's major observatories, all of them in the northern hemisphere, would be suddenly stunned by its appearance as it came up in full display over our southern horizons.

SKY EVENT

John Tebbutt (Windsor, New South Wales) discovered this comet on 1861 May 13.37

The comet was widely observed in the Southern Hemisphere during June. Although it passed perihelion on June 12, the comet actually continued to brighten and develop a spectacular tail as it continued to approach Earth. Emmanuel Liais (Rio de Janeiro) saw the comet on the 12th and said the nucleus equalled a star of magnitude 2 or 3, while the tail was 40° long. On the 20th Edward John White (Williamstown, Victoria, Australia) said the nucleus equalled a star of magnitude 2 and was distinctly fan-shaped in a telescope. He added that the tail was double, with the western or main tail extending over 40° and the eastern tail extending about 5° and separated by an angle of 34°. The eastern tail was also slightly curved toward the east. The comet's path kept it south of the sun until after June 28, thus making the 29th the absolute earliest Northern Hemisphere observers could have seen it.

Closest Distance to Earth (0.1326 AU): The comet was well-observed as it passed closest to Earth on June 30. The total brightness was estimated as "not as bright as Jupiter" (fainter than magnitude -2) by Johann Friedrich Julius Schmidt (Athens), while the nuclear magnitude was estimated as 1 by T. Brorsen (Senftenberg), but "intermediate" between Venus and Jupiter according to the Reverend Thomas William Webb (Hardwick Parsonage). He added that the comet had a golden hue to it. Hermann Goldschmidt (Paris, France) estimated the diameter of the nucleus as near 4", while G. Schweizer (Moscow, Russia) more precisely measured it as 3.07". Webb observed with a 5.5-inch refractor and estimated it as 2", but admitted that he probably underrated it. He added that it was "a fine luminous disc" with "a very ill-terminated, but still definite, limb." Webb also observed the comet at 27x and said the comet looked "as though a number of light, hazy clouds were floating around a miniature full moon." He was describing six "luminous veils" located within the coma, the brightest of which was nearest the nucleus, while the faintest was farthest away. Johann Gottfried Galle (Wroclaw (formerly Breslau), Poland) said the nucleus was "extremely bright and distinct," while the Reverend R. Main (Radcliffe Observatory, Oxford) said a telescope showed it was elliptical, with the major axis "directed nearly towards the Sun." Main added, "A stream of light went off from the upper apparent part of the nucleus, and turned round towards the apparent west in the shape of a sickle. Another but fainter stream was seen on the apparent east side of the first stream, also turning round towards the west." The coma was described as a parabolic curve by Galle, with Schmidt estimating its diameter as 60-70'. The tail was very impressive and

contained a number of rays. Although Galle estimated the length as 30° to 40° and Goldschmidt said it was 35° long and 3° to 4° wide, other observers noted a much longer length. Schmidt said the tail was 120° long, Brorsen estimated it as 90° in length, Webb said it was at least 90° long, and Main indicated it was "considerably longer" than 43°. George Williams (Liverpool) observed a tail ray extending through Boötis into Ursa Major, as well as a somewhat brighter ray extending into Cassiopeia. He suspected they might have been clouds, but noted that both pointed towards the comet's nucleus. Webb and his wife noticed a faint ray "of perfectly similar character to the tail, stretching under the square of Ursa Major, about 3° or 3.5° broad...and traceable about half way from the latter star to Arturus: it pointed to the Comet, but in the twilight no connexion could be made out." Webb added that about 20-minutes later it had become brighter. He concluded it was probably a "cirrus cloud, brought up by the N. W. wind."

July Observations: Although the comet continued to be well-observed during the first days of July, fewer physical descriptions were being made by July 5th, but these still indicated the tail was of great length. The main tail was estimated as 63 degrees long by Littrow, 85 degrees long by Schmidt, and 45 degrees long by Quirling, with the latter astronomer also indicating the greatest width was 10 degrees. The second tail was estimated as wide and 30 degrees long by Littrow. Schmidt estimated the coma diameter as 50 arcmin. Webb swept rapidly across the tail with his comet eyepiece and noted a slightly darker region extended from the nucleus for a short distance into the tail. Activity was still visible within the coma. Main said the nucleus was "very bright and almost equal to a star of the first magnitude." He added that the two streams of light "now pass symmetrically on each side of the nucleus." Peters said the diameter of the nucleus was 5.7 arcsec or possibly smaller and that the 13.5-inch refractor showed one bright inner envelope and two faint outer ones. In addition, he noted "many fine jets streaming out from the nucleus, part of them recurving to the right, others to the left." This comet was independently discovered by David Livingston on July 6, who was then traveling down the Shire River near present day Blantyre, Malawi, in Africa. He noted "a large comet in Ursa Major" and estimated the tail length as 23 degrees. Littrow estimated the main tail as 59 degrees long and about 2.5 degrees wide, while the second tail was about 30 degrees long and distinctly fainter since the 5th. Webb said the tail seemed slightly turned to the left again. Peters said, "The secondary tail is quite bright, and as wide as the principal tail, branching off from it to the west under an acute angle." He added that the 13.5-inch refractor revealed a nucleus 3.8 arcsec across. The last big day of observations for this comet came on July 7. John Kirk, who was traveling independent of Livingston down the Shire River, in Africa wrote, "This night we got sight of a splendid comet in the Great Bear moving rapidly from the sun." Heis said the brightness equalled Gamma Ursae Majoris (magnitude 2.44). Dembowski estimated the tail length as 30 degrees, while Gilliss said it was no more than 25 degrees long and 3 degrees wide. Peters agreed that the tail seemed to have decreased in brightness at its end, but was wider and still visible over 30 degrees. Dembowski said the fan extending from the nucleus was less definite than on the 3rd. Gilliss commented that the luminous sector was "much smaller and fainter, and for the greater part of the time could scarcely be discerned at all as distinct from the general mass of light." Peters said the 13.5-inch refractor indicated the outer envelopes were no longer visible, while the inner envelope seemed to be undulating before his eyes. Descriptive observations were sparse during the second half of July. On the 16th Heis said the brightness nearly equalled that of Iota Draconis (magnitude 3.29), while Quirling estimated the tail length as 12 to 13 degrees. On the 17th Heis said the brightness was between those of Iota Draconis (magnitude 3.29) and Alpha Draconis (magnitude 3.65). While the comet faded the nucleus was beginning to change as well. E. Schönfeld (Mannheim) said the nucleus appeared a little diffuse on the 18th, while Peters noted on the 24th, "The nucleus now appears much less stellar than before, rather as a blurred surface, of 8" in diameter, though this measure is little reliable." He added that the outline of the envelope was no longer visible, though the moon was nearly full.

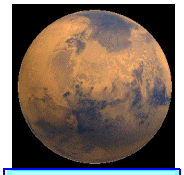
Observations for Remainder of 1861: On August 10, Heis said the comet was three steps fainter than Iota Boötis (magnitude 4.76). On August 12, Peters observed with a 13.5-inch refractor and wrote, “The nucleus has become small and is rather dim....” On August 13, Schönfeld said the coma was 5 arcmin across, and contained a nucleus which was not centrally placed. On August 14, Schönfeld said the coma was 4 arcmin across. On August 15, Heis said the comet was still a naked eye object. On September 2, Schönfeld said the coma was 5 arcmin across. On September 3, Schönfeld said the nuclear magnitude was 9. On September 12, Schönfeld said the coma was about 2.5 arcmin across in moonlight. On September 16, Peters said skies were cloudy and affected by moonlight, but he did manage to catch sight of the comet with the 13.5-inch refractor. He noted that the comet’s faintness only allowed a faint illumination of the wires used for measuring its position. On October 1, C. Bruhns (Leipzig) said the comet appeared rather faint in the 6-foot focal length refractor. On October 4, Schönfeld said the nucleus was still visible. Bruhns said the comet appeared rather faint. On October 5, Schönfeld said the nucleus was magnitude 11. On October 11, Peters observed with a 13.5-inch refractor and described the comet as “dull”. On October 13, Schönfeld said the coma was round and 2 arcmin across, with a nucleus of magnitude 11. On October 19, Peters observed with the 13.5-inch refractor and noted the nucleus “is more concentrated to a point.” On October 25, Schönfeld said the coma was 3 arcmin across, with an eccentrically situated faint nucleus. On November 4, Schönfeld said the coma was fairly faint, with an indistinct nucleus of about magnitude 11-12. On November 5, Schönfeld said the coma was 1.3 arcmin across. On November 21, Schönfeld said the coma was 1.5 arcmin across. On November 25, Schönfeld said the comet contained a condensation of magnitude 12-13. On November 28, Schönfeld said the diffuse coma was rather faint and 0.7 arcmin across. There was also a weak condensation. Schönfeld observed on December 22 and 23 and said the comet was fairly bright, with a coma 20 arcsec across, and well condensed. On December 26, Peters observed the comet with a 13.5-inch refractor.

On January 3, 1862, Peters observed the comet with a 13.5-inch refractor. On January 5, Peters observed with a 13.5-inch refractor in moonlight, strong winds, and a temperature of -4¡ F, and noted the comet was difficult to see. Schmidt observed the comet with difficulty using peripheral vision on both February 3 and 6. O. Struve (Pulkova) saw the comet on April 16 and said the coma was 40” across. He noted, “Its light is, even in its present faint state, not quite uniform, but shows distinctly traces of concentration.” The comet was last detected on May 1.

Orbit: Hopff used three positions obtained between June 30 and July 2, and computed a parabolic orbit which was first published on July 12. The perihelion date was determined as June 11.98. Pape used three positions obtained between June 30 and July 6, and computed a parabolic orbit which was first published on July 12. The perihelion date was determined as June 12.23. Hubbard used three positions obtained between July 3 and 18, and computed a hyperbolic orbit. The perihelion date was determined as June 12.57, and the eccentricity was 1.0265470. A. Murmann used three positions obtained between June 30 and July 4, and computed a parabolic orbit which was first published on August 2. The perihelion date was determined as June 12.15. H. Seeling (Altona) used three positions obtained between June 12 and July 21, and computed a parabolic orbit which was first published on August 2. The perihelion date was determined as June 12.21. Sluzki took positions determined by Schweizer during the period of June 30 to September 10, and computed an elliptical orbit with a perihelion date of June 12.00, and an orbital period of 399.81 years. During 1880, Heinrich Carl Friedrich Kreutz used 1156 positions obtained between 1861 May 27 and 1862 May 1 and computed an elliptical orbit with a perihelion date of June 12.01 and an orbital period of 409 years. Perturbations for four planets were included.

1862

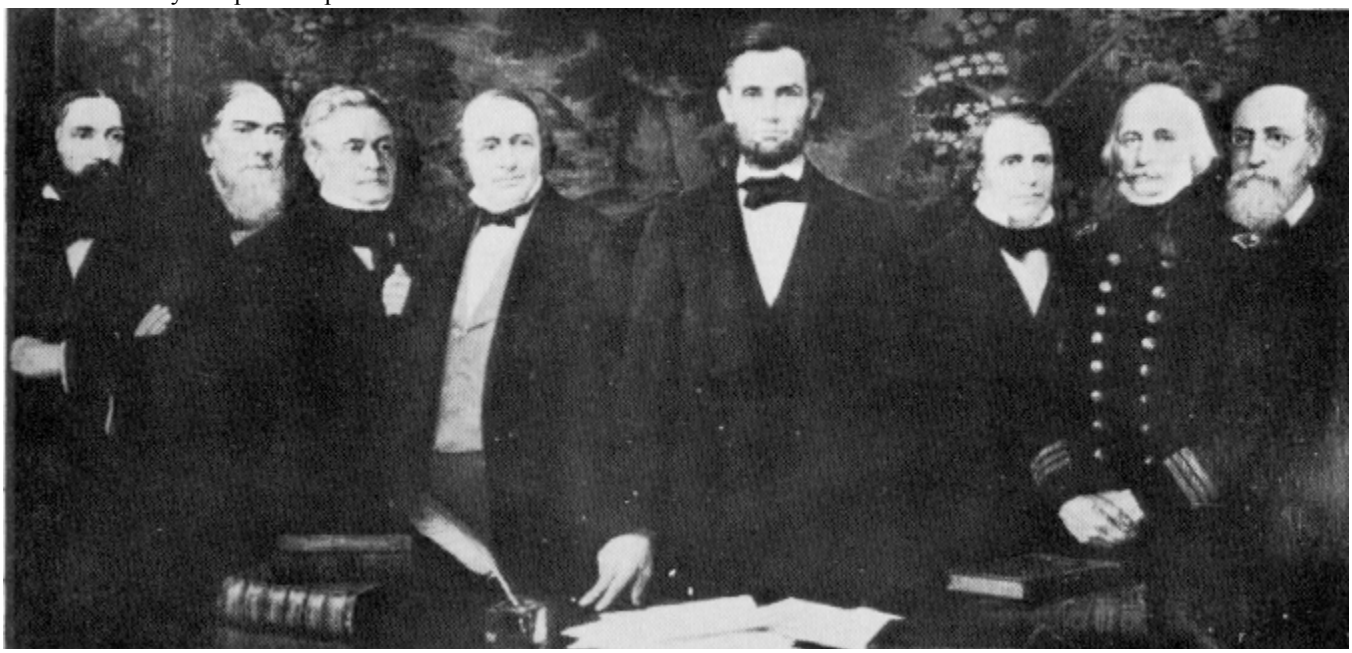
During the perihelic opposition of Mars, a new map of the planet's surface features was prepared. Most, but not all, astronomers were finding themselves persuaded at this point that they were gazing upon seas and continents. Some supposed that they were instead viewing deserts and spots of vegetation, pointing out that were any substantial portion of the surface of this red planet covered with water, we would be seeing some sort of reflection of the sun, appearing in the center of the planet's disk as a starlike image — and that nobody had as yet claimed to have observed such a reflective phenomenon.



ASTRONOMY

1863

March 3, Tuesday: In our nation's puzzle palace on the Potomac, in the wee small hours of the 37th Congress, a decade of plotting and conspiring by the "Lazzaroni" of Professor Louis Agassiz of Harvard College came to culmination in the creation of a new disciplinary "jury" to be known as the National Academy of Sciences. The Lazzaroni had prepacked this august new secret body of administrators, by name in the enabling legislation, with non-scientist apparatchiks "who never turned a pen or did a thing for science," officers they had recruited from the Army and Navy, and apparatchiks from the federal bureaucracy of Washington DC, whose chief or only asset was expertise in gameplaying.[69] From the very first it was clear that the game plan was not so much discovery as the control, by safe people, of the processes by which things may be discovered. Here they are clustered close around the President, so that some of his legitimacy will rub off on them or so they can pick his pocket:



"Scientists have power by virtue of the respect commanded by the discipline. We may therefore be sorely tempted to misuse that power in furthering a personal prejudice or social goal — why not provide that extra oomph by extending the umbrella of science over a personal preference in ethics or politics?"

— Stephen Jay Gould
BULLY FOR BRONTOSAURUS
NY: Norton, 1991, page 429

69. It was Louis Agassiz who referred to it as a "jury." He was gloating about how "the malcontents will be set aside or die out and the institution survive," and urging his co-conspirators to further such scheming because "it now remains for us to give it permanency by our own doings." Joseph Leidy appropriately commented that the "grand humbug" was "nothing more than the formation of an illiberal clique based on Plymouth Rock." Even the founder of MIT, William Barton Rogers, was made fearful by these developments, and how they had been implemented behind the backs of the American researchers by secret political negotiations with non-scientists about which "only two or three of the men of science knew anything until … announced in the newspapers."

1864

August: In setting up the National Academy of Sciences, Louis Agassiz's bully-boy "Lazzaroni" had excluded a number of reputable potential members. Spencer Fullerton Baird, who had offended by hiring as an assistant at the Smithsonian Institution the researcher Charles Frédéric Girard whom Agassiz had fired, had been pointedly excluded as "only a descriptive scientist." To make sure they carried the day, the Lazzaroni had been less than frank with their colleagues about what they were doing and to whom they were doing it. Then when inquiries began to be raised, there was talk about how they had had "opportunities for inductions upon … parts of their lives," regarding folks like Baird and George Phillips Bond of the Harvard Observatory, which had led to "distinct conclusions" that such men were "too mean to bring into our Academy." As more and more of this networking came to the attention of the less well connected members, there was a definite groundswell of resentment, and, in spite of the fact that "Mr. Agassiz lost his temper —and as I found next day —took personal offense," eventually Baird would be enrolled as a member.[70]

1865

November 14, Tuesday: Henry Thoreau had commented on an observatory, that he had slept outside of while hiking in the summer of 1844, in A WEEK ON THE CONCORD AND MERRIMACK RIVERS:

> A WEEK: This observatory was a building of considerable size, erected by the students of Williamstown College, whose buildings might be seen by daylight gleaming far down in the valley. It would be no small advantage if every college were thus located at the base of a mountain, as good at least as one well-endowed professorship. It were as well to be educated in the shadow of a mountain as in more classical shades. Some will remember, no doubt, not only that they went to the college, but that they went to the mountain. Every visit to its summit would, as it were, generalize the particular information gained below, and subject it to more catholic tests.

70. Rivinus, E.F. and E.M. Youssef. SPENCER BAIRD OF THE SMITHSONIAN. Washington DC: Smithsonian Institution Press, 1992.

THOREAU AND TELESCOPES

Waldo Emerson, upon looking through the Alvan Clark telescope at this Williams College Observatory, made the following entry in his journal:

I saw tonight in the observatory, through Alvan Clark's telescope, the Dumb-Bell nebula in the Fox and Geese Constellation; the four double stars in Lyra; the double stars of Castor; the two hundred stars of the Pleiades.... I have rarely been so much gratified.
Of all tools, an observatory is the most sublime. And these mountains give an inestimable worth to Williamstown and Massachusetts. But, for the mountains, I don't quite like the proximity of a college and its noisy students. To enjoy the hills as a poet, I prefer the simple farmers....
What is so good in a college as an observatory? The sublime attaches to the door and to the first stair you ascend; – that this is the road to the stars. Every fixture and instrument in the building, every nail and pin, has a direct reference to the Milky Way, the fixed stars, and the nebulae, and we leave Massachusetts and history outside at the door when we come in.

1876

This was the Harvard Observatory in this year:

HARVARD COLLEGE

NEW "HARVARD MEN"

There was a new edition of Hiram Mattison's edition of Elijah Hinsdale Burritt's A PLAN OF THE SOLAR SYSTEM EXHIBITING ITS RELATIVE MAGNITUDES AND DISTANCES (New York: Mason Brothers).
The preface to this 1876 edition alleged that overall, since the initial edition way back in 1833, more than 300,000 copies had been sold.

ASTRONOMY

1910

April 20, Wednesday/21, Thursday: Regular as clockwork, the 3d whip around the sun as had been predicted by Edmond Halley in 1704 of the comet which had been observed by the Reverends Increase Mather and Cotton Mather through Harvard College's "3 foote and a halfe with a concave ey-glasse" reflecting telescope in 1682, the comet which is known as "P/Halley" to the initiated and as "Halley's Comet" to the unwashed. It would be during this appearance that it would be possible to calculate in advance the date of its perihelion (the point at which it would come closest to the sun, some 55,000,000 miles, which is not really all that much on target) within a margin of error of three days. It was announced in the popular press that this time the million-kilometer tail of the comet would sweep across Earth's orbit, and a "comet pill" was marketed as an antidote for the comet's poisonous gasses.[71]

> Halley's Comet is sometimes called "the comet of all lifetimes," or "mankind's comet," because the length of its orbit brings it within sight of the earth about every seventy-five years — the approximate length of one human lifetime. Most people who live to adulthood have the opportunity to view it.

ASTRONOMY
HARVARD OBSERVATORY

Samuel Langhorn Clemens, who had been born in Missouri while the comet was departing in 1835, died on this day during this next passage of the comet. The biologist Sewall Wright witnessed this visit of this comet while working on the railroads in South Dakota, and would endure to mark its disappointing performance upon its well-anticipated next visit in 1985-1986.

On its trip back out into the cold dark the comet would come within 0.15 astronomical units of the earth, and in all probability the earth did pass through its 120-degree tail of gas and dust.

71. This pill would prove to be quite effective, so effective in fact that it would work even for those who neglected to procure it.

THOREAU AND TELESCOPES

HALLEY'S COMET

This is what Halley's Comet looked like, the last time it passed us. We have records of the appearances of this comet on each and every one of its past 30 orbits, which is to say, we have spotty records of observations before that, in 1,404 BCE, 1,057 BCE, 466 BCE, 391 BCE, and 315 BCE, but then on the 240 BCE return the sightings record begins to be complete. The Babylonians recorded seeing it in 164 BCE and again in 87 BCE, and then it was recorded as being seen in 12 BCE, 66 CE, 141 CE, 218 CE, 295 CE, 374 CE, 451 CE, 530 CE, 607 CE, 684 CE, 760 CE (only by Chinese), 837 CE, 912 CE, 989 CE, 1066, 1145, 1222, 1301, 1378, 1456, 1531, 1607, 1682, 1758, 1835, 1910, and 1986 — and we are confidently awaiting sightings in 2061 and 2134 even though due to a close conjunction with the earth we are presently unable to calculate what orbit it will have by the date of that approach. Each time P/Halley orbits in out of the Kuiper belt beyond the planets Neptune and Pluto and whips around the sun, it has been throwing off about one 10,000ths of its mass into a streaming tail, which means that this comet which we know to have been visiting us for at the very least the past 3,000 years or so is only going to be visiting us for perhaps another half a million years or so!

EDMOND HALLEY

1985

Regular as clockwork, the 4th return as had been predicted by Edmond Halley in 1704 of the comet which had been observed by the Reverends Increase Mather and Cotton Mather through Harvard College's "3 foote and a halfe with a concave ey-glasse" reflecting telescope in 1682, the comet which is known as "Halley's" to commoners and as "P/Halley" to others. It would be during this appearance of Halley's Comet that it would attract visitors: it would be met by two Vega and one Giotto spacecraft, from the USSR and from Europe, which would pass near its head and take many photographs.

ASTRONOMY

THOREAU AND TELESCOPES

HALLEY'S COMET

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EDMOND HALLEY

"It's all now you see. Yesterday won't be over until tomorrow and tomorrow began ten thousand years ago."

– Remark by character "Garin Stevens" in William Faulkner's INTRUDER IN THE DUST

Prepared: July 22, 2013

ARRGH AUTOMATED RESEARCH REPORT GENERATION HOTLINE

This stuff presumably looks to you as if it were generated by a human. Such is not the case. Instead, upon someone's request we have pulled it out of the hat of a pirate that has grown out of the shoulder of our pet parrot "Laura" (depicted above). What these chronological lists are: they are research reports compiled by ARRGH algorithms out of a database of data modules which we term the Kouroo Contexture. This is data mining. To respond to such a request for information, we merely push a button.

> Commonly, the first output of the program has obvious deficiencies and so we need to go back into the data modules stored in the contexture and do a minor amount of tweaking, and then we need to punch that button again and do a recompile of the chronology — but there is nothing here that remotely resembles the ordinary "writerly" process which you know and love. As the contents of this originating contexture improve, and as the programming improves, and as funding becomes available (to date no funding whatever has been needed in the creation of this facility, the entire operation being run out of pocket change) we expect a diminished need to do such tweaking and recompiling, and we fully expect to achieve a simulation of a generous and untiring robotic research librarian. Onward and upward in this brave new world.
>
> First come first serve. There is no charge.
> Place your requests with <Kouroo@kouroo.info>.
> Arrgh.

- Harvard Observatory on a hill north of the Cambridge campus, as viewed from the corner of Concord Avenue and Bond Street, illustrated in Gleason's Pictorial Drawing-Room Companion in 1851 [HarvardObservatory.tiff]
- Photograph of the B. Martin telescope, donated by Thomas Hancock to Harvard College in 1761 but evidently confiscated by the British during the Revolutionary War because now in the Science Museum of South Kensington, London, England [ThomasHancockTelescope.tiff]
- Painting of William Cranch Bond, at Harvard Observatory, by Cephas G. Thompson [WilliamCranchBond.tiff]
- Engraving of the Great Refractor telescope obtained in 1847 by Harvard Observatory [GreatRefractor.tiff]
- 1850 daguerreotype of the moon, reproduced from Jones, Bessie (Judith) Zaban and Boyd, Lyle Gifford. THE HARVARD COLLEGE OBSERVATORY: THE FIRST FOUR DIRECTORSHIPS, 1839-1919. Cambridge MA: The Belknap Press of Harvard UP, 1971 [1850moon.tiff]
- One of the series of four daguerreotypes of the partial eclipse of the sun by the moon on July 28, 1851, made at Harvard Observatory by John Adams Whipple, reproduced from Jones, Bessie (Judith) Zaban and Boyd, Lyle Gifford. THE HARVARD COLLEGE OBSERVATORY: THE FIRST FOUR DIRECTORSHIPS, 1839-1919. Cambridge MA: The Belknap Press of Harvard UP, 1971 [28jul51eclipse.tiff]
- Stereoscopic photographs by the collodion process of the moon, made with the 15-inch refractor at Harvard Observatory by John Adams Whipple on February 7 and April 6, 1860, reproduced from Jones, Bessie (Judith) Zaban and Boyd, Lyle Gifford. THE HARVARD COLLEGE OBSERVATORY: THE FIRST FOUR DIRECTORSHIPS, 1839-1919. Cambridge MA: The Belknap Press of Harvard UP, 1971 [1860moons.tiff]
- Drawing by George Phillips Bond of the solar eclipse of July 28, 1851, made at Lilla Edet, Sweden, reproduced from Jones, Bessie (Judith) Zaban and Boyd, Lyle Gifford. THE HARVARD COLLEGE OBSERVATORY: THE FIRST FOUR DIRECTORSHIPS, 1839-1919. Cambridge MA: The Belknap Press of Harvard UP, 1971 [28jul51eclipse.tiff]
- 1859-1863 drawing by George Phillips Bond of the nebula in Orion, reproduced from Jones, Bessie (Judith) Zaban and Boyd, Lyle Gifford. THE HARVARD COLLEGE OBSERVATORY: THE FIRST FOUR DIRECTORSHIPS, 1839-1919. Cambridge MA: The Belknap Press of Harvard UP, 1971 [Orion.tiff]
- 1850 daguerreotype of the moon, reproduced from Jones, Bessie (Judith) Zaban and Boyd, Lyle Gifford. THE HARVARD COLLEGE OBSERVATORY: THE FIRST FOUR DIRECTORSHIPS, 1839-1919. Cambridge MA: The Belknap Press of Harvard UP, 1971 [1850moon.tiff]

- Photograph by the collodion process of the moon, made with the 15-inch refractor at Harvard Observatory by John Adams Whipple on May 8, 1857, reproduced from Jones, Bessie (Judith) Zaban and Boyd, Lyle Gifford. THE HARVARD COLLEGE OBSERVATORY: THE FIRST FOUR DIRECTORSHIPS, 1839-1919. Cambridge MA: The Belknap Press of Harvard UP, 1971 `[8may57moon.tiff]`