New
Braunfels
Astronomy
Club Because It's Out There

April 21st, 2022
Meeting 271
Agenda

- Open meeting and introduce new members (get names, email)
- Old Club Business:
- New Club Business (events, outreach): *Astronomy Night 04/30 – telescope giveaway? Fall/winter dates*
- Interesting observations, experiences:
- Show and tell:
- What's in our sky this month? Newsletter + member input
- Main feature(s):
- Discussion, feedback and close the meeting

Notes:

Coming up: OUR 272nd ASTRONOMY CLUB MEETING

May 19th, 2022, from 6 - 8 pm **Bosses Pizza on Loop 337**

astronomynbtx.org Email: info@astronomynbtx.org

Astronomy Friends New Braunfels..... facebook.com/groups/354953995432792/

Comal County Friends of the Night Sky..... facebook.com/groups/166098014710276/

comaldarksky.org/ Email: info@comaldarksky.org

New Braunfels Astronomy Club

Because It's Out There

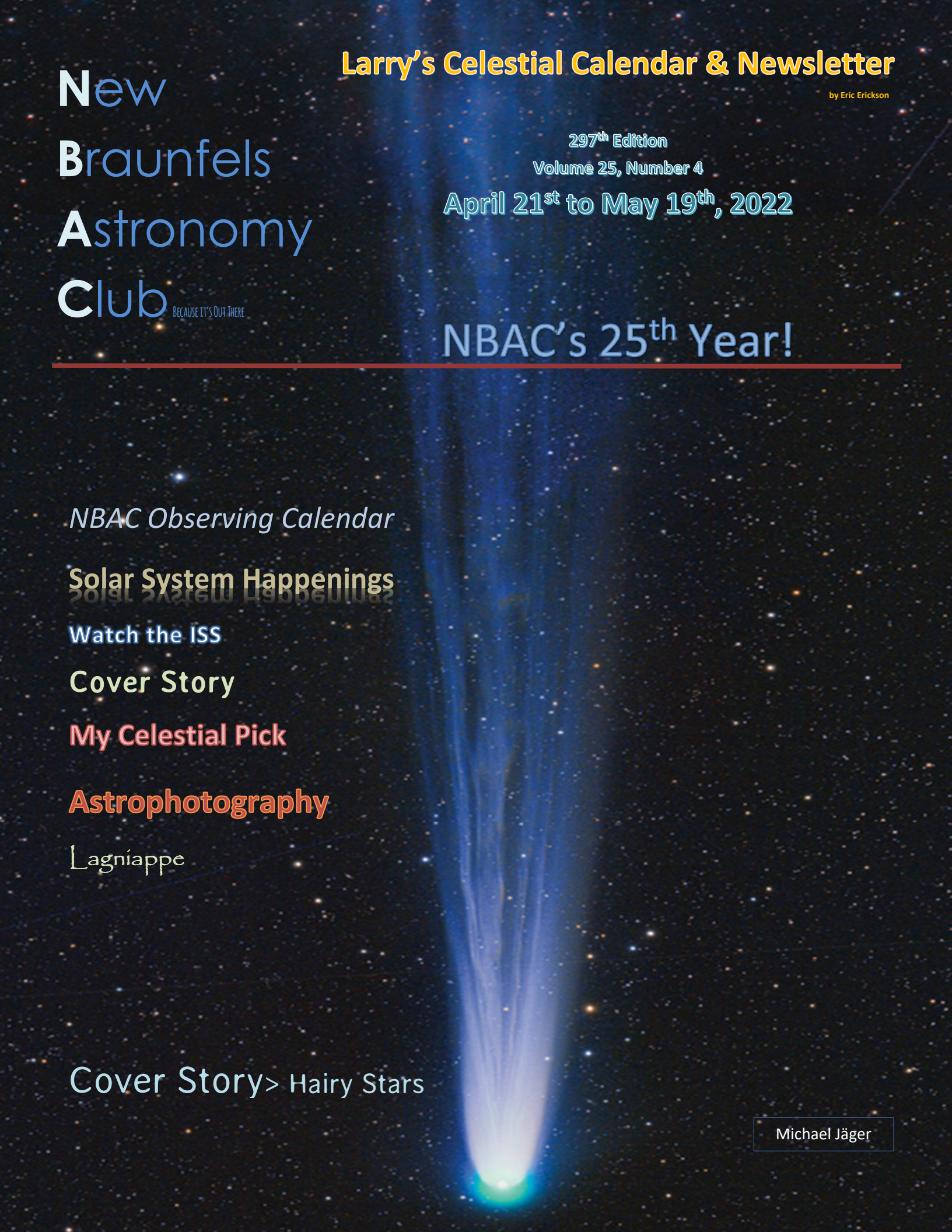
Larry's Celestial Calendar & Newsletter

by Eric Erickson

297th Edition
Volume 25, Number 4
April 21st to May 19th, 2022

NBAC's 25th Year!

Cover Story> Hairy Stars

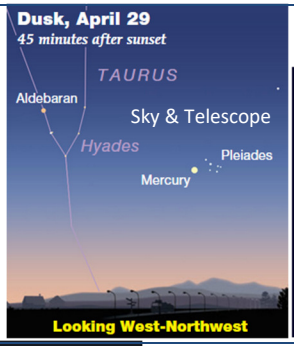


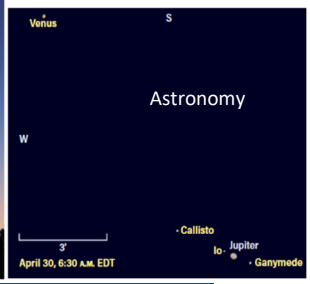
Michael Jäger

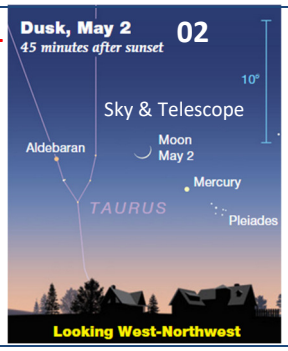
APR/MAY 2022

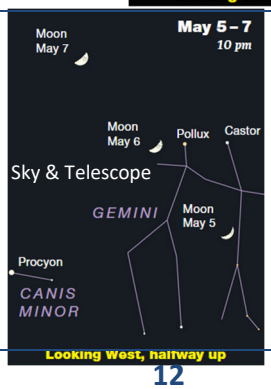
SUN	MON	TUE	WED	THU	FRI	SAT
				21	22	23
				NBAC Meeting 6:00 Bosses Pizza-Loop 337	*Lyrids* See below	
24	25	26	27			30
MAY 01	02	03	04		06	07
					Eta Aquariids See below	
08	09	10	11	12	13	14
15	16	17	18	19		
Flower Moon **Total Lunar Eclipse tonight!** Partial phase begins at 9:28 PM CDT – see below			Mars and Neptune conjunction	NBAC Meeting 6:00 Bosses Pizza – Loop 337		

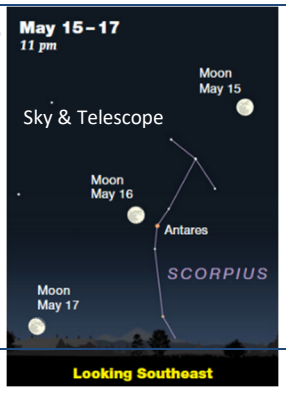
On the cover: Comet Leonard (C/2021 A1), captured on 12/26/2021 by Michael Jäger using a remote imaging setup in Namibia. *Cropped for this cover*.

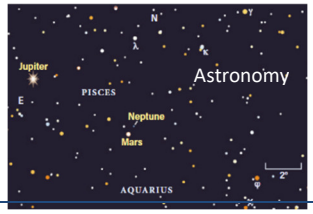








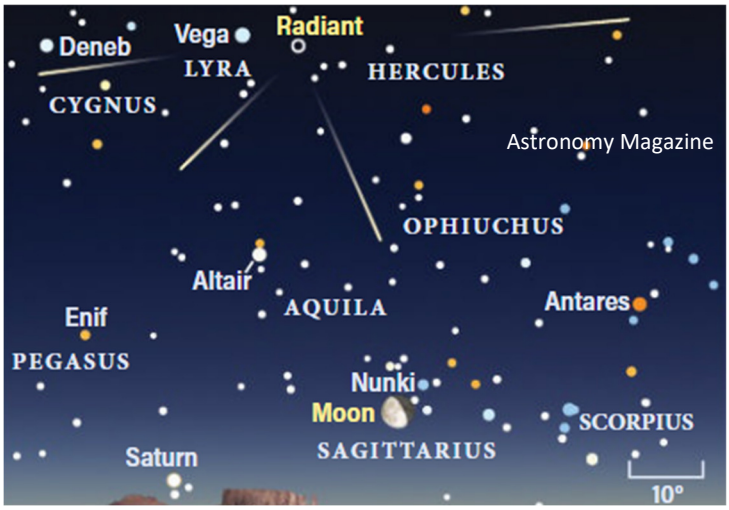




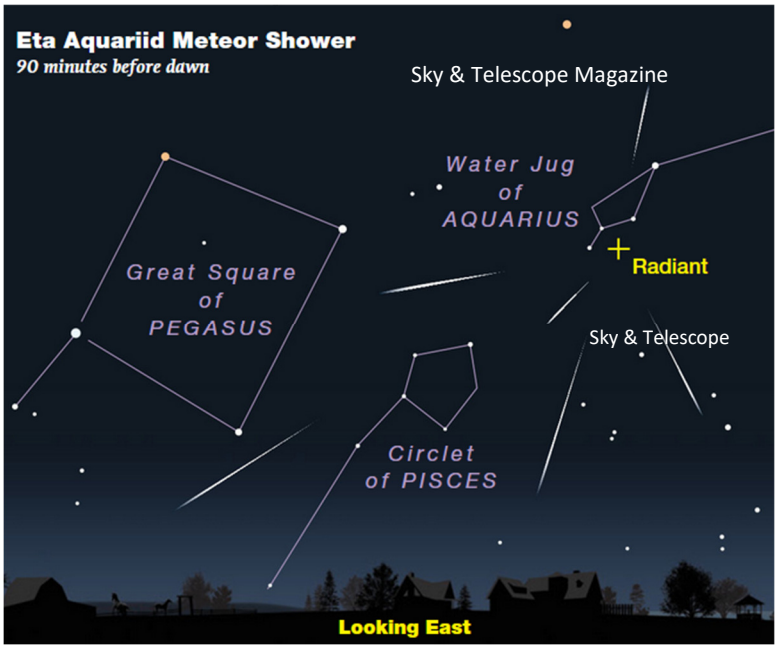
Solar System Happenings

- Mercury is an evening planet. Watch as it mingles with the Pleiades and a crescent Moon April 29-May 2. It becomes dimmer and lower as May progresses.
- Venus is bright in the morning, posing with Jupiter, Mars, and Saturn. Watch for a close conjunction of Venus and Jupiter on April 30 before dawn. They will be less than the width of a full Moon apart.
- Earth still spins, and we are still here to marvel at it all

Zodiacal Light: Look in the west after sunset for a triangle shaped glow coming from the horizon. Zodiacal light is sunlight reflected by interplanetary light along the ecliptic. In spring zodiacal light points into the Milky Way for a double pleasure and photo opp.



The *Lyrid Meteor Shower* peaks on 04/22, 1 - 6 AM
Looking southeast
Remnants of comet Thatcher
A bright Moon interferes



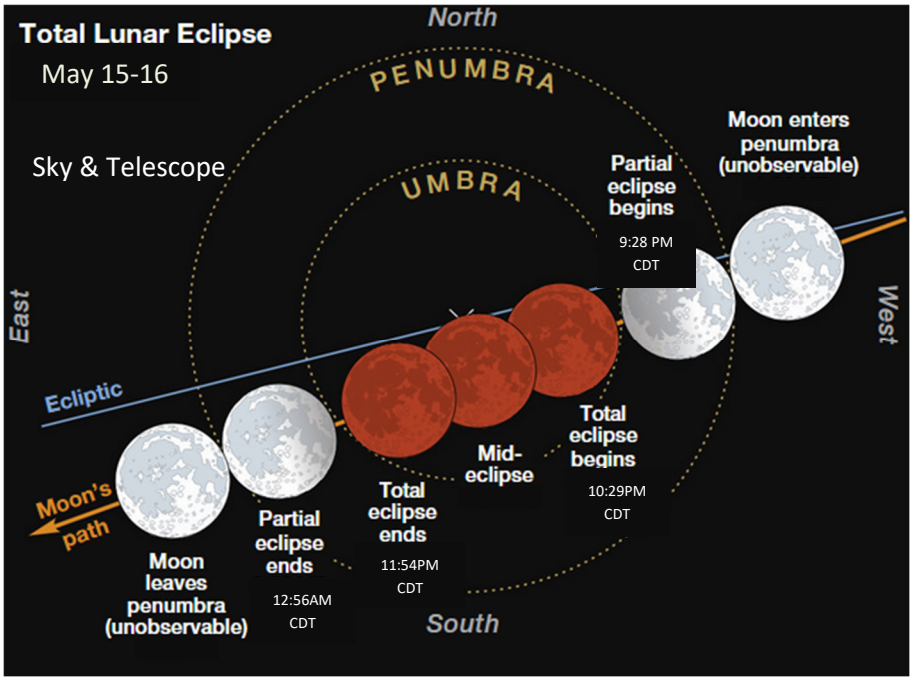
The *Eta Aquariid Meteor Shower* peaks on May 6th 1 - 6 AM CDT

The meteors are remnants of comet 1P/Halley's many trips around the Sun

Best ISS viewing for New Braunfels (works for Canyon Lake too) -From Heavens Above

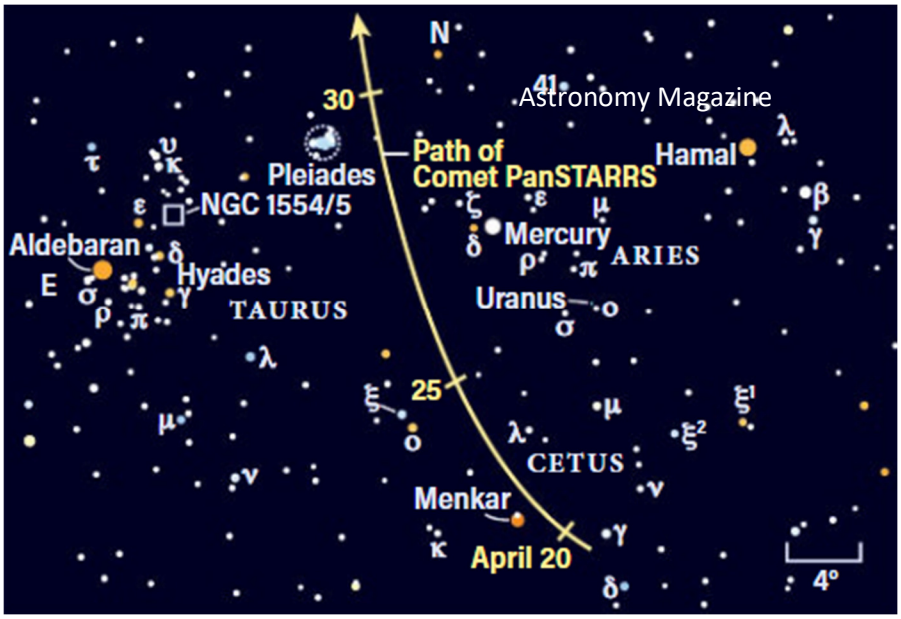
Date	Start Time	Start Loc	Max Alt °	End Loc	Note
04/21	05:34	SSE	18	ENE	Exits Earth's shadow at 05:34. Slips below Saturn then above Mars, Venus and Jupiter.
04/22	06:26	WSW	45	NE	
04/23	05:40	SW	84	NE	Comes out of Earth's shadow in Ophiuchus. Skirts just east of Deneb in Cygnus, west of M31 in Andromeda
04/24	06:27	W	15	NNE	
05/12	21:27	SSW	41	E	Enters Earth's shadow east of Bootes.
05/13	05:37	NW	34	ESE	Slips between Venus and Jupiter in the east
05/13	20:38	SSW	20	ENE	
05/14	21:26	SW	47	NE	Very close to Pollux in Gemini
05/15	05:36	NW	60	SE	
05/15	20:37	SW	79	NE	
05/16	21:25	W	16	NNE	Passes through Auriga, close to M36 & 38

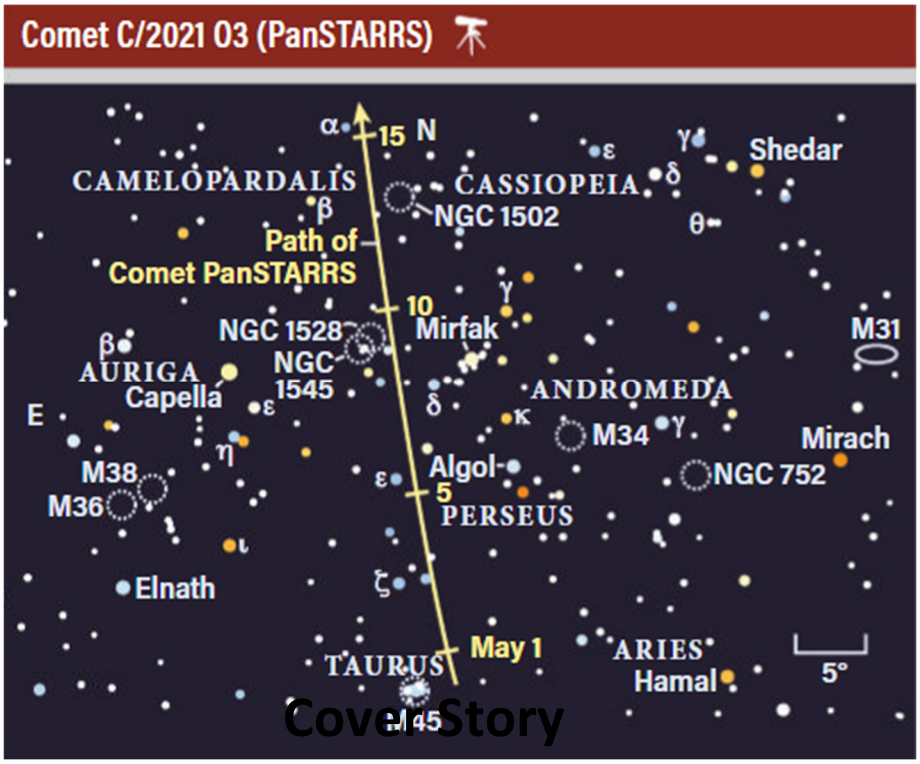
- The Moon dances with planets and stars
  - Our first Total Lunar Eclipse of 2022 occurs with the Flower Full Moon on May 15-16. Partial phase starts at 9:28 PM CDT May 15 (2:28 AM UT, May 16). Totality begins at 10:29 PM CDT and ends at 11:54 PM CDT.
  - Will the eclipsed Moon occult double star S672 in Libra at around 10:45 PM CDT? Look for it.



- Mars is a morning planet in the east, joining with Venus, Mars, Saturn, Jupiter and the Moon at various times. Mars and Neptune are only 33" apart on May 18th.
- Jupiter is a morning planet, teaming up with Venus, Mars, Saturn, even the Moon.
- Saturn is in the pre-dawn eastern sky variously with Venus, Mars, Jupiter, and the Moon.
- Uranus is heading for solar conjunction on May 5th and hard to see.

- Neptune is past conjunction with the Sun and a morning planet in the east. It is in conjunction with Mars on May 18th.
- Comet(s)
  - C/2021 03 (PanSTARRS) comes on the scene for N. America on April 21st, but only in the southern states. Look for its core below Mercury just after sunset the night of our April meeting. Use binoculars or a telescope. On May 2nd look for it standing on its head about 8° north of Mercury, sharing the sky with a young crescent Moon and the Pleiades to boot! See the calendar above.





Cover Story – Hairy Stars

Humans have had a love-hate relationship with them since we could grunt and point to the sky. Some of the earliest writings describing them come from 1200 B.C.E. China. Scary, maybe even more so than a total solar eclipse, the specter of a bright comet seems to have engendered fear often. I suppose this ghostly apparition with two tails, when bright, would set one's imagination spinning. Magical thinking humans came up with meanings, usually dark and foreboding. The Greek and Roman names describe a head with long hair. The English derived the word *cometa* from Roman (Latin), and we now have the word comet. Who wouldn't be creeped out by a head with long hair flying through the sky?

Comets are just extended family members of our solar system. Now that we know about them, they aren't so scary, well, except if one is on a collision course with us!

Comets are small objects, if you consider 200 meters to 30 kilometers small. They are made up of ices, dust, and rocks, (dirty snowballs) orbiting the Sun. The ices consist of water, carbon dioxide, carbon monoxide, methane, and ammonia. Other components of comets include various hydrocarbons, and amino acids. Some findings indicate when combined, cometary and meteorite amino acids might be sufficient to form RNA or DNA. Of course, it's a big stretch from might to actually happening.

At home in the outer solar system, comets are dry with rocky surfaces, ices buried below. When a comet's orbit takes it to the inner solar system, the Sun's radiation causes outgassing as ices melt and sublimate, forming an atmosphere called the coma. The coma is mostly water vapor, but includes other gases, and dust, and can expand to enormous size, even larger than the Sun! Solar radiation pressure drives this thin atmosphere away from the comet, forming two tails. Dust trails behind the comet and might form a long arching tail. Ionized gases, being lighter, point directly away from the Sun, under the influence of solar radiation.

It's scary think of a comet heading for us. Comet Shoemaker-Levy 9 broke up and slammed into Jupiter in July 1994. Its effects were visible for weeks. If it were the Earth?

The extended family I mentioned are the Kuiper belt/Scattered Disc and the Oort cloud. The Kuiper belt, known to harbor dwarf planets, has been in the news as possibly containing our solar systems 9th planet, a Neptune sized beast. This belt lies outside the orbit of Neptune, around 30 Astronomical Units (1 AU = 93,000,000 miles) and extends to 50 AU. The Scattered Disc is a population of objects with more eccentric orbits that crisscross into and outside the Kuiper Belt. The Kuiper belt is our source for most periodic comets, those we see every 200 years or less.

The Oort cloud is a theoretical spherical stronghold of comets and who knows what else. It appears to begin around 2,000 AU from the Sun and extends to possibly 100,000 AU. It is the primary source of non-periodic or long period (thousands to millions of years) comets. It's so far away we really do not know what variety of objects exist there, other than comets.

It's interesting how our solar system arranges itself. We have two belts, the Asteroid belt and the Kuiper belt, and one cloud, the Oort cloud. The asteroid belt is thin like a disk, the Kuiper belt is more like a doughnut, and the Oort cloud is thought to be shaped like a thick-walled bubble.

Comets or comet like asteroids have been found in the asteroid belt between Mars and Jupiter too, and given the provisional name of main-belt comets.

The first comet I saw was Halley in 1986, though I tried in 1973 to spot Kohoutek but couldn't see it. Kohoutek was a bust, literally, it broke up. Halley was a disappointment, so dim.

In 1996 comet Hyakutake arrived and made my toes curl! Hale-Bopp arrived in 1997, and was so sweet! Since then, a series of OK comets have graced our skies, but most were barely visible with the naked eye, or you needed binoculars or a telescope to see them. Comet McNaught (C/2006 P1) was spectacular in the southern hemisphere and visible in the daytime worldwide. I didn't look. More recently we had comet NEOWISE (C/2020 F3). It was mostly naked eye visible and looked good in binoculars.

Great comets are transformative. They astonish, incite wonder, even fear, and make us consider the larger picture. They get big, bright, and have marvelous tails. Let's look at some.

During the period 7 to 1 BCE, a couple of bright comets appeared, and some historians think it plausible a comet represented the star of Bethlehem, as prophesied, heralding the coming of the messiah.

Comet Halley was first documented in the winter of BC 373-372 by Greek historian Ephorus. It has been followed ever since but hasn't always been a great comet. See 1986 above. Its apparition in 12 BC was considered both an omen of death (Roman general Marcus Agrippa) and possibly birth (the Star of Bethlehem?). With a period of 74-79 years its return often rekindles prophecy or omens, including in 1066 when Harold II died in the battle of Hastings. Halley has had 5 great apparitions.

Donati's Comet (Giovanni Battista Donati) of 1858 was the brightest comet of the 19th century and considered one of the most beautiful ever. Abraham Lincoln observed it on September 14th, 1858, the night before his third debate with Stephen Douglas. He described it as "a fire of remarkable whiteness…a distinct disc of brilliant white light…terminating in a broad brush of faint light". Was it a good omen?

The Great Daylight Comet of January 1910 snuck up on everyone. It apparently brightened suddenly because it was not discovered until already visible with the naked eye. This comet became brighter than Venus. It was also a big surprise because everyone was waiting for the next apparition of Halley's Comet in April, which itself was great. A twofer!

Comet Ikeya-Seki (1965) is a Sun-grazing comet, and got within 300,000 miles from the Sun. It became one of the brightest comets of the past 1000 years. I missed it, my loss.

Hyped Kohoutek (1973) …disintegrated and fizzled. Not great.

Comets Hyakutake (1996), and Hale-Bopp (1997) were treats to cap the 20th century. They were both bright, beautiful, and big, and stayed a while. They were great comets.

The next time you enjoy a meteor shower, remember, it is likely due to Earth slamming into the trail of debris left behind by a comet.

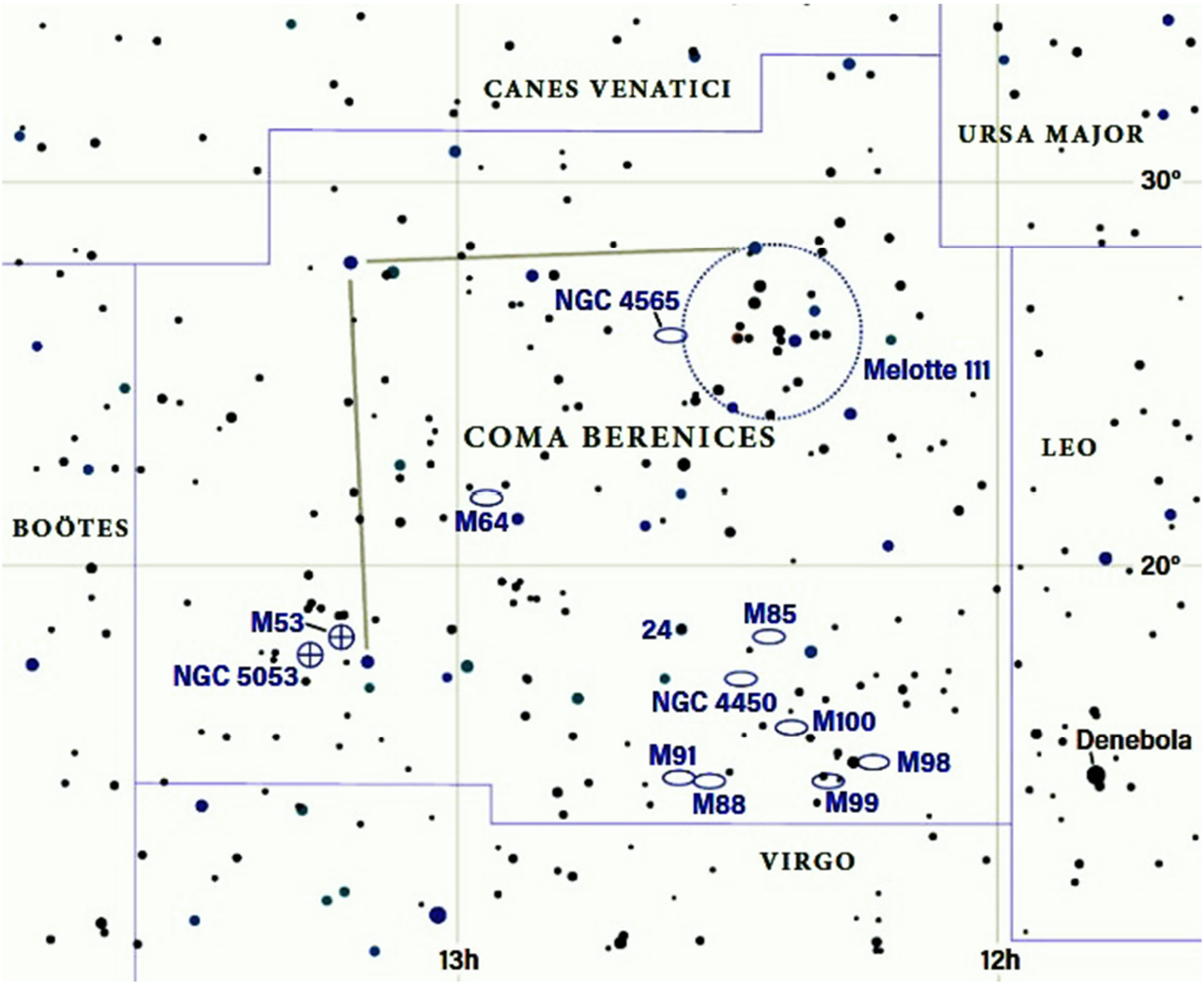
-Eric Erickson

My Celestial Pick: Coma Berenices

Were is Berenice? Where's her hair? Between Leo and Boötes, that's where. *Coma Berenices is Latin for Berenices Hair.*

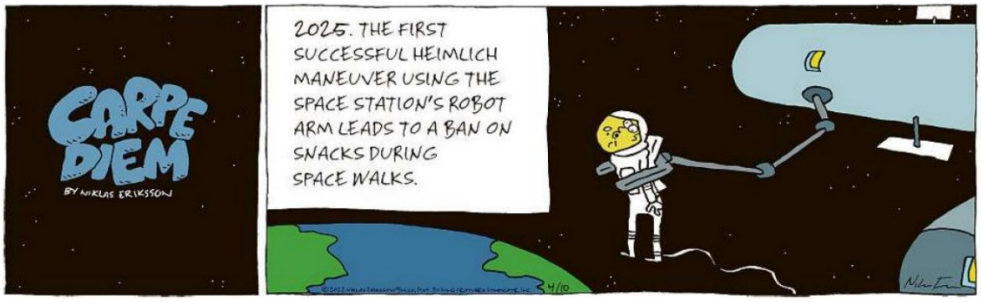
And get this, Berenice was a real person, not a Greek or Roman or other mythical God, demigod, king, queen, etc. Berenice, actually Berenice II Euergertis, was queen of Egypt and reigned from 246 BCE to 222 BCE after marrying Ptolomy III Euergertis. Neverttheless, this story is not without a little drama – of course! The story goes that Berenice placed a lock of her hair in the temple at Cape Zephyriam in Alexandria, as a votive offering for the safe return of her husband Ptolomy III, fighting in the Third Syrian War. He came back healthy but Berenice's hair went missing. Colon of Samos the court astronomer announced they had been placed in the sky by Aphrodite, in appreciation of Berenices sacrifice. He then identified a new constellation as the missing hair, naming it Corona Berenices. Nice story but I wonder about that astronomer…

Coma Berenices is littered with Messier and NGC Objects so get out there and load up.



Lagniappe

SIX-CHIX



THE BRILLIANT MIND OF EDISON LEE