

What Caroline saw?

Remark to “Caroline Herschel’s star atlas” by Ian Ridpath (A&G, August 2015, 4.16-4.17)

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At the end of the article the author writes: “There is, though, a smudgy pencil mark near 82 Pegasi labelled ‘Com’ for which I can find no explanation. Is this perhaps an unannounced [comet] discovery? It is one of the many secrets awaiting elucidation.” This mark by Caroline in Herschel’s exemplar of Flamsteed’s Atlas Coelestis is indeed remarkable. In my ongoing study of the observations made by the Herschels, I came across Caroline’s mark “Com” too. I found the solution in her observing journals, archived by the Royal Astronomical Society. Ridpath’s article is a good opportunity to present the result.

On page 52 of Caroline’s second journal (archived as RAS C. 1/1.2) she describes a sweep, made on 14 January 1789 and performed with her 4.2-inch reflector (“small sweeper”), built by her brother. The handwritten note reads: “I swept that part of the heavens between the head of Pegasus, and α Piscium down to the horizon; but it was not clear in the lower part of the sweep. Fomalhaut was hardly visible all the time during this sweep.” This must be in evening twilight, looking south. In a note (“Mem”) just following she explained that “this last sweep was made in pursuit of the great Comet”.

Which object – marked “Com” in the atlas near 82 Pegasi (just midway between Pegasus’ head and α Piscium) – is meant here? This undoubtedly is Messier’s comet, discovered on 16 November 1788 (comet 1788 I). Caroline mentions the object a few pages earlier (p. 49): on 8 December 1788 she wrote “I could find nothing”. Perhaps the position was incorrect – as it likely was on 14 January 1789. Messier’s comet was 4° southwest of the mark – and already about 10^{th} magnitude, i.e. too dim for her sweeper. However, the previous journal entry (8 January 1789) describes a comet sighting between Vega and δ Cygni. But this was Caroline’s own one: the second discovery (comet 1788 II), made on 21 December 1788.