

Catalog of Comets

- C/1801 N1** *Discovered:* 1801 July 11.90 ($\Delta = 0.37$ AU, $r = 0.84$ AU, Elong. = 52°)
(Pons) *Last seen:* 1801 July 23.91 ($\Delta = 0.60$ AU, $r = 0.56$ AU, Elong. = 28°)
Closest to the Earth: 1801 July 12 (0.3738 AU)
1801 *Calculated path:* CAM (Disc), UMa (Jul. 13), LMi (Jul. 19), LEO (Jul. 23)

Not long after the nineteenth century began, J. J. de Lalande offered a prize of 600 francs to the first person to discover a comet in the new century. On July 11 and 12 of 1801, four of the greatest names in early cometary astronomy responded with that first comet, with the winner being a man who would become the greatest visual comet discoverer of all time.

J. L. Pons (Marseille, France) discovered this comet in Camelopardalis on 1801 July 11.90 and, on the next evening, three independent discoveries were made from Paris, France: P. F. A. Méchain on July 12.92, C. Messier on July 12.93, and A. Bouvard on July 12.93. Messier and Bouvard found the comet almost simultaneously, and this was about 15 minutes after Méchain. Messier described the comet as very faint, while Bouvard described it as small and round, without a tail. Méchain measured the comet's position on July 12.94 as $\alpha = 7^h 22.0^m$, $\delta = +69^\circ 40'$.

The comet was not kept under observation for very long. Méchain saw the comet on July 16, 18, 19, 21, and 23. The last date marked the final time the comet was seen, with Méchain giving a position of $\alpha = 10^h 06.0^m$, $\delta = +28^\circ 29'$ on July 23.91.

Three very similar parabolic orbits have been calculated over the years. Méchain (1802) determined the perihelion date as 1801 August 9.04. J. K. Burckhardt (1806) determined it as August 9.06. A. W. Doberck (1873) determined it as August 9.06. The last orbit is given below and indicates the comet passed only 5° from the sun on August 12.

Interestingly a fifth independent discovery was reported. In a letter written to J. E. Bode, Reissig (Kassel, Germany) said he had seen a small nebulous comet through a break in the clouds on June 30 "between the head of the Great Bear and the Giraffe." He said it remained visible for only 5 or 6 minutes before clouds covered it. Bode wrote that there was too little information to conclude with any certainty that Reissig saw the same comet discovered by Pons and others, and that Lalande's prize should go to Pons. The story did not end there. Over a century and a half later, J. Ashbrook computed the position of C/1801 N1 for 1801 June 30 and found it would have actually

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been situated in Andromeda. He suggested Reissig’s comet was a fabrication. Interestingly, Reissig reported another comet in 1803, which remained visible for eight days at magnitude 5–6, but was seen by no one else.

<i>T</i>	ω	Ω (2000.0)	<i>i</i>	<i>q</i>	<i>e</i>
1801 Aug. 9.0565 (UT)	219.840	45.313	159.267	0.25641	1.0

ABSOLUTE MAGNITUDE: $H_{10} = 9$ (V1964)
FULL MOON: Jun. 26, Jul. 25
SOURCES: C. Messier, P. F. A. Méchain, and A. Bouvard, *MC*, **4** (1801 Aug.), pp. 179–80; P. F. A. Méchain and Reissig, *BAJ for 1805*, **30** (1802), pp. 128–30; *MINS*, **6** (1806), p. 62; J. K. Burckhardt, *BAJ for 1809*, **34** (1806), p. 272; J. L. Pons, *MC*, **18** (1808 Sep.), p. 250; *American Almanac*. Boston: James Munroe & Co. (1847), p. 88; A. W. Doberck, *AN*, **81** (1873 May 27), pp. 321–4; A. W. Doberck, *MNRAS*, **34** (1874 Jun.), p. 426; V1964, p. 53; Reissig, *ST*, **37** (1969 Apr.), p. 230.

- C/1802 Q1** *Discovered:* 1802 August 26.90 ($\Delta = 0.39$ AU, $r = 1.12$ AU, Elong. = 96°)
(Pons) *Last seen:* 1802 October 5.84 ($\Delta = 0.89$ AU, $r = 1.17$ AU, Elong. = 76°)
Closest to the Earth: 1802 August 18 (0.3626 AU)
1802 *Calculated path:* OPH (Disc), HER (Sep. 8)

J. L. Pons (Marseille, France) discovered this comet on 1802 August 26.90, at a position of $\alpha = 16^{\text{h}} 35.3^{\text{m}}$, $\delta = -10^\circ 35'$. He described it as small. Pons confirmed his find on August 27.92. P. F. A. Méchain (Paris, France) independently discovered this comet on August 28.88. He said it was much fainter than the nearby globular clusters M10 and M12, and exhibited no distinct nucleus or tail. H. W. M. Olbers (Bremen, Germany) independently discovered this comet in the evening sky on September 2.85 and described it as faint, diffuse, with a brighter central region 2–3' across.

Olbers said the comet was easily observed on September 4, but noted it appeared fainter on the 5th. On the last date, K. L. Harding (Lilienthal, Germany) observed with a refractor of 3-foot focal length and described the comet as a whitish nebulosity with a stellar nucleus. From the eastern side of the coma extended a faint trace of a tail. Moonlight interfered with observations during the period of September 7–13, with Olbers simply describing the comet as very faint on the first date and hardly visible on the last.

Once moonlight ceased to be a problem, observations picked up once again. Olbers said the comet was rather well observed on September 19, while J. E. Bode (Berlin, Germany) described the comet as an extremely faint nebulosity with indistinct edges on the 20th. By September 23, Olbers remarked on the appreciable decrease in both brightness and size since September 2, although he noted that there was a fairly bright, nearly stellar, central condensation.

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The comet had become a difficult object to see by September 25, with Olbers remarking on the poorly-defined center. Bode could no longer see the comet on the 29th, and Olbers caught his final glimpses of the comet on September 30 and October 2, when he noted it was very faint.

Part of the reason for the ending of observations was the reappearance of the moon in the evening sky, with the comet being seen for the final time on October 5.84, when Messier found it at a position of $\alpha = 17^{\text{h}} 19.6^{\text{m}}$, $\delta = +36^{\circ} 23'$.

Olbers had calculated two parabolic orbits while the comet was still being followed. Around mid-September he determined the perihelion date as September 14.39, and near the end of the month he revised this to September 10.29. Very similar orbits were computed by Olbers (1802) and Méchain (1802) later in the year. K. Lundmark (1916, 1917) noted a strong similarity to the orbit of C/1909 L1, but added that a positive identification was not possible. Lundmark's orbit is given below.

<i>T</i>	ω	Ω (2000.0)	<i>i</i>	<i>q</i>	<i>e</i>
1802 Sep. 10.3554 (UT)	21.8478	313.0142	57.0108	1.094249	1.0

ABSOLUTE MAGNITUDE: $H_{10} = 8.3$ (V1964)
FULL MOON: Aug. 13, Sep. 11, Oct. 11
SOURCES: P. F. A. Méchain, *BAJ for 1805*, **30** (1802), pp. 229–30; H. W. M. Olbers, *BAJ for 1805*, **30** (1802), pp. 232–3; H. W. M. Olbers, *BAJ for 1805*, **30** (1802), pp. 247–8; K. L. Harding, *BAJ for 1805*, **30** (1802), p. 257; J. E. Bode, *BAJ for 1805*, **30** (1802), p. 266; J. L. Pons, P. F. A. Méchain, and H. W. M. Olbers, *MC*, **6** (1802 Oct.), pp. 376–81; H. W. M. Olbers, *MC*, **6** (1802 Nov.), pp. 506–7; P. F. A. Méchain, *MC*, **6** (1802 Dec.), pp. 584–7; P. F. A. Méchain, *BAJ for 1806*, **31** (1803), pp. 129–31; J. L. Pons, *MC*, **18** (1808 Sep.), p. 250; O1899, pp. 74–6; K. Lundmark, *AN*, **202** (1916 Feb. 3), pp. 65–70; K. Lundmark, *AMAF*, **12** (1917 Sep. 12), pp. 1–53; V1964, p. 53.

- C/1804 E1** *Discovered:* 1804 March 7.11 ($\Delta = 0.23$ AU, $r = 1.13$ AU, Elong. = 122°)
(Pons) *Last seen:* 1804 April 1.85 ($\Delta = 0.51$ AU, $r = 1.32$ AU, Elong. = 119°)
Closest to the Earth: 1804 March 9 (0.2229 AU)
1804 *Calculated path:* LIB (Disc), VIR (Mar. 11), BOO (Mar. 13)

J. L. Pons (Marseille, France) discovered this comet on 1804 March 7.11. On March 8.20, Pons' colleague J. J. C. Thulis (Marseille, France) measured the position as $\alpha = 14^{\text{h}} 35.1^{\text{m}}$, $\delta = -15^{\circ} 56'$. A. Bouvard (Paris, France) independently discovered this comet on March 11.16, while H. W. M. Olbers (Bremen, Germany) independently discovered it on March 12.98. Olbers described it as larger and brighter than M5 (a globular cluster in Serpens of about magnitude 6.2 and about 13' across), but without a distinct boundary.

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Messier and Olbers consistently managed to acquire observations throughout the remainder of March. On the 13th Olbers said it was not visible to the naked eye, although his cometseeker revealed it as a bright object. Upon observing it with his refractor, the comet was seen as a “pale and diffuse light.” Olbers said poor seeing caused the comet to appear faint on the 14th, while bright moonlight made it very difficult to find on the 20th. Messier wrote that his observations during the period of March 11–17 always revealed the comet as very faint, with a round coma 5–6’ across. He added that the nucleus was hardly apparent. Once the moon had left the sky, Olbers reported the comet was easy to see on March 27 and 28, and he even noted a nucleus was occasionally seen on the last date. But his observation on the 29th revealed a much fainter comet than on the previous nights. Messier saw the comet for the final time on the 31st, when he found it after much difficulty, because it was “almost completely invisible.”

The comet was last detected on April 1.85, when Olbers determined the position as $\alpha = 14^h\ 33.0^m$, $\delta = +51^\circ\ 52'$. He said he expected the comet to be similar in brightness to that observed on March 29, but was puzzled when he failed to find it with the cometseeker. Another sweep with the same telescope revealed “a small insignificant nebulosity near a star of 8 or 9 magnitude.” Examination with a large refractor separated the two objects and Olbers noted the comet’s center was a little northeast of the star. Olbers searched for the comet on April 8, but was unable to find it.

C. F. Gauss (1804) used ten positions obtained between March 13 and April 1 and computed a parabolic orbit with a perihelion date of 1804 February 14.09. This orbit is given below. Very similar orbits were also determined by D. von Wahl (1804) and A. Bouvard (1808).

<i>T</i>	ω	Ω (2000.0)	<i>i</i>	<i>q</i>	<i>e</i>
1804 Feb. 14.0881 (UT)	331.9459	179.5344	56.4522	1.071168	1.0

ABSOLUTE MAGNITUDE: $H_{10} = 8.0$ (V1964)
FULL MOON: Feb. 25, Mar. 26, Apr. 24
SOURCES: J.-J. L. de Lalande, J. L. Pons, J. J. C. Thulis, *BAJ for 1807*, **32** (1804), p. 225; H. W. M. Olbers, C. F. Gauss, and D. von Wahl, *BAJ for 1807*, **32** (1804), pp. 229–33; H. W. M. Olbers, *MC*, **9** (1804 Apr.), p. 344; H. W. M. Olbers, J. L. Pons, A. Bouvard, C. Messier, and C. F. Gauss, *MC*, **9** (1804 May), pp. 432–5; H. W. M. Olbers and A. Bouvard, *MC*, **9** (1804 Jun.), pp. 503–7; C. F. Gauss, *CDT* (1807), pp. 374–9; A. Bouvard, *CDT* (1808), p. 338; J. L. Pons, A. Bouvard, and H. W. M. Olbers, *MC*, **18** (1808 Sep.), p. 250; *American Almanac*. Boston: James Munroe & Co. (1847), p. 88; O1899, pp. 76–7; V1964, p. 54.

- 2P/1805 U1
(Encke)

1805

Discovered: 1805 October 20.1 ($\Delta = 0.44$ AU, $r = 0.84$ AU, Elong. = 56°)
Last seen: 1805 November 20.25 ($\Delta = 1.03$ AU, $r = 0.34$ AU, Elong. = 19°)
Closest to the Earth: 1805 October 16 (0.4352 AU)
Calculated path: UMa (Disc), LEO (Oct. 22), COM (Oct. 24), VIR (Oct. 30)

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J. L. Pons (Marseille, France) discovered this comet near ν Ursae Majoris on 1805 October 20.1. His colleague, J. J. C. Thulis, measured the position as $\alpha = 11^{\text{h}} 06.6^{\text{m}}$, $\delta = +33^{\circ} 29'$ on October 20.20. An independent discovery was made by J. S. Huth (Frankfurt an der Oder, Germany) on October 20.08. He found the object with a cometseeker, describing it as a very bright nebulosity, but immediately identified it as a comet when seen in a refractor of 3.5-foot focal length. Huth noted that it appeared "as large and bright as the famous nebula in Andromeda, is nearly round, very bright in the center . . . and more sharply defined to the north." He estimated the diameter as 4' or 5' across and said no nucleus was seen. Another independent discovery was made by A. Bouvard (Paris, France) on October 20.17.

Huth said the comet appeared larger and brighter on the 22nd than when seen on the 20th, and was visible to the naked eye. On October 23, J. E. Bode (Berlin, Germany) described the comet as a rather bright nebulosity in his refractor of 3.5-foot focal length. On October 25, Huth said he saw a bright flickering within the coma, but no distinct nucleus. The coma gradually faded from the center toward the edges, although it seemed to extend toward the south-southwest. On October 29, Huth said the comet's motion had decreased, but the size and brightness had not noticeably changed since the 25th. A stellar nucleus was seen near the northern edge, which seemed to occasionally flicker. On October 30, H. W. M. Olbers (Bremen, Germany) said the comet was very bright, about 4' across, with a diffuse central condensation. It also displayed a faint tail about 1.5° long.

On November 1, Huth said the cometseeker revealed a vapor-like tail over 3° long and about 1.7' wide. Its edges were sharply defined near the comet, but showed no clear boundary near the end. The coma was about 3' across. Olbers said the tail appeared about 3° long in a cometseeker. Bode saw a small, thin tail in the finder. On November 3, Bode said the comet was seen "quite clearly, but the tail was less visible." On November 6, Huth said the nucleus occasionally flickered, while the tail was short and considerably fainter than the coma. On November 16, Huth saw the comet for the final time. On November 13 and 14, Olbers said moonlight and morning twilight interfered with his observations. Nevertheless, he estimated the comet shone with a brightness equal to stars of magnitude 4.

The comet was last detected on November 20.25, when Thulis determined the position as $\alpha = 14^{\text{h}} 23.3^{\text{m}}$, $\delta = -13^{\circ} 30'$. Bode searched for this comet in the evening sky on December 5, 9, 10, and 11, but no trace was found. The comet passed 7.0° from the sun on December 22.

Very similar parabolic orbits were computed by F. W. Bessel (1806), C. F. Gauss (1806), and A. M. Legendre (1806). These indicated a perihelion date of 1805 November 18. J. F. Encke (1819a) suspected this comet was identical to one found by Pons in 1818. He was confident that the 1818 comet moved in a short-period elliptical orbit, but he was interested to see if the 1805 comet did as well. He ultimately found that an orbit with a perihelion date of November 22.00 and a period of 3.36 years fitted the positions

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for the 1805 comet. Encke (1819b) announced that comets seen in 1786 and 1795 were previous returns of this comet. The most recent investigation into this orbit was conducted by B. G. Marsden and Z. Sekanina (1974). It gave nongravitational terms of $A_1 = -0.29$ and $A_2 = -0.03847$ and is given below.

<i>T</i>	ω	Ω (2000.0)	<i>i</i>	<i>q</i>	<i>e</i>
1805 Nov. 21.9864 (TT)	182.3076	337.1517	13.5936	0.340645	0.846528

ABSOLUTE MAGNITUDE: $H_{10} = 8.0$ (V1964)
FULL MOON: Oct. 8, Nov. 7, Dec. 6
SOURCES: J. S. Huth and J. J. C. Thulis, *MC*, **12** (1805 Nov.), pp. 499–502; J. S. Huth and A. Bouvard, *BAJ for 1809*, **34** (1806), pp. 127–31; H. W. M. Olbers and F. W. Bessel, *BAJ for 1809*, **34** (1806), pp. 134–6; J. E. Bode, *BAJ for 1809*, **34** (1806), pp. 261–2; H. W. M. Olbers, F. W. Bessel, and C. F. Gauss, *MC*, **13** (1806 Jan.), pp. 79–83; J. J. C. Thulis, *MC*, **13** (1806 Feb.), p. 194; F. W. Bessel, J. J. C. Thulis, and A. M. Legendre, *MC*, **14** (1806 Jul.), pp. 68–71; J. L. Pons, *MC*, **18** (1808 Sep.), p. 250; J. J. C. Thulis, *CDT* (1809), pp. 325–6; J. F. Encke, *CA*, **2** (1819a), pp. 305–8, 316; J. F. Encke, *CA*, **2** (1819), p. 415; J. F. Encke, *BAJ for 1822*, **47** (1819b), pp. 188–91; O1899, pp. 77–8; V1964, p. 54; B. G. Marsden and Z. Sekanina, *AJ*, **79** (1974 Mar.), pp. 415–16.

- 3D/1805 V1** *Discovered:* 1805 November 10.9 ($\Delta = 0.25$ AU, $r = 1.20$ AU, Elong. = 145°)
(Biela) *Last seen:* 1805 December 14.70 ($\Delta = 0.05$ AU, $r = 0.95$ AU, Elong. = 53°)
Closest to the Earth: 1805 December 9 (0.0366 AU)
1806 I *Calculated path:* AND (Disc), PSC (Dec. 2), CET–AQR (Dec. 7), SCL (Dec. 8), GRU (Dec. 9)

J. L. Pons (Marseille, France) discovered this comet on 1805 November 10.9. His colleague, J. J. C. Thulis confirmed the comet on November 10.91 and estimated the position as $\alpha = 1^{\text{h}} 06.6^{\text{m}}$, $\delta = +40^\circ 43'$. He described the comet as very small, with a fairly strong nucleus, and a weak coma. Independent discoveries were made by A. Bouvard (Paris, France) on November 16.95 and by J. S. Huth (Frankfurt an der Oder, Germany) on November 22.75. Huth noted the comet was visible to the naked eye as a star of magnitude 5 or 6. Huth described the comet as large, only a little fainter than M31, with a nucleus. When looked at with the refractor the nucleus showed a faint, planetary disk.

The comet was heading toward both the sun and Earth, and observers noted that it steadily brightened and grew larger in the days following discovery. Huth said the comet was not much fainter than M31 on November 23, while on the 30th he noted it was found at the same time the galaxy was. Interestingly, while both of these observations were naked eye, the observation on the last date was made in moonlight. Huth consistently remarked on the planetary appearance of the nucleus in his refractor, and he watched the coma grow from 6–7' on the 23rd, to 20' on the 30th. Although

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no tail was seen on the 23rd, Huth noted a slight extension of the coma on the northern edge on the 26th. By the 30th, he said the coma continued to spread to the east-northeast into a possible tail. J. E. Bode (Berlin, Germany) saw the comet on the 28th and said the coma was thinner and the nucleus easier to see than for comet 2P/1805 U1 (Encke).

As December began, the comet's increasingly rapid, southward motion was quite apparent. Moonlight still deterred observations, although Huth commented on the 1st, "If I hold my hand between my eye and the moon, I can clearly see the comet as much larger and brighter than [M31]." The comet was described as easily visible to the naked eye on December 8, even after the rising of the moon. C. F. Gauss (Brunswick, Germany) said the brightness of the comet was similar to a star of magnitude 3 or 4. H. W. M. Olbers (Bremen, Germany) described the comet as very beautiful, and added that a telescope revealed a very small, but distinct, planet-like nucleus situated within a large coma. J. Schroeter (Lilienthal, Germany) observed with a reflector of 13-foot focal length and said the coma was 5.5' across. He measured the "whole nucleus" as 6.419" across, while the "central brightest portion of the nucleus" was 4.052" across. No tail was reported by any observer.

The comet was last detected in Europe on December 9.74, when Thulis determined the position as $\alpha = 23^{\text{h}} 16.2^{\text{m}}$, $\delta = -35^{\circ} 22'$. Bode looked for the comet on December 9 and 10, but failed to find it. He suggested this was because it was then too close to the southern horizon.

Observers in more southerly latitudes began seeing the comet on December 10. Around December 10.6, W. Morison (Madras, India) saw an object easily visible to the naked eye and similar in brightness to a star of magnitude 4. He wrote that, although it looked like a comet, he was skeptical of its nature because of its very rapid motion. That evening, Dabadie and Laprie (Royal College of Port Louis, Mauritius) saw a "beautiful nebulous star . . . traversing the space between the constellations of Grus and Pavo."

The final observations of this comet were made by observers on the Isle de France (now Mauritius). Dupeloux roughly measured the comet's distances from Achernar on December 13.70 and 14.70, and from Canopus on December 13.72 and 14.69. Without knowledge of Dupeloux's observations, but aware of those of Dabadie and Laprie a few days earlier, Malavois precisely measured the comet's distances from Achernar on December 14.68 and Canopus on December 14.69. Using those distances, he roughly plotted the comet on a celestial globe and concluded its position was about $\alpha = 19^{\text{h}}$, $\delta = -74.5^{\circ}$. Malavois said his first observation occurred when weak twilight was still present and noted the coma was about 20–25' across. During the second observation, with dark skies, the coma was closer to 45' across. Malavois was traveling on the 15th and was not able to look for the comet, and skies were cloudy on the 16th and 17th. He was not able to see the comet thereafter.

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The first parabolic orbit was calculated by F. W. Bessel, and it revealed a perihelion date of 1806 January 1.49. Olbers immediately pointed out its similarity to the orbit of a comet seen in 1772. Gauss then took positions obtained during the period of November 16 to December 8, and determined the perihelion date as 1805 December 31.78. He also noted the similarity to the orbit of the comet of 1772, but added, “one cannot bring the elements substantially closer without disfiguring the agreement with the observations. The comet of 1772 came close to no planet that could have caused a large modification of its elements.” Similar parabolic orbits were calculated by Bessel, Gauss, A. M. Legendre, and A. Bouvard during the next few years, but attempts were underway to establish a link between this comet and that of 1772.

Gauss redetermined the orbit of the comet of 1772 during February 1806 and became convinced that it was identical to Pons’ current comet. Although the first elliptical orbit was calculated by Bessel during April 1806, the period had been *assumed* to be 33.86 years. The first true calculation of an elliptical orbit must be credited to Gauss, who determined the perihelion date as 1806 January 2.93 and the period as 4.74 years during May. Further investigation into the orbit of this comet basically ended because of the short period of time the comet was under observation.

Work on this orbit finally resumed in 1826 after W. von Biela had discovered a comet on February 27. Shortly after mid-March, several astronomers were pointing out the similarity between the orbits of their 1826 comet, and those seen in 1772 and 1805. That comet was followed until May 9, which provided enough observations for a fairly accurate determination of the orbit. Based on the assumption that the 1805 and 1826 comets were the same, J. F. A. Gambart (1826) calculated orbits for both comets. For the 1805 comet, Gambart determined a perihelion date of January 2.47 and a period of 6.74 years.

Further observed returns of this comet allowed additional refinements to the orbit of the 1805 apparition. Some of the astronomers who published later investigations include J. S. Hubbard (1860), J. von Hepperger (1900), B. G. Marsden and Z. Sekanina (1971), and W. Landgraf (1986). Landgraf’s orbit is given below.

<i>T</i>	ω	Ω (2000.0)	<i>i</i>	<i>q</i>	<i>e</i>
1806 Jan. 2.4028 (TT)	218.0800	254.0782	13.5913	0.907144	0.745847

ABSOLUTE MAGNITUDE: $H_{10} = 7-8$ (V1964)
FULL MOON: Nov. 7, Dec. 6, Jan. 5
SOURCES: J. L. Pons, A. Bouvard, J. S. Huth, J. J. C. Thulis, H. W. M. Olbers, F. W. Bessel, and C. F. Gauss, *MC*, **13** (1806 Jan.), pp. 83–91; J. J. C. Thulis, *MC*, **13** (1806 Feb.), p. 195; C. F. Gauss and F. W. Bessel, *MC*, **13** (1806 Mar.), pp. 310–13; F. W. Bessel, A. M. Legendre, and C. F. Gauss, *MC*, **14** (1806 Jul.), pp. 71–86; C. F. Gauss, *MC*, **14** (1806 Aug.), pp. 181–6; J. J. C. Thulis, *MC*, **14** (1806 Oct.), pp. 382–3; J. S. Huth, *BAJ* for

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1809, **34** (1806), pp. 131–4; H. W. M. Olbers and F. W. Bessel, *BAJ for 1809*, **34** (1806), pp. 135–6; C. F. Gauss, J. J. C. Thulis, and N. Maskelyne, *BAJ for 1809*, **34** (1806), pp. 137–40; J. Schroeter, *BAJ for 1809*, **34** (1806), pp. 140–2; J. E. Bode, *BAJ for 1809*, **34** (1806), pp. 262–3; A. Bouvard, *CDT* (1808), p. 340; J. L. Pons, *MC*, **18** (1808 Sep.), p. 251; J. J. C. Thulis, *CDT* (1809), pp. 326–7; A. Bouvard, *CDT* (1824), pp. 316–20; J. F. A. Gambart, *MAS*, **2** (1826), pp. 504–6; *Briefwechsel zwischen W. Olbers und F. W. Bessel*, **1**, edited by A. Erman. Leipzig: Avenarius & Mendelssohn (1852), p. 22; J. S. Hubbard, *AJ*, **6** (1860 Jun. 26), pp. 115–17; F. A. T. Winnecke, Dabadie, Laprie, Malavois, and Dupeloux, *VJS*, **15** (1880), pp. 372–8; W. T. Lynn and W. Morison, *The Observatory*, **14** (1891 Oct.), pp. 345–7; O1899, pp. 78–9; J. von Hepperger, *SAWW*, **109** Abt. IIa (1900), pp. 623–55; V1964, p. 54; B. G. Marsden and Z. Sekanina, *AJ*, **76** (1971 Dec.), pp. 1138–41; W. Landgraf, *QJRAS*, **27** (1986), p. 604.

- C/1806 V1** *Discovered:* 1806 November 10.24 ($\Delta = 1.81$ AU, $r = 1.34$ AU, Elong. = 47°)
(Pons) *Last seen:* 1807 February 12.78 ($\Delta = 1.71$ AU, $r = 1.31$ AU, Elong. = 50°)
Closest to the Earth: 1806 December 29 (0.4520 AU)
1806 II *Calculated path:* VIR (Disc), CRV (Dec. 4), CRT (Dec. 9), HYA (Dec. 15), CEN (Dec. 19), ANT-VEL (Dec. 21), CAR (Dec. 26), VOL (Dec. 28), DOR (Dec. 31), RET (Jan. 2), HOR (Jan. 5), ERI (Jan. 8), PHE (Jan. 10), FOR (Jan. 15), SCL (Jan. 17), CET (Jan. 31)

J. L. Pons (Marseille, France) discovered this comet in the morning sky on 1806 November 10.24. His colleague, J. J. C. Thulis, confirmed the comet on November 11.17 and measured the position as $\alpha = 12^{\text{h}} 09.1^{\text{m}}$, $\delta = +2^\circ 15'$.

The comet was heading southward at discovery and, although several astronomers in Germany, France, and England measured positions, few descriptive observations were made. F. W. Bessel (Lilienthal, Germany) saw the comet in unfavorable skies on December 8 and noted a faint nucleus and a tail that was hardly visible. On the same night, J. E. Bode (Berlin, Germany) said the comet was “obvious in the finder, while the telescope shows a small nucleus and weak traces of a tail.” H. W. M. Olbers (Bremen, Germany) observed the comet on the morning of the 9th and said it displayed a central nucleus and faint traces of a tail. Although the comet was approaching both the sun and Earth, its increasingly southern declination brought observations to an end shortly after mid-December. The comet was last detected in Paris on December 18 and in Marseille on the 20th.

The comet was closest to both the sun and Earth on December 29, and it attained a maximum southern declination of -67° on December 31. So, as the new year began, the comet was moving northward and fading. Pons accidentally found the comet in the evening sky on 1807 January 17, less than 10° above the horizon. He considered it his seventh comet discovery, even after finding out it was the same comet he had discovered the previous November. Before the end of the month, Bessel had resumed his observations and the comet was seen for the first time by C. Herschel (Slough, England).

CATALOG OF COMETS

During the first days of February, the comet was still under observation at Marseille, Paris, Lilienthal, and Slough. W. Herschel saw the comet with the reflector of 10-foot focal length on the 1st and wrote, "There was no visible nucleus, nor did the light which is called the coma increase suddenly towards the centre, but was of an irregular round form, and with this low power extended to about 5, 6, or 7 minutes in diameter. When I magnified 169 times it was greatly reduced in size, which plainly indicated that a farther increase of magnifying power would be of no service for discovering a nucleus." The comet was last seen on February 12.78, when Thulis determined the position as $\alpha = 1^{\text{h}} 08.9^{\text{m}}$, $\delta = -20^{\circ} 57'$.

The first parabolic orbit was calculated by Bessel before the comet was recovered in January of 1807. The perihelion date was determined as 1806 December 29.80, and Bessel provided an ephemeris for the period of December 21 to February 19. Almost identical parabolic orbits that took advantage of the complete observational arc were later calculated by Bessel (1807) and J. K. Burckhardt (1819). Burckhardt's orbit is given below.

Another orbit was calculated over 40 years later. F. Hensel (1862) took 61 positions obtained during the period of November 11 to February 12, and determined seven Normal positions. He then calculated a hyperbolic orbit with a perihelion date of December 29.42 and an eccentricity of 1.0101820. No planetary perturbations were applied. Interestingly, the orbit does not fit the positions as well as the parabolas.

<i>T</i>	ω	Ω (2000.0)	<i>i</i>	<i>q</i>	<i>e</i>
1806 Dec. 29.4315 (UT)	225.22645	324.9969	144.9746	1.081571	1.0

ABSOLUTE MAGNITUDE: $H_{10} = 6$ (V1964)
FULL MOON: Oct. 27, Nov. 26, Dec. 25, Jan. 24, Feb. 22
SOURCES: J. E. Bode, *BAJ for 1810*, **35** (1807), p. 238; W. Herschel, *PTRSL*, **97** (1807), pp. 264–6; F. W. Bessel, *MC*, **15** (1807 Jan.), pp. 85–8; F. W. Bessel, *MC*, **15** (1807 Apr.), pp. 373–6; F. W. Bessel and J. J. C. Thulis, *MC*, **16** (1807 Aug.), pp. 176–82; J. L. Pons, *MC*, **18** (1808 Sep.), p. 251; *CDT* (1810), pp. 298–9; J. K. Burckhardt, *CDT* (1819), p. 378; *American Almanac*. Boston: James Munroe & Co. (1847), p. 88; F. Hensel, *AN*, **58** (1862 Aug. 8), pp. 89–92; O1899, pp. 79–80; V1964, p. 54.

- C/1807 R1**
(Great Comet)
- Discovered:* 1807 September 9.7 ($\Delta = 1.20$ AU, $r = 0.68$ AU, Elong. = 34°)
Last seen: 1808 March 27.87 ($\Delta = 3.68$ AU, $r = 3.12$ AU, Elong. = 49°)
Closest to the Earth: 1807 September 26 (1.1533 AU)
- 1807**
Calculated path: VIR (Disc), LIB (Sep. 28), VIR (Sep. 29), SER (Oct. 3), HER (Oct. 17), LYR (Nov. 18), CYG (Dec. 4), LAC (Jan. 8), AND (Jan. 22), CAS (Feb. 4), AND (Mar. 9), PER (Mar. 24)

This comet should probably have been seen in the Southern Hemisphere weeks before its actual discovery, but no records of any such observations