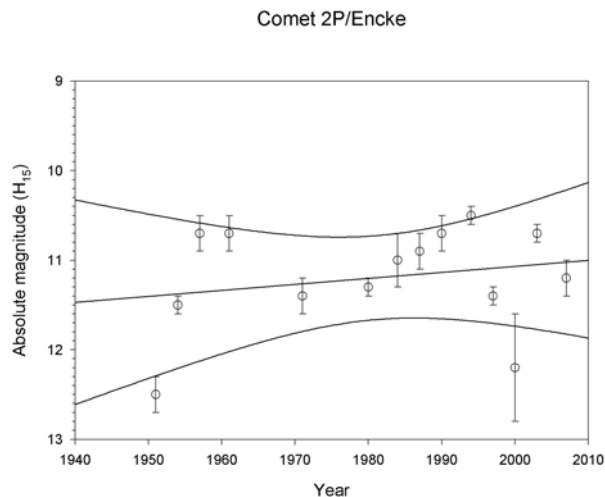


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## Comet Prospects for 2013

2013 shows little promise for the return of periodic comets. Only two are likely to be readily visible, but one is 2P/Encke, which returns for the 62<sup>nd</sup> time of observation and should be a binocular object. To make up for the lack there are two parabolic comets, and one of these may be the brightest comet for several years.

Theories on the structure of comets suggest that any comet could fragment at any time, so it is worth keeping an eye on some of the fainter periodic comets, which are often ignored. They would make useful targets for CCD observers, especially those with time on instruments such as the Faulkes telescope. In addition to those in the BAA Handbook, ephemerides for new and currently observable comets are published in the *Circulars*, and on the Section, CBAT and Seiichi Yoshida's web pages. Complete ephemerides and magnitude parameters for all comets predicted to be brighter than about 21<sup>m</sup> are given in the International Comet Quarterly Handbook; details of subscription to the ICQ are available on the Internet. A section booklet on comet observing is available from the BAA Office.



This year sees comet **2P/Encke's** 62<sup>nd</sup> observed return to perihelion since its discovery by Mechain in 1786. The orbit is quite stable, and with a period of 3.3 years apparitions repeat on a 10-year cycle. This year the comet is well seen from the Northern Hemisphere prior to perihelion, which is in late November. The comet brightens rapidly during September and could be visible in large binoculars by the end of the month. It crosses from

the evening to the morning sky through October and will sink into the morning twilight by mid November, when it could be 6<sup>th</sup> magnitude. This magnitude may however be optimistic as observations from the SOHO spacecraft in 2000 showed that it suddenly brightened after perihelion, by which time it will be at a poor elongation. A possible explanation for this behaviour is that Encke has two active regions, an old one with declining activity, which operates prior to perihelion and a recently activated one present after perihelion. There is, however, little evidence for a secular fading in the archive of BAA observations of the comet. The comet is the progenitor of the Taurid meteor complex and may be associated with several Apollo asteroids.

**29P/Schwassmann-Wachmann** is an annual comet that has outbursts, which over the last decade seem to have become more frequent. The comet had one of its strongest outbursts yet recorded in early 2010. The comet is an ideal target for those equipped with CCDs and it should be observed at every opportunity. The comet begins the year in Virgo, and completes its retrograde loop on the border with Hydra by mid summer. It ends the year in nearby Libra. The comet is at opposition towards the end of April and passes through solar conjunction early in November.

**154P/Brewington** makes its third return since its discovery by Howard J Brewington of Cloudcroft, New Mexico, as a small diffuse 10<sup>m</sup> object on 1992 August 28.41 using a 0.40-m reflector x55. This was his fourth discovery and his second periodic one. The comet is in a Jupiter crossing orbit, but has not approached the planet for several revolutions. At a really favourable return it could reach 7<sup>m</sup>, but at this return it will only reach 10<sup>th</sup> magnitude, although it is conveniently placed. Observers located in the UK should pick it up as a 12<sup>m</sup> object in the August morning sky, although Southern Hemisphere observers may find it a couple of months earlier. By October it could be 10<sup>m</sup> and has moved to the evening sky. It is at its brightest around the time of the new moon in early November, when it is on the border of Aquarius and Pegasus. By the end of the year it has faded to 11<sup>th</sup> magnitude, but remains well placed in the evening sky.

**2011 F1 (LINEAR)** reaches 10<sup>th</sup> magnitude at perihelion, but it is then poorly placed for observation. It is observable from the UK in the evening from July to early October as it slowly brightens from 12<sup>th</sup> magnitude. After perihelion it slowly emerges from conjunction for Southern Hemisphere observers.

**2011 L4 (PanSTARRS)** is raising some excitement in the blogosphere, however comet brightness is notoriously difficult to predict. It will not be visible from the UK prior to perihelion, but some Southern Hemisphere locations may find it as a binocular object early in the year. After perihelion in March it rapidly emerges into our evening sky in Pisces when it could be a naked eye comet with a 10° tail. By April it is visible all night, and is still a binocular object. It fades relatively quickly and by the end of June a telescope will be needed.

The other periodic and parabolic comets that are at perihelion during 2013 are unlikely to become brighter than 12<sup>th</sup> magnitude or are poorly placed. Ephemerides for these can be found on the CBAT WWW pages. One D/ comet has predictions for return, though searches at favourable returns in the intervening period have failed to reveal the comets and it is possible that they are no longer active. There is however always a chance that they will be rediscovered accidentally by one of the Sky Survey patrols. Several SOHO comets are predicted to return, however these will only be visible from the SOHO or STEREO satellites.

Looking ahead to 2014, the prospects for periodic comets are even worse, with the most interesting object being 2004 CB, which could reach 11<sup>th</sup> magnitude when it passes 0.05 AU from the earth in May.

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### Comets reaching perihelion in 2013

Comet	T	q	P	N	H <sub>1</sub>	K <sub>1</sub>	Peak mag
LINEAR (2011 F1)	Jan 8.0	1.82			5.0	10.0	10
P/Garradd (2008 R1)	Jan 25.5	1.80	4.51	1	15.5	10.0	20
246P/NEAT (2010 V2)	Jan 28.7	2.88	8.08	1	9.0	10.0	15
111P/Helin-Roman-Crockett	Jan 30.7	3.70	8.49	3	5.0	20.0	19
P/LINEAR (2000 R2)	Feb 2.4	1.46	6.13	1	18.0	10.0	21
133P/Elst-Pizarro	Feb 9.0	2.65	5.62	5	12.0	10.0	18
125P/Spacewatch	Feb 17.0	1.53	5.53	4	15.5	10.0	19
120P/Mueller	Feb 22.4	2.73	8.39	3	12.0	10.0	19

P/Kowalski (2007 T2)	Feb 25.6	0.69	5.43	1	18.5	10.0	18
P/NEAT (2004 F1)	Feb 28.2	2.42	9.36	1	16.0	5.0	19
91P/Russell	Mar 1.2	2.62	7.70	4	7.5	15.0	15
PanSTARRS (2011 L4)	Mar 11.1	0.30			5.5	10.0	
P/Christensen (2006 S1)	Mar 17.0	1.36	6.53	1	17.5	10.0	21
P/LINEAR (2003 HT <sub>15</sub> )	Mar 17.2	2.69	9.96	1	14.0	5.0	17
197P/LINEAR	Mar 24.9	1.06	4.85	2	16.5	5.0	17
63P/Wild	Apr 10.8	1.95	13.2	3	12.0	10.0	15
P/SOHO (2002 R4 = 2007 Y4)	Apr 13.5	0.05	5.31	2			
76P/West-Kohoutek-Ikemura	May 7.7	1.60	6.47	5	8.0	30.0	16
114P/Wiseman-Skiff	May 13.9	1.57	6.67	4	11.5	15.0	16
LINEAR (2010 S1)	May 20.3	5.90			3.5	10.0	15
P/LINEAR (2010 A2)	May 23.1	2.00	3.47	1	15.5	10.0	20
175P/Hergenrother	May 23.6	1.95	6.34	2	14.0	10.0	17
P/SOHO (2002 R1 = 2008 A3)	Jun 1.1	0.05	5.37	2			
P/Catalina (2005 JY <sub>126</sub> )	Jun 4.4	2.13	7.27	1	11.5	10.0	16
P/LINEAR (2005 YQ <sub>127</sub> )	Jun 5.8	1.91	7.59	1	14.0	10.0	19
112P/Urata-Nijjima	Jun 24.3	1.46	6.64	4	14.0	15.0	18
P/LINEAR (2003 U2)	Jun 29.0	1.69	9.52	1	15.0	10.0	19
26P/Grigg-Skjellerup	Jul 6.0	1.09	5.24	19	12.0	40.0	14
P/Gehrels (1997 C1)	Jul 8.2	3.60	18.0	1	8.0	10.0	16
46P/Wirtanen	Jul 9.4	1.05	5.43	10	8.5	20.5	11
178P/Hug-Bell	Jul 23.1	1.93	7.03	2	13.5	10.0	18
84P/Giclas	Jul 23.2	1.84	6.94	6	9.5	20.0	16
184P/Lovas	Jul 28.5	1.39	6.61	2	14.0	10.0	15
P/McNaught (2006 K2)	Aug 2.7	2.10	7.12	1	14.0	10.0	18
98P/Takamizawa	Aug 5.4	1.67	7.43	4	11.5	15.0	15
79P/du Toit-Hartley	Aug 23.3	1.12	5.06	5	14.0	15.0	16
P/Christensen (2006 U5)	Aug 31.8	2.33	6.64	1	12.0	10.0	17
102P/Shoemaker	Sep 1.0	1.97	7.22	4	8.0	15.0	13
121P/Shoemaker-Holt	Sep 8.3	3.75	9.94	3	4.5	15.0	15
P/SOHO (2002 Q8 = 2008 E4)	Sep 10.5	0.05	5.52	2			
P/SOHO (2002 S11 = 2008 G6)	Oct 26.9	0.05	5.53	2			
83D/Russell	Nov 5.5	2.14	7.53	2	12.0	10.0	18
P/Christensen (2007 C1)	Nov 16.2	2.19	6.80	1	15.0	10.0	20
2P/Encke	Nov 21.7	0.34	3.30	61	10.0	8.8	6
P/McNaught (2005 L1)	Nov 24.6	3.16	7.96	1	9.5	10.0	16
P/Larsen (2004 H2)	Dec 11.6	2.64	9.63	1	13.5	10.0	20
154P/Brewington	Dec 12.2	1.61	10.8	2	7.0	15.0	10
P/NEAT (2003 S1)	Dec 16.1	2.59	9.71	1	11.5	10.0	17
87P/Bus	Dec 19.6	2.10	6.38	5	10.0	15.0	17
LINEAR (2011 J2)	Dec 25.9	3.45			6.0	10.0	14

Check D/

The date of perihelion (T), perihelion distance (q), period (P), the number of previously observed returns (N), the magnitude parameters  $H_1$  and  $K_1$  and the brightest magnitude (which must be regarded as uncertain) are given for each comet. The magnitudes, orbits, and in particular the time of perihelion of the D/ comets, are uncertain.

Note:  $m_1 = H_1 + 5.0 * \log(d) + K_1 * \log(r)$

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