

## ALPO COMET NEWS FOR DECEMBER 2019

By Carl Hergenrother - 2019-December-3

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 Cloudy Nights (<https://www.cloudynights.com/topic/685850-alpo-comet-news-for-december-2019/>). Everyone is invited to join the discussion on our Cloudy Nights forum.

C/2017 T2 (PANSTARRS) is well placed in the evening sky for northern observers and should become brighter than 10<sup>th</sup> magnitude this month. CCD imagers are encouraged to image a number of fainter comets this month. In particular, the following three are of interest. Interstellar visitor 2I/Borisov will be at its best around 15<sup>th</sup> magnitude. December and January will see short-period comet 289P/Blanpain pass within 0.09 au of the Earth. How bright this comet gets is uncertain as it is a faint, outburst prone object. Speaking of outburst prone comets, the British Astronomical Society invites CCD photometrists to join their effort to monitor the outbursts of 29P/Schwassmann-Wachmann.

### **Bright Comets (magnitude < 10.0)**

*C/2017 T2 (PANSTARRS)* – C/2017 T2 (PANSTARRS) has finally arrived as an object visually observable in modest size telescopes. As a result, we've received images, sketches and magnitude estimates from multiple observers (Michel Deconinck, J. J. Gonzalez, Carl Hergenrother, John Maikner, Michael Rosolina and Chris Wyatt). Over the last week of November, ALPO contributors found the comet to be between magnitude 10.2 and 11.1. Many commented on the compactness of the coma (1-3') and its narrow tail (up to 10' in length). An interesting non-feature has been the comet's lack of an outer gas coma, the sort that give similarly bright comets their blue-green color in CCD images. I've only seen one image online that shows this feature (a nearly 1-hour exposure by Michael Jager with a Celestron RASA 8" that can be seen at [https://spaceweathergallery.com/full\\_image.php?image\\_name=Michael-Jager-2017T220191130rgblarge2\\_1575315837.jpg](https://spaceweathergallery.com/full_image.php?image_name=Michael-Jager-2017T220191130rgblarge2_1575315837.jpg)). If this outer coma continues to develop, we may see a marked increase in the comet's reported brightness.

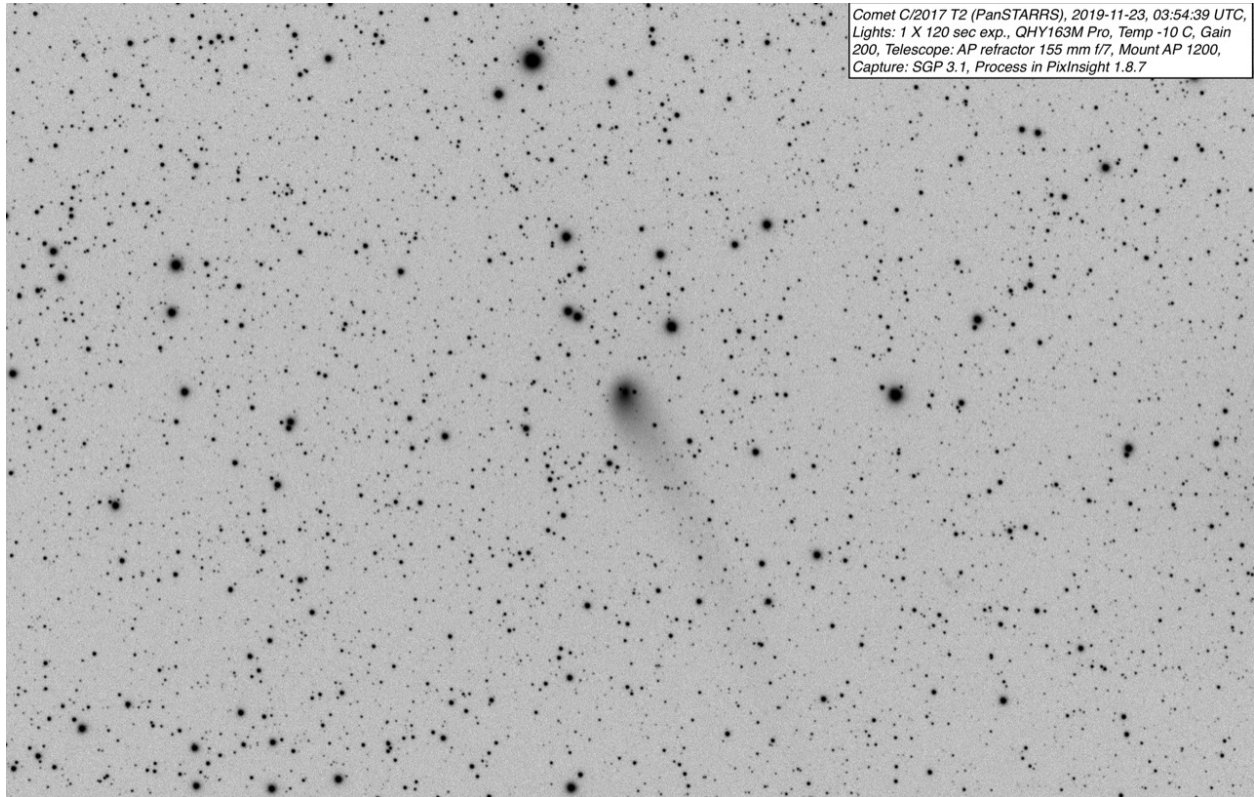
This December, C/2017 T2 (PANSTARRS) continues its march inwards towards a 2020 May 4 perihelion at 1.62 au. C/2017 T2 should start December around magnitude 10 and brighten to 9.5 by December 1 as it moves through Auriga (Dec 1-3), Perseus (3-20), Camelopardalis (20-30) and Perseus again (30-31). It is well placed in the evening sky for northern observers. Unfortunately, the comet will be located very low or below the horizon for southern hemisphere observers.

C/2017 T2 (PANSTARRS)

T = 2020-May-04    q = 1.62 au

Long-Period comet - dynamically new

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El	
								40N	40S
2019-12-01	10.2	04 56	+46 19	2.576	1.650	154	Aur	84	4
2019-12-06	9.9	04 44	+48 10	2.529	1.606	154	Per	82	2
2019-12-11	9.8	04 30	+49 55	2.484	1.571	151	Per	80	0
2019-12-16	9.8	04 16	+51 31	2.438	1.546	148	Per	78	0
2019-12-21	9.7	04 00	+52 54	2.393	1.529	143	Cam	77	0
2019-12-26	9.6	03 44	+54 05	2.349	1.521	138	Cam	76	0
2019-12-31	9.5	03 28	+55 02	2.305	1.521	132	Per	75	0
2020-01-05	9.5	03 13	+55 47	2.261	1.527	127	Per	74	0



Comet C/2017 T2 (PanSTARRS), 2019-11-23, 03:54:39 UTC,  
 Lights: 1 X 120 sec exp., QHY163M Pro, Temp -10 C, Gain  
 200, Telescope: AP refractor 155 mm f/7, Mount AP 1200,  
 Capture: SGP 3.1, Process in PixInsight 1.8.7

Image by John Maikner

C/2017 T2 (PanSTARRS)  
 26 November 2019 0700-0800 UT

+ 0800 UT

TYC2907-613-1 mag. 10.15

N

W

35cm SCT f/11 @ 244x                      FOV: 12'  
 S: 5/10P   T: 5/6   Alt: 76°   SQM-L: 21.33  
 No Moon   Comet in Auriga  
 m1= 10.6   DC= 3/   Dia= ~3'

Twin Sugars Observatory                      © M Rosolina

Sketch by Michael Rosolina

### **Faint Comets (between magnitude 10.0 and 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 observed 29P twice in November between magnitude 14.3 on November 2.6 and 14.7 on November 19.4 UT.

Comet 29P has experienced a number of small (<1 to 4 magnitude) outbursts this year. Richard Miles at the British Astronomical Society (BAA) is leading an effort to continually monitor 29P and its outbursts. He’s looking for observers to contribute CCD photometry with the following:

*“a fairly large telescope, say at least 15-cm aperture (the larger the better!) and a focal length of >100 cm, as well as an image scale for your camera of preferably <2.0 “/pixel. Use a monochrome camera, and take a series of exposures using either no filter, a Luminance filter, or a red filter. I like to use an exposure time of 60 sec but if your mount does not track well then shorten the duration to say 20 or 30 sec as the objective is to stack the images to create a higher quality stacked frame for measuring.”*

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

Centaur comet - 14.8-yr orbital period

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El	
								40N	40S
2019-12-01	12-14	00 25	+13 11	5.780	5.193	122	Psc	63	34
2019-12-06	12-14	00 24	+13 04	5.781	5.263	117	Psc	63	31
2019-12-11	12-14	00 25	+12 58	5.782	5.336	112	Psc	63	29
2019-12-16	12-14	00 25	+12 53	5.782	5.412	107	Psc	63	26
2019-12-21	12-14	00 26	+12 51	5.783	5.490	102	Psc	63	23
2019-12-26	12-14	00 27	+12 50	5.783	5.570	97	Psc	63	20
2019-12-31	12-14	00 28	+12 51	5.784	5.650	92	Psc	62	17
2020-01-05	12-14	00 30	+12 54	5.784	5.731	88	Psc	61	14

*C/2018 N2 (ASASSN)* - Comet C/2018 N2 (ASASSN) was discovered 16 months ago on 2018 July 7 by the All-Sky Automated Survey for Supernovae (ASAS-SN) program. Since discovery, ASASSN has brightened slowly. ASASSN is now passed its November 11 perihelion (q = 3.12 au). The section received a sketch of this comet from Michel Deconinck as well as 2 magnitude estimates from J. J. Gonzalez (11.2 with a 2’ coma on the 18<sup>th</sup>) and Chris Wyatt (12.4 with a 1’ coma on the 19<sup>th</sup>). Submissions to the COBS site during the last week of November placed C/2018 N2 between magnitude 11.4 and 12.1. This month, C/2018 N2 is well placed for northern observers at a +39 degree declination in Andromeda. With the comet on the wrong side of perihelion and closest approach to Earth, it should slowly fade from magnitude ~11.8 to ~12.2.

C/2018 N2 (ASASSN)

T = 2019-Nov-11  $q = 3.12$  au

Long-Period comet - dynamically old

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El	
								40N	40S
2019-12-01	11.8	23 48	+39 09	3.131	2.528	119	And	89	6
2019-12-06	11.8	23 43	+39 10	3.134	2.595	114	And	89	4
2019-12-11	11.9	23 38	+39 12	3.138	2.666	109	And	89	1
2019-12-16	12.0	23 35	+39 15	3.143	2.738	105	And	88	0
2019-12-21	12.1	23 32	+39 21	3.149	2.812	100	And	83	0
2019-12-26	12.1	23 30	+39 29	3.155	2.887	96	And	79	0
2019-12-31	12.2	23 29	+39 40	3.162	2.963	92	And	74	0
2020-01-05	12.3	23 29	+39 55	3.170	3.038	88	And	70	0



C/2018 N2 (ASASSN)

Mewlon 250 CRS f10 - EP: 13mm - 192x

2019/11/17 - 20h43 UTC

F.O.S.: 20'

<http://astro.aquarellia.com>

Sketch by Michael Delconinck

**Fainter Comets of Interest (probably fainter than magnitude 13.0)**

*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. Pre-discovery observations from the Zwicky Transient Facility on Mount Palomar have been found as far back as 2018 October 31 when the comet was located at 8.55 au from the Sun.

The comet comes to perihelion this month on December 8 at 2.01 au. Based on its brightness through early November, it should peak at around magnitude 15.1. There were few magnitude estimates submitted to the COBS and ALPO last month. Submissions to the Minor Planet Center have been running faint (16-17<sup>th</sup> magnitude) but this is also common for astrometric observations. As a result of this uncertainty, its actual brightness is a bit in question. The comet is visible from

both hemispheres in the morning sky as it moves through Crater (Dec 1-17) and Hydra (17-31) though it will become progressively more difficult to observe from the northern hemisphere. On the other hand, it becomes better placed for folks in the southern hemisphere.

2I/2019 Q4 (Borisov)

T = 2019-Dec-08  $q = 2.01$  au

Interstellar comet

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El	
								40N	40S
2019-12-01	15.2	11 15	-12 33	2.014	2.048	73	Crt	34	29
2019-12-06	15.1	11 24	-16 21	2.007	2.010	75	Crt	32	33
2019-12-11	15.1	11 32	-20 12	2.007	1.980	77	Crt	29	37
2019-12-16	15.1	11 40	-24 03	2.013	1.958	78	Crt	25	42
2019-12-21	15.1	11 48	-27 53	2.026	1.944	80	Hya	22	46
2019-12-26	15.1	11 56	-31 40	2.044	1.937	81	Hya	18	51
2019-12-31	15.2	12 04	-35 21	2.068	1.938	83	Hya	14	55
2020-01-05	15.2	12 11	-38 54	2.097	1.945	84	Cen	11	60

*289P/Blanpain* – 289P/Blanpain will approach to within 0.09 au of Earth on 2020 January 11. It is not expected to get bright due to its usual low activity though it has experienced a number of outbursts in the past. Jean-Jacques Blanpain discovered 289P at 6<sup>th</sup> magnitude in November 1819. Likely experiencing an outburst at the time of discovery, it went unobserved for the next 194 years until re-discovered by the Catalina Sky Survey in November 2003 as near-Earth asteroid 2003 WY25. Observations in 2005 found it to still be an active comet, albeit at a very low level of activity. In July 2013 while far from perihelion (3.9 au vs perihelion at ~1.0 au), Blanpain experienced a major ~9 magnitude outburst that caused it to brighten from 26<sup>th</sup> to 17<sup>th</sup> magnitude. The Phoenicids meteor shower is associated with this object. Similar to its parent comet, this shower usually shows little activity except for two outbursts in 1956 and 2014.

A number of observations were submitted to the Minor Planet Center in November. The brightest placed the comet at magnitude 17.7 on the 20<sup>th</sup> (MPC code I47 - Pierre Auger Observatory, Malargue). This is ~3 magnitudes brighter than predicted for a bare inactive nucleus.

This month, the comet reaches perihelion on December 20 at 0.96 au. Its geocentric distance falls from 0.28 au on the 1<sup>st</sup> to 0.11 au on New Year's. The comet becomes a progressively easier object to observe from the northern hemisphere and more difficult to observe from the southern hemisphere as it moves through Aquarius (Dec 1-18), Pisces (18-26) and Pegasus (26-31) in the evening sky. The predicted magnitudes below are for the inactive nucleus and provide a faint limit. If the comet continues its recent brightening it may be 3+ magnitudes brighter than this prediction.

289P/Blanpain

T = 2019-Dec-20  $q = 0.96$  au

Short-period comet – 5.3-yr orbital period

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El	
								40N	40S
2019-12-01	20.5	22 30	-15 57	1.002	0.275	85	Aqr	34	42
2019-12-06	20.4	22 35	-13 19	0.983	0.250	82	Aqr	36	36
2019-12-11	20.2	22 41	-10 04	0.970	0.223	79	Aqr	39	30
2019-12-16	20.1	22 47	-05 57	0.962	0.196	77	Aqr	42	24
2019-12-21	19.9	22 56	-00 34	0.959	0.169	76	Psc	46	18
2019-12-26	19.6	23 06	+06 45	0.962	0.142	77	Psc	52	10
2019-12-31	19.1	23 21	+17 03	0.970	0.119	80	Peg	60	2
2020-01-05	18.5	23 44	+31 32	0.983	0.101	87	Peg	70	0

## New Discoveries, Recoveries and Other Comets in the News

*P/2019 S5 = P/2009 SK280 (Spacewatch-Hill)* – Scott S. Sheppard (Carnegie Institution for Science, Washington, DC) reported his discovery of a 21<sup>st</sup> magnitude comet from images taken on September 24 with the Blanco 4-m reflector at Cerro Tololo in Chile. Sheppard's object was identified as a recovery of periodic comet P/2009 SK280 (Spacewatch-Hill). The Minor Planet Center also identified further observation made this year by the Mt. Lemmon Survey 1.5-m reflector on October 3 and 31 and the Pan-STARRS1 1.8-m on October 5. P/Spacewatch-Hill was discovered in September/October 2009 by ALPO Solar Section Coordinator Rik Hill who was using the Mount Lemmon 1.5-m and the Pan-STARRS survey. This time around it reached perihelion on 2019 October 23. Its 10.4-year period orbit lies just inside the orbit of Jupiter and ranges between 4.21 au and 5.35 au from the Sun. It is unlikely to become brighter than ~20<sup>th</sup> magnitude.

*C/2019 V1 (Borisov)* – Gennedy Borisov (MARGO observatory, Nauchnij, Crimea) used his home-made 0.65-m f/1.5 astrograph to discover his 9<sup>th</sup> comet overall and 3<sup>rd</sup> of the year. This is also his 1<sup>st</sup> discovery since finding interstellar 2I/Borisov. The latest Comet Borisov was found at 19<sup>th</sup> magnitude on November 1. It is a long-period comet and reaches perihelion on 2020 July 15 at 3.11 au. The comet comes to opposition this month which also corresponds with its peak brightness (18<sup>th</sup> magnitude).

*P/2019 V2 (Groeller)* – Hannes Groeller used the Mount Lemmon 1.5-m telescope north of Tucson, Arizona to discover this comet on November 3 at 20<sup>th</sup> magnitude. Perihelion occurs on 2020 November 8 at 4.99 au. P/2019 V2 is a short period comet with an orbital period of 20.3 years. Its orbit is interesting in that perihelion is located near the orbit of Jupiter while its aphelion is located near the orbit of Saturn. It should peak at 19<sup>th</sup> magnitude during its next two oppositions in 2020 February and 2021 March.

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. My search criteria are based on the JPL Small-Body Database of orbits and is limited to: 1) asteroidal objects with aphelia greater than 4.7 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 VR1	Nov 04	0.98	4.84	27.0	18-in-Nov2019	MountLemmon
2019 VG2	Nov 02	0.46	4.62	19.9	21-in-Sep2019	PanSTARRS
2019 WF1	Nov 17	1.12	6.56	19.8	20-in-Nov2019	PanSTARRS
2019 WH1	Nov 18	1.05	5.57	21.4	21-in-Dec2019	WISE
2019 WV2	Nov 26	3.28	16.6	15.5	20-in-Dec2019	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)

## Magnitude Measurements Contributed to the ALPO Comet Section since October 1

Comet Des	YYYY MM DD.DD (UT)	Mag	SC	APER	FL	POW	COMA		TAIL		ICQ CODE	Observer Name
							Dia	DC	LENG	PA		
2018W2	2019 11 19.44	xM 13.1	AQ	40.0L	4	108	1.3	3/			ICQ XX WYA	Christopher Wyatt
2018W2	2019 11 02.61	xS 11.1	AQ	40.0L	4	59	3.0	3			ICQ XX WYA	Christopher Wyatt
2018N2	2019 11 19.41	xM 12.4	AQ	40.0L	4	108	1.0	5/			ICQ XX WYA	Christopher Wyatt
2018N2	2019 11 18.93	S 11.2	TK	20.3T10	133		2	3/			ICQ XX GON05	J. J. Gonzalez Suarez
2018A6	2019 11 19.45	xM 14.7	AQ	40.0L	4	261	0.4	5/			ICQ XX WYA	Christopher Wyatt
2018A6	2019 11 06.67	xM 14.0	AQ	40.0L	4	261	0.7	3/			ICQ XX WYA	Christopher Wyatt
2018A6	2019 11 02.63	xM 14.2	AQ	40.0L	4	108	0.7	3/			ICQ XX WYA	Christopher Wyatt
2017T2	2019 11 28.02	11.1		25.0T10	360		1.2	6	2.0m		ICQ XX DECxx	Michel Deconinck
2017T2	2019 11 27.10	S 10.6	TK	12.5B	30		1.5	5			ICQ xx HER02	Carl Hergenrother
2017T2	2019 11 26.31	10.6		35.0T11	244		3	3/			ICQ XX ROSxx	Michael Rosolina
2017T2	2019 11 25.27	C 10.2	U4	10.6R	5a840		3.5		10.0m213		ICQ xx HER02	Carl Hergenrother
2017T2	2019 11 23.32	C 11.1	U4	61.0Y	7a180		2.1		1.6m210		ICQ xx HER02	Carl Hergenrother
2017T2	2019 11 18.85	S 9.3	TK	20.3T10	100		6	2			ICQ XX GON05	J. J. Gonzalez Suarez
2017T2	2019 11 06.68	xM 12.5	AQ	40.0L	4	261	0.8	6	1.4m226		ICQ XX WYA	Christopher Wyatt
2017T2	2019 11 02.64	xM 12.3	AQ	40.0L	4	108	0.8	6			ICQ XX WYA	Christopher Wyatt
2017B3	2019 11 19.43	xS 14.7	AQ	40.0L	4	261	0.5	3/			ICQ XX WYA	Christopher Wyatt
260	2019 11 18.90	S 11.3	TK	20.3T10	167		1	5			ICQ XX GON05	J. J. Gonzalez Suarez
29	2019 11 19.42	xM 14.7	AQ	40.0L	4	108	0.9	1/			ICQ XX WYA	Christopher Wyatt
29	2019 11 02.62	xS 14.3	AQ	40.0L	4	108	1.3	2/			ICQ XX WYA	Christopher Wyatt

## Select Images and Sketches Contributed to the ALPO Comet Section since November 1

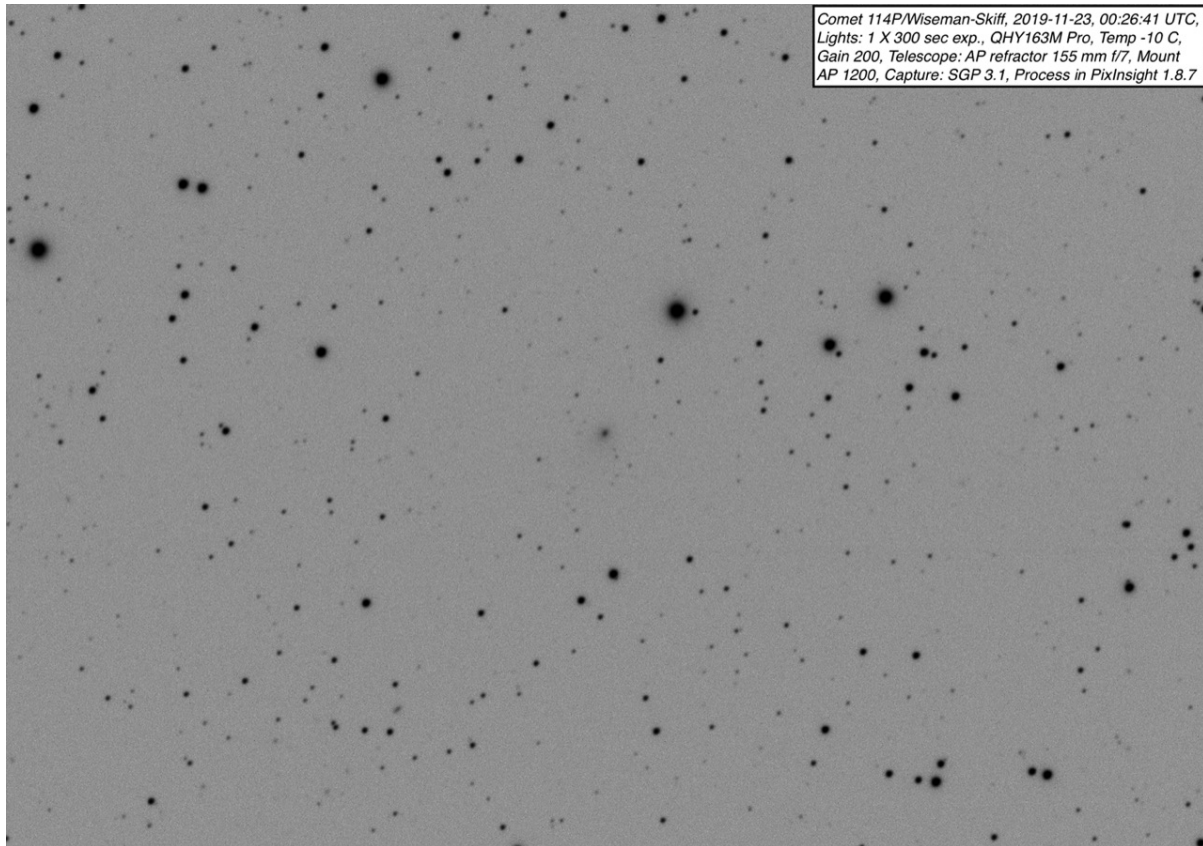
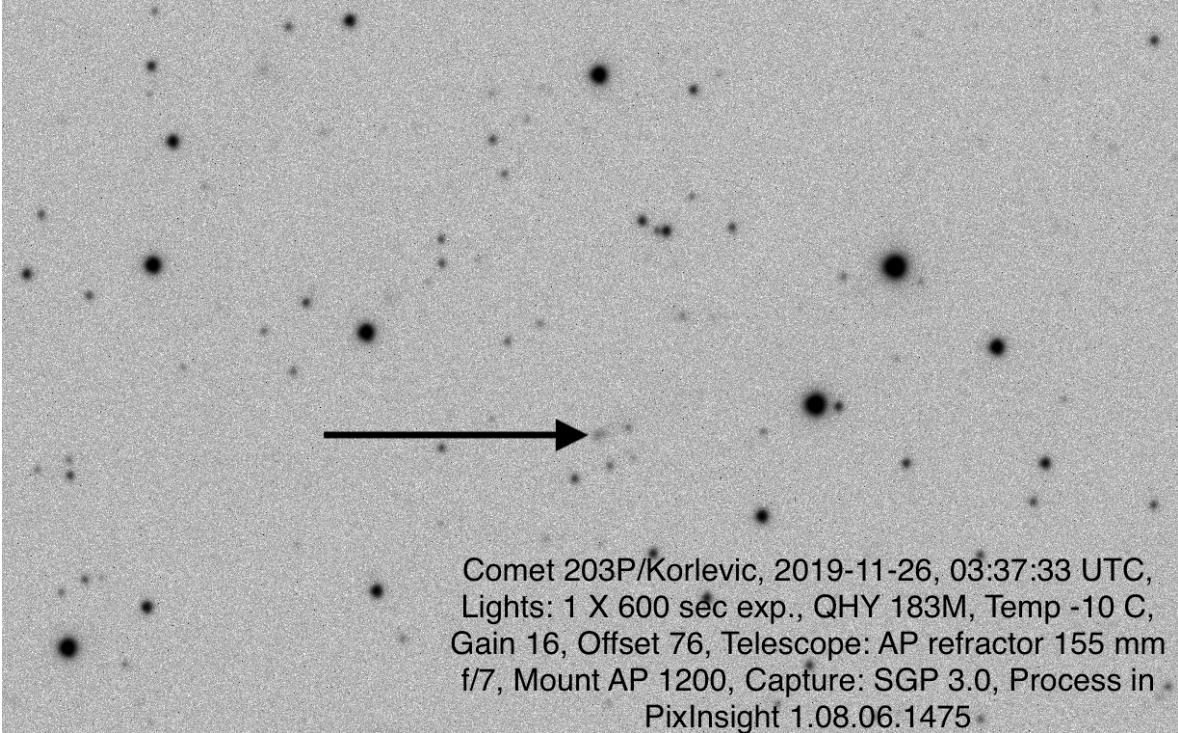



Image by John Maikner



Comet 203P/Korlevic, 2019-11-26, 03:37:33 UTC,  
Lights: 1 X 600 sec exp., QHY 183M, Temp -10 C,  
Gain 16, Offset 76, Telescope: AP refractor 155 mm  
f/7, Mount AP 1200, Capture: SGP 3.0, Process in  
PixInsight 1.08.06.1475

Image by John Maikner



Thomas G Cupillari Observatory	260P	
Fleetville, PA	KC2019 11 03.06712 02 36 58.91 +49 48 20.1 I17	
Borg 77mm f/6.62		
SBIG ST-i	10 x 60 seconds	John D Sabia



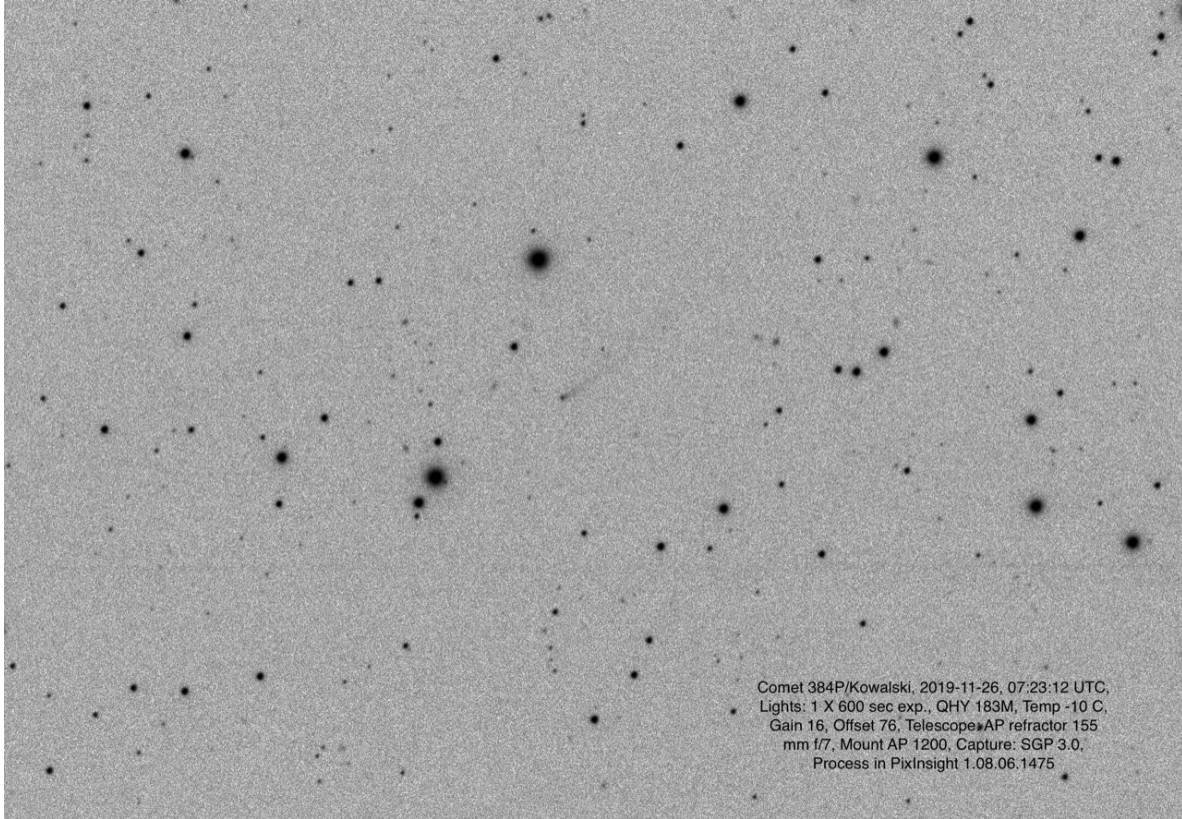
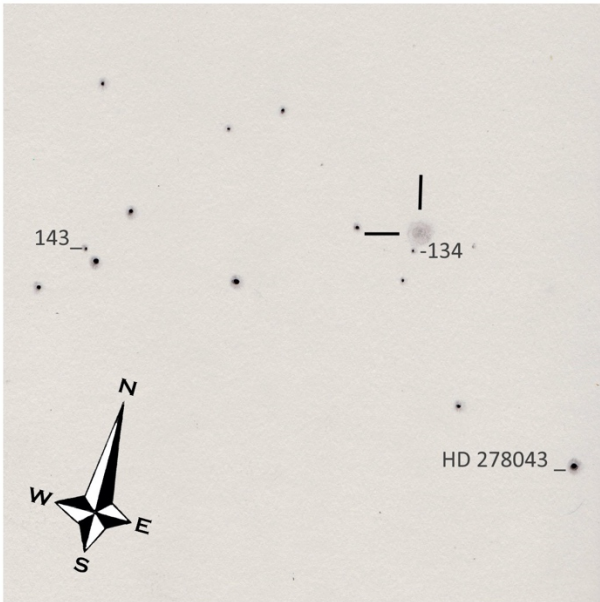


Image by John Maikner

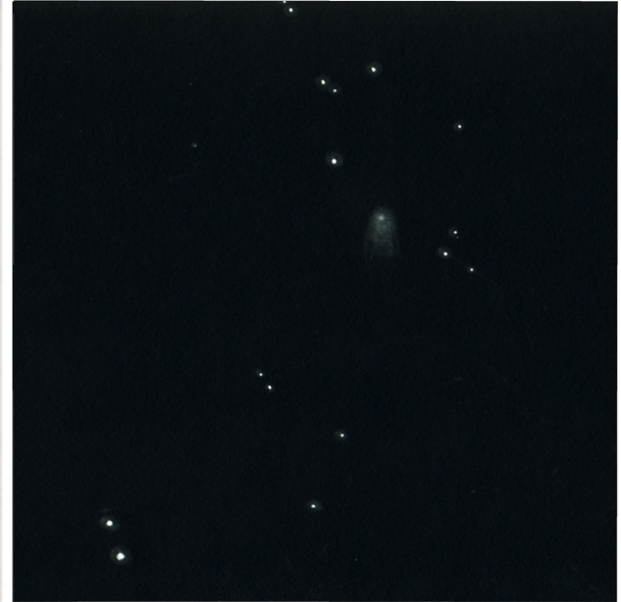


Comets C/2017 T2 (PanSTARRS)  
 Mewlon 250 CRS f10 - EP 13mm - 192x

2019/11/17 - 22h55 UTC  
 F.O.S.: 16'

<http://astro.aquarellia.com>  
 Sketch by Michel Deconinck





Comets C/2017 T2 (PanSTARRS)  
Mewlon 250 CRS f10 - EP7mm - 360x

2019/11/28 - 0h30 UTC  
F.O.S.: 20'

Magn.: 11.1 - Tail : 120" - Coma : 70" - DC : 6

<http://astro.aquarellia.com>

Sketch by Michel Deconinck