



December 2011



***Aurora Borealis***

1865

**Frederic Edwin Church**

Born: Hartford, Connecticut 1826

Died: New York, New York 1900

oil on canvas

56 x 83 1/2 in. (142.3 x 212.2 cm)

Smithsonian American Art Museum

Gift of Eleanor Blodgett

1911.4.1

[Collections Webpage and High Resolution Image](#)

*Much has been written about landscape painter Frederic Church, so one of the challenges is sorting through everything that has already been written. Researcher Liz discovered that there is a recent Master's thesis (U. Wisconsin-Madison, 2006) by Michael Aschenbrenner, "The Hope of a Nation: Frederic Edwin Church's 'Our Banner in the Sky' and "Aurora Borealis," which she has ordered through interlibrary loan. She had visited the exhibition, To the Ends of the Earth: Painting the Polar Landscape at the Peabody Essex Museum in Salem, Massachusetts (in which our painting was included), so its catalogue has provided a good overview of artists' depictions of polar exploration. Based on this background, the first questions she wanted to explore were:*

- **What was known at the time about the causes of the aurora borealis?**
- **What were the cultural associations of the aurora?**

The aurora borealis or "northern dawn," a term coined by Pierre Gassendi in 1621, is caused by the [collision of charged plasma from the solar atmosphere](#) with Earth's magnetic field at the North Pole. In the southern hemisphere, a similar phenomenon is called the aurora australis. The aurora are more common close to the poles, but occasionally can be seen further from the Arctic or Antarctic. With help from my friend Donna, a planetary astronomer at Mississippi State

University, I found numerous photographs and video online about the aurora, particularly on the websites of NASA and the ESA (European Space Agency). One of the most stunning images is one taken of the aurora borealis from the [International Space Station](#). Church himself viewed and sketched the aurora borealis while at Mt. Desert Island in Maine in 1860.

Through a search of ProQuest Historical Newspapers, I found a review of Alfred Angot's [The Aurora Borealis](#) (1897). Angot's treatise includes extensive engravings cataloguing different kinds of auroral activity, including Fig. 11, a "Draped Aurora with Hook" that closely resembles the auroral fold towards the left of the painting. Angot explains that the arc of darkness commonly seen in rayed aurora (which appears on the horizon in Church's painting) is caused by the orientation of the display towards magnetic north.

Reading Angot and two modern scholarly articles by J. Morton Briggs Jr. and Patricia Fara which I found through database searches (WorldCat, Bibliography of the History of Art), I got an overview of historical explanations of the aurora. The Roman writer Pliny saw the aurora as a great battle in the sky. In Nordic legend, the aurora was believed to be the flashes of the shields of the Valkyries, and they have been called everything from jumping goats (Aristotle) to merry dancers (Northern Scotland) to fox fires (the Norwegian Lapps told tales about hunting fox by the light of the aurora). The Greek philosopher Aristotle referred to them as "exhalations" or "airy meteors" and into the eighteenth century, many believed the aurora were formed from vapors emanating from the earth. Astronomer Edmund Halley (for whom the famous comet is named) believed that subterranean magnets were responsible for creating the aurora displays. In 1732, the Frenchman J. J. Dortous de Mairan published a treatise on the aurora suggesting that material from the "solar atmosphere"—was responsible. I went to the Dibner Library of Science and Technology at the National Museum of American History to look at a 1733 edition of Mairan's treatise. One engraving illustrating Mairan's treatise depicts a dark arc rising above the horizon with auroral rays streaming towards the sky's zenith, and thus closely resembles the aurora in Church's painting. By the nineteenth century, numerous scientific expeditions yielded new information and J. Unterweger and E. Edlund connected the phenomenon to solar electricity. Despite the investigations of scientists, the aurora still evoked superstition as a portent of war and disaster; this association was reinforced by its appearance above the northern part of the United States in December 1864 and above Paris in October 1870 during the Franco-Prussian War.

Since a spectacular appearance of the aurora was visible as far south as Fredericksburg, Virginia, on December 23, 1864, I wondered if this had occurred during a period of abnormally high sunspot activity. So I turned again to Donna, who told me that this auroral occurrence took place during Solar Cycle 10, during the eleven-year period between December 1865 and March 1867 (data can be found at [www.solen.info/solar](http://www.solen.info/solar)). Forty sunspots occurred in December 1864, which was "unremarkably average."

However, Donna noted that on September 1-2, 1859, the largest solar flare ever recorded caused the aurora to be visible as far south as the Caribbean and Panama! Through Wikipedia, I found an article by astronomers Sten F. Odenwald and James L. Green in the August 2008 issue of [\*Scientific American\*](#) about the 1859 storm. A storm this severe only occurs every 500 years, and were another storm to occur today of even a fraction of its size, it would disable modern telecommunications and satellites worldwide. Just seventeen hours before the solar storm hit the Earth (it takes about eighteen hours for plasma from solar flares to travel to the Earth from the Sun), astronomer Richard Carrington in England observed (and recorded on plate 133 of his [\*treatise\*](#)) sunspots so large they could be seen by the naked eye. The surge temporarily eliminated the Van Allen radiation belts that encircle the Earth. In many areas, the crimson and green light of the aurora appeared in the sky, causing alarmed citizens to believe that their cities were on fire. The aurora turned “night into day” and the accompanying surge of electrical activity from the solar storm disrupted and impeded telegraph transmissions. Church was at his studio in New York at the time and must have seen or at least heard about the appearance of the aurora.

### **Cultural Associations of the Aurora**

Several scholars have connected the Aurora Borealis to the Civil War, which concluded in April 1865, around the time Church completed the painting. In *The Landscapes of Frederick Edwin Church* (1966), David Huntington theorized that Church, supporter of the Union cause, alluded to a presaged victory of the Union in the Civil War in many of the landscape paintings - including *Aurora Borealis* and *Our Banner in the Sky* (1861). Huntington also notes that millions of Americans witnessed an aurora on December 23, 1864 that was visible as far south as Fredericksburg, Virginia, which was viewed by Herman Melville (see below) and others as a portent of [Northern] triumph. I searched ProQuest Historical Newspapers in an attempt to find contemporary commentary on this aurora in the press, but was unable to find mention of the aurora. Huntington claims that Church drew this aurora in a pocket sketchbook and then painted his *Aurora Borealis*. Yet the only surviving confirmed sketch of the aurora I have been able to locate is an oil sketch in the Cooper-Hewitt Museum, [\*Aurora Borealis, Mt. Desert Island, from Bar Harbor, Maine\*](#), which Church made in September, 1860.

Michael Aschenbrenner further developed the Civil War connection, conjecturing that *Our Banner in the Sky* and *Aurora Borealis* served as “visual bookends to the Civil War” and demonstrated Church’s dedication to the Union cause and God’s providential role in the war’s outcome.

The associations of the aurora with war, blood, and destruction were not novel in Church’s day and are in fact, very old. Pliny the Elder wrote in his *Natural Histories* (about 77-79 CE) of the aurora as a “flame of bloody appearance... which falls down upon the earth,” and multiple legends and authors depict the aurora as battling armies. Fara reproduces a print from 1681 in which the artist shows an aurora over Europe as a great battle in the sky. A spectacular aurora that appeared over London in 1716 was linked by some observers to Jacobite rebels in the north in Scotland.

Herman Melville wrote a poem, “Aurora-Borealis” in May 1865 (published in the collection, [Battle-Pieces and Aspects of the War](#)), to commemorate the end of the war, likening the fading of the northern lights to the dissolution of the armies of war: “What power disbands the Northern Lights/After their steely play? ... Alike the God,/Decreeing and commanding/The million blades that glowed,/ The muster and disbanding/Midnight and Morn.” Through Robert Eather’s *Majestic Lights: The Aurora in Science, History, and the Arts* (1980), I found a poem, “[The Aerial Omens](#),” by American poet, John Greenleaf Whittier, which describes the aurora borealis as an army in the sky:

Strange, fiery forms uprise  
On the wide arch, and take the throngful shape  
Of warriors gathering to the strife on high,—  
A dreadful marching of infernal shapes,  
Beings of fire with plumes of bloody red,  
With banners flapping o’er their crowded ranks,  
And long swords quivering up against the sky!

I contacted the librarian at [Olana](#), the historic home of Frederic Church in Hudson, N.Y., and she was able to send me a list of books in Church’s personal library. Church did indeed have the complete works of Whittier, published in 1857. Surely he must have been aware of this poem and of Whittier’s association of the aurora with war.

Through a search of the LOC’s Prints and Photographs’ collection, I discovered a tempera painting by Thomas Nast, [The Uprising of the North](#). Nast’s work is dated about 1867; he almost certainly must have seen Church’s *Aurora* before painting his own. *Aurora*-like light emanates from the U.S. Capitol on the horizon, while mounted soldiers gather beneath a balcony draped with an American flag, where Columbia stands, her sword pointed toward the sky.

Works of art can have multiple layers of meaning, intended and unintended. Church’s *Aurora* could allude to a very personal tragedy in addition to the national drama of the Civil War. In addition to his *Aurora Borealis*, in 1865 Church painted two works, *Sunrise* and *Moonrise*, in honor of his two-year-old son, Herbert Edwin, and five-month-old daughter, Emma. Tragically, Church and his wife lost both children to diphtheria during the spring of 1865. So there is one additional question that I’d like to pursue.

**Given that these three paintings all depict the heavens, could the *Aurora* also symbolize the artist’s mourning for his two children?**

**Bibliography: Frederic Church, *Aurora Borealis***

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