September 2023

ALPO Comet News

A Publication of the Comets Section of the Association of Lunar and Planetary Observers

The Surprise Comet of 2023

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On the Front Cover:

Comet C/2023 P1 (Nishimura) is a rare bright amateur discovery. Hideo Nishimura found C/2023 P1, his 3rd discovery, on August 12 at 10th magnitude. The comet was around 6-7th magnitude when imaged by Dan Bartlett at June Lake, California, on 2023 August 23 with a Hyperstar equipped Celestron C14 and ZWO ASI2600MC Pro camera. The resulting image is a co-add of 58 x 90-s color images.

The monthly ALPO Comet News PDF can be found on the ALPO Comets Section website (http://www.alpo-astronomy.org/cometblog/ and in the Comets Section Image Gallery). A shorter version of this report is posted on a dedicated Cloudy Nights forum (https://www.cloudynights.com/topic/889909-alpo-comet-news-for-september-2023/). All are encouraged to join the discussion over at Cloudy Nights. The ALPO Comets Section welcomes all comet-related articles, observations, images, drawings, magnitude estimates, or spectra. One does not have to be a member of ALPO to submit material, though membership is appreciated.

Please send your observations to the Comets Section at < comets@alpo-astronomy.org >, Coordinator Carl Hergenrother < carl.hergenrother@alpo-astronomy.org >, and/or Acting Assistant Coordinator Michel Deconinck < michel.deconinck@alpo-astronomy.org >.

Summary

August was a busy month for comet watchers. In addition to observing 12P/Pons-Brooks in outburst and 9th magnitude C/2023 E1 (ATLAS) and C/2020 V2 (ZTF), a new bright amateur comet was discovered around mid-month. C/2023 P1 (Nishimura) is now 6th magnitude and should brighten to 4th-5th magnitude before being lost in the glare of the Sun. September will also see returning periodic comets 2P/Encke and 103P/Hartley brighten to 9th and 7th magnitude by the end of the month, respectively.

Also, observable in September are C/2020 V2 (ZTF) at 9th magnitude, 12P/Pons-Brooks and C/2017 K2 (PANSTARRS) at 11th mag, C/2021 S3 (PANSTARRS) brightening from 12th to 11th magnitude, C/2021 T4 (Lemmon) fading from 10th to 11th magnitude, and C/2023 E1 (ATLAS) fading from 10th to 12th magnitude.

Last month the ALPO Comets Section received 277 observations of comets C/2023 P1 (Nishimura), C/2023 E1 (ATLAS), C/2023 A3 (Tsuchishan-ATLAS), C/2022 W3 (Leonard), C/2022 JK5 (PANSTARRS), C/2022 A2 (PANSTARRS), C/2021 X1 (Maury-Attard), C/2021 T4 (Lemmon), C/2021 S3 (PANSTARRS), C/2020 V2 (ZTF), C/2020 O2 (Amaral), C/2020 K1 (PANSTARRS), C/2019 T4 (ATLAS), C/2017 K2 (PANSTARRS), P/2014 W1 (PANSTARRS), 364P/PANSTARRS, 347P/PANSTARRS, 326P/Hill, 310P/Hill, 276P/Vorobjov, 242P/Spahr, 237P/LINEAR, 126P/IRAS, 103P/Hartley, 80P/Peters-Hartley, 41P/Tuttle-Giacobini-Kresak, 32P/Comas Sola, 12P/Pons-Brooks, and 2P/Encke. A big thanks to our August contributors: Dan Bartlett, Michel Besson, Michel Deconinck, J. J. Gonzalez, Jose Guilherme de Souza Aguiar, Andrew Hampton, Christian Harder, Scott Harrington, Carl Hergenrother, Eliot Herman, Michael Jäger, John Maikner, Martin Mobberley, Charles Morris, Gary T. Nowak, Mike Olason, Uwe Pilz, Ludovic Prebet, Michael Rosolina, Greg Ruppel, Greg Shanos, Tenho Tuomi, and Chris Wyatt.

Request for Observations

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 the Comets Section < comets @ alpo-astronomy . org >, Comets Section Coordinator Carl Hergenrother < carl.hergenrother @ alpo-astronomy . org > and/or Comets Section Acting Assistant Coordinator Michel Deconinck < michel.deconinck @ alpo-astronomy . org >.

Photometric Corrections to Magnitude Measurements

We include lightcurves for the comets discussed in these reports and apply aperture and personal corrections to the visual observations and only personal corrections to digital observations. Though we try to keep these lightcurves up to date, observations submitted a few days before publication may not be included.
All magnitude estimates are affected by many factors, including instrumental (aperture, focal length, magnification, type of optics), environmental (sky brightness due to moonlight, light pollution, twilight, aurora activity, zodiacal light, etc.), cometary (degree of condensation, coma color, strength and type of gas emission lines, coma-tail interface) and personal (sensitivity to different wavelengths, personal technique, observational biases). The first correction used here corrects for differences in aperture [Charles S. Morris, On Aperture Corrections for Comet Magnitude Estimates. Publ Astron Soc Pac 85, 470, 1973]. Visual observations are corrected to a standard aperture of 6.78 cm by 0.019 magnitudes per centimeter for reflectors and 0.066 magnitudes per centimeter for refractors. After applying the aperture correction and if a sufficient number of visual observations are submitted for a particular comet, we also determine personal corrections for each observer for each comet; for digital observations, only a personal correction is applied. A single observer submitting both visual and digital magnitude measurements may also have separate corrections for each observing method. If the magnitudes shown in the text don't match those plotted in the lightcurves, it is because of the application of these corrections.

Acknowledgments

In addition to observations submitted directly to the ALPO, we occasionally use data from other sources to augment our analysis. Therefore, we acknowledge with thanks observations submitted directly to the ALPO and those submitted initially to the International Comet Quarterly, Minor Planet Center, and COBS Comet Observation Database. In particular, we have been using observations submitted to the COBS site by Thomas Lehmann for our analysis and would like to thank Thomas for his COBS observations. We would also like to thank the Jet Propulsion Laboratory for making their Small-Body Browser and Orbit Visualizer available and Seiichi Yoshida for his Comets for Windows programs that produced the lightcurves and orbit diagrams in these pages. Last but not least, we'd like to thank Syuichi Nakano and the Minor Planet Center for their comet orbit elements, the asteroid surveys and dedicated comet hunters for their discoveries, and all of the observers who volunteer their time to add to our knowledge of these fantastic objects.

Thank you to everyone who contributed to the ALPO Comets Section!

Clear skies!
- Carl Hergenrother

Comets Calendar

Lunar Phases

Sep 06 - Last Quarter Moon
Sep 14 - New Moon
Sep 22 - First Quarter Moon
Sep 29 - Full Moon

Comets at Perihelion

Sep 07 - C/2023 K1 (ATLAS) [q = 2.04 au, V ~ 14]
Sep 18 - C/2023 P1 (Nishimura [q = 0.22 au, new bright amateur discovery, more below]
Sep 27 - P/2005 E1 (Tubbiolo) [q = 4.45 au, 19.4-yr period, V ~ 19, only seen at discovery apparition in 2005, no observations so far, currently too close to the Sun for observation]
Sep 28 - C/2022 A3 (Lemmon-ATLAS) [q = 3.70 au, V ~ 15-16]
Sep 30 - 79P/du Toit-Hartley [q = 1.12 au, 5.3-yr period, V ~ 17, visual discovery in 1945, photographic rediscovery in 1982, split in two during 1982 return, observed at 6 returns, current return is poor, no observations so far, currently too close to the Sun for observation]

Photo Opportunities

Sep 10 - C/2023 P1 (Nishimura) nearly passes over 12th mag galaxy NGC 3301
Sep 13 - C/2023 P1 (Nishimura) nearly passes over 11th mag galaxy NGC 3626
Sep 17 - C/2023 E1 (ATLAS) passes 1 deg from Saturn
Sep 20 - 103P/Hartley passes within 0.5 deg of 7th mag open cluster NGC 1857
Sep 30 - C/2023 E1 (ATLAS) ends September within 1.5 deg of the bright Helix Nebula [NGC 7293]

Recent Magnitudes Contributed to the ALPO Comets Section

Comet Des	YYYY MM DD.DD (UT)		Mag	SC	APER	FL	POW	COMA Dia	COMA DC	TAIL LENG	TAIL PA	ICQ CODE	Observer Name
C/2023 P1 (Nishimura)					T								
2023P1	2023 08 31.17	S	6.4	TK	8.0B		20	3	6	0.4	290	ICQ XX GON05	Juan Jose Gonzalez Suarez
2023P1	2023 08 31.16	S	6.6	TK	20.3T10		77	4	5/	0.7	290	ICQ XX GON05	Juan Jose Gonzalez Suarez
2023P1	2023 08 30.12	B	7.0	S	12.6R	5	63	5	6	10	m270	ICQ XX DEC	Michel Deconinck
2023P1	2023 08 30.10	S	7.1	S	12.6B	5	25	5	6			ICQ XX DEC	Michel Deconinck
2023P1	2023 08 29.09	S	7.2:TI		25.2L	4	56	4	5/			ICQ XX HAR11	Christian Harder
2023P1	2023 08 28.48	S	7.4	TK	5.0B		10	5	6			ICQ xx HER02	Carl Hergenrother
2023P1	2023 08 28.09	S	7.6	TI	29.8L	4	79	4	4/	3	m295	ICQ XX HAR11	Christian Harder
2023P1	2023 08 27.17	S	7.3	TK	20.3T10		77	5	5	0.4	280	ICQ XX GON05	Juan Jose Gonzalez Suarez
2023P1	2023 08 26.12	B	7.8	S	12.6R	5	63	8	5	1	m110	ICQ XX DEC	Michel Deconinck
2023P1	2023 08 26.11	B	7.8	S	12.6B	5	25	6	4			ICQ XX DEC	Michel Deconinck
2023P1	2023 08 25.79	&M	8.6	TK	40.0L	4	59	2.6	5/			ICQ XX WYA	Christopher Wyatt
2023P1	2023 08 25.49	S	7.8	TK	12.5B		30	3	6			ICQ xx HER02	Carl Hergenrother
2023P1	2023 08 25.49	S	7.5	TK	5.0B		10	5	6			ICQ xx HER02	Carl Hergenrother
2023P1	2023 08 24.36	S	8.0	TK	15.0L	5	42	5	4			ICQ XX SOU01	Willian Souza
2023P1	2023 08 24.35	M	8.0	TK	10.0B		25	4	3/			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023P1	2023 08 24.11	B	8.0	S	12.6R	5	63	3	5	1.5	m 90	ICQ XX DEC	Michel Deconinck
2023P1	2023 08 24.10	B	8.0	S	12.6B	5	25	2.5	4/			ICQ XX DEC	Michel Deconinck
2023P1	2023 08 23.47	S	7.9	TK	12.5B		30	2.5	6			ICQ xx HER02	Carl Hergenrother
2023P1	2023 08 23.36	S	8.0	TK	15.0L	5	33	5	4			ICQ XX SOU01	Willian Souza
2023P1	2023 08 23.35	M	8.2	TK	10.0B		25	4	4			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023P1	2023 08 22.36	M	8.3	TK	15.0L	5	33	5	4			ICQ XX SOU01	Willian Souza
2023P1	2023 08 22.35	M	8.5	TK	10.0B		25	3	3/			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023P1	2023 08 22.16	S	7.6	TK	8.0B		20	6	4			ICQ XX GON05	Juan Jose Gonzalez Suarez
2023P1	2023 08 22.15	S	7.8	TK	20.3T10		77	5	5	0.3	270	ICQ XX GON05	Juan Jose Gonzalez Suarez
2023P1	2023 08 22.12	O	7.9	HD	12.6B	5	25	6	4			ICQ XX DEC	Michel Deconinck
2023P1	2023 08 21.79	xM	8.9	AQ	25.0L	5	40	3.5	5/			ICQ XX WYA	Christopher Wyatt
2023P1	2023 08 21.08	S	8.8	TI	53.1L		111	2.2	4			ICQ XX HAR11	Christian Harder
2023P1	2023 08 20.10	B	8.2	TK	12.6B	5	25	5	2/			ICQ XX DEC	Michel Deconinck
2023P1	2023 08 19.06	S	8.7	TK	32.0L	5	80	4	6			PIL01	Uwe Pilz
2023P1	2023 08 18.11	B	8.7:S		12.6B	5	25 >	4	1/			ICQ XX DEC	Michel Deconinck
2023P1	2023 08 17.47	S	9.2	TK	12.5B		30	2	6			ICQ xx HER02	Carl Hergenrother
2023P1	2023 08 17.35	M	9.9	AQ	27.0L	5	68		3/			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023P1	2023 08 15.35	M	10.8	AQ	27.0L	5	68		4/			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023P1	2023 08 14.16	S	9.3	TK	20.3T10		77	4	3			ICQ XX GON05	Juan Jose Gonzalez Suarez
C/2023 E1 (ATLAS)													
2023E1	2023 08 28.01	S	9.4	TI	29.8L	4	66	9.5	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 27.08	S	8.8	TK	7.0B		15	8	3			ICQ XX GON05	Juan Jose Gonzalez Suarez
2023E1	2023 08 26.94	S	9.5	TI	19.6L	5	40	8.5	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 25.93	S	9.2	TI	19.6L	5	40	7	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 25.67	xS	9.7	TK	40.0L	4	59	5.6	3			ICQ XX WYA	Christopher Wyatt
2023E1	2023 08 23.85	S	10.0	TK	32.0L	5	48	11				PIL01	Uwe Pilz
2023E1	2023 08 22.89	S	9.1	TI	19.6L	5	38	9	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 22.08	M	9.7	TK	27.0L	5	68	2	3			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023E1	2023 08 21.90	S	8.6	TK	8.0B		20	8	3			ICQ XX GON05	Juan Jose Gonzalez Suarez
2023E1	2023 08 21.89	S	9.0	TI	19.6L	5	38	9.5	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 21.89	S	8.7	TK	7.0B		15	8	3			ICQ XX GON05	Juan Jose Gonzalez Suarez
2023E1	2023 08 21.71	xS	8.9	TK	25.0L	5	40	6.5	3/			ICQ XX WYA	Christopher Wyatt
2023E1	2023 08 20.90	S	9.1	TI	19.6L	5	40	9.5	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 19.89	S	8.8	TI	19.6L	5	40	10	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 19.08	M	9.6	TK	27.0L	5	68	3	3			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023E1	2023 08 18.86	S	8.9	TI	19.6L	5	40	9	1/			ICQ XX HAR11	Christian Harder
2023E1	2023 08 18.08	M	9.6	TK	27.0L	5	68	3	2/			ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023E1	2023 08 17.45	S	9.5	TK	12.5B		30	6	1			ICQ xx HER02	Carl Hergenrother
2023E1	2023 08 17.08	C	15.0	BG	30.5H	4	C990					ICQ XX MAI01	John Maikner
2023E1	2023 08 15.89	S	8.7	TI	19.6L	5	40	7.5	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 14.89	S	8.8	TI	19.6L	5	40	8	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 13.89	S	9.1	TI	19.6L	5	40	6.5	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 09.90	S	9.1:TI		35.3L		61	7	2			ICQ XX HAR11	Christian Harder
2023E1	2023 08 09.89	S	9.4	TK	32.0L	5	80	6	3/			PIL01	Uwe Pilz
2023E1	2023 08 08.90	S	8.8	TI	29.8L	4	66	9.5	2/			ICQ XX HAR11	Christian Harder
2023E1	2023 08 07.92	S	8.8	TK	7.0B		15	8	3			ICQ XX GON05	Juan Jose Gonzalez Suarez
2023E1	2023 08 07.89	S	8.5	TI	29.8L	4	66	9.5	2/			ICQ XX HAR11	Christian Harder
C/2023 A3 (Tsuchinshan-ATLAS)													
2023A3	2023 08 13.77	V	16.3	U4	50.0Y	7a	600	0.4		0.3	m100	ICQ xx HER02	Carl Hergenrother
C/2022 W3 (Leonard)													
2022W3	2023 08 02.16	C	16.8	BG	30.5H	4	B000					ICQ XX MAI01	John Maikner

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C/2022 JK5 (PANSTARRS)
   2022JK5 2023 08 25.68 xM 13.4 AQ 40.0L 4 108   0.9  4/           ICQ XX WYA   Christopher Wyatt
C/2022 A2 (PANSTARRS)
   2022A2  2023 08 26.95  S 12.0 TI 53.1L   111   3    3            ICQ XX HAR11 Christian Harder
   2022A2  2023 08 25.67 xM 13.5 AQ 40.0L 4 108   1.1  4            ICQ XX WYA   Christopher Wyatt
   2022A2  2023 08 22.90  S 12.7 TI 35.3L   122   2    1            ICQ XX HAR11 Christian Harder
   2022A2  2023 08 22.01  S 11.7 AQ 20.3T10  77   3.5  2            ICQ XX GON05 Juan Jose Gonzalez Suarez
   2022A2  2023 08 21.72 xM 12.6 AQ 25.0L 5  74   1.8  4            ICQ XX WYA   Christopher Wyatt
   2022A2  2023 08 20.93  S 12.7 TI 53.1L   139   2.5  2            ICQ XX HAR11 Christian Harder
   2022A2  2023 08 13.94  S 12.1 TI 53.1L   111   2    2            ICQ XX HAR11 Christian Harder
   2022A2  2023 08 07.94  S 11.2 TK 20.3T10  77   4    2/           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2022A2  2023 07 29.33  M 13.2 AQ 30.0L 5 121   1    4            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2022A2  2023 07 24.34  M 13.2 AQ 30.0L 5 121   1    4            ICQ XX DES01 Jose Guilherme de Souza Aguiar
C/2021 X1 (Maury-Attard)
   2021X1  2023 08 27.03  S 15.2:TI 53.1L   242   0.3  3/           ICQ XX HAR11 Christian Harder
   2021X1  2023 08 25.69 xM 14.8 AQ 40.0L 4 182   0.6  4            ICQ XX WYA   Christopher Wyatt
   2021X1  2023 08 21.03  S 14.8 TI 53.1L   242   0.3  3            ICQ XX HAR11 Christian Harder
C/2021 T4 (Lemmon)
   2021T4  2023 08 21.98  M 10.2 TK 27.0L 5  68   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 21.86  S  9.4 TK 20.3T10  77   6    2/           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2021T4  2023 08 19.02  M 10.1 TK 27.0L 5  68   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 17.93  M 10.1 TK 27.0L 5  55   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 11.42 xS  9.4 TK  7.0B    15   9    3/           ICQ XX WYA   Christopher Wyatt
   2021T4  2023 08 07.92  M  9.3 TK 27.0L 5  55                     ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 07.89  S  9.1 TK 20.3T10  77   5    2/           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2021T4  2023 08 06.91  M  9.3 TK 27.0L 5  55   1    2            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 05.91  M  9.2 TK 27.0L 5  55   1    2            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 04.91  M  9.2 TK 27.0L 5  55   1.5  2/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 03.92  M  9.1 TK 27.0L 5  55   1.5  2/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 02.91  M  9.1 TK 27.0L 5  55   2    2/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 07 26.93  M  9.0 TK 30.0L 5  88   1.5  3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 07 25.93  M  8.9 TK 10.0B    25   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
C/2021 S3 (PANSTARRS)
   2021S3  2023 08 25.76 xS 13.1 AQ 40.0L 4 182   0.7  3            ICQ XX WYA   Christopher Wyatt
   2021S3  2023 08 21.78 xM 12.7 AQ 25.0L 5 125   0.7  4/           ICQ XX WYA   Christopher Wyatt
C/2020 V2 (ZTF)
   2020V2  2023 08 28.46  S  9.8 TK 12.5B    30   2    4            ICQ xx HER02 Carl Hergenrother
   2020V2  2023 08 28.08  S 10.0 TI 29.8L 4  79   2.2  4            ICQ XX HAR11 Christian Harder
   2020V2  2023 08 27.10  S  9.6 TK 20.3T10  77   3.5  5            ICQ XX GON05 Juan Jose Gonzalez Suarez
   2020V2  2023 08 25.69 xM  9.9 AQ 40.0L 4  59   3.4  6  15   m  7 ICQ XX WYA   Christopher Wyatt
   2020V2  2023 08 25.46  S  9.9 TK 12.5B    30   2    4            ICQ xx HER02 Carl Hergenrother
   2020V2  2023 08 24.33  M 10.5 TK 27.0L 5  68   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 22.33  M 10.5 TK 27.0L 5  68   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 22.18  S  9.7 TK 20.3T10  77   3    5            ICQ XX GON05 Juan Jose Gonzalez Suarez
   2020V2  2023 08 21.75 xM 10.1 AQ 25.0L 5  40   2.7  6  13.5 m 15 ICQ XX WYA   Christopher Wyatt
   2020V2  2023 08 21.06  S 10.2 TI 53.1L   111   1.5  5   3    350 ICQ XX HAR11 Christian Harder
   2020V2  2023 08 20.12  I  9.5 S  12.5B 5  25   1    5            ICQ XX DEC   Michel Deconinck
   2020V2  2023 08 17.46  S  9.9 TK 12.5B    30   2    4            ICQ xx HER02 Carl Hergenrother
   2020V2  2023 08 17.33  M 10.4 TK 27.0L 5  68   2    4            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 15.34  M 10.3 TK 27.0L 5  68   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 10.34  M 10.3 TK 30.0L 5 100   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 03.33  M 10.2 TK 30.0L 5 100   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 02.32  M 10.1 TK 30.0L 5  88   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 07 30.31  M 10.1 TK 30.0L 5  88   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 07 29.31  M 10.0 TK 30.0L 5  88   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 07 28.31  M 10.0 TK 30.0L 5  88   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 07 27.32  M 10.0 TK 30.0L 5  88   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 07 26.31  M  9.9 TK 10.0B    25   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
C/2020 O2 (Amaral)
   2020O2  2023 08 23.13  C 19.2 BG 30.5H 4A800   1    5   1.1 m135 ICQ XX MAI01 John Maikner
C/2020 K1 (PANSTARRS)
   2020K1  2023 08 25.73 xS 13.6 AQ 40.0L 4 182   0.8  3            ICQ XX WYA   Christopher Wyatt
   2020K1  2023 08 21.76 xM 13.4 AQ 25.0L 5 125   1.6  4            ICQ XX WYA   Christopher Wyatt
   2020K1  2023 08 11.39 xS 13.0 AQ 25.0L 5 125   1.3  3            ICQ XX WYA   Christopher Wyatt
C/2019 T4 (ATLAS)
   2019T4  2023 08 22.87  S 13.4 TI 35.3L   122   1.4  2            ICQ XX HAR11 Christian Harder
   2019T4  2023 08 21.88  S 13.0:TI 35.3L   122   1.5  2            ICQ XX HAR11 Christian Harder
   2019T4  2023 08 20.88  S 13.3 TI 53.1L   155   1.5  2            ICQ XX HAR11 Christian Harder
   2019T4  2023 08 19.86  S 13.6 TI 53.1L   139   0.8  3            ICQ XX HAR11 Christian Harder
   2019T4  2023 08 14.88  S 14.0 TI 53.1L   155   0.55 3            ICQ XX HAR11 Christian Harder
   2019T4  2023 08 13.88  S 13.8 TI 53.1L   155   1.2  2            ICQ XX HAR11 Christian Harder
C/2017 K2 (PANSTARRS)
   2017K2  2023 08 25.73 xM 13.2 AQ 40.0L 4 108   0.7  6            ICQ XX WYA   Christopher Wyatt
   2017K2  2023 08 21.76 xM 13.3 AQ 25.0L 5 125   0.5  6            ICQ XX WYA   Christopher Wyatt
   2017K2  2023 07 29.35  M 11.7 AQ 30.0L 5 100   1    2/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
P/2014 W1 (PANSTARRS)
```

```
  P2014W1  2023 08 11.26  C 19.8 BG 30.5H 4F000   1    2   0.5 m244 ICQ XX MAI01 John Maikner
  P2014W1  2023 08 02.27  C 20.0 BG 30.5H 4F300                    ICQ XX MAI01 John Maikner
364P/PANSTARRS)
364        2023 08 11.32  C 19.6 BG 30.5H 4C600           4   m254 ICQ XX MAI01 John Maikner
347P/PANSTARRS
347        2023 08 17.36  C 19.8 BG 30.5H 4B760                    ICQ XX MAI01 John Maikner
326P/Hill
326        2023 08 12.20  C 19.2 BG 30.5H 4C600                    ICQ XX MAI01 John Maikner
310P/Hill
310        2023 08 17.29  C 19.7 BG 30.5H 4a720                    ICQ XX MAI01 John Maikner
276P/Vorobjov
276        2023 08 17.13  C 19.0 BG 30.5H 4D800           1.5 m280 ICQ XX MAI01 John Maikner
242P/Spahr
242        2023 08 23.28  C 20.0 BG 30.5H 4C420   0.3              ICQ XX MAI01 John Maikner
237P/LINEAR
237        2023 08 23.85  S 13.1 HS 32.0L 5 144   0.8                     PIL01 Uwe Pilz
237        2023 08 22.01  M 13.3 AQ 27.0L 5  90   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
237        2023 08 21.88  S 13.5 TI 35.3L   176   0.4  3           ICQ XX HAR11 Christian Harder
237        2023 08 20.88  S 12.4 TI 53.1L   215   0.9  3           ICQ XX HAR11 Christian Harder
237        2023 08 19.87  S 13.0 TI 53.1L   155   0.7  3           ICQ XX HAR11 Christian Harder
237        2023 08 19.02  M 13.1 AQ 27.0L 5  79   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
237        2023 08 14.90  S 13.9 TI 53.1L   215   0.7  3           ICQ XX HAR11 Christian Harder
237        2023 08 13.90  S 13.0 TI 53.1L   155   0.8  3           ICQ XX HAR11 Christian Harder
237        2023 08 12.89  S 12.4 TI 53.1L   155   1    3           ICQ XX HAR11 Christian Harder
237        2023 08 11.41 xM 12.4:AQ 25.0L 5 125   0.9  4           ICQ XX WYA   Christopher Wyatt
237        2023 08 09.89  S 12.6 TI 35.3L   144   1    2/          ICQ XX HAR11 Christian Harder
237        2023 08 09.88  S 11.6 TK 32.0L 5  80   1                PIL01 Uwe Pilz
237        2023 08 08.88  S 12.0:TI 29.8L 4 132   1    3/          ICQ XX HAR11 Christian Harder
237        2023 08 07.95  S 12.2 AQ 20.3T10  77   2    3/          ICQ XX GON05 Juan Jose Gonzalez Suarez
126P/IRAS
126        2023 08 27.02  S 14.2 TI 53.1L   215   0.7  3           ICQ XX HAR11 Christian Harder
126        2023 08 25.71 xS 14.5 AQ 40.0L 4 108   0.5  3/          ICQ XX WYA   Christopher Wyatt
126        2023 08 20.96  S 14.5 TI 53.1L   215   0.8  3           ICQ XX HAR11 Christian Harder
103P/Hartley
103        2023 08 28.02  S 10.5 TI 29.8L 4  79   5    1/          ICQ XX HAR11 Christian Harder
103        2023 08 27.05  S 11.0 AQ 20.3T10  77   5    2/          ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 08 26.99  S 11.6 TI 53.1L   139   4    2/          ICQ XX HAR11 Christian Harder
103        2023 08 25.70 xM 13.0 AQ 40.0L 4 108   1    4/          ICQ XX WYA   Christopher Wyatt
103        2023 08 22.91  S 13.3 TI 35.3L   144   1.5  1           ICQ XX HAR11 Christian Harder
103        2023 08 22.24  M 12.6 AQ 27.0L 5  90   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
103        2023 08 22.00  S 11.2 AQ 20.3T10  77   4    2           ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 08 21.91  S 12.2 TI 35.3L   122   1.6  1           ICQ XX HAR11 Christian Harder
103        2023 08 21.73 xS 12.5 AQ 25.0L 5 125   2.2  4           ICQ XX WYA   Christopher Wyatt
103        2023 08 21.12  I[11.8 S  25.0C10 188                    ICQ XX DEC   Michel Deconinck
103        2023 08 20.93  S 12.7 TI 53.1L   139   2    1           ICQ XX HAR11 Christian Harder
103        2023 08 19.96  S 12.5 TI 53.1L   139   2.2  1           ICQ XX HAR11 Christian Harder
103        2023 08 19.06  S 12.3 HS 32.0L 5  80   5    2/                  PIL01 Uwe Pilz
103        2023 08 14.13  S 11.6 AQ 20.3T10  77   4    2           ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 08 14.00  S 14.0 TI 53.1L   155   1.1  3           ICQ XX HAR11 Christian Harder
103        2023 08 07.93  S 11.8 AQ 20.3T10  77   4    2           ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 07 29.34  M 13.0 AQ 30.0L 5 121   1    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
80P/Peters-Hartley
 80        2023 08 02.21  C 19.9 BG 30.5H 4C660                    ICQ XX MAI01 John Maikner
41P/Tuttle-Giacobini-Kresak
 41        2023 08 23.20  C 19.7 BG 30.5H 4E340                    ICQ XX MAI01 John Maikner
32P/Comas Sola
 32        2023 08 11.36  C 18.5 BG 30.5H 4A560                    ICQ XX MAI01 John Maikner
12P/Pons-Brooks
 12        2023 08 27.04  S 11.5 AQ 20.3T10  77   6    1           ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 26.98  S 13.6 TI 53.1L   155   2.2  1           ICQ XX HAR11 Christian Harder
 12        2023 08 23.85  S 13.0 HS 32.0L 5  80   0.7 s2                  PIL01 Uwe Pilz
 12        2023 08 22.88  S 14.3 TI 35.3L   122   1.5              ICQ XX HAR11 Christian Harder
 12        2023 08 21.92  S 11.8 AQ 20.3T10  77   5    1           ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 20.90  S 13.7 TI 53.1L   155   1.5  1           ICQ XX HAR11 Christian Harder
 12        2023 08 19.88  S 13.5 TI 53.1L   139   1.5  1           ICQ XX HAR11 Christian Harder
 12        2023 08 14.91  S 14.0:TI 53.1L   139   1.5  0/          ICQ XX HAR11 Christian Harder
 12        2023 08 14.11  S 11.7 AQ 20.3T10  77   5    1           ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 13.91  S 13.2 TI 53.1L   139   2    1           ICQ XX HAR11 Christian Harder
 12        2023 08 12.89  S 12.2 TI 53.1L   111   2.5  1           ICQ XX HAR11 Christian Harder
 12        2023 08 09.90  S 11.7 TI 35.3L   122                    ICQ XX HAR11 Christian Harder
 12        2023 08 08.89  S 11.8 TI 29.8L 4  79   2.7  1/          ICQ XX HAR11 Christian Harder
 12        2023 08 07.90  S 11.7 AQ 20.3T10  77   3.5  1/          ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 07.89  S 11.4 TI 29.8L 4  66   2.9  2           ICQ XX HAR11 Christian Harder
2P/Encke
  2        2023 08 27.09  S 11.1 AQ 20.3T10 100   4    1/          ICQ XX GON05 Juan Jose Gonzalez Suarez
  2        2023 08 22.30  M 12.8 AQ 27.0L 5  90   1    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

```
2        2023 08 22.17  S 11.3 AQ 20.3T10 100   3    1/          ICQ XX GON05 Juan Jose Gonzalez Suarez
2        2023 08 21.07  S 12.2 TI 53.1L   139   1.3  0/          ICQ XX HAR11 Christian Harder
```

Comets News

New Discoveries and Recoveries

13P/Olbers – Alan Hale, co- discoverer of the great comet C/1995 O1 (Hale-Bopp), recovered 13P/Olbers on a series of images taken with Las Cumbres Observatory 1.0-m f/8 Schmidt-Cassegrain telescopes at the South African Astronomical Observatory (Sutherland, South Africa) and Siding Spring Observatory (Australia) on August 13, 24, 25, 26, and 27. 13P was 21st-22nd magnitude and appeared stellar.

13P/Olbers is one of two bright Halley-type comets arriving at perihelion in 2024, the other being 12P/Pons-Brooks. Comet Olbers was discovered in 1815 by Heinrich Wilhelm Olbers of Bremen, Germany. With a ~69-year orbital period, the comet was also observed in 1887, when it was recovered by William R. Brooks, and again in 1956.

2024 sees Olbers arrive at perihelion on June 30 at 1.18 au. This return is rather poor, with the comet only passing within 1.9 au of Earth and remaining at low solar elongations when at its brightest. Still, a peak brightness around magnitude 7.5 is expected in June and July. Olbers will only be visible to the northern hemisphere observers for a month or two around perihelion. [CBET 5289]

C/2023 P1 (Nishimura) – More on this bright amateur comet discovery can be found below. [CBET 5285, MPEC 2023-P87]

P/2023 O2 = P/2014 W1 (PANSTARRS) – Congratulations to regular ALPO contributor John Maikner on his recovery of P/2014 W1 (PANSTARRS)! The comet was around magnitude 20 on images taken on August 2 and 11 with a 0.31-m Astro-Physics Riccard Honders astrograph. A few days before John's first observation, Pan-STARRS also observed the comet, though it was not recognized as the comet at the time. With a perihelion on 2023 December 18, at 2.73 au, this is its first return since its discovery in 2014. [CBET 5288, MPEC 2023-Q142]

ATel 16220 reports on an outburst that occurred on or around August 25. Michael S. P. Kelley and the ZTF team found the comet brightening from magnitude 20.3 on August 18 to 18.5 on August 29. The outburst was also confirmed in Pan-STARRS and ATLAS photometry reported to the MPC.

P/2015 XG422 (PANSTARRS) – PANSTARRS discovered this object as an asteroid on 2015 December 13 at magnitude 22, though the discovery wasn't officially announced until 2019 (hence the large number of 422 in the provisional designation). Amateur K. Ly found evidence of cometary activity in publicly available archival images taken on multiple nights in 2016 with the "SkyMapper" 1.35-m f/4.8 reflector at Siding Spring, 8.2-m Subaru Telescope + Suprime-Cam at Mauna Kea, 1.0-m Las Cumbres Observatory telescope "B" at Cerro Tololo, and the Cerro Tololo 4-m reflector + DECam.

Its last perihelion was on 2016 December 2, at 2.99 au, when the comet peaked at 19th magnitude. Its next perihelion on its 9-year orbit will be 2025 December 8, at 3.01 au. [CBET 5284, MPEC 2023-P35]

Comets Brighter than Magnitude 6

C/2023 P1 (Nishimura)

Discovered 2023 August 12 by amateur Hideo Nishimura with a DSLR and telephoto lens

Orbit (from Minor Planet Center, MPEC 2023-Q150)

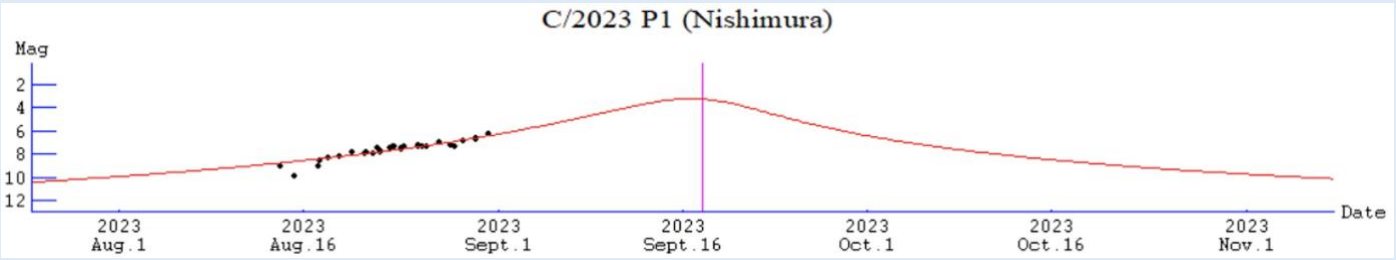
```
    C/2023 P1 (Nishimura)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2023 Sept. 17.64112 TT                                  Rudenko
q   0.2251637           (2000.0)            P               Q
z  +0.0161710      Peri.  116.28908     +0.38236795     -0.62749778
 +/-0.0006602      Node    66.84341     -0.85509439     -0.51846683
e   0.9963589      Incl.  132.46439     +0.35015473     -0.58089473
From 421 observations 2023 Aug. 11-28, mean residual 0".6.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2023 P1 (Nishimura)                                                 Max El
                                                                       (deg)
    Date       R.A.    Decl.      r        d     Elong  Const  Mag  40N  40S
2023-Sep-01  08 41   +23 51    0.574    1.068     31M    Cnc   6.3   13    0
2023-Sep-06  09 34   +24 05    0.448    0.928     26M    Leo   5.2    8    0
2023-Sep-11  10 48   +21 00    0.323    0.843     17M    Leo   4.1    0    0
2023-Sep-16  12 06   +11 32    0.233    0.880     11E    Vir   3.2    0    0
2023-Sep-21  12 46   -00 31    0.255    1.053     13E    Vir   3.9    0    0
2023-Sep-26  12 55   -08 53    0.364    1.243     14E    Vir   5.3    0    0
2023-Oct-01  12 56   -14 24    0.491    1.403     13E    Crv   6.4    0    0
2023-Oct-06  12 56   -18 27    0.616    1.538     13E    Crv   7.2    0    0
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  7.7 + 5 log d +  6.6 log r
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
             (UT)                      T         Dia  DC  LENG  PA
   2023P1  2023 08 31.17  S  6.4 TK  8.0B    20   3    6   0.4  290 ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023P1  2023 08 31.16  S  6.6 TK 20.3T10  77   4    5/  0.7  290 ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023P1  2023 08 30.12  B  7.0 S  12.6R 5  63   5    6   10  m270 ICQ XX DEC   Michel Deconinck
   2023P1  2023 08 30.10  S  7.1 S  12.6B 5  25   5    6            ICQ XX DEC   Michel Deconinck
   2023P1  2023 08 29.09  S  7.2:TI 25.2L 4  56   4    5/           ICQ XX HAR11 Christian Harder
   2023P1  2023 08 28.48  S  7.4 TK  5.0B    10   5    6            ICQ xx HER02 Carl Hergenrother
   2023P1  2023 08 28.09  S  7.6 TI 29.8L 4  79   4    4/  3   m295 ICQ XX HAR11 Christian Harder
   2023P1  2023 08 27.17  S  7.3 TK 20.3T10  77   5    5   0.4  280 ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023P1  2023 08 26.12  B  7.8 S  12.6R 5  63   8    5   1   m110 ICQ XX DEC   Michel Deconinck
   2023P1  2023 08 26.11  B  7.8 S  12.6B 5  25   6    4            ICQ XX DEC   Michel Deconinck
   2023P1  2023 08 25.79 &M  8.6 TK 40.0L 4  59   2.6  5/           ICQ XX WYA   Christopher Wyatt
   2023P1  2023 08 25.49  S  7.8 TK 12.5B    30   3    6            ICQ xx HER02 Carl Hergenrother
   2023P1  2023 08 25.49  S  7.5 TK  5.0B    10   5    6            ICQ xx HER02 Carl Hergenrother
   2023P1  2023 08 24.36  S  8.0 TK 15.0L 5  42   5    4            ICQ XX SOU01 Willian Souza
   2023P1  2023 08 24.35  M  8.0 TK 10.0B    25   4    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023P1  2023 08 24.11  B  8.0 S  12.6R 5  63   3    5   1.5 m 90 ICQ XX DEC   Michel Deconinck
   2023P1  2023 08 24.10  B  8.0 S  12.6B 5  25   2.5  4/           ICQ XX DEC   Michel Deconinck
   2023P1  2023 08 23.47  S  7.9 TK 12.5B    30   2.5  6            ICQ xx HER02 Carl Hergenrother
   2023P1  2023 08 23.36  S  8.0 TK 15.0L 5  33   5    4            ICQ XX SOU01 Willian Souza
   2023P1  2023 08 23.35  M  8.2 TK 10.0B    25   4    4            ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

```
2023P1  2023 08 22.36  M  8.3 TK 15.0L 5  33   5    4            ICQ XX SOU01 Willian Souza
2023P1  2023 08 22.35  M  8.5 TK 10.0B    25   3    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
2023P1  2023 08 22.16  S  7.6 TK  8.0B    20   6    4            ICQ XX GON05 Juan Jose Gonzalez Suarez
2023P1  2023 08 22.15  S  7.8 TK 20.3T10  77   5    5   0.3  270 ICQ XX GON05 Juan Jose Gonzalez Suarez
2023P1  2023 08 22.12  O  7.9 HD 12.6B 5  25   6    4            ICQ XX DEC   Michel Deconinck
2023P1  2023 08 21.79 xM  8.9 AQ 25.0L 5  40   3.5  5/           ICQ XX WYA   Christopher Wyatt
2023P1  2023 08 21.08  S  8.8 TI 53.1L   111   2.2  4            ICQ XX HAR11 Christian Harder
2023P1  2023 08 20.10  B  8.2 TK 12.6B 5  25   5    2/           ICQ XX DEC   Michel Deconinck
2023P1  2023 08 19.06  S  8.7 TK 32.0L 5  80   4    6                   PIL01 Uwe Pilz
2023P1  2023 08 18.11  B  8.7:S  12.6B 5  25 > 4    1/           ICQ XX DEC   Michel Deconinck
2023P1  2023 08 17.47  S  9.2 TK 12.5B    30   2    6            ICQ xx HER02 Carl Hergenrother
2023P1  2023 08 17.35  M  9.9 AQ 27.0L 5  68        3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
2023P1  2023 08 15.35  M 10.8 AQ 27.0L 5  68        4/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
2023P1  2023 08 14.16  S  9.3 TK 20.3T10  77   4    3            ICQ XX GON05 Juan Jose Gonzalez Suarez
```

The discovery of C/2023 P1 (Nishimura) is a callback to a time when most bright comets were discovered by amateurs when already relatively bright. C/2023 P1 was discovered by Hideo Nishimura at 10th magnitude on August 12 on three 30-s exposures using a 200-mm f/3 lens and Canon EOS 6D digital camera [CBET 5285].

The discovery image can be found on Maik Meyer's site at https://www.cometchaser.de/discoverystories/Comet-discoverers.html#2023P1 .

This is Nishimura's 3rd named comet after his visual discovery of C/1994 N1 (Nakamura-Nishimura-Machholz) and imaging discovery of C/2021 O1 (Nishimura). He is also a prolific discoverer of Milky Way novae with over two dozen finds! (N Sgr 2023, N Sgr 2021, N Ser 2020, N Sct 2019, N Sgr 2018, N Oph 2018 #2, N Sco 2018 #2, N Sco 2018 #1, N Sco 2017, N Sco 2016 #1, N Sgr 2015 #4, N Sgr 2015 #1, N Oph 2012, N Sgr 2011 #1, N Oph 2010 #2, N Oph 2010 #1, N Sct 2009, N Oph 2008 #2, N Oph 2008 #1, N Oph 2007, N Sco 2007 #2, N Cyg 2006, N Sco 2005, N Sgr 2005 #1, N Cyg 2005, N Sgr 2004, and N Sct 2003)

A question that was asked after the discovery was, "Why didn't the professional surveys see the comet?" We now know that it was imaged but not recognized by the Pan-STARRS survey on three nights in January. It was also found in ZTF data taken on a single night in March. The comet was then between 21st and 23rd magnitude.

Whenever a new comet is found with a small perihelion distance, we ask whether it will disintegrate. In some good news, C/2023 P1 has an orbital period of ~437 years. It also may be the parent body of the sigma Hydrids meteor shower, which occurs in December. Both the orbital period and possible meteor shower suggest that P1 has been close to the Sun before, and perhaps many times before.

Since discovery, P1 has brightened at a relatively slow rate of 2.5n ~ 6.6. But since its distance to the Sun is rapidly decreasing, the slow absolute brightening rate still resulted in a rapid apparent brightening from around magnitude 9 in mid-August to nearly magnitude 6 at the start of September. Assuming the same brightening rate going forward, P1 should peak at magnitude 3.2 at perihelion (September 17). While 3rd magnitude is naked eye bright in a dark sky, the problem is that the comet will be 12 degrees from the Sun and located against a very bright sky. An evening object by that time, the comet will be setting at the end of nautical twilight, with observers at far northern latitudes having a better view.

Before that, the comet will be a morning object observable from the northern hemisphere in a darker sky until about the end of the first week of September, when it should be at 5th magnitude. After that, it will be very low or only above the horizon after the start of twilight.

Images show what I like to call a "lollipop" appearance, a round blue-green gas coma, and a long but narrow gas tail. So far, the comet appears to be dust-poor, making observing it against a bright sky even more difficult. Regardless, the first week or two of September should see plenty of observations and hopefully a rapidly brightening and dynamic comet.

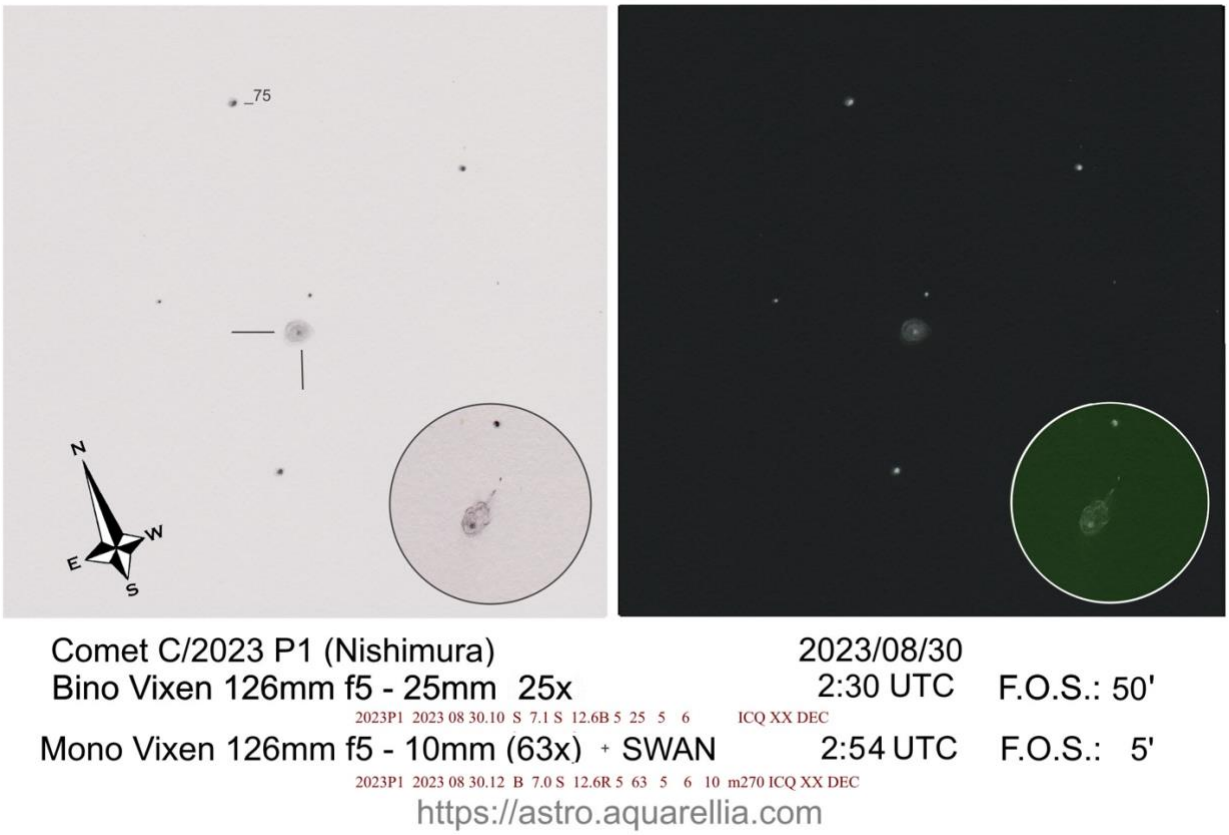


Figure 1 – C/2023 P1 as seen visually by Michel Deconinck in 125mm binoculars at 25 and 53 power.

Figure 2 - Michael Jäger imaged C/2023 P1 (Nishimura) on August 24 with a 16" f/3.2 reflector and QHY600 camera. The exposures consist of L-10x60-s (UV/IR) and 5x90-s green, RGB.

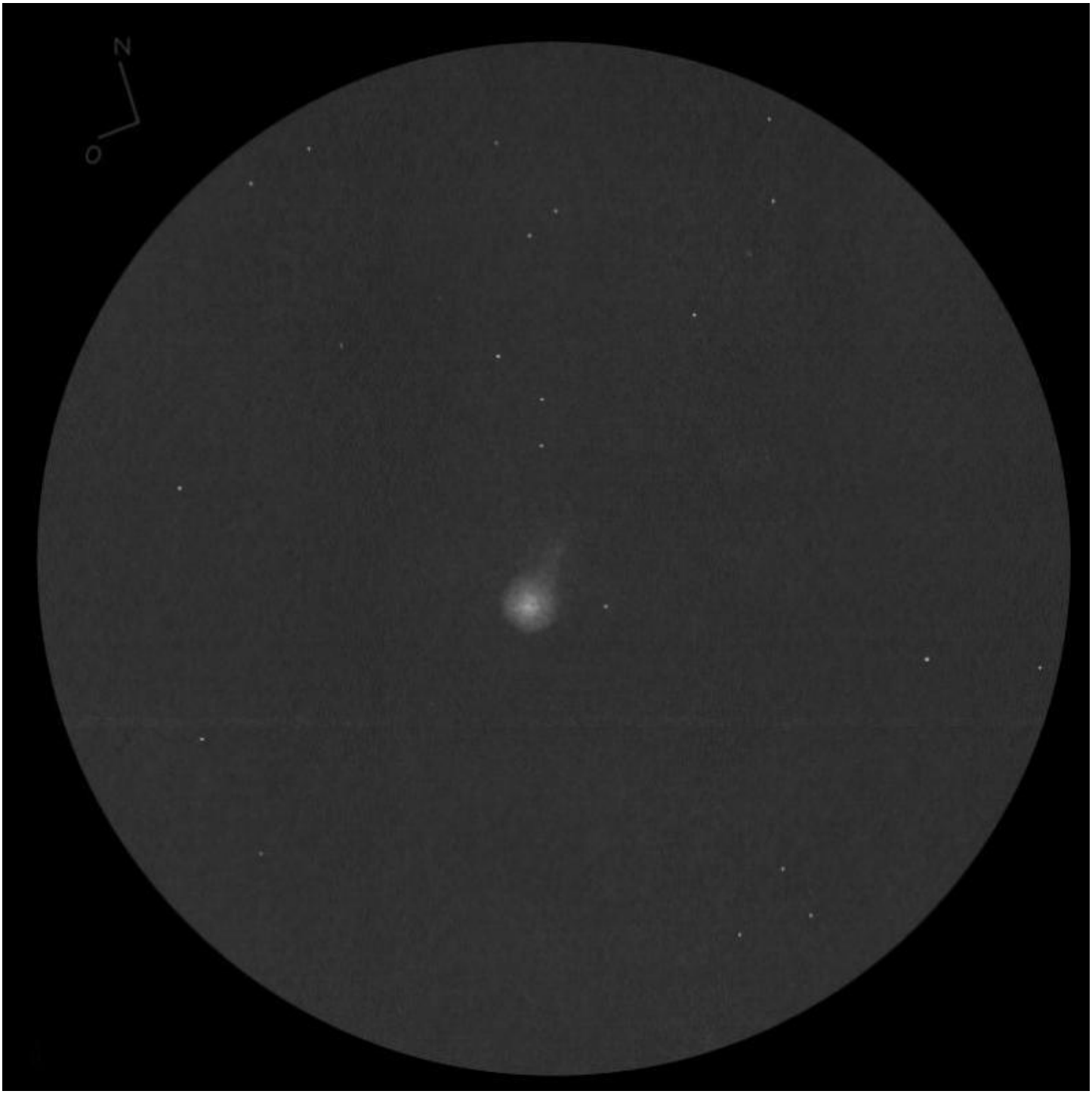


Figure 3 – Christian Harder sketched C/2023 P1 on August 28. He used a 12" f/4 Dobsonian at 79 power.

Comets Between Magnitude 6 and 10

C/2020 V2 (ZTF)

Discovered 2020 November 2 by the ZTF survey
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2023-Q150)

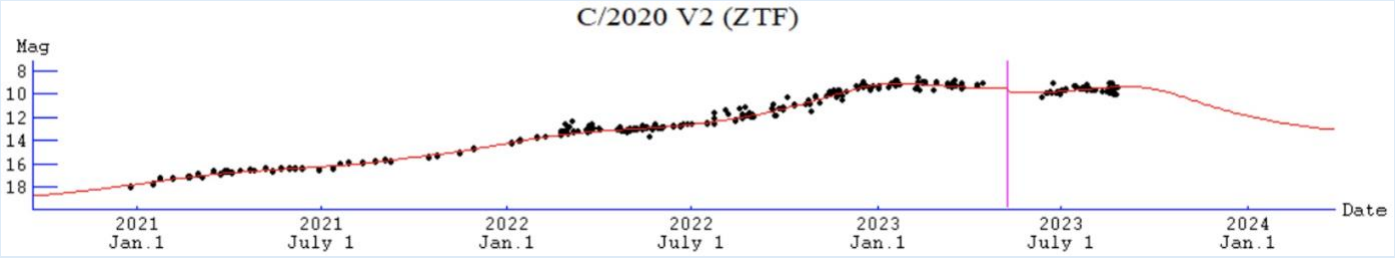
```
    C/2020 V2 (ZTF)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2023 May 8.50416 TT                                   Rudenko
q   2.2276741           (2000.0)            P              Q
z  -0.0005202      Peri.  162.40325     +0.69759065     +0.59424642
 +/-0.0000004      Node   212.37101     +0.53389562     -0.05852843
e   1.0011588      Incl.  131.61172     +0.47783130     -0.80215062
From 4679 observations 2020 Apr. 18-2023 Aug. 27, mean residual 0".9.
1/a(orig) = +0.000019 AU**-1, 1/a(fut) = -0.000217 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2020 V2 (ZTF)                                                        Max El
                                                                        (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Sep-01  02 43  -11 37   2.586   1.933    119M   Cet   9.4   38   62
2023-Sep-06  02 35  -15 02   2.615   1.894    125M   Cet   9.4   35   65
2023-Sep-11  02 25  -18 32   2.644   1.867    131M   Cet   9.4   31   69
2023-Sep-16  02 14  -22 02   2.674   1.855    136M   Cet   9.4   28   72
2023-Sep-21  02 02  -25 28   2.705   1.858    139M   For   9.5   24   76
2023-Sep-26  01 49  -28 43   2.736   1.877    141M   For   9.5   21   79
2023-Oct-01  01 35  -31 41   2.768   1.911    141M   Scl   9.6   18   82
2023-Oct-06  01 20  -34 19   2.801   1.960    139M   Scl   9.7   16   84
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 = -1.4 + 5 log d + 15.9 log r [up to T-580 days
m1 =  3.2 + 5 log d + 10.1 log r [between T-580 and T-220 days]
m1 =  4.0 + 5 log d +  8.6 log r [T-220 days and onward]
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
             (UT)                    T          Dia  DC  LENG  PA
   2020V2  2023 08 28.46  S  9.8 TK 12.5B    30   2    4           ICQ xx HER02 Carl Hergenrother
   2020V2  2023 08 28.08  S 10.0 TI 29.8L 4  79   2.2  4           ICQ XX HAR11 Christian Harder
   2020V2  2023 08 27.10  S  9.6 TK 20.3T10  77   3.5  5           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2020V2  2023 08 25.69 xM  9.9 AQ 40.0L 4  59   3.4  6  15   m  7 ICQ XX WYA   Christopher Wyatt
   2020V2  2023 08 25.46  S  9.9 TK 12.5B    30   2    4           ICQ xx HER02 Carl Hergenrother
   2020V2  2023 08 24.33  M 10.5 TK 27.0L 5  68   2    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 22.33  M 10.5 TK 27.0L 5  68   2    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 22.18  S  9.7 TK 20.3T10  77   3    5           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2020V2  2023 08 21.75 xM 10.1 AQ 25.0L 5  40   2.7  6  13.5 m 15 ICQ XX WYA   Christopher Wyatt
   2020V2  2023 08 21.06  S 10.2 TI 53.1L   111   1.5  5   3    350 ICQ XX HAR11 Christian Harder
   2020V2  2023 08 20.12  I  9.5 S  12.5B 5  25   1    5           ICQ XX DEC   Michel Deconinck
   2020V2  2023 08 17.46  S  9.9 TK 12.5B    30   2    4           ICQ xx HER02 Carl Hergenrother
   2020V2  2023 08 17.33  M 10.4 TK 27.0L 5  68   2    4           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 15.34  M 10.3 TK 27.0L 5  68   2    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 10.34  M 10.3 TK 30.0L 5 100   2    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 03.33  M 10.2 TK 30.0L 5 100   2    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 08 02.32  M 10.1 TK 30.0L 5  88   2    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

We are approaching the 3rd anniversary of the discovery of comet C/2020 V2 (ZTF) by the Zwicky Transient Facility on November 2, 2020. On that date, the comet was 8.7 au from the Sun and 9.4 au from Earth. It was also at a solar elongation of 44 degrees, which is relatively close to the Sun for the discovery of a faint 19th-magnitude comet. Pre-discovery observations by the Mount Lemmon Survey push the earliest known observation of V2 back to April 2020, when it was 10.1 au from the Sun (for comparison, the average distance of Saturn from the Sun is 9.6 au).

As a dynamically new comet, it may be making its first trip into the inner solar system. A negative future 1/a value suggests this may be its only trip as its outbound trajectory will be hyperbolic, resulting in its leaving the solar system.

V2 was well placed for observations in the morning sky from both hemispheres. As a result, 17 magnitude measurements were received in August. The comet was estimated to be between 9.5 and 10.5 (aperture and personal bias corrected to between 9.3 and 10.1). Most observations found the coma to be compact at 1.5’ to 3.5’ in diameter and moderately condensed (DCs from 3 to 6). Chris Wyatt and Christian Harder even reported a tail up to a quarter degree in length. This tail was probably the dust tail. Images by Dan Bartlett not only recorded the dust tail but also a fainter, narrow gas tail. The tails extended in directions ~90 degrees apart in an image taken on August 26.

C/2020 V2 starts the month in the morning sky but will be close to opposition by the end of the month as it moves through Cetus (Sep 1-18), Fornax (18-27), and Sculptor (27-30). September also sees a second “close” approach to Earth, this time at 1.86 au, resulting in a second peak in brightness (at magnitude 9.4). It continues to be visible from both hemispheres, though its southerly motion makes it a progressively more difficult observation for northern observers.

Figure 4 - C/2020 V2 (ZTF) was imaged by Dan Bartlett (June Lake, CA, USA) on 2023 August 26, with a Starizona Hyperstar equipped Celestron C14 at f/2. Dan used a ZWO ASI 2600mcP camera. The image consists of 86 90-s co-added exposures.

2P/Encke

Discovered visually on four separate occasions in 1786 by Méchain, 1795 by Herschel, 1805 by Pons, Huth, and Bouvard, and again by Pons in 1818
Jupiter-family comet / Encke-type comet

Orbit (from Minor Planet Center, MPEC 2023-Q150)

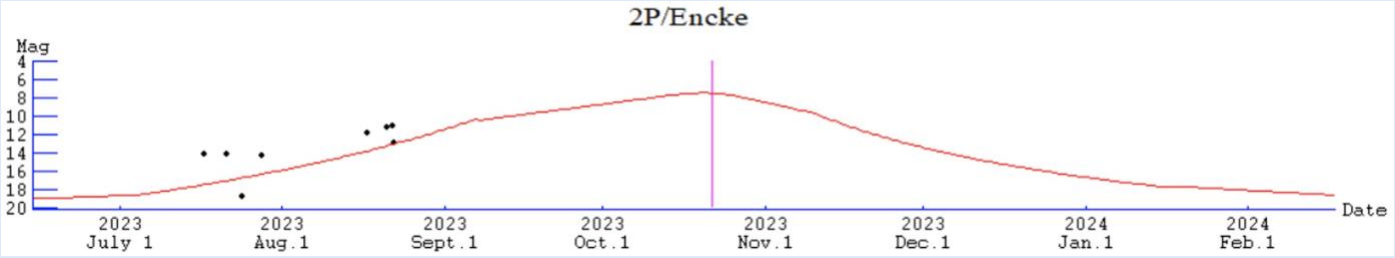
```
   2P/Encke
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2023 Oct. 22.52817 TT                                  Rudenko
q   0.3396003           (2000.0)            P              Q
n   0.29823152     Peri.  187.28605     -0.94616121     -0.31203206
a   2.2187090      Node   334.02019     +0.30601960     -0.77555696
e   0.8469379      Incl.   11.33669     +0.10550340     -0.54876898
P   3.30
From 3264 observations 2009 Aug. 22-2023 Aug. 27, mean residual 0".7.
     Nongravitational parameters A1 = +0.00, A2 = -0.0001.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
2P/Encke                                                              Max El
                                                                       (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Sep-01  06 13  +34 05   1.147   1.102     65M    Aur   11.5   46    7
2023-Sep-06  06 48  +33 53   1.068   1.031     63M    Gem   10.6   44    5
2023-Sep-11  07 27  +32 56   0.986   0.973     59M    Gem   10.2   41    2
2023-Sep-16  08 09  +31 01   0.902   0.930     55M    Cnc    9.8   36    0
2023-Sep-21  08 53  +27 58   0.815   0.906     50M    Cnc    9.5   31    0
2023-Sep-26  09 36  +23 49   0.725   0.902     44M    Leo    9.1   26    0
2023-Oct-01  10 18  +18 46   0.634   0.922     38M    Leo    8.7   19    0
2023-Oct-06  10 58  +13 07   0.542   0.966     31M    Leo    8.4   13    0
```

Comet Magnitude Formula (from Seiichi Yoshida)

```
m1 =  9.8 + 5 log d + 25.0 log r [-110 to -45 days from perihelion]
m1 = 10.3 + 5 log d +  7.0 log r [-45 to +20 days from perihelion]
m1 = 12.3 + 5 log d + 15.7 log r [+20 to +85 days from perihelion
where "T" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Estimates submitted to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ CODE Observer Name
               (UT)                    T         Dia  DC  LENG  PA
  2        2023 08 27.09  S 11.1 AQ 20.3T10 100   4    1/           ICQ XX GON05 Juan Jose Gonzalez Suarez
  2        2023 08 22.30  M 12.8 AQ 27.0L 5  90   1    2/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
  2        2023 08 22.17  S 11.3 AQ 20.3T10 100   3    1/           ICQ XX GON05 Juan Jose Gonzalez Suarez
  2        2023 08 21.07  S 12.2 TI 53.1L   139   1.3  0/           ICQ XX HAR11 Christian Harder
```

2P/Encke is a frequent visitor to the inner solar system and one of the most interesting comets. With an orbital period of 3.3 years, it has the shortest orbital period of any sublimating comet. The "sublimating" caveat is due to 311P/PANSTARRS having a shorter period. However, 311P is an inner Main Belt asteroid that probably experienced a rotationally induced breakup event and only superficially appeared cometary.

With a small aphelion distance of 4.09 au, Encke is decoupled from Jupiter's strong gravitational influence. Orbital dynamicists have been wrestling with how to get an outer solar system object like Encke onto its present orbit. It is also the parent of the Taurid Meteoroid Complex. Studies of the orbital evolution of Encke, the

Taurids meteors, and a small number of near-Earth asteroids in similar orbits suggest the possibility of a break-up event occurring thousands of years ago to explain their formation.

Even Encke's discovery story is interesting. It was discovered on 4 separate occasions before its periodic nature was known. Pierre Méchain was the first to see Encke in January 1786. Caroline Herschel made an independent discovery in 1795, while three observers, including Jean-Louis Pons, found it in 1805 (J. S. Huth and A. Bouvard were the other two independent discoverers). Pons would also discover the comet a final time in 1818. So why Comet Encke and not Comet Méchain-Herschel-Pons-Huth-Bouvard or some other variation? 2P/Encke joins 1P/Halley and 27P/Crommelin in being named after an orbit computer rather than its discoverer. It was the German mathematician Johann F. Encke who established its periodic nature and linked the four sightings. Except for a missed return during the war-torn year of 1944, it has been seen at every return since 1819. This year is its 65th observed return!

For northern hemisphere observers, perihelia during the early months of the year produce evening apparitions, mid-year perihelia aren't observable, and end of the year perihelia produce morning apparitions. For southern hemisphere observers, perihelia during the early months of the year produce morning apparitions, mid-year perihelia produce evening perihelia, and end of the year perihelia are difficult or impossible to observe. The comet is usually only observable in the weeks before perihelion from the northern hemisphere and only from the southern hemisphere in the weeks after perihelion.

With perihelion on 2023 October 22, the comet will be a northern hemisphere object in the morning sky before perihelion but not visible after perihelion until March/April, when it will be a very faint object. Encke should start the month around magnitude 11.5 in Auriga before brightening to around magnitude 10.0 at mid-month (as the comet moves from Gemini into Cancer) and ends September in Leo at 8th magnitude.

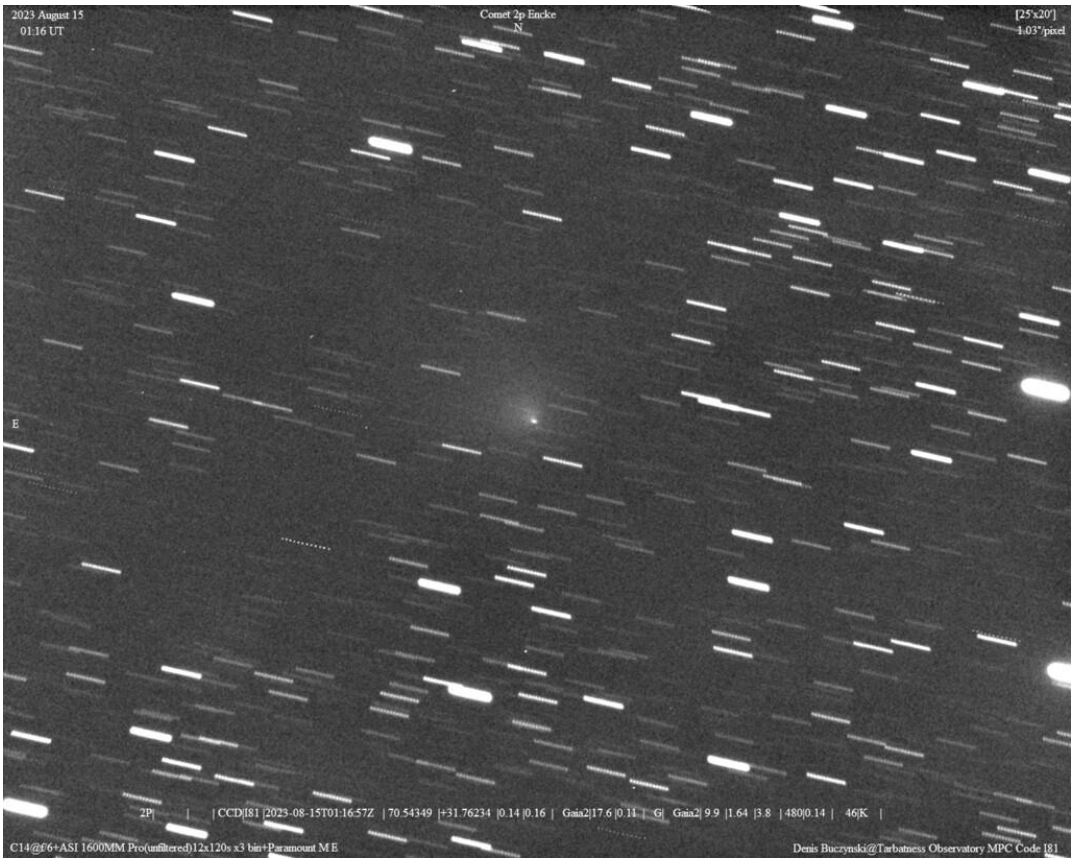


Figure 5 – Denis Buczynski imaged 2P/Encke on August 15 with a Celestron C14 at f/6 and a ZWO ASI1600MM Pro camera.

103P/Hartley

Discovered photographically on 1986 March 15 by Malcolm Hartley at Siding Spring Observatory in Australia
Jupiter-family comet

Orbit (from Minor Planet Center, MPEC 2023-Q150)

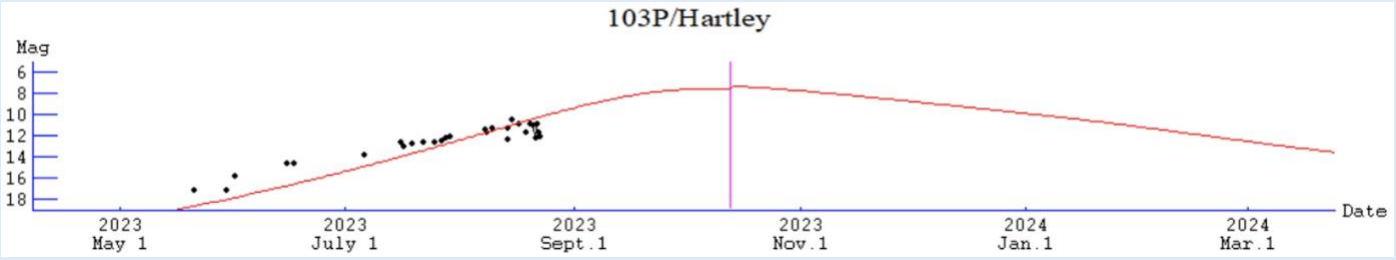
```
103P/Hartley
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2023 Oct. 12.51270 TT                                  Rudenko
q   1.0640927           (2000.0)            P              Q
n   0.15210794     Peri.  181.30135     +0.75452857     -0.63878372
a   3.4756400      Node   219.75005     +0.60421926     +0.76566900
e   0.6938427      Incl.   13.61045     +0.25613615     +0.07554033
P   6.48
From 7122 observations 2004 Sept. 20-2023 Aug. 27, mean residual 0".6.
     Nongravitational parameters A1 = +0.15, A2 = +0.0246.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
103P/Hartley                                                          Max El
                                                                       (deg)
    Date       R.A.    Decl.      r        d     Elong  Const  Mag  40N  40S
2023-Sep-01  02 36  +42 31    1.211    0.452    105M   Per    9.4   87    7
2023-Sep-06  03 14  +43 12    1.181    0.425    103M   Per    9.0   85    7
2023-Sep-11  03 55  +42 57    1.154    0.404    100M   Per    8.6   83    7
2023-Sep-16  04 36  +41 36    1.130    0.389     98M   Per    8.3   80    8
2023-Sep-21  05 16  +39 11    1.110    0.379     95M   Aur    8.0   77   10
2023-Sep-26  05 53  +35 49    1.093    0.375     93M   Aur    7.8   74   12
2023-Oct-01  06 25  +31 49    1.080    0.376     91M   Aur    7.7   71   14
2023-Oct-06  06 54  +27 26    1.071    0.382     90M   Aur    7.6   68   17
```

Comet Magnitude Formula (from 2010 ALPO data)

```
m1 =  8.9 + 5 log d + 26.6 log r [Pre-perihelion]
m1 =  9.1 + 5 log d + 10.0 log r [Post-perihelion]
where "T" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Estimates submitted to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ CODE Observer Name
               (UT)                    T         Dia  DC  LENG  PA
103        2023 08 28.02  S 10.5 TI 29.8L 4  79   5    1/           ICQ XX HAR11 Christian Harder
103        2023 08 27.05  S 11.0 AQ 20.3T10  77   5    2/           ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 08 26.99  S 11.6 TI 53.1L   139   4    2/           ICQ XX HAR11 Christian Harder
103        2023 08 25.70 xM 13.0 AQ 40.0L 4 108   1    4/           ICQ XX WYA   Christopher Wyatt
103        2023 08 22.91  S 13.3 TI 35.3L   144   1.5  1            ICQ XX HAR11 Christian Harder
103        2023 08 22.24  M 12.6 AQ 27.0L 5  90   1    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
103        2023 08 22.00  S 11.2 AQ 20.3T10  77   4    2            ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 08 21.91  S 12.2 TI 35.3L   122   1.6  1            ICQ XX HAR11 Christian Harder
103        2023 08 21.73 xS 12.5 AQ 25.0L 5 125   2.2  4            ICQ XX WYA   Christopher Wyatt
103        2023 08 21.12  I[11.8 S  25.0C10 188                      ICQ XX DEC   Michel Deconinck
103        2023 08 20.93  S 12.7 TI 53.1L   139   2    1            ICQ XX HAR11 Christian Harder
103        2023 08 19.96  S 12.5 TI 53.1L   139   2.2  1            ICQ XX HAR11 Christian Harder
103        2023 08 19.06  S 12.3 HS 32.0L 5  80   5    2/                  PIL01 Uwe Pilz
103        2023 08 14.13  S 11.6 AQ 20.3T10  77   4    2            ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 08 14.00  S 14.0 TI 53.1L   155   1.1  3            ICQ XX HAR11 Christian Harder
103        2023 08 07.93  S 11.8 AQ 20.3T10  77   4    2            ICQ XX GON05 Juan Jose Gonzalez Suarez
103        2023 07 29.34  M 13.0 AQ 30.0L 5 121   1    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

103P/Hartley is a Jupiter family comet with an orbital period of 6.5 years. It has been one of the brightest short-period comets of the past 30+ years, with good apparitions in 1991, 1997, 2010, and now, 2023. Currently, its orbit has a perihelion of 1.06 AU (just beyond Earth's orbit) and an aphelion of 5.89 AU (about 60 million miles beyond Jupiter's orbit). During its 2010 return, the NASA Deep Impact/EPOXI spacecraft flew by 103P, providing high-resolution images of its peanut-shaped, 2.25 km (1.4 miles) long nucleus.

103P was first seen on photographic plates obtained in March 1986 by Malcolm Hartley at the Siding Spring Observatory in Australia. At the time, the comet was a 17th-magnitude object and 9 months past perihelion. Hartley discovered 13 comets of which 9 are periodic (79P/du Toit-Hartley, 80P/Peters-Hartley, 100P/Hartley, 103P/Hartley, 110P/Hartley, 119P/Parker-Hartley, 123P/West-Hartley, 161P/Hartley-IRAS, 318P/McNaught-Hartley). His four non-periodic finds were C/1984 W2 (Hartley), C/1985 R1 (Hartley-Good) [peaked at 6-7th mag], C/1995 Q2 (Hartley-Drinkwater), and C/1999 T1 (McNaught-Hartley) [peaked at 7th mag].

At its first two predicted returns in 1991 and 1997, the comet brightened to become a nice 8th magnitude object easily visible in small telescopes and binoculars. Until experiencing a very close approach to Jupiter in 1971 (0.09 au), 103P was further from the Sun. As a result, the comet never became bright enough to be discovered. Though the comet was probably very active during the 1973 and 1979 returns, perihelion occurred on the other side of the Sun and out of view from Earth. The same was true in 1985, so its discovery in 1986 was despite a poor apparition.

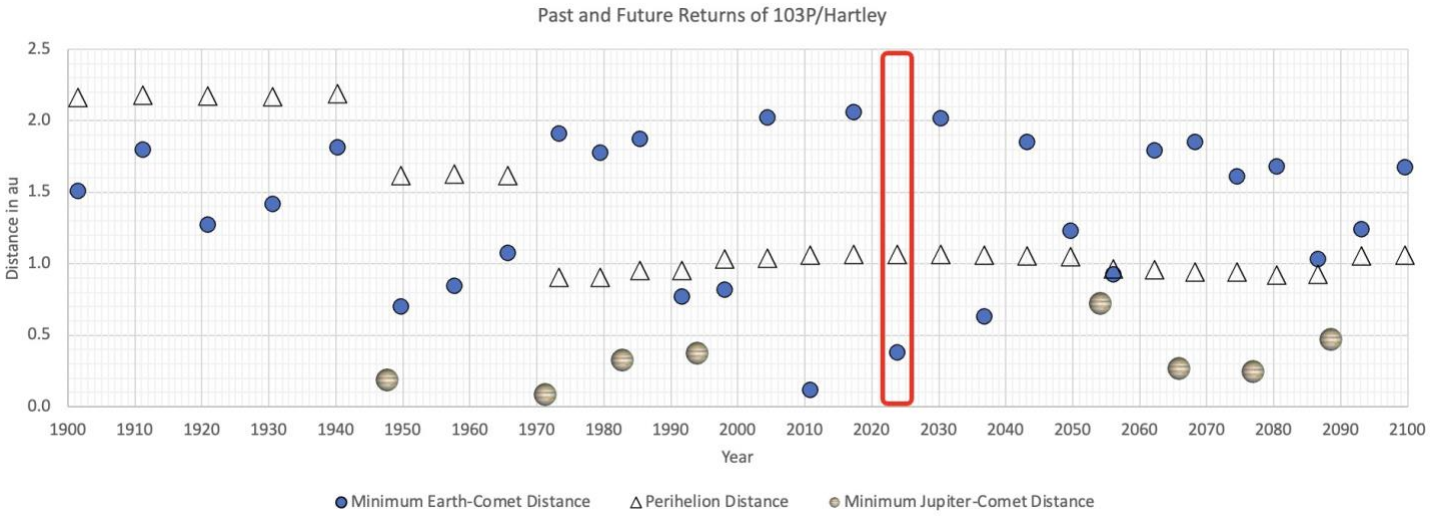


Figure 6 - Orbital evolution of 103P/Hartley. The current return is highlighted within the red rectangle.

This year, Hartley 2 reaches perihelion on 2023 October 12 at 1.06 au from the Sun, with the closest approach to Earth occurring a few weeks earlier, on September 26 at 0.38 au. While not as good as the 2010 return, the current return is the second-best between 1900 and 2100.

103P brightened to 10th magnitude at the end of August, with most visual observers reporting a small 1' to 5' diffuse coma (DC between 1 and 4.5). In September, it is well placed for northern observers as it moves through Perseus (Sep 1-16) and Auriga (16-30) while brightening from around magnitude 9.4 to 7.7. The lightcurve plot above shows the current apparitions observations plotted against the 2010 lightcurve. While the comet appeared brighter than expected over the past few months, the comet may now be a little fainter than expected. If the comet follows the 2010 lightcurve, it will peak at magnitude 7.4 in mid-October.

Comets Between Magnitude 10 and 12

C/2017 K2 (PANSTARRS)

Discovered 2017 May 21 by the Pan-STARRS survey with the Pan-STARRS1 1.8-m on Haleakala
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2023-Q150)

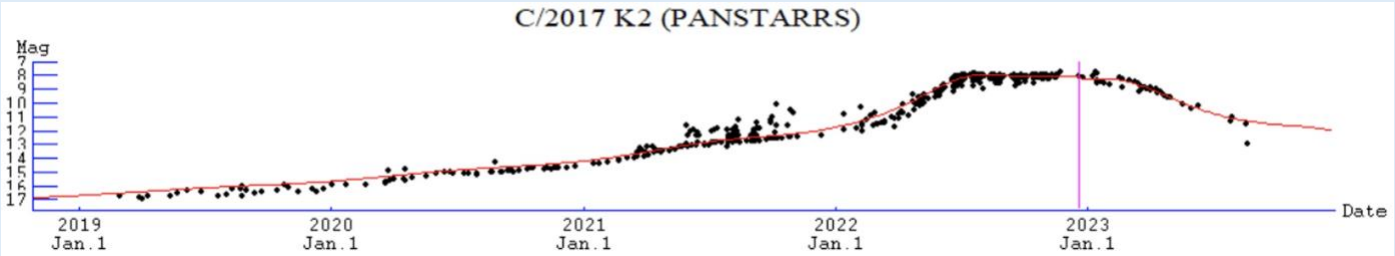
```
    C/2017 K2 (PANSTARRS)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2022 Dec. 19.68350 TT                                  Rudenko
q   1.7971519           (2000.0)            P               Q
z  -0.0003961      Peri.  236.20346     +0.01816366     +0.04922468
 +/-0.0000003      Node    88.23483     -0.18083975     +0.98247616
e   1.0007118      Incl.   87.56445     -0.98334484     -0.17977076
From 11820 observations 2013 May 12-2023 Aug. 25, mean residual 1".8.
1/a(orig) = +0.000059 AU**-1, 1/a(fut) = +0.001151 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2017 K2 (PANSTARRS)                                                 Max El
                                                                       (deg)
    Date      R.A.    Decl.     r       d     Elong  Const  Mag   40N   40S
2023-Sep-01  06 45  -08 15   3.516   3.902    60M    Mon   11.4    14    37
2023-Sep-06  06 47  -08 13   3.561   3.887    63M    Mon   11.4    18    39
2023-Sep-11  06 48  -08 12   3.606   3.868    67M    Mon   11.4    22    40
2023-Sep-16  06 49  -08 12   3.652   3.845    71M    Mon   11.5    26    42
2023-Sep-21  06 50  -08 13   3.697   3.821    75M    Mon   11.5    30    44
2023-Sep-26  06 50  -08 14   3.743   3.793    79M    Mon   11.5    33    46
2023-Oct-01  06 50  -08 16   3.788   3.764    83M    Mon   11.5    36    47
2023-Oct-06  06 49  -08 17   3.833   3.734    88M    Mon   11.6    38    49
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  4.4 + 5 log d +  6.2 log r [Before perihelion]
m1 =  4.5 + 5 log d +  7.2 log r [After perihelion]
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Estimates submitted to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ CODE Observer Name
              (UT)                    T         Dia  DC  LENG  PA
   2017K2  2023 08 21.76 xM 13.3 AQ 25.0L 5 125   0.5  6           ICQ XX WYA   Christopher Wyatt
   2017K2  2023 07 29.35  M 11.7 AQ 30.0L 5 100   1    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

C/2017 K2 (PANSTARRS) has been a constant fixture on these pages since August 2021. It is amazing how consistent this comet's brightening and fading has been. Going back to 2019, only two sets of lightcurve parameters are needed to model its brightness behavior. The need for two is due to the comet fading slightly faster since perihelion (2.5n ~ 7.2) than it brightened prior to perihelion (2.5n ~ 6.2).

In September, K2 is a morning object in Monoceros and observable from both hemispheres. It should continue to slowly fade from around magnitude 11.4 to 11.5. Unless the comet experiences a rapid fading, it will continue to grace these pages for a few more months before becoming fainter than 12th magnitude.

C/2021 S3 (PANSTARRS)

Discovered 2021 September 24 by PANSTARRS with the Pan-STARRS2 1.8-m Ritchey-Chretien reflector at Haleakala
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2023-O106)

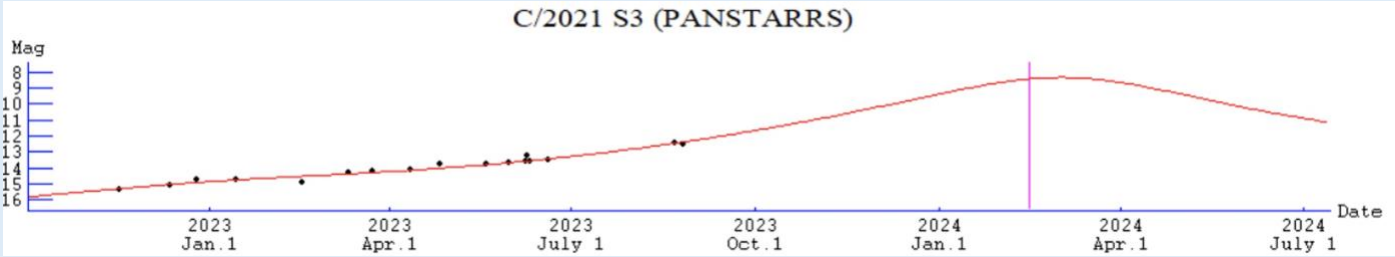
```
    C/2021 S3 (PANSTARRS)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2024 Feb. 14.72082 TT                                  Rudenko
q   1.3201299           (2000.0)            P               Q
z  -0.0001379      Peri.    6.86267     -0.77073743     +0.39897661
 +/-0.0000025      Node   215.62082     -0.61758998     -0.65952522
e   1.0001821      Incl.   58.53347     -0.15667303     +0.63705899
From 978 observations 2020 Dec. 6-2023 July 23, mean residual 0".4.
1/a(orig) = +0.000149 AU**-1, 1/a(fut) = +0.000064 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2021 S3 (PANSTARRS)                                                 Max El
                                                                      (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Sep-01  08 53  -27 59    2.646   3.270     44M    Pyx   12.3    0   25
2023-Sep-06  09 04  -28 38    2.593   3.213     44M    Pyx   12.2    0   25
2023-Sep-11  09 15  -29 21    2.540   3.157     44M    Pyx   12.1    0   26
2023-Sep-16  09 26  -30 04    2.487   3.100     44M    Pyx   12.0    0   26
2023-Sep-21  09 38  -30 50    2.434   3.043     44M    Ant   11.9    0   27
2023-Sep-26  09 50  -31 36    2.381   2.986     44M    Ant   11.8    0   27
2023-Oct-01  10 02  -32 24    2.329   2.928     44M    Ant   11.7    0   27
2023-Oct-06  10 14  -33 12    2.276   2.872     44M    Ant   11.5    0   27
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  6.9 + 5 log d + 6.6 log r
Where "t" is the date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au.
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des   YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
              (UT)                    T         Dia  DC  LENG  PA
   2021S3  2023 08 25.76 xS 13.1 AQ 40.0L 4 182   0.7  3           ICQ XX WYA   Christopher Wyatt
   2021S3  2023 08 21.78 xM 12.7 AQ 25.0L 5 125   0.7  4/          ICQ XX WYA   Christopher Wyatt
```

C/2021 S3 (PANSTARRS) is a new comet to this newsletter. It was discovered at 19-20th magnitude on 2021 September 24 by PANSTARRS with their Pan-STARRS2 1.8-m Ritchey-Chretien reflector at Haleakala on Maui. The comet is still about 5-6 months from its 2024 February 14 perihelion at 1.32 au and a minimum distance to Earth on 2024 March 14 at 1.30 au.

Chris Wyatt observed C/2021 S3 twice in late August at magnitude 12.7 and 13.1 (aperture corrected to 12.4-12.5) with a small 0.7' coma. Combining Chris' observations with photometry submitted to the COBS database by Thomas Lehmann yields a very slow 2.5n ~ 6.6 brightening rate. If this rate continues, the comet should peak around magnitude 8.3 in February/March, when it will be a morning object. This month, it will only be observable by southern hemisphere observers as it moves through Pyxis and Antlia.

C/2021 T4 (Lemmon)

Discovered 2021 October 7 by the Mount Lemmon Survey
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2023-Q150)

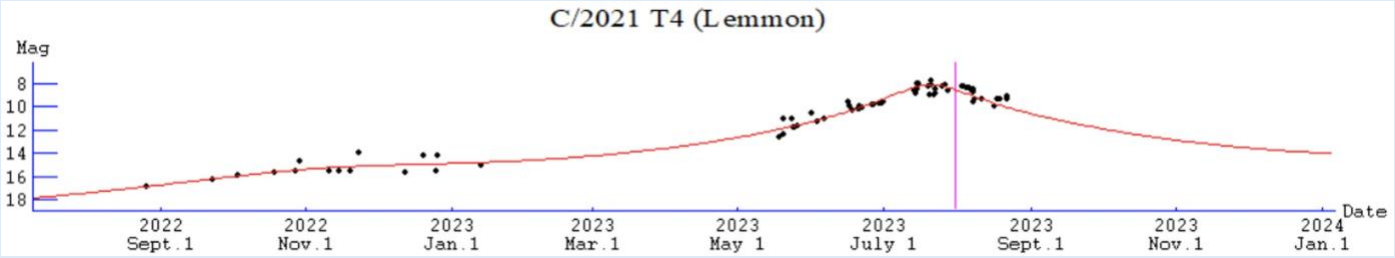
```
    C/2021 T4 (Lemmon)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2023 July 31.53905 TT                                  Rudenko
q   1.4832803           (2000.0)            P               Q
z  +0.0000832      Peri.  329.82227     +0.28264803     -0.90359446
 +/-0.0000006      Node   257.88458     -0.80103681     -0.40696405
e   0.9998766      Incl.  160.77704     -0.52768373     +0.13378087
From 1378 observations 2021 Aug. 7-2023 Aug. 26, mean residual 0".6.
1/a(orig) = +0.000005 AU**-1, 1/a(fut) = +0.000947 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2021 T4 (Lemmon)                                                  Max El
                                                                    (deg)
    Date       R.A.    Decl.      r        d     Elong  Const  Mag  40N  40S
2023-Sep-01  14 54   -18 50    1.548    1.596     68E    Lib   10.6   11   49
2023-Sep-06  14 52   -17 28    1.569    1.744     63E    Lib   10.8   10   43
2023-Sep-11  14 51   -16 21    1.593    1.886     57E    Lib   11.1    9   38
2023-Sep-16  14 51   -15 26    1.620    2.023     52E    Lib   11.3    7   32
2023-Sep-21  14 51   -14 39    1.649    2.153     47E    Lib   11.5    6   27
2023-Sep-26  14 52   -14 00    1.680    2.276     42E    Lib   11.7    5   22
2023-Oct-01  14 53   -13 25    1.713    2.392     37E    Lib   11.9    4   17
2023-Oct-06  14 54   -12 55    1.748    2.500     32E    Lib   12.1    2   12
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  7.8 + 5 log d + 9.4 log r
Where "t" is the date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au.
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des   YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
              (UT)                    T         Dia  DC  LENG  PA
   2021T4  2023 08 21.98   M 10.2 TK 27.0L 5  68   2    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 21.86   S  9.4 TK 20.3T10  77   6    2/          ICQ XX GON05 Juan Jose Gonzalez Suarez
   2021T4  2023 08 19.02   M 10.1 TK 27.0L 5  68   2    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 17.93   M 10.1 TK 27.0L 5  55   2    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 11.42 xS  9.4 TK  7.0B    15   9    3/          ICQ XX WYA   Christopher Wyatt
   2021T4  2023 08 07.92   M  9.3 TK 27.0L 5  55                   ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 07.89   S  9.1 TK 20.3T10  77   5    2/          ICQ XX GON05 Juan Jose Gonzalez Suarez
   2021T4  2023 08 06.91   M  9.3 TK 27.0L 5  55   1    2           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 05.91   M  9.2 TK 27.0L 5  55   1    2           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 04.91   M  9.2 TK 27.0L 5  55   1.5  2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 03.92   M  9.1 TK 27.0L 5  55   1.5  2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 08 02.91   M  9.1 TK 27.0L 5  55   2    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

With perihelion back on July 31 at 1.48 au and a close approach to Earth on July 20 at 0.54 au, C/2021 T4 (Lemmon) is now fading from around magnitude 10.6 to 11.9 this month as it moves away from the Sun and Earth. Though located in the far southern sky when at its best, T4 is now far enough north in the evening sky to be seen at northern mid-latitudes, though it is still much better placed for southern observers as it slowly moves through Libra.

C/2023 E1 (ATLAS)

Discovered 2023 March 1 by the Asteroid Terrestrial-Impact Last Alert System program from Sutherland, South Africa.
Halley-type comet

Orbit (from Minor Planet Center, MPEC 2023-Q150)

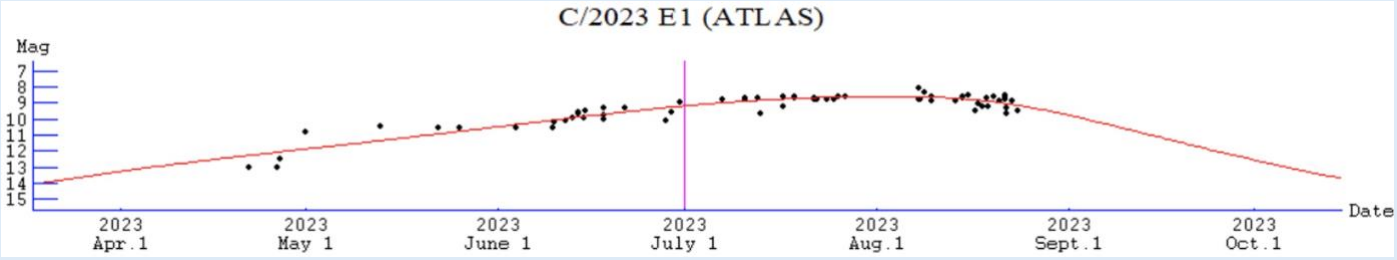
```
    C/2023 E1 (ATLAS)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2023 July 1.10943 TT                                  Rudenko
q   1.0266351           (2000.0)            P              Q
n   0.01159028     Peri.  105.89845     +0.06333771     +0.98427281
a  19.3377819      Node   164.57370     -0.97143164     +0.02293576
e   0.9469104      Incl.   38.31368     +0.22871142     -0.17515988
P  85.0
From 2414 observations 2022 Dec. 25-2023 Aug. 27, mean residual 0".5.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2023 E1 (ATLAS)                                                    Max El
                                                                      (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Sep-01  22 00  +08 26   1.424   0.432    160E    Peg    9.8   58   42
2023-Sep-06  22 05  +00 30   1.477   0.480    165E    Aqr   10.2   50   50
2023-Sep-11  22 08  -05 55   1.531   0.539    163E    Aqr   10.7   44   56
2023-Sep-16  22 12  -10 59   1.586   0.607    158E    Aqr   11.2   39   61
2023-Sep-21  22 16  -14 55   1.642   0.683    152E    Aqr   11.6   35   65
2023-Sep-26  22 20  -17 56   1.698   0.766    147E    Aqr   12.1   32   68
2023-Oct-01  22 23  -20 14   1.755   0.854    142E    Aqr   12.5   30   70
2023-Oct-06  22 27  -21 58   1.812   0.947    137E    Aqr   13.0   28   72
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  9.9 + 5 log d + 13.9 log r [t - 10]
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
              (UT)                    T         Dia  DC  LENG  PA
   2023E1  2023 08 28.01   S  9.4 TI 29.8L 4  66   9.5  2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 27.08   S  8.8 TK  7.0B    15   8    3           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023E1  2023 08 26.94   S  9.5 TI 19.6L 5  40   8.5  2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 25.93   S  9.2 TI 19.6L 5  40   7    2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 25.67 xS  9.7 TK 40.0L 4  59   5.6  3           ICQ XX WYA   Christopher Wyatt
   2023E1  2023 08 23.85   S 10.0 TK 32.0L 5  48  11               PIL01 Uwe Pilz
   2023E1  2023 08 22.89   S  9.1 TI 19.6L 5  38   9    2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 22.08   M  9.7 TK 27.0L 5  68   2    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023E1  2023 08 21.90   S  8.6 TK  8.0B    20   8    3           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023E1  2023 08 21.89   S  9.0 TI 19.6L 5  38   9.5  2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 21.89   S  8.7 TK  7.0B    15   8    3           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023E1  2023 08 21.71 xS  8.9 TK 25.0L 5  40   6.5  3/          ICQ XX WYA   Christopher Wyatt
   2023E1  2023 08 20.90   S  9.1 TI 19.6L 5  40   9.5  2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 19.89   S  8.8 TI 19.6L 5  40  10    2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 19.08   M  9.6 TK 27.0L 5  68   3    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023E1  2023 08 18.86   S  8.9 TI 19.6L 5  40   9    1/          ICQ XX HAR11 Christian Harder
   2023E1  2023 08 18.08   M  9.6 TK 27.0L 5  68   3    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023E1  2023 08 17.45   S  9.5 TK 12.5B    30   6    1           ICQ xx HER02 Carl Hergenrother
   2023E1  2023 08 17.08   C 15.0 BG 30.5H 4C990                    ICQ XX MAI01 John Maikner
   2023E1  2023 08 15.89   S  8.7 TI 19.6L 5  40   7.5  2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 14.89   S  8.8 TI 19.6L 5  40   8    2           ICQ XX HAR11 Christian Harder
   2023E1  2023 08 13.89   S  9.1 TI 19.6L 5  40   6.5  2           ICQ XX HAR11 Christian Harder
```

```
2023E1  2023 08 09.90  S  9.1:TI 35.3L    61   7    2           ICQ XX HAR11 Christian Harder
2023E1  2023 08 09.89  S  9.4 TK 32.0L 5  80   6    3/                 PIL01 Uwe Pilz
2023E1  2023 08 08.90  S  8.8 TI 29.8L 4  66   9.5  2/          ICQ XX HAR11 Christian Harder
2023E1  2023 08 07.92  S  8.8 TK  7.0B    15   8    3           ICQ XX GON05 Juan Jose Gonzalez Suarez
2023E1  2023 08 07.89  S  8.5 TI 29.8L 4  66   9.5  2/          ICQ XX HAR11 Christian Harder
```

Halley-type comet C/2023 E1 (ATLAS) was one of the brightest comets in the sky during August, yet it has been a challenging observation. It is now ~2 months past its July 1 perihelion at 1.03 au and a few weeks past a close approach at 0.37 au.

Several observers (Jose Guilherme de Souza Aguiar, Juan Jose Gonzalez Suarez, Christian Harder, Carl Hergenrother, John Maikner, and Uwe Pilz) reported observations in August. Most visual observations found the comet between magnitude 8.5 and 10.0 with a concentration around 8.7-8.8 with a large (up to 11' in diameter) and very diffuse (DC between 1 and 3.5) coma. Personally, though I've been able to see it in 30x125 binoculars, these were all borderline detections of this large, low-surface brightness object. It might not have been visible to those using higher magnifications or observing under brighter skies.

C/2023 E1 is now heading south through Pegasus (Sep 1-4) and Aquarius (4-30) in the evening sky, allowing observations from both hemispheres. Though its lightcurve shows an offset towards being brighter after perihelion, now that the comet is moving away from the Earth and Sun, it should start to rapidly fade from around magnitude 9.8 to 12.5.

Figure 7 - C/2023 E1 (ATLAS) was in the process of photobombing the bright open cluster M39 in Cygnus in this image taken by Eliot Herman on August 12.

12P/Pons-Brooks

Discovered visually on 1812 July 12 by Jean-Louis Pons and rediscovered visually on 1883 September 2 by William R. Brooks
Halley-type comet

Orbit (from Minor Planet Center, MPEC 2023-Q150)

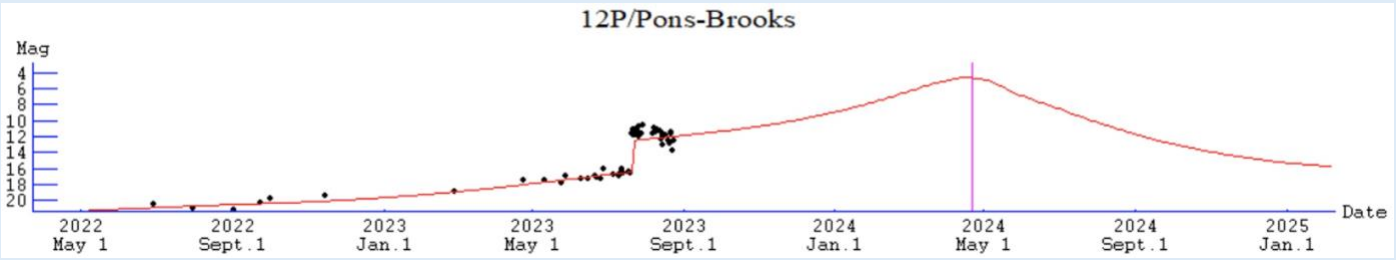
```
  12P/Pons-Brooks
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2024 Apr. 21.13670 TT                                  Rudenko
q   0.7808789           (2000.0)            P              Q
n   0.01383722      Peri.  198.98794     +0.14511978     -0.32930721
a  17.1831783       Node   255.85541     +0.98565925     +0.13019278
e   0.9545556       Incl.   74.19104     +0.08611674     -0.93520404
P  71.2
From 2550 observations 2020 June 10-2023 Aug. 26, mean residual 0".6.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
12P/Pons-Brooks                                                    Max El
                                                                    (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Sep-01  17 25  +52 09    3.437   3.281     90E    Dra   11.9   72    0
2023-Sep-06  17 22  +51 19    3.383   3.252     88E    Dra   11.8   70    0
2023-Sep-11  17 20  +50 28    3.329   3.224     87E    Dra   11.7   69    0
2023-Sep-16  17 19  +49 35    3.274   3.195     85E    Her   11.6   67    0
2023-Sep-21  17 18  +48 41    3.218   3.165     83E    Her   11.5   66    0
2023-Sep-26  17 19  +47 46    3.163   3.135     82E    Her   11.4   64    0
2023-Oct-01  17 20  +46 52    3.107   3.104     80E    Her   11.3   63    0
2023-Oct-06  17 21  +45 59    3.050   3.072     79E    Her   11.2   61    0
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  4.4 + 5 log d +  6.2 log r [Before perihelion]
m1 =  4.5 + 5 log d +  7.2 log r [After perihelion]
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ CODE Observer Name
               (UT)                    T         Dia  DC  LENG  PA
 12        2023 08 27.04  S 11.5 AQ 20.3T10  77   6    1            ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 26.98  S 13.6 TI 53.1L   155   2.2  1            ICQ XX HAR11 Christian Harder
 12        2023 08 23.85  S 13.0 HS 32.0L 5  80   0.7 s2                  PIL01 Uwe Pilz
 12        2023 08 22.88  S 14.3 TI 35.3L   122   1.5               ICQ XX HAR11 Christian Harder
 12        2023 08 21.92  S 11.8 AQ 20.3T10  77   5    1            ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 20.90  S 13.7 TI 53.1L   155   1.5  1            ICQ XX HAR11 Christian Harder
 12        2023 08 19.88  S 13.5 TI 53.1L   139   1.5  1            ICQ XX HAR11 Christian Harder
 12        2023 08 14.91  S 14.0:TI 53.1L   139   1.5  0/           ICQ XX HAR11 Christian Harder
 12        2023 08 14.11  S 11.7 AQ 20.3T10  77   5    1            ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 13.91  S 13.2 TI 53.1L   139   2    1            ICQ XX HAR11 Christian Harder
 12        2023 08 12.89  S 12.2 TI 53.1L   111   2.5  1            ICQ XX HAR11 Christian Harder
 12        2023 08 09.90  S 11.7 TI 35.3L   122                     ICQ XX HAR11 Christian Harder
 12        2023 08 08.89  S 11.8 TI 29.8L 4  79   2.7  1/           ICQ XX HAR11 Christian Harder
 12        2023 08 07.90  S 11.7 AQ 20.3T10  77   3.5  1/           ICQ XX GON05 Juan Jose Gonzalez Suarez
 12        2023 08 07.89  S 11.4 TI 29.8L 4  66   2.9  2            ICQ XX HAR11 Christian Harder
```

Inbound intermediate-period Halley-type comet 12P/Pons-Brooks has a 71-year orbital period. Though it doesn't get as bright as Halley, it has been observed as a naked-eye object, or nearly so, at 5 or 6 previous returns.

Jean-Louis Pons was the first to see 12P on 1812 July 21. During the 1812 return, the comet reached 4th magnitude with a 3-degree long tail. William R. Brooks at Phelps, New York, re-discovered 12P on 1883 September 2. During that return, it approached within 0.63 au of Earth and brightened to 3rd magnitude with a tail up to 20 degrees long. The most recent return in 1954 saw the comet reach 5th magnitude. Maik Meyer recently identified comets seen in 1457 and 1385 as previous returns of 12P. It may also have been seen in 245 AD.

The comet was recovered three years ago on 2020 June 10 and 17, with the 4.3-m Lowell Discovery Telescope at 11.9 au from the Sun. The comet was active with a short tail even at that considerable distance. Analysis of that dust tail suggests the comet may have been active as far out as 30 au (Ye et al. 2020. Res. Notes AAS 4, 101).

The current return is similar to the last one in 1954, which means it isn't great, with the comet never getting closer to Earth than 1.55 au. That, combined with a perihelion on 2024 April 21 at 0.78 au, means it will be located at very low solar elongations when it will be at its brightest (a peak at 4-5th magnitude).

12P is notorious for its outbursts. During the 1884 return, it experienced several outbursts. That was also true during the last return with multiple multi-magnitude outbursts on its inbound leg. On 2023 July 20, a 4-5 magnitude outburst erupted, increasing its brightness from 16th to 11th magnitude. Since then, the comet has the appearance of a comet within a comet within a comet. A small, bright inner coma is probably made of recently released dust from the comet's recent post-outburst activity. Then, there is a larger lower surface brightness coma from the July 20 outburst (the remnant of the horned feature discussed last month). Finally, there is an even larger, very faint out coma proposed by Federico Manzini, Paolo Ochner, Luigi R. Bedin, and Andrea Reguitti to have been created by a second outburst event that occurred about 30 hours before the main July 20 outburst (see ATel #16202). The multiple coma features have resulted in a wide scatter in reported magnitudes, with visual estimates ranging from 11.4 to 14.3.

Based on the comet's 1954 brightness, the current return was running about 4 magnitudes faint until the July outburst. Now, the brightness is close to what was observed in 1954. The above prediction is based on the 1954 lightcurve with the comet at 11th magnitude this month unless another outburst occurs. As has been the case for the past few months, Pons-Brooks will be riding high in the northern evening sky in Draco (Sep 1-11) and Hercules (11-30), making it only observable from the northern hemisphere.

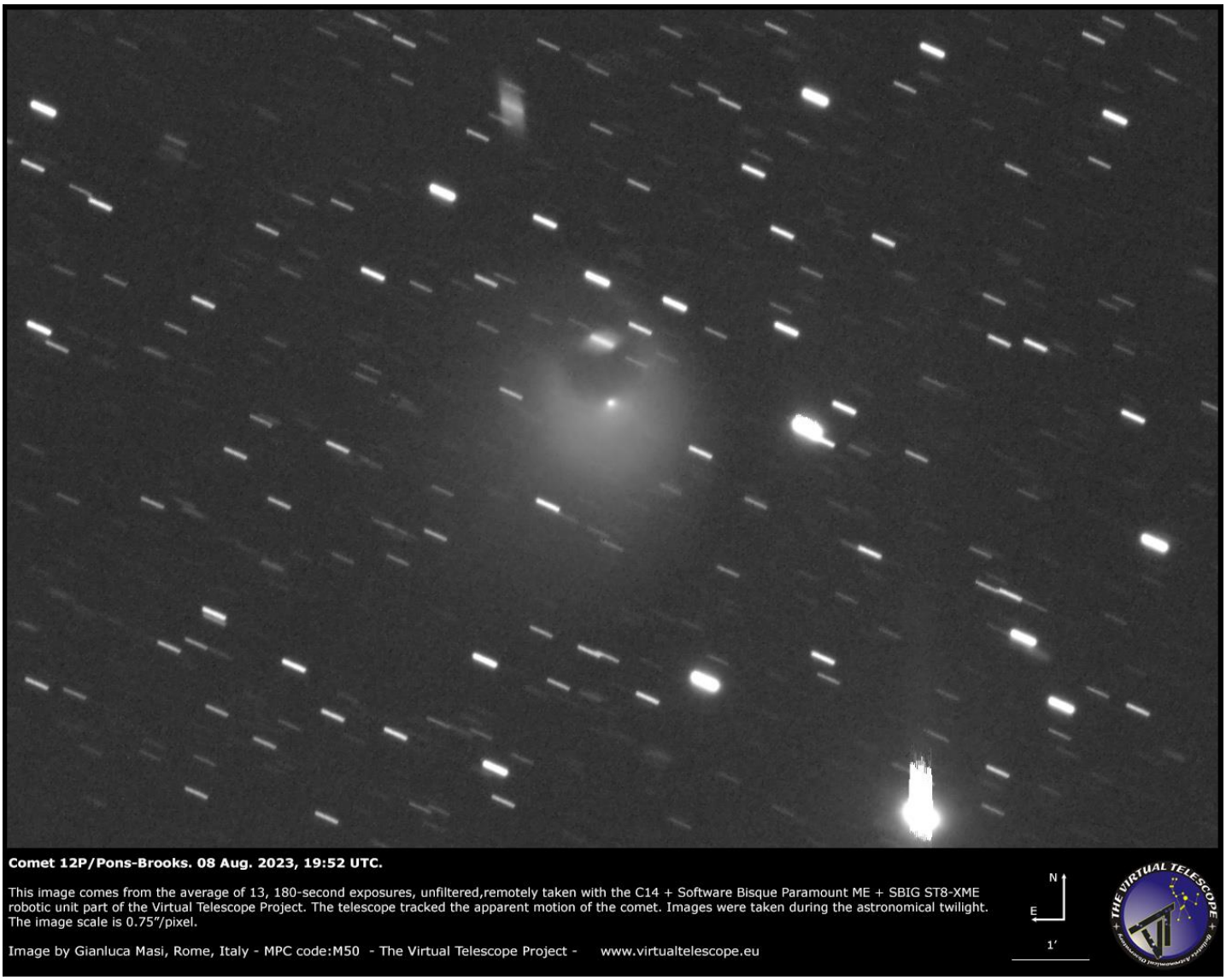


Figure 8 - 12P/Pons-Brooks as imaged by Gianluca Masi on 2023 August 8, with a Celestron C14 and SBIG ST8-XME camera in Rome, Italy.

Fainter Comets of Interest

C/2023 A3 (Tsuchinshan-ATLAS)

Discovered on 2023 January 9 at the Purple Mountain Observatory's XuYi Station and on February 22 by ATLAS
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2022-Q150)

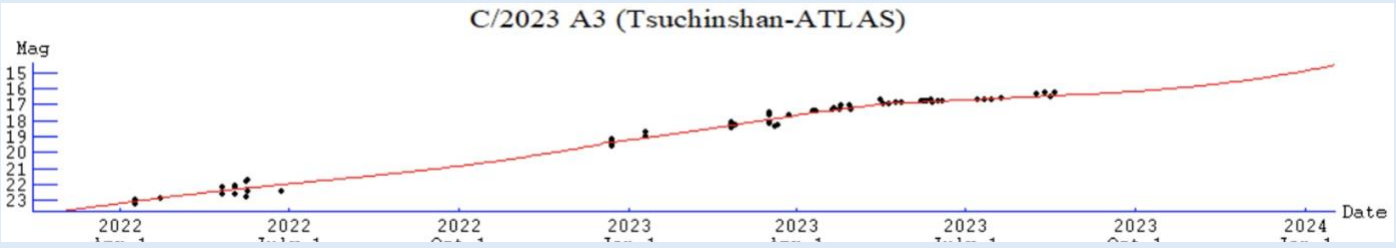
```
    C/2023 A3 (Tsuchinshan-ATLAS)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2024 Sept. 27.71950 TT                                  Rudenko
q   0.3914389           (2000.0)            P                Q
z  -0.0003893      Peri.  308.48413     +0.36131463     +0.90090177
 +/-0.0000200      Node    21.55681     +0.91858957     -0.29961362
e   1.0001524      Incl.  139.11923     -0.16014034     +0.31401861
From 2064 observations 2022 Apr. 9-2023 Aug. 24, mean residual 0".3.
1/a(orig) = +0.000021 AU**-1, 1/a(fut) = -0.000020 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2023 A3 (Tsuchinshan-ATLAS)                                          Max El
                                                                        (deg)
    Date      R.A.    Decl.     r       d    Elong  Const  Mag  40N   40S
2023-Sep-01  14 05  +00 11   5.537   6.099    52E   Vir  16.4   16    27
2023-Sep-06  14 06  -00 08   5.487   6.114    47E   Vir  16.3   14    23
2023-Sep-11  14 07  -00 29   5.437   6.123    43E   Vir  16.3   12    19
2023-Sep-16  14 09  -00 50   5.387   6.127    39E   Vir  16.3   10    15
2023-Sep-21  14 10  -01 11   5.336   6.126    35E   Vir  16.3    8    11
2023-Sep-26  14 12  -01 32   5.285   6.120    30E   Vir  16.2    6     7
2023-Oct-01  14 14  -01 54   5.234   6.107    26E   Vir  16.2    4     2
2023-Oct-06  14 16  -02 15   5.183   6.088    23E   Vir  16.1    2     0
```

Comet Magnitude Formula (from ALPO, COBS, and MPC data)

```
m1 = -16.6 + 5 log d + 35.0 log r [Through T-650 days]
m1 =  -2.3 + 5 log d + 19.0 log r [Between T-650 and T-490 days]
m1 =   4.1 + 5 log d + 11.2 log r [Between T-490 and T-405 days]
m1 =   6.5 + 5 log d +  8.0 log r [After T-405 days, assumed]
where "t" is the date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
              (UT)                    T         Dia  DC  LENG  PA
   2023A3  2023 08 13.77  V 16.3 U4 50.0Y 7a600   0.4       0.3m100 ICQ xx HER02 Carl Hergenrother
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We are now a year away from C/2023 A3 (Tsuchinshan-ATLAS)'s perihelion on 2024 September 27 at 0.39 au from the Sun. While its rapid brightening from early 2022 through the first few months of 2023 has slowed down, the comet is still brightening at a healthy rate. We will lose the comet this month as it approaches solar conjunction and becomes unobservable for a few months. Northern observers should be able to pick it up again in November/December, while southern hemisphere observers will have to wait till January/February. This month, C/2023 A3 remains in Virgo in the evening sky and is visible near the celestial equator between magnitude 16.0 and 16.5.