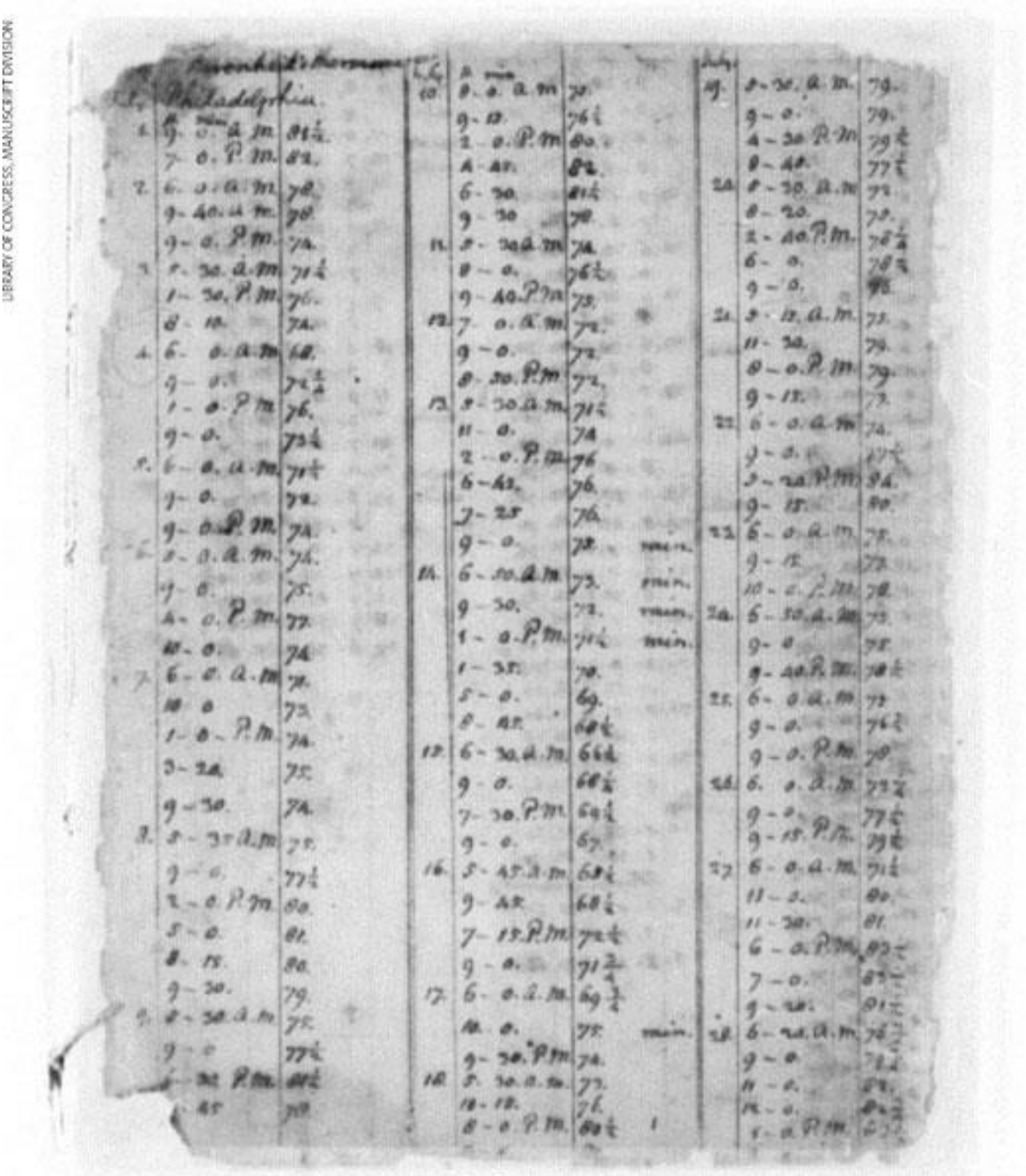
Retrospect: July 4, 1776: The Declaration of Independence

by Sean Potter



Caption: A page from Thomas Jefferson's Weather Memorandum Book showing his temperature observations for the first two weeks in July 1776. He recorded a temperature of 76 degrees at 1:00 p.m. on July 4, the day the Declaration of Independence was adopted.

When delegates of the Second Continental Congress adopted the Declaration of Independence on July 4, 1776 (it was not actually signed on that date, as many erroneously assume), they formally resolved to dissolve all political bonds with Great Britain, thus declaring that the American colonies "are, and of Right ought to be Free and Independent States."

Historians have debated the facts of that day for more than two centuries, including the weather conditions prevailing outside the Pennsylvania State House (now Independence Hall), in Philadelphia where the delegates meet. Although there was no systematic network of weather observations in place at the time, there were many amateur weather observers scattered throughout the colonies, including several of the delegates who would later sign the Declaration. Benjamin Franklin, for example—one of the most "weatherwise" of the Founding Fathers—wrote and conducted experiments related to weather and theorized on the movement of storms.

Thomas Jefferson, who served as the principal author of the Declaration of Independence, was one of the most avid weather observers of his time. For more than 50 years, he kept careful, systematic records of temperature and other meteorological conditions, not only at his home in Monticello, but wherever he travelled. His devotion to his weather records was unwavering. After he broke his right wrist while in Paris in 1786, for example, Jefferson made a record of his observations using his left hand. Jefferson was also a keen collector of weather instruments. He reportedly owned one of only two barometers in America at the time (his records show the purchase of one on July 8, 1776), and he purchased nearly 20 thermometers during his life; this was at a time when they were considered a luxury instrument of the scientific elite—especially as they were not yet being manufactured in America.

While in Philadelphia for the Second Continental Congress, Jefferson recorded the purchase of a thermometer from a local merchant, John Sparhawk, for £3–15 (the equivalent, by one estimate, of more than $300 today) in his account book on July 4, 1776. He had actually begun taking observations three days earlier, on Monday, July 1, in what is his earliest surviving set of weather records. Regardless of whether these readings were made with a different thermometer or the new one which he had just paid for, he recorded a temperature of 82.5°F at 9:00 a.m. and 82°F at 7:00 p.m. Although it was Jefferson's

practice to take two observations a day (“one as early as possible in the morning, the other from 3. to 4. o'clock, because I have found 4. O’clock the hottest day light in the 24. hours”), he did not take an afternoon reading that day. This was no doubt due to the important matters at hand—namely the debates taking place inside the State House over the draft of the Declaration that Jefferson and his fellow Committee of Five members, who had been charged with writing the document, presented to Congress the previous Friday.

“It was hot and humid outside, and stifling in the chamber,” wrote historian William Hogeland in his book, Declaration: The Nine Tumultuous Weeks When America Became Independent, May 1-July 4, 1776. “At four in the afternoon, heat gave way to a two-hour thunderstorm. The rain would play a strange part in the memories of the men in the room and in the recounting of later generations.”

In his diary, Philadelphian Christopher Marshall noted that the day began with “fine sunshine,” then “grew very warm,” with a southerly wind. “At 4 came a thunder gust with rain,” he wrote which “cleared up by six.” Hogeland points out that discrepancies exist in several accounts of the day's weather, describing a pause in the debates, “which one writer has filled with the sound of rain just starting to hit the windows, another with roaring thunder. Others say heat and humidity mounted, the storm held off till late afternoon, and one writer therefore describes the sky darkening just as the committee reaches its divided result”

The next day, July 2, began cloudy, according to Marshall, with heavy rain starting sometime before 10:00 a.m., which did not abate until after 2:00 in the afternoon. Jefferson recorded a steady temperature of 78°F throughout the morning, cooling to 74°F by 9:00 that evening. Again, Hogeland notes inconsistencies in the historical records, describing how “the city was bathed in gentle summer showers all day,” according to one writer. “In tradition and in history,” he writes, “the rain goes on and off at will.”

July 2 was the day that Congress actually voted to declare America's independence from Great Britain, and, therefore, was the date that many, including John Adams, were sure would be celebrated as Independence Day for years to come. Yet, inside the Pennsylvania State House, the delegates had not yet come to a final agreement on the exact language of the Declaration.

The debates took up the entire day of the July 3—which Marshall

described as having had a “fine clear & very cool morning,” with a morning low of 71.5°F recorded by Jefferson's thermometer, with mild weather spilling well into the following day.

July 4 began with “fine sunshine,” according to Marshall's diary, which records a “pleasant morning” with winds out of the southeast. Jefferson awoke to record a temperature of 68°F at 6:00 a.m. By 1:00 in the afternoon—about an hour before a final agreement on the Declaration was reached—the temperature had risen to an à propos 76°F. It would cool down only two-and-a-half degrees by 9:00 p.m.

Weatherwise founder and historian David Ludlum wrote a summary of the day's weather for the June 1975 issue, in which he states that the sky “was fair in the morning and cloudy in the afternoon. The wind shifted from north to southwest during the day while the barometer fell 0.25 in. (7.5 mb).”

In 1894, Alexander McAdie of the U.S. Weather Bureau wrote an article for Popular Science entitled, “A Colonial Weather Service,” in which he referred to the day as “relatively cool.” Given that the current normal high temperature for Philadelphia for July 4 is 85°F, that would make sense (even if what would have been considered “normal” was a few degrees different in 1776). McAdie went on to describe his impressions of the weather that day:

I think statements to the contrary have been made, and the day described as hot and sweltering. More than one historian may have drawn upon imagination in describing the weather of those first days in July when the signers of the Declaration were gathered together in Philadelphia. Strange that from the same hand that penned the Declaration should come at this late date a true statement of the weather of that period. One can’t help a feeling of surprise that Jefferson, with so many duties pressing, should have found time to make these detailed observations.

Although the exact details of the weather that historic day may have been lost to history, some elements remain certain, thanks to the man whose dedication helped give rise to not only a new nation, but also to some of the earliest systematic weather observations taken in it. Jefferson continued his study of weather and climate, recruiting friends such as James Madison to take observations for comparison. (Both men lamented at the loss of their barometers to the hands of the British—Jefferson's was broken, and Madison's was stolen, along with his thermometer.) His efforts to establish a network of amateur

weather observers laid the foundation for the current National Weather Service Cooperative Observer Program, and one of the most prestigious awards NWS presents to local observers each year bears Jefferson's name.

Jefferson made his final entry in his weather memorandum book just six days before his death, which occurred on July 4, 1826—half a century to the day after he took perhaps his most famous temperature readings ever.

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Article from:

“Weatherwise Magazine” July-August , 2011 Volume 64 / number4 pages 10-12