

Glossary

Absolute magnitude For Solar System objects, the magnitude of an object located at one Astronomical Unit from both Earth and Sun.

Aphelion The point of an orbit farthest from the Sun.

Asteroids (Minor Planets) Predominantly rocky bodies smaller than the major planets and found mostly within the inner Solar System.

Astronomical Unit (AU) A unit of distance equal to the average distance of Earth from the Sun, predominantly used for expressing distances within the Solar System. One AU is approximately 92,955,807 miles, or 149,597,870 km.

Averted vision The technique of looking slightly away from a faint object so as to bring its image to the most light-sensitive part of the retina.

Celestial poles The points in the heavens directly over the north or south poles of Earth.

Coma The cloud of dust and gas that forms around the nucleus of a comet when the latter is heated by the Sun. The nucleus and coma together make the head of a comet.

Comet A predominantly icy body capable of producing clouds of dust and gas when heated by the Sun.

Degree Angular measure in which a circle around the entire heavens above and below the horizon can be divided into 360 degrees of arc; 1 degree can be divided into 60 min of arc and 1 min can be divided into 60 s of arc.

Dynamically new comet A comet that is apparently entering the inner Solar System from the Oort Cloud for the first time.

Eccentricity An orbital element that defines how elongated or even how open-ended the orbit of an astronomical object is. A circle has an eccentricity of 0, an ellipse between 0 and 1, a parabola exactly 1, and a hyperbola greater than 1.

Ecliptic plane The plane of Earth's orbit around the Sun.

Great comet A comet that becomes unusually spectacular and conspicuous with the naked eye.

Head (of a comet) A name given to the combined nucleus and coma of a comet, especially when a visible tail is also present.

Inclination An orbital element that defines the angle between the plane of an object's orbit and the plane of Earth's orbit (i.e., the ecliptic plane).

Kuiper Belt A system of comets and icy dwarf planets (including Pluto) just beyond the orbits of the outermost planets in the Solar System. This is believed to be the source of comets having short periods.

Magnitude A measure of brightness, used in astronomy, in which a difference of 5 magnitudes equals a difference in brightness of 100 times. The lower the magnitude, the brighter the object.

Meteor The streak of light in the sky caused by a meteoroid burning up in Earth's atmosphere.

Meteorite An interplanetary piece of rock or iron reaching the surface of a moon or planet, especially Earth.

Meteoroid A small solid object in orbit around the Sun which, upon entry into Earth's atmosphere, gives rise to a meteor.

Nucleus The solid, more permanent part of a comet and the source of its coma and tail.

Oort Cloud The vast "cloud" of comets, beyond 50,000 AU from the Sun, believed to be the source of comets having very long periods.

Orbital Elements A set of quantities that specifies the size and shape of an orbit and the times when the object following that orbit reaches key positions.

Parallax The apparent shift of a nearby object's position in relation to more distant ones, when the former is viewed from different viewing angles.

Perihelion The point of an orbit nearest to the Sun.

Plasma A gas composed of electrons and positive ions.

Return The reappearance of a comet at a specific perihelion passage.

Solar radiation pressure The force exerted by photons of visible light and other wavelengths of electromagnetic radiation.

Solar wind The plasma constantly traveling outward from the Sun.

Swan bands Three prominent bands in the spectrum of most comets, caused by diatomic carbon (C₂).

Synchrone A line connecting dust particles in a comet tail that left the nucleus at the same time.

Syndyne (syndyname) A line connecting particles in a comet tail that left the nucleus at the same velocity.

Tail An appendage of gas and/or dust that streams away from the coma of many comets under the influence of solar radiation pressure or the solar wind.

Further Reading

Most books on general astronomy have a chapter dedicated to comets. Of the books published from ca. 1980 and dealing specifically with comets, the following are pleasantly non-technical.

Burnham, Robert. *Great Comets*. Cambridge: Cambridge University Press, 2000

Kronk, Gary W. *Cometography* (in six volumes) Cambridge: Cambridge University Press. First three volumes published 1999, 2003, and 2007.

Kronk, Gary W. *Comets: A Descriptive Catalog*. Hillside, NJ: Enslow Publishers Inc., 1984.

Levy, David H. *The Quest for Comets*. New York: Avon Books, 1995.

Levy, David. *Comets: Creators and Destroyers*. New York: Touchstone Books, 1998.

Schaaf, Fred. *Comet of the Century: From Halley to Hale-Bopp*. Springer-Verlag, New York, Inc., 1997.

Appendix

The following table lists all comets that we consider to have been the “greatest” of the many objects recorded throughout history. Listed are the official designation (where applicable) or year of appearance where no official designation has been given, the date of perihelion (T), perihelion distance in AU (q), minimum distance from earth (Δ_{\min}), the date of minimum approach to Earth (Date Δ_{\min}), approximate apparent magnitude at greatest observed brilliance (m), approximate visual length of tail, in degrees, at maximum (Tail) and approximate absolute magnitude ($H10$). The last three are, in most instances, little more than guesses – “wild” guesses for the early entries – but will hopefully facilitate some degree of comparison between these magnificent comets.

Comet	<i>T</i>	<i>q</i>	Δ min	Date Δ min	<i>m</i>	Tail	<i>H</i> 10
372 B.C	Winter	v small			v bright	60	
135 B.C					v bright	>90?	
(-134 N1)							
44 B.C	May 25	0.22	0.96	May 12	-3?	15	3
(-43 K1)							
P/141 F1	March 22.43	0.58	0.17	April 21	-1	>10	3
(IP/Halley)							
178	Early September	0.5	0.05	Mid-October	Bright	90?	
191	Early September?	<0.01?				>100	
252	March 13-21	<0.01				90?	
P/374 E1	February 16.34	0.58	0.09	April 1	-2	90?	3
(IP/Halley)							
C/390 Q1	September 5	0.92	0.1	August 18	-3	100	
C/400 F1	February 25	0.21	0.07	March 31	0	45	6
C/418 M1	October 5	0.35	0.93	October 9	-4?	>100	-2?
467	January?	<0.01?				Long	
P/607 U1	March 15.47	0.58	0.09	April 19	-2	90?	3
(IP/Halley)							
X/676 P1						45	
C/770 K1	June 5.8	0.58	0.30	July 10	-3	75	3.2
P/837 F1	February 28.27	0.58	0.03	April 10	-4	90	3
(IP/Halley)							
X/838 V1						100	
X/891 J1						>100	
893						>100(200?)	
C/905 K1	April 26	0.20	0.20	May 25	0	>100	4.5
P/1066 G1	March 20.93	0.57	0.10	April 23	-5?	>100	3

(continued)

Comet	T	q	Δ min	Date Δ min	m	Tail	$H10$
(1P/Halley)							
X/1106 C1	Early February?	<0.01?			-10?	100	
C/1132 T1	August 30.7	0.74	0.05	October 6	-2	45	4.5
C/1147 A1	January 28	0.12	0.32	December 29 (1146)	0	100	5
C/1264 N1	July 20.29	0.82	0.18	July 29	0	100	3.5
C/1402 D1	March 21	0.38	0.71	February 20	-5	45	0
C/1471 Y1	March 1.44(1472)	0.49	0.07	January 22	-4	30	2
C/1577 V1	October 27.45	0.18	0.63	November 10	-4	20	0
C/1582 J1	May 6.91	0.17	0.83	May 8	-1	100	4.8
Gregorian calendar							
C/1618 W1	November 8.85	0.39	0.36	December 6	-4?	104	4.6
C/1680 V1	November 18.49	0.006	0.49	January 4 (1681)	-10	90	4
C/1743 X1	March 1.89(1744)	0.22	0.83	February 26 (1744)	-7	90	0.5
C/1769 P1	October 8.12	0.12	0.32	September 10	0	90	3.2
C/1811 F1	September 12.76	1.04	1.22	October 16	0	25	0
C/1843 D1	February 27.91	0.006	0.84	March 5	-11	64	4.9
C/1858 L1	September 30.47	0.58	0.54	October 10	-1	43	3.3
C/1861 J1	June 12.01	0.82	0.13	June 30	-5	122	3.9
C/1882 R1	September 17.72	0.008	0.98	September 17	-12.5	30	0.8
P/1909 R1	April 20.18(1910)	0.58	0.15	May 20 (1910)	-6?	>120	3
(P/Halley)							
C/1910 A1	January 17.59	0.13	0.86	January 18	-6	50	5
C/1927 X1	December 18.18	0.18	0.75	December 12	-9	35	5.5
C/1965 S1	October 21.18	0.008	0.91	October 17	-15	45	6
C/1975 V1	February 25.22(1976)	0.20	0.79	March 1 (1976)	-3	40	4.5
C/1995 O1	March 30.29(1997)	0.93	1.31	March 22 (1997)	-0.3	40	0
C/1996 B2	May 1.40	0.23	0.10	March 22	0	118	5
C/2006 P1	January 12.80 (2007)	0.17	0.82	January 15 (2007)	-6	40	5.5

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