ALPO COMET NEWS FOR JANUARY 2020
By Carl Hergenrother – 2020-January-1

Happy New Year and welcome to 2020!

The monthly ALPO Comet News PDF can be found on the ALPO Comet Section website (http://www.alpo-astronomy.org/cometblog/). A shorter version of this report is posted on a dedicated Cloudy Nights forum (https://www.cloudynights.com/topic/688998-alpo-comet-news-for-january-2020/). All are encouraged to join the discussion over at Cloudy Nights.

The brightest comet as 2020 begins is long-period comet C/2017 T2 (PANSTARRS). It is possible that PANSTARRS will be the brightest comet of the year even though it is only predicted to peak around magnitude 8. This month, PANSTARRS is nicely placed for northern observers in the evening sky. CCD observers can observe interstellar visitor 2I/Borisov at 15-16th magnitude though it is likely to start fading. Another comet of interest to CCD imagers is short-period comet 289P/Blanpain which passes within 0.09 au of Earth this month. How bright this comet gets is uncertain as it is a faint, outburst prone object.

Looking Back on 2019

2019 saw the announcement of 48 new comet discoveries and 17 returning comet recoveries. That number will undoubtably climb as a few possible comets are still listed on the Minor Planet Center's Possible Comet Confirmation Page.

The brightest comet of 2019 was returning short-period comet 46P/Wirtanen which started the year at 5th magnitude after peaking at 4th magnitude in December 2018. The 2nd brightest comet was long-period comet C/2018 Y1 (Iwamoto), an amateur CCD discovery which peaked at 6th magnitude in February. In total 6 comets reached magnitude 10.0 or brighter. In addition to the aforementioned, comets 38P/Stephan-Oterma, 64P/Swift-Gehrels, C/2017 T2 (PANSTARRS), and C/2018 W2 (Africano) reached single digits on the magnitude scale.

Professional asteroid hunting surveys ATLAS and PANSTARRS tied for the most comet discoveries with 18 apiece. The Catalina Sky Survey came in third with 7 new finds. Amateur Gennady Borisov used his CCD equipped 0.65-m f/1.5 astrograph to discover 2 comets. One of his discoveries, 2I/2019 Q4 (Borisov), was the comet event of the year as it is the 2nd recognized interstellar object and 1st interstellar comet.

Looking Ahead to 2020

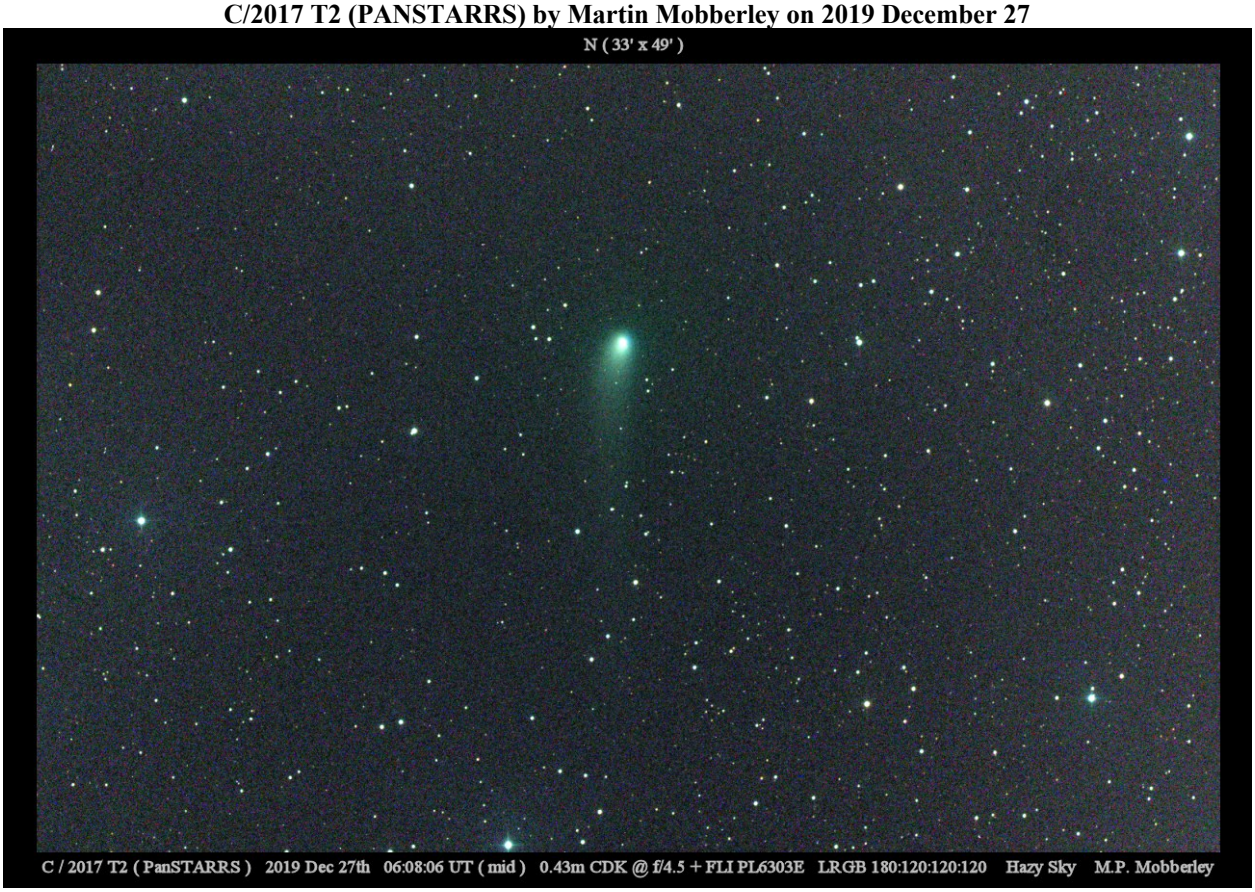
Three comets are expected to be brighter than magnitude 10. One, C/2017 T2 (PANSTARRS), has already reached that milestone as 2020 begins. The other two are short-period comets 88P/Howell and frequent visitor 2P/Encke. You can read more about C/2017 T2 below. As for the others, Encke reaches perihelion in late June at 0.34 au. This return will be a very poor one for northern observers but a nice one for southern observers, especially after perihelion. Howell comes to perihelion in late September at 1.35 au when it should be 8-9th magnitude. You can hear me talk with more about these comets and a few fainter ones of interest (17P/Holmes, 141P/Machholz, 249P/LINEAR) on the ALPO's The Observers Notebook – The Comets of 2020 podcast at https://soundcloud.com/observersnotebook.

Bright Comets (magnitude < 10.0)

C/2017 T2 (PANSTARRS) – C/2017 T2 (PANSTARRS) will be a nice object for visual observers for the next few months. Last month, the ALPO Comet Section received images, sketches and magnitude estimates from a number of observers (Salvador Aguirre, Michel Deconinck, J. J. Gonzalez, Carl Hergenrother, John Maikner, Martin Mobberley, John D. Sabia, and Chris Wyatt). The comet was estimated to be magnitude 9.5 on Dec. 3.04 (J. J. Gonzalez), 10.5 on Dec. 6.00 (Salvador Aguirre), 9.8 on Dec. 16.11 (Carl Hergenrother), 9.9 on Dec. 17.16 (Carl Hergenrother), and 9.7 on Dec. 27.92 (J. J. Gonzalez). It is still a compact object with a coma diameter of 2-4'. CCD images and visual observations continue to show the development of a nice narrow tail.

This month, C/2017 T2 (PANSTARRS) will slowly brighten from around magnitude 9.5 to 9.2 as its approaches a 2020 May 4 perihelion at 1.62 au. C/2017 T2 spends all month in the northern constellation of Perseus. It is well placed in the evening sky for northern observers. but very low or below the horizon for southern hemisphere observers. During the last week of January, C/2017 T2 will be located within a few degrees of the Double Cluster making for some nice wide-field views.

C/2017 T2 (PANSTARRS) by Martin Mobberley on 2019 December 27



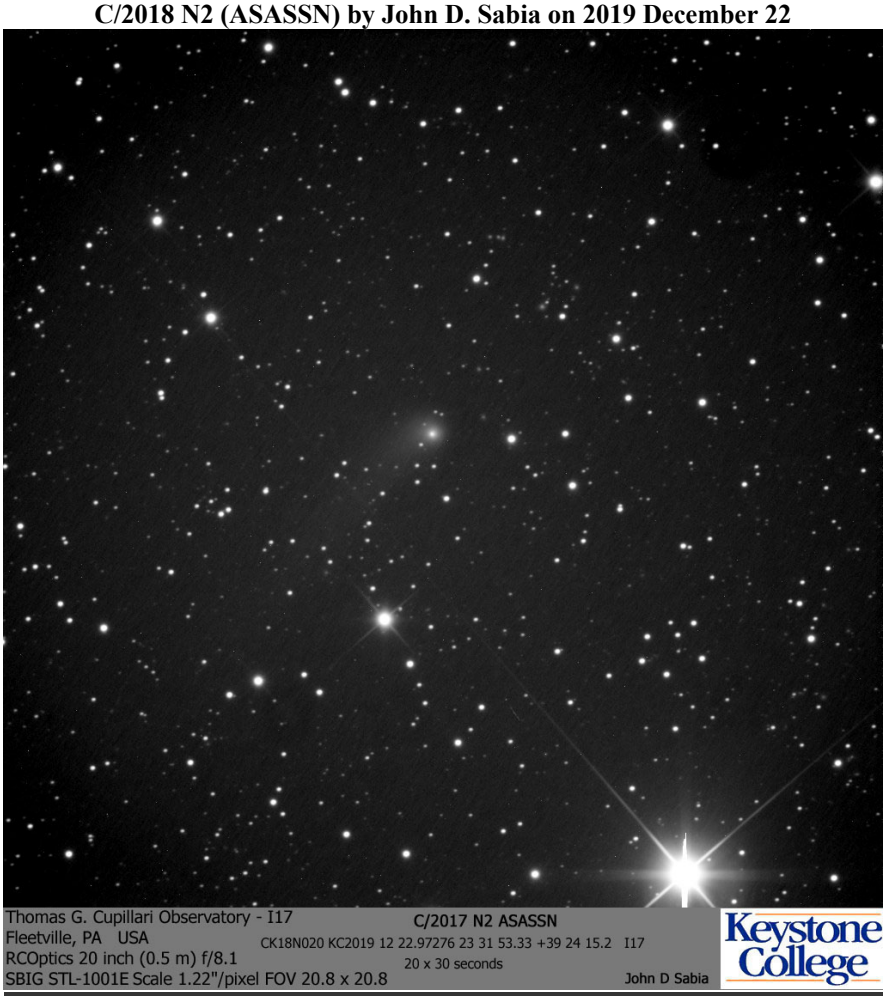
C/2017 T2 (PANSTARRS)
T = 2020-May-04 q = 1.62 au Max El
Long-Period comet - dynamically new (deg)

Date	Mag	R.A.	Decl.	r	d	Elong	Const	40N	40S
2020-01-01	9.5	03 25	+55 12	2.296	1.521	131	Per	75	0
2020-01-06	9.4	03 10	+55 55	2.252	1.529	126	Per	74	0
2020-01-11	9.4	02 56	+56 28	2.210	1.541	120	Per	73	0
2020-01-16	9.3	02 44	+56 53	2.168	1.558	115	Per	73	0
2020-01-21	9.3	02 33	+57 15	2.126	1.577	110	Per	73	0
2020-01-26	9.2	02 24	+57 34	2.086	1.599	105	Per	72	0
2020-01-31	9.2	02 17	+57 54	2.046	1.622	100	Per	69	0
2020-02-05	9.1	02 12	+58 16	2.008	1.645	96	Per	66	0

Faint Comets (between magnitude 10.0 and 13.0)

C/2018 N2 (ASASSN) - Comet C/2018 N2 (ASASSN) was discovered back in July 2018 by the All-Sky Automated Survey for Supernovae (ASAS-SN) program. It is now past its 2019 November 11 perihelion (q = 3.12 au). The section received images of this comet from John D. Sabia as well as 2 magnitude estimates from J. J. Gonzalez (11.1 with a 1.5' coma on the Dec 3 and 11.5 with a 2' coma on the Dec 27). Similar to C/2017 T2, it is well placed for northern observers as it moves through Andromeda in the evening sky. The comet should now be fading as it is on the wrong side of perihelion and moving away from Earth.

C/2018 N2 (ASASSN) by John D. Sabia on 2019 December 22



C/2018 N2 (ASASSN)
T = 2019-Nov-11 q = 3.12 au Max El
Long-Period comet - dynamically old (deg)

Date	Mag	R.A.	Decl.	r	d	Elong	Const	40N	40S
2020-01-01	12.2	23 29	+39 43	3.164	2.978	91	And	73	0
2020-01-06	12.3	23 29	+39 58	3.172	3.053	87	And	69	0
2020-01-11	12.4	23 29	+40 17	3.180	3.127	84	And	64	0
2020-01-16	12.4	23 30	+40 40	3.190	3.200	80	And	60	0
2020-01-21	12.5	23 32	+41 07	3.200	3.271	77	And	56	0
2020-01-26	12.6	23 34	+41 37	3.211	3.339	73	And	52	0
2020-01-31	12.6	23 36	+42 11	3.222	3.406	70	And	48	0
2020-02-05	12.7	23 38	+42 48	3.234	3.470	68	And	44	0

Fainter Comets of Interest (fainter than magnitude 13.0)

29P/Schwassmann-Wachmann – 29P/Schwassmann-Wachmann was discovered photographically in 1927 by German astronomer Arnold Schwassmann and Arno Arthur Wachmann. The duo discovered 4 comets together, three short-period comets (29P, 31P and 73P) and a long-period comet shared with Leslie Peltier (C/1930 D1). Chris Wyatt made an unsuccessful attempt to visually observe 29P on December 27 (fainter than 15.7). As outburst prone as this comet has been recently, it probably won't stay that faint for long. A CCD image by John D. Sabia from December 23rd shows the comet as a small faint object.

Last month we noted that Richard Miles at the British Astronomical Society (BAA) is leading an effort to continually monitor 29P and its outbursts via CCD photometry. With 29P well placed for northern observers in the evening sky, CCD observers are asked to consider contributing to Richard's endeavor. You can find more information at the BAA's "Observing the outbursting comet 29P/Schwassmann-Wachmann" page (https://britastro.org/node/18562).

29P/Schwassmann-Wachmann
T = 2019-Mar-07 q = 5.77 au Max El
Centaur comet - 14.8-yr orbital period (deg)

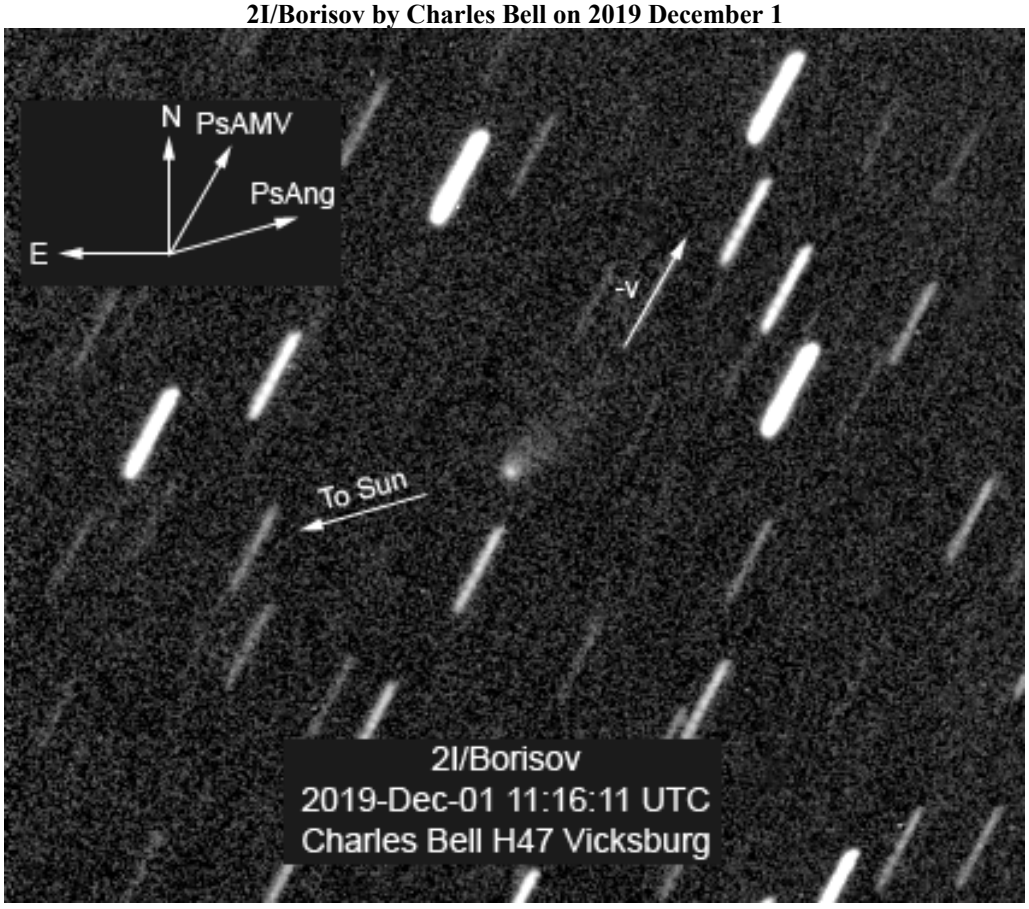
Date	Mag	R.A.	Decl.	r	d	Elong	Const	40N	40S
2020-01-01	12-14	00 28	+12 51	5.784	5.666	91	Psc	62	16
2020-01-06	12-14	00 30	+12 54	5.784	5.747	87	Psc	61	14
2020-01-11	12-14	00 32	+12 59	5.785	5.827	82	Psc	59	11
2020-01-16	12-14	00 34	+13 05	5.785	5.907	78	Psc	56	9
2020-01-21	12-14	00 36	+13 13	5.786	5.985	73	Psc	53	6
2020-01-26	12-14	00 38	+13 23	5.787	6.062	69	Psc	50	4
2020-01-31	12-14	00 41	+13 34	5.787	6.137	64	Psc	46	2
2020-02-05	12-14	00 44	+13 46	5.788	6.208	60	Psc	42	0

2I/2019 Q4 (Borisov) – The first bona fide interstellar comet, 2I/2019 Q4 (Borisov), was discovered by Gennady Borisov on August 30 with a 0.65-m f/1.5 astrograph of his own making at MARGO observatory near Nauchnij, Crimea. Last month, the Comet Section received images and magnitude estimates from Rodolfo Artolaon, Charles Bell, Martin Mobberley, Marcos Santucho, and Chris Wyatt.

The comet passed perihelion on December 8 at 2.01 au. Chris Wyatt made two visual sighting in early December and placed the comet at magnitude 15.6 (Dec 4) and 15.7 (Dec 6). More recent visual magnitude estimates posted on the comet-ml list and COBS place the comet between magnitude 14.5 and 15.0. As the first interstellar comet, we should be on the lookout for any

brightness surprises. But if it acts like a typical comet, fading should commence this month as it moves away from the Earth and Sun. The comet is rapidly moving south in Centaurus and will become invisible to most northern hemisphere observers. On the other hand, it is nicely placed for folks in the southern hemisphere.

2I/Borisov by Charles Bell on 2019 December 1

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2I/2019 Q4 (Borisov)
T = 2019-Dec-08  q = 2.01 au                                          Max El
Interstellar comet                                                    (deg)
    Date      Mag     R.A.    Decl.      r        d     Elong  Const  40N  40S
2020-01-01   15.2   12 05   -36 04    2.073    1.939     83     Cen    13   56
2020-01-06   15.3   12 13   -39 36    2.104    1.947     85     Cen    10   61
2020-01-11   15.3   12 20   -42 58    2.140    1.962     86     Cen     7   65
2020-01-16   15.4   12 26   -46 10    2.180    1.982     87     Cen     3   68
2020-01-21   15.5   12 32   -49 11    2.226    2.007     89     Cen     0   71
2020-01-26   15.7   12 38   -51 59    2.276    2.036     90     Cen     0   73
2020-01-31   15.8   12 43   -54 35    2.330    2.069     92     Cen     0   73
2020-02-05   15.9   12 48   -56 59    2.388    2.106     94     Cen     0   72
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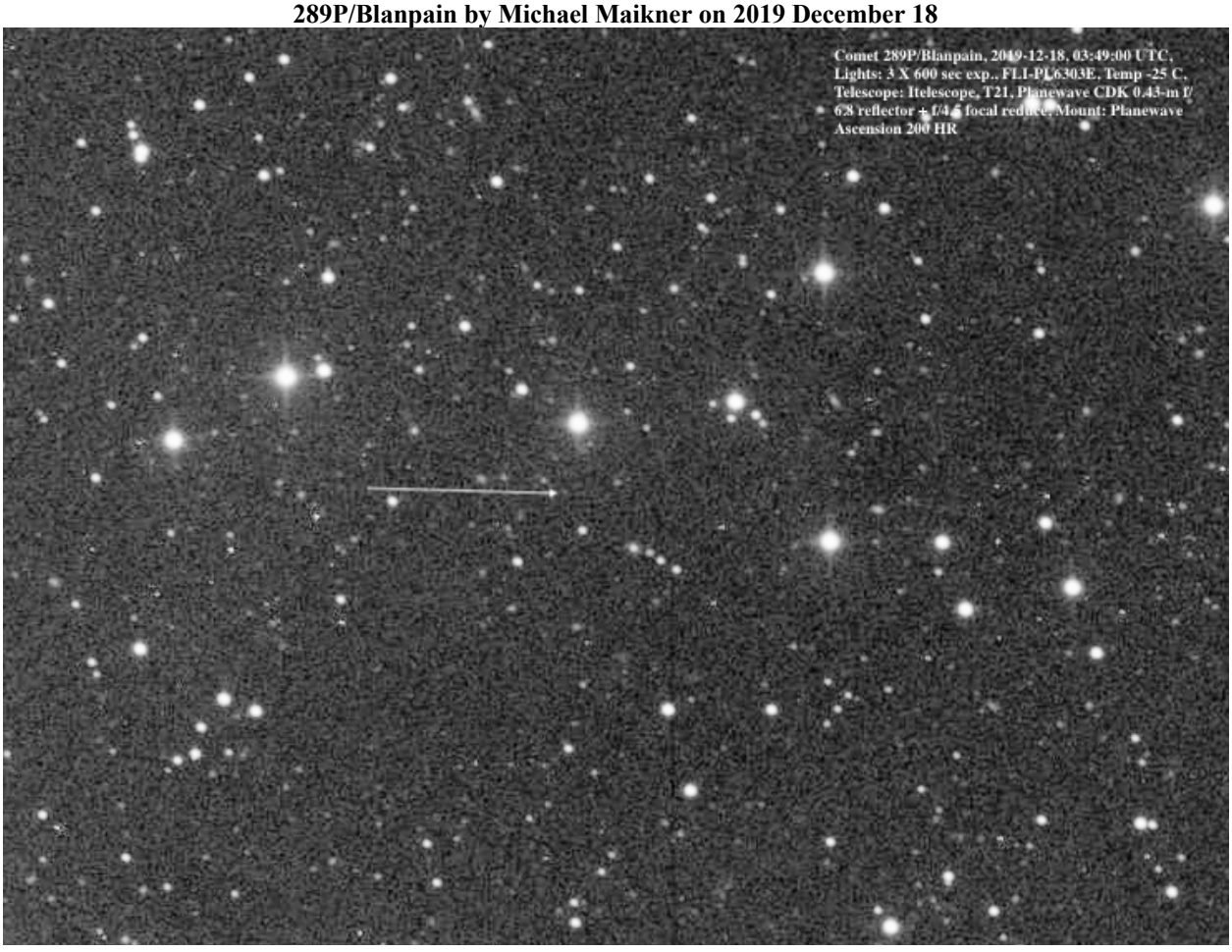
289P/Blanpain – It seems like every year or so a short-period comet passes within 0.1 au of Earth. In the past 6 years, we've seen the following close approaches: P/2016 BA14 PANSTARRS (2016 Mar 22 @ 0.024 au), 252P/LINEAR (2016 Mar 21 @ 0.036 au), 209P/LINEAR (2014 May 29 @ 0.056 au), 45P/Honda-Mrkos-Pajdusakova (2017 Feb 11 @ 0.083 au), and 46P/Wirtanen (2018

Dec 16 @ 0.078 au). This month 289P/Blanpain joins the list as its passes 0.089 au of Earth on January 11th.

Coming this close to Earth doesn't always produce a bright comet and it is likely Blanpain will remain very faint. Case in point, in 2003 it came even closer (0.025 au) and never got brighter than 14th magnitude. While it is not expected to get bright, it is outburst prone. Jean-Jacques Blanpain discovered 289P at 6th magnitude in November 1819 when it was likely experiencing an outburst. It went unobserved for the next 194 years until re-discovered by the Catalina Sky Survey in November 2003. Observations in 2005 found it to still be active, albeit at a very low level. In July 2013 while far from perihelion (3.9 au vs perihelion at ~1.0 au), Blanpain experienced a major ~9 magnitude outburst and brightened from 26th to 17th magnitude.

Last month Blanpain reached perihelion at 0.96 au. It spends all of January within 0.18 au of Earth and 1.13 au of the Sun. It is solely a northern hemisphere object as it races through Pegasus (Jan 1-5), Andromeda (5-9), Cassiopeia (9-16), Camelopardalis (16-26), Ursa Major (26-28), Lynx (28-29) and Ursa Major again (29-31) in the evening sky. The brightness prediction below is for the inactive nucleus (a cometary runt with a small diameter of only ~400 m) and provides a faint limit. If the comet is more active it may be magnitudes brighter than this prediction.

289P/Blanpain by Michael Maikner on 2019 December 18



289P/Blanpain
T = 2019-Dec-20 q = 0.96 au Max El
Short-period comet — 5.3-yr orbital period (deg)

Date	Mag	R.A.	Decl.	r	d	Elong	Const	40N	40S
2020-01-01	19.0	23 25	+19 35	0.972	0.115	81	Peg	62	1
2020-01-06	18.4	23 51	+34 58	0.987	0.098	89	And	72	0
2020-01-11	17.9	00 45	+53 43	1.006	0.091	101	Cas	73	0
2020-01-16	17.6	02 57	+68 53	1.030	0.097	115	Cas	61	0
2020-01-21	17.7	06 21	+69 56	1.057	0.114	127	Cam	60	0
2020-01-26	17.9	08 04	+62 46	1.088	0.139	135	Cam	68	0
2020-01-31	18.3	08 46	+55 49	1.123	0.169	141	UMa	75	0
2020-02-05	18.6	09 06	+50 16	1.159	0.203	145	UMa	80	0

New Discoveries, Recoveries and Other Comets in the News

Newly Numbered Periodic Comet – The following periodic comet was numbered in the latest batch of the Minor Planet Circulars (MPC 118229).

393P/2009 SK280 = 2019 S5 (Spacewatch-Hill)

This comet is ALPO Solar Coordinator Rik Hill's 10th numbered period comet. Congratulations, Rik! His other numbered comets include 195P, 211P, 232P, 310P, 326P, 357P, 369P, 375P, and 385P, all of which were named P/Hill.

P/2019 X1 (Pruyne) – Theodore Pruyne used the Mount Lemmon Survey 1.5-m reflector to discover this comet on December 2. At discovery, the comet was 19th magnitude with a 15" coma and 16" long tail. A pre-discovery observation from November 29 were found by Pan-STARRS. Comet Pruyne is a Jupiter family short-period comet with a period of 15.3 years. Perihelion was on 2019 August 2 at 4.33 au. The comet should peak in brightness 19th magnitude) in early January.

P/2019 W1 (PANSTARRS) – The Pan-STARRS survey used their Pan-STARRS2 1.8-m Ritchey-Chretien reflector on Haleakala in Maui to discover this 20th magnitude short-period comet on November 29. Additional pre-discovery observations were found back to August 2018 when the comet was as faint as 24th magnitude. It should peak at 19th magnitude this month. Perihelion occurred back on 2019 May 8 at 3.34 au. The comet is due back at perihelion in January 2029.

In addition to the above discoveries and recoveries, the following objects are designated as asteroids but have comet-like orbits. This doesn't mean these objects are cometary in origin, but it makes them a good group to watch. Unfortunately, most remain very faint objects. My search criteria are based on the JPL Small-Body Database of orbits and is limited to: 1) asteroidal objects with Jupiter MOID < 0.3 au, but not Hilda (3.85 < a < 4.05 au) or Jupiter Trojan (5.03 < a < 5.43 au) objects and 2) possess a condition code (to filter out uncertain, short arc orbits).

Object	Disc. Date	Peri. Dist.	Period (years)	H	Max Brightness	Discoverer
2019 WV6	Nov 29	1.38	5.62	19.4	20-in-Mar2020	WISE
2019 XY2	Dec 06	1.28	5.70	21.0	19-in-Dec2019	MountLemmon
2019 YN2	Dec 20	1.44	7.24	20.6	21-in-Feb2020	MountLemmon
2019 YY2	Dec 24	1.43	5.72	20.7	20-in-Feb2020	PANSTARRS

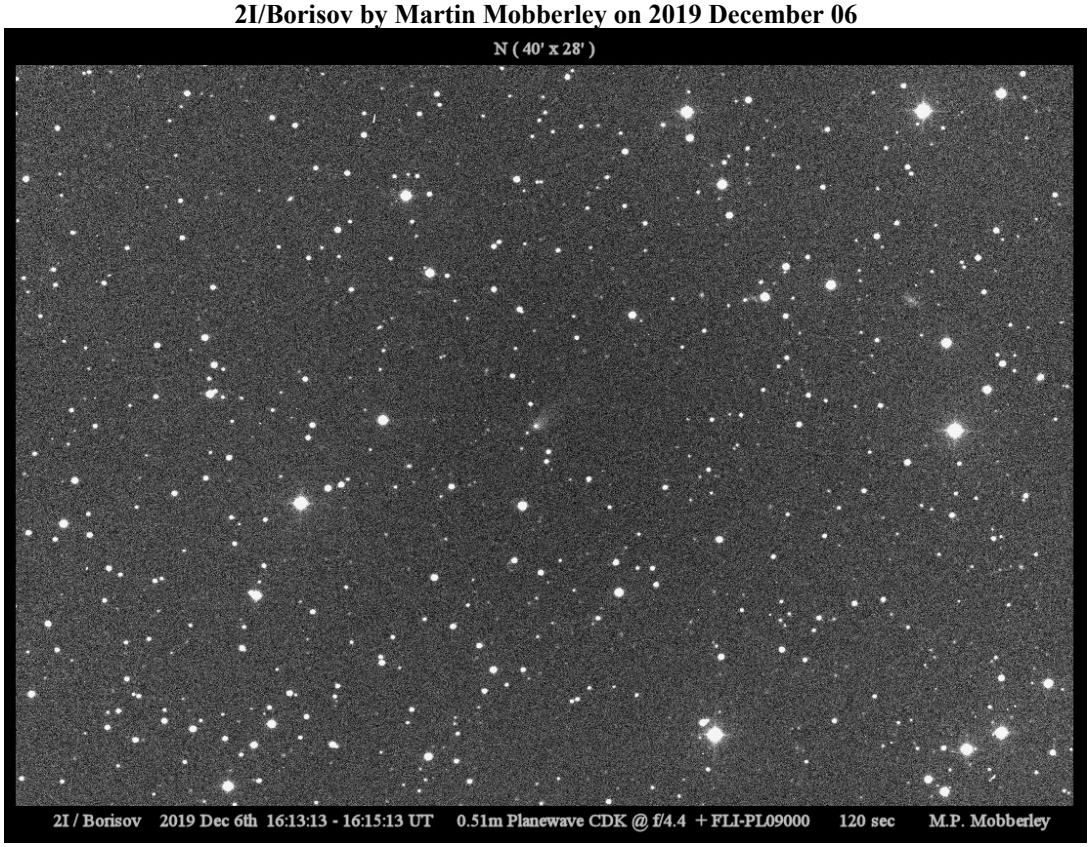
As always, the Comet Section is happy to receive all comet observations, whether textual descriptions, images, drawings, magnitude estimates, or spectra. Please send your observations via email to < carl.hergenrother @ alpo-astronomy.org >.
- Carl Hergenrother (ALPO Comet Section Coordinator)

Recent Magnitude Measurements Contributed to the ALPO Comet Section

Comet Des	YYYY MM DD.DD (UT)	Mag	SC	APER	FL	POW T	COMA Dia	COMA DC	TAIL LENG	TAIL PA	ICQ CODE	Observer Name
2I	2019 12 06.71	xS 15.7	AQ	40.0L	4	261	0.3	2/			ICQ XX WYA	Christopher Wyatt
2I	2019 12 04.69	xS 15.6	AQ	81.3L	4	215	0.6	3/			ICQ XX WYA	Christopher Wyatt
2018W2	2019 12 28.45	xM 14.9	AQ	40.0L	4	261	0.5	4			ICQ XX WYA	Christopher Wyatt
2018W2	2019 12 27.45	xM 14.2	AQ	40.0L	4	108	0.8	3/			ICQ XX WYA	Christopher Wyatt
2018N2	2019 12 27.94	S 11.5	TK	20.3T10		100	2	3/			ICQ XX GON05	J. J. Gonzalez
2018N2	2019 12 03.06	S 11.1	TK	20.3T10		100	1.5	3			ICQ XX GON05	J. J. Gonzalez
2018F4	2019 12 28.66	xM 13.8	AQ	40.0L	4	108	0.8	5			ICQ XX WYA	Christopher Wyatt
2018F4	2019 12 27.50	xM 13.9	AQ	40.0L	4	108	0.8	6			ICQ XX WYA	Christopher Wyatt
2018F4	2019 12 06.67	xM 13.5	AQ	40.0L	4	108	0.8	5/			ICQ XX WYA	Chris Wyatt
2018A6	2019 12 28.46	xM 14.6	AQ	40.0L	4	261	0.3	5			ICQ XX WYA	Christopher Wyatt
2018A6	2019 12 27.45	xM 14.6	AQ	40.0L	4	261	0.5	5			ICQ XX WYA	Christopher Wyatt
2018A6	2019 12 02.68	xS 14.2	AQ	40.0L	4	261	0.5	3			ICQ XX WYA	Chris Wyatt
2017T2	2019 12 27.92	S 9.7	TK	20.3T10		77	4	4/			ICQ XX GON05	J. J. Gonzalez
2017T2	2019 12 17.16	M 9.9	TK	12.5B		30	2.5	5			ICQ xx HER02	Carl Hergenrother
2017T2	2019 12 16.11	M 9.8	TK	12.5B		30	2	6			ICQ xx HER02	Carl Hergenrother
2017T2	2019 12 08.19	10.3		25.0T15		288	1	6			ICQ xx DELxx	Michel Delconinck
2017T2	2019 12 06.00	S 10.5	AC	20.0T10		40 &	1.5	4/			ICQ XX AGUxx	Salvador Aguirre
2017T2	2019 12 03.04	S 9.5	TK	20.3T10		100	4	3			ICQ XX GON05	J. J. Gonzalez
2017B3	2019 12 28.46	xS 14.8	AQ	40.0L	4	261	0.4	3/			ICQ XX WYA	Christopher Wyatt
2017B3	2019 12 27.47	xM 14.8	AQ	40.0L	4	261	0.3	5/			ICQ XX WYA	Christopher Wyatt
260	2019 12 28.44	xS 14.8	AQ	40.0L	4	261	0.4	3			ICQ XX WYA	Christopher Wyatt
260	2019 12 03.08	S 11.8	TK	20.3T10		133	1.2	4			ICQ XX GON05	J. J. Gonzalez
155	2019 12 06.69	xS 15.6	AQ	40.0L	4	261	0.4	2			ICQ XX WYA	Chris Wyatt
114	2019 12 28.49	xM 14.5	AQ	40.0L	4	108	1.0	5			ICQ XX WYA	Christopher Wyatt
114	2019 12 27.48	xM 14.8	AQ	40.0L	4	261	0.5	3/			ICQ XX WYA	Christopher Wyatt
78	2019 12 28.71	xS 15.3	AQ	40.0L	4	261	0.3	3			ICQ XX WYA	Christopher Wyatt
29	2019 12 27.47	xI[15.7	AQ	40.0L	4	261		9			ICQ XX WYA	Christopher Wyatt

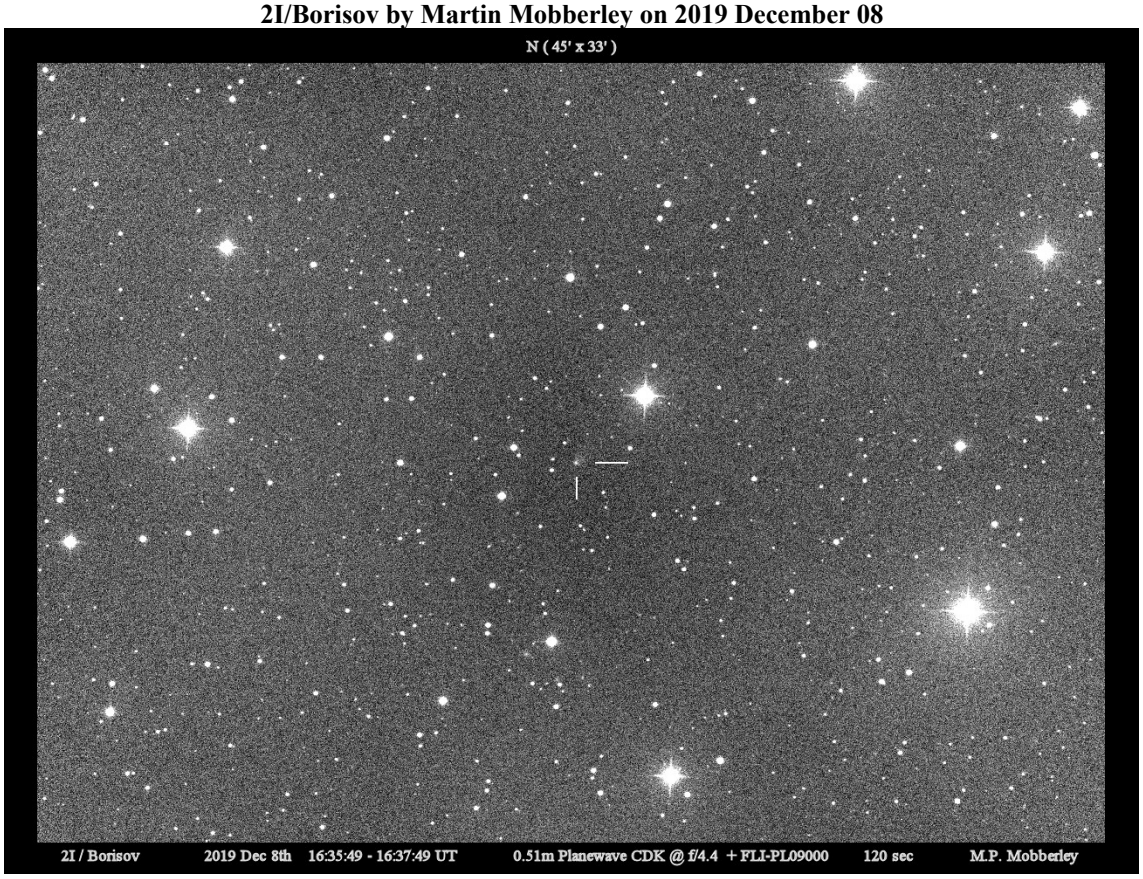
Recent Select Images and Sketches Contributed to the ALPO Comet Section

2I/Borisov by Martin Mobberley on 2019 December 06

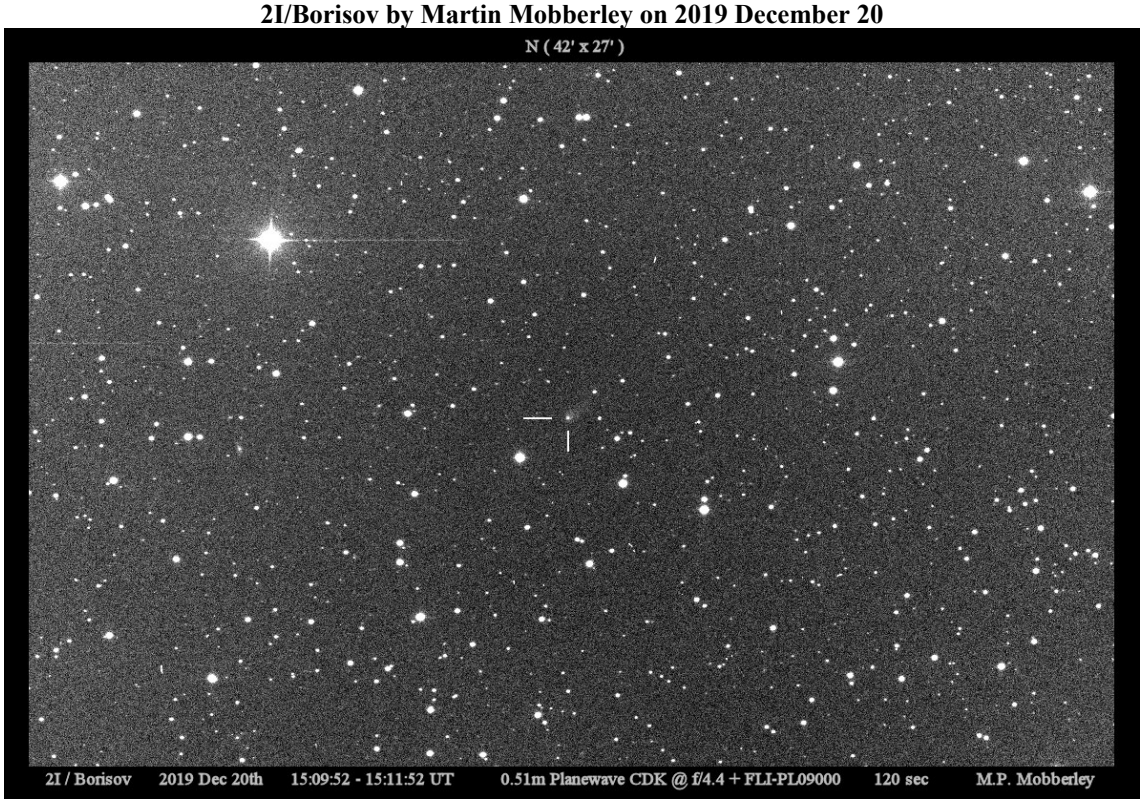


2I/Borisov by Marcos Santucho & Rodolfo Artolaon 2019 December 06

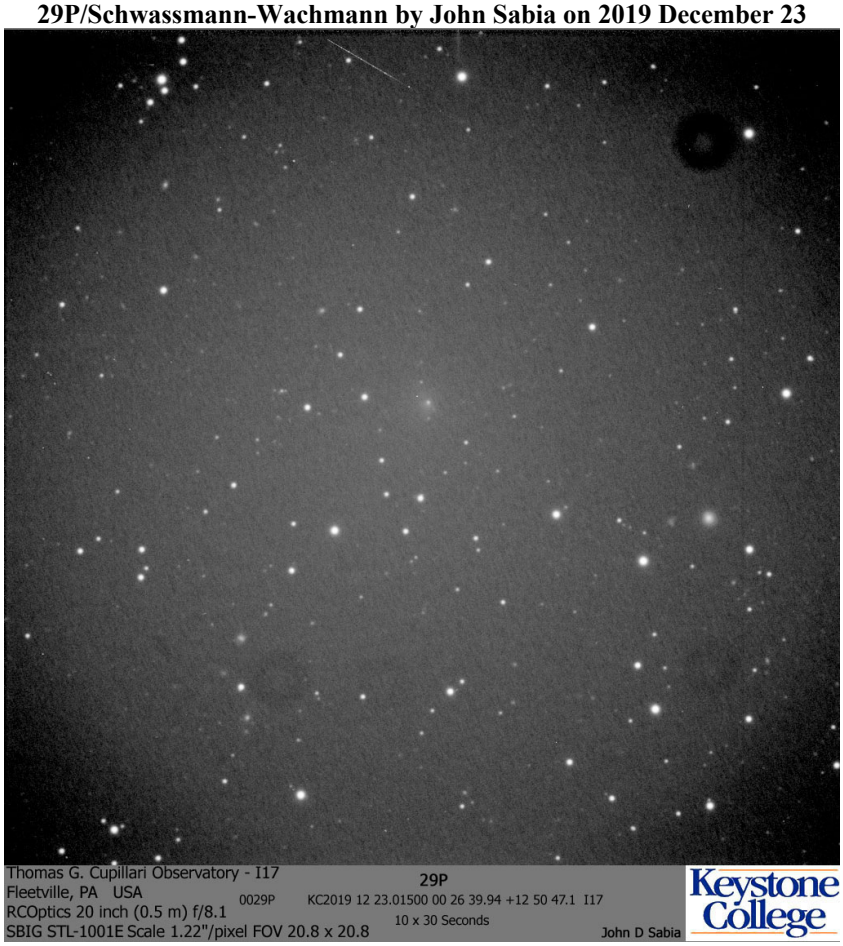
2I/Borisov by Martin Mobberley on 2019 December 08



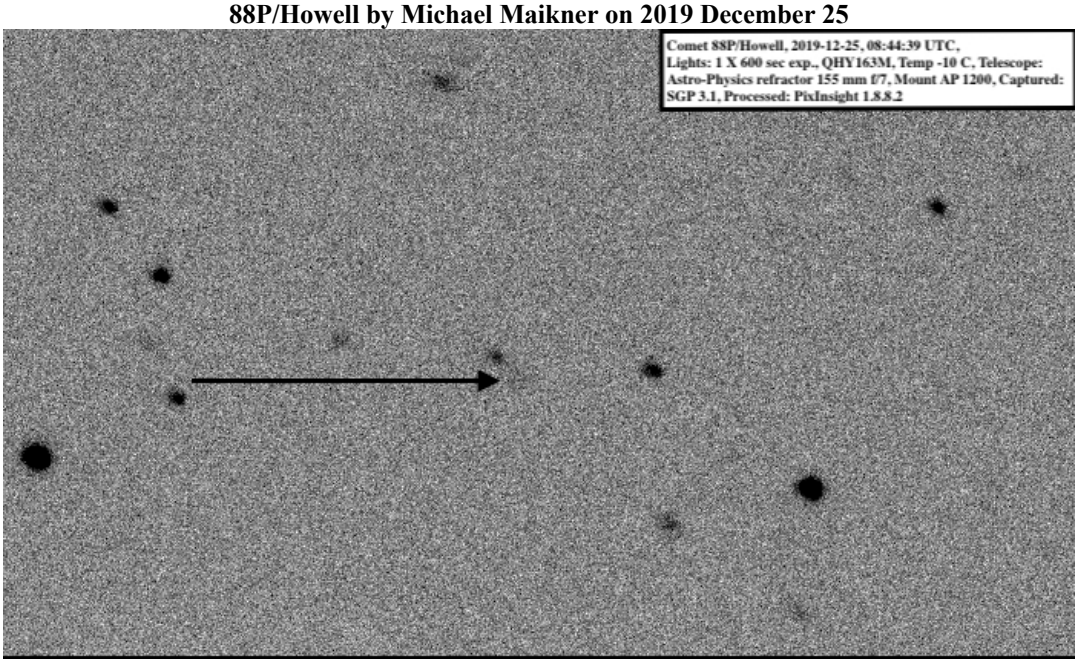
2I/Borisov by Martin Mobberley on 2019 December 20



29P/Schwassmann-Wachmann by John Sabia on 2019 December 23



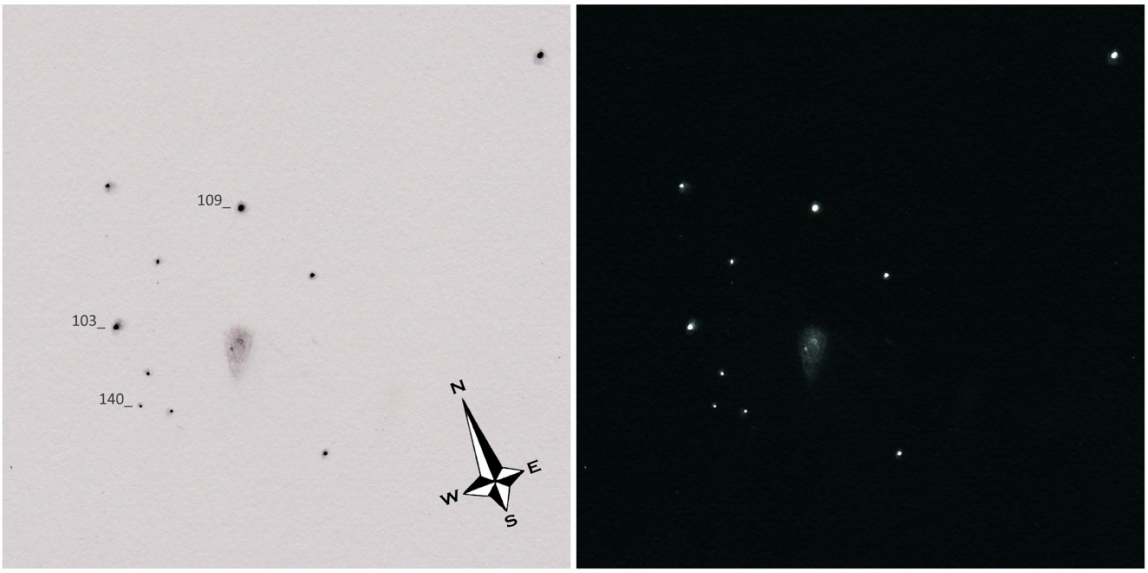
88P/Howell by Michael Maikner on 2019 December 25



114P/Wiseman-Skiff by John Sabia on 2019 December 22

155P/Shoemaker by Charles Bell on 2019 December 04

C/2017 T2 (PANSTARRS) by Michel Delconinck on 2019 December 08



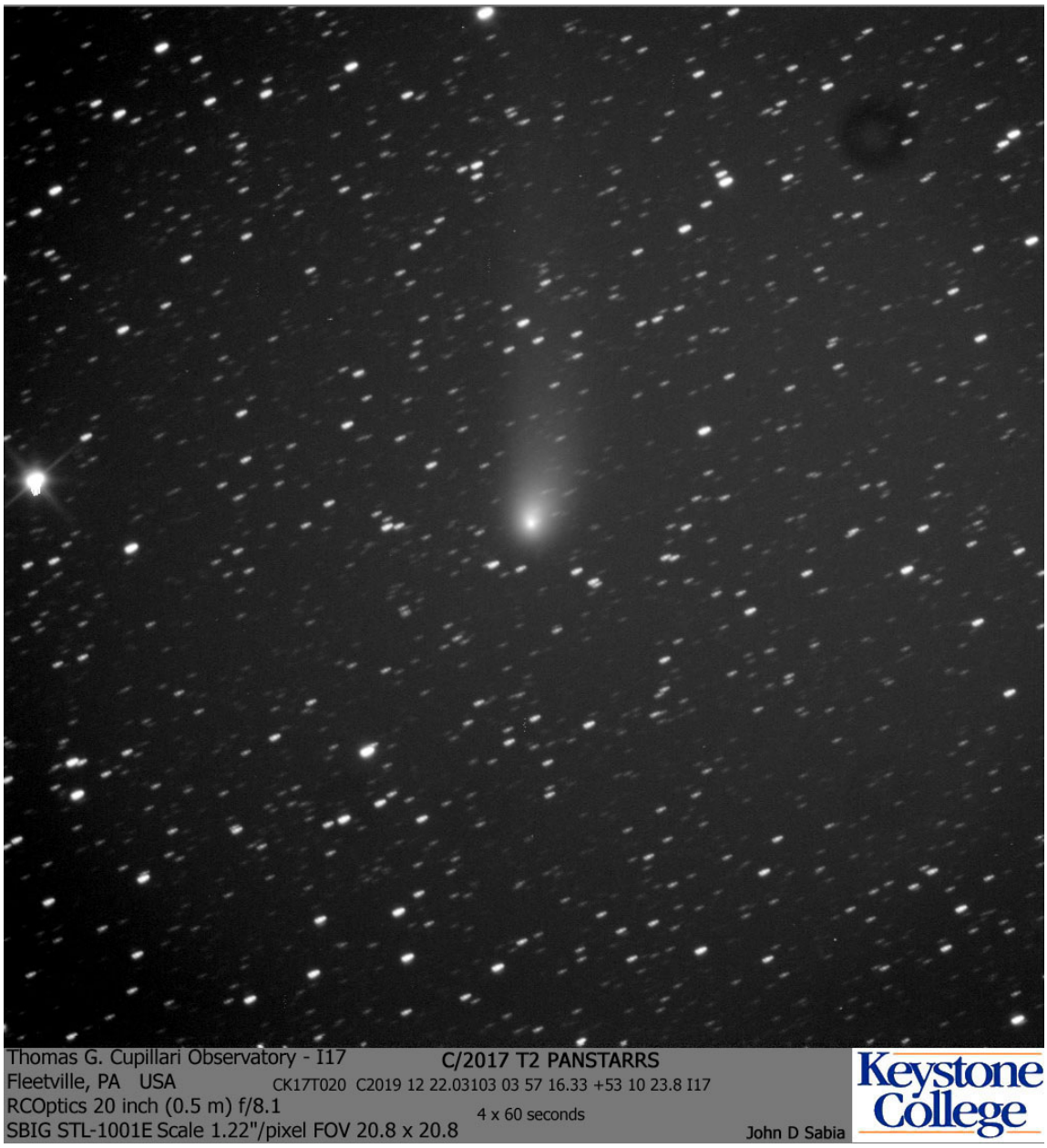
Comets C/2017 T2 (PanSTARRS) 2019/12/08 - 4h38 UTC

Mewlon 250 CRS f15 - EP : 26 mm - 13mm (288x) F.O.S.: 15'

Magn.: 10.3 - Tail : 2'20" - Coma : 60" - DC : 6

http://astro.aquarellia.com

C/2017 T2 (PANSTARRS) by John Sabia on 2019 December 22



C/2018 N2 (ASASSN) by John D. Sabia on 2019 December 22