New Braunfels Astronomy Club

Because It's Out There

Larry's Celestial Calendar & Newsletter

by Eric Erickson

315th Edition

Volume 26, Number 10

October 18th to November 15th, 2023

NOTE:

WE NOW MEET ON THE *THIRD WEDNESDAY* OF THE MONTH AT TYE PRESTON MEMORIAL LIBRARY (TPML)

In This Issue ---

Cover Story> Living Away from Earth...or Not

MGM/UA Entertainment

New
Braunfels
Astronomy
Club Because It's Out There

October 18th, 2023
TPML at 6:00 pm
Meeting 289
Agenda

THIS MEETING WILL BE A WORKSHOP. EVERYONE MEET AT THE OBSERVATORY. WE WILL HAVE THE C11, LX200, AND A DOB SET UP SO EVERYONE HAS AN OPPORTUNITY TO LEARN THEIR OPERATION.
IF IT'S CLOUDY WE WILL GO THROUGH SET UP STEPS. IF RAIN, MEET IN THE LIBRARY.

- Open meeting and introduce new members (get names, email).
- Interesting observations, experiences.
- Show and tell.
- Current news and what's in our sky this month: *Member input, Newsletter.*
- Events, Outreach, Planning.
  - Report on the solar eclipse Sun Party at TPML 10/14/23
  - April 8, 2024 total solar eclipse planning with TPML
- Business
- Main Event

Coming up: OUR 290th ASTRONOMY CLUB MEETING

November 15th, 2023, from 6 - 8 pm **Tye Preston Memorial Library, Canyon Lake**

Library website tpml.org
NBAC website astronomynbtx.org
NBAC Email: admin@astronomynbtx.org

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

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

comaldarksky.org/ Email: admin@comaldarksky.org

News to Chew on

From
The 1440 Daily Digest

A 'JuMBO' Discovery

Dozens of pairs of free-floating, Jupiter-sized objects were identified in the nearby Orion Nebula in what scientists are describing as a never-before-seen celestial body unexplained by current theories of planet formation. Composite images of the phenomenon—captured by the James Webb Space Telescope—were released concurrently with studies that have not yet been peer-reviewed.

The 150 objects, located roughly 1,300 light-years away within the "sword" of the Orion constellation, don't meet current definitions for any celestial category. Although they are the size of planets, they don't orbit a star; instead, many of them are in binary orbit, where each is gravitationally bound to the other. Their novelty prompted astronomers to carve out a new category: Jupiter Mass Binary Objects, or JuMBOs, indicating their singular combination of planetary mass and starless orbit.

The new phenomenon challenges current frameworks explaining how stars and planets form within nebula, with astrophysicists claiming such objects should not exist. Read the studies here.

From
Nature Briefing

Attosecond physicists win Nobel Prize

The Nobel Prize in Physics has been awarded to Pierre Agostini, Ferenc Krausz and Anne L'Huillier for their research into attosecond pulses of light. Attosecond physics allows scientists to look at the very smallest particles at the very shortest timescales (an attosecond is one-quintillionth of a second, or one-billionth of a nanosecond). The winners all developed experiments to be able to produce these ultrafast laser pulses, which can be used to probe our world at the smallest scales and have applications across chemistry, biology and physics.

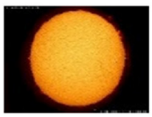
The impact of attosecond tools is hard to overstate. "A great number of spectacular experiments have been performed with them," Krausz told *Nature Photonics* last year, when he, L'Huillier and physicist Paul Corkum won the Wolf Prize in Physics. "The new technology has provided, for the first time, direct, time-domain access to phenomena as fundamental as the decay of inner-shell vacancies in atoms, electron tunnelling through the barrier imposed by the atomic Coulomb potential, migration of electrons within molecules, optical-field-induced ionization and subsequent recollision of the freed electron with its parent ion, or intra-atomic and inter-atomic electron correlations. The listing could continue."

Astronomy Night at Tye Preston Memorial Library

Canyon Lake, TX

2023

Date	Doors Open	Note
1/21/2023	7:00 PM	
2/18/2023	7:30 PM	
3/25/2023	8:30 PM	
4/22/2023	8:30 PM	
5/20/2023	2:00 PM	*Sun Party* - *wear sunscreen*
June, July, August		No Scheduled Astronomy Nights
9/16/2023	8:00 PM	Kickoff for the fall-winter season
10/14/2023	10:00 AM	*Sun Party* - *wear sunscreen* Annular solar eclipse - it will not reach annularity in Canyon Lake but will come close
	Eclipse Start	10:23 AM
	Maximum Eclipse	11:54 AM
	Eclipse End	1:32 PM
10/21/2023	7:30 PM	*International Observe the Moon Night*
11/18/2023	6:30 PM	Crescent Moon
12/9/2023	6:30 PM	



Tye Preston Memorial Library *tpml.org*

New Braunfels Astronomy Club *astronomynbtx.org* *Astronomy Friends New Braunfels*

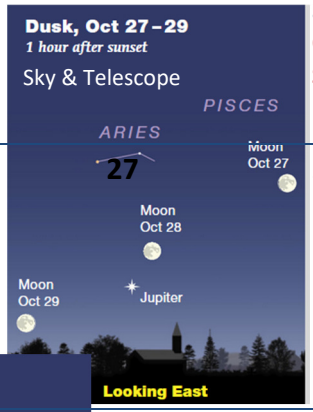
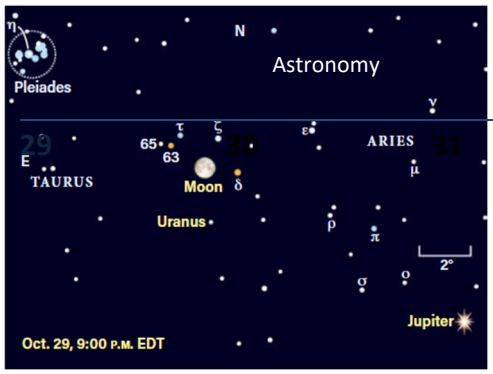
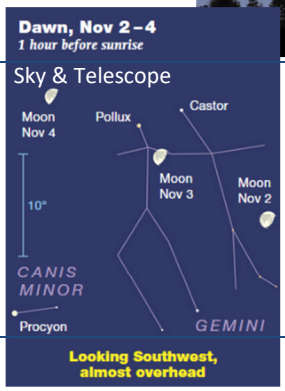
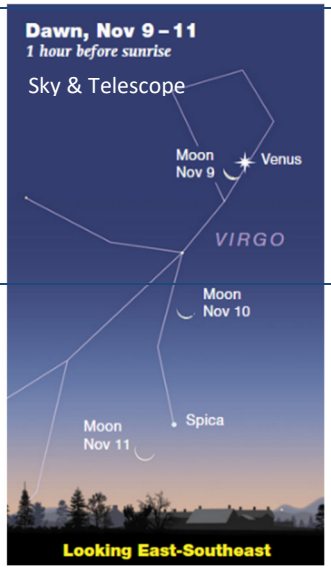
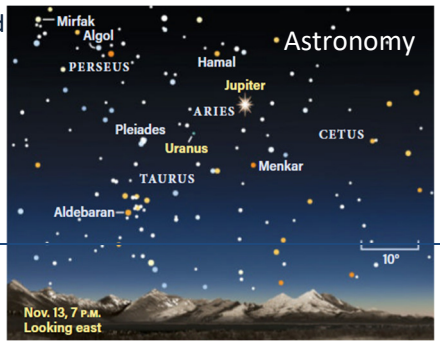
There will be surprise giveaways at some evnts so join us!!

Comal County Friends of the Night Sky supports and encourages Astronomy Night

Website: comaldarksky.org Email: info@comaldarksky.org

Comal County Friends of the Night Sky Group

October/November 2023

SUN	MON	TUE	WED	THU	FRI	SAT
On the Cover: A scene from 2010: The Year we Make Contact. Jupiter is transitioning from a planet to a star via mass from millions of monoliths. This is science fiction. Can humans thrive in space?			**OCT 18** **NBAC Meeting 6:00** TYE PRESTON MEMORIAL LIBRARY, CANYON LAKE	19	20	21 ***Astronomy Night at TPML*** See schedule above. **Orionid Meteor Shower Peaks Late night**
22	**23**	**24**	**25**	**26**	**27** 	**28** **Hunter's Full Moon** Drying Rice Moon Falling Leaves Moon Freezing Moon Migration Moon
			**NOV 01**		**03**	**04**
05 ****DAYLIGHT SAVINGS ENDS 2AM**** Southern Taurid Meteor Shower Peak	**06**	**07**	**08**			
12 Northern Taurid Meteor Shower Peaks	**13** 	**14**	**15** **NBAC Meeting 6:00** TYE PRESTON MEMORIAL LIBRARY, CANYON LAKE			

Solar System Happenings

Astronomy

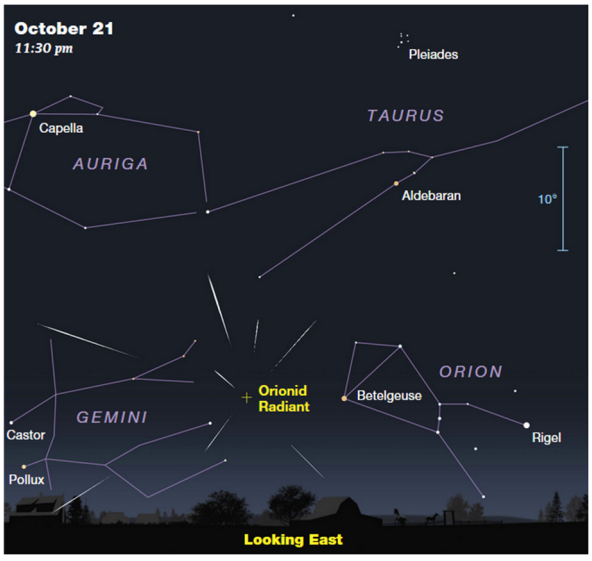
WHEN TO VIEW THE PLANETS

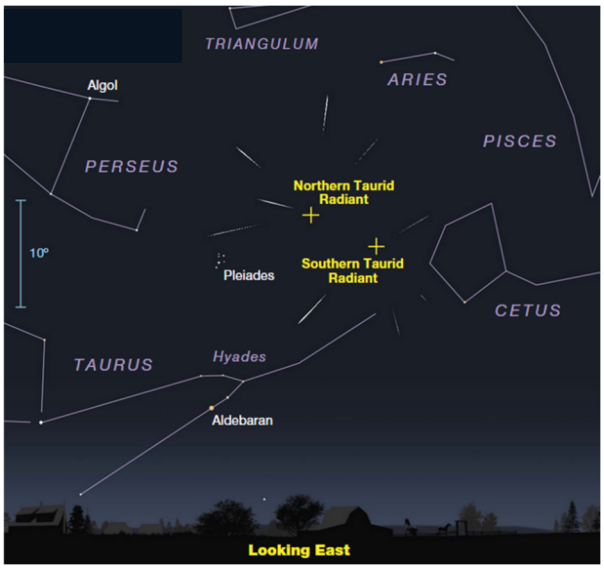
EVENING SKY
Mercury (southwest)
Jupiter (east)
Saturn (south)
Uranus (east)
Neptune (southeast)

MIDNIGHT
Jupiter (southwest)
Saturn (southwest)
Uranus (south)
Neptune (west)

MORNING SKY
Venus (southeast)
Jupiter (west)
Uranus (west)

- The Sun is ramping activity as solar maximum approaches, 2025.
- Mercury is in the Sun's glare and will reach conjunction with the Sun on October 20th. Look for it to emerge in the southwestern evening sky by mid-November.
- Venus is brilliant in the morning.
- Earth still spins, and we are still here to marvel at it all.
    - The Orionid Meteor Shower peaks on the night of October 21st/morning of October 22nd.
    - The Southern Taurid Meteor Shower peaks on the night of November 5/6.
    - The Northern Taurid Meteor Shower peaks on the night of November 12/13.

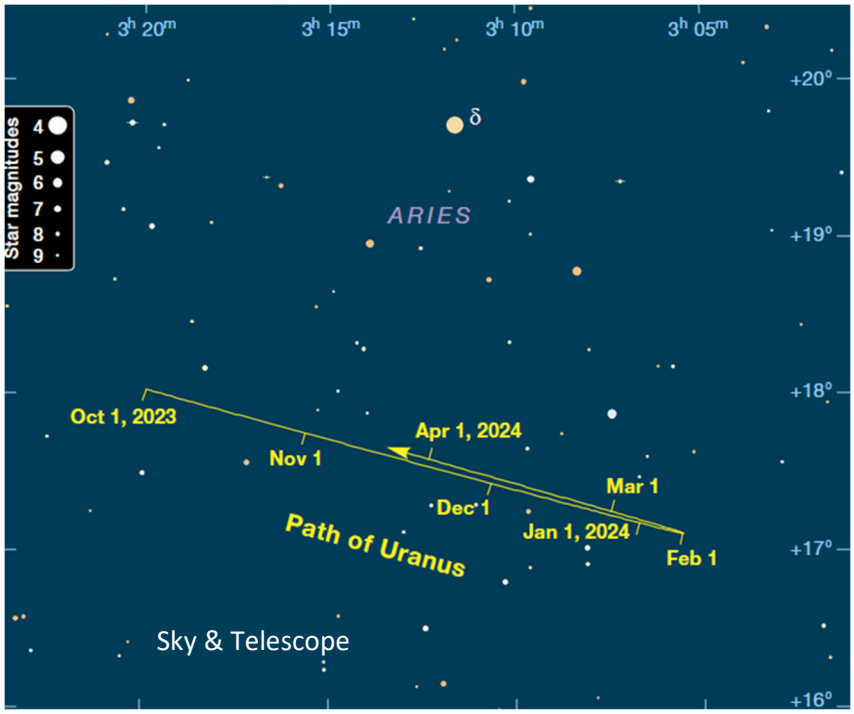




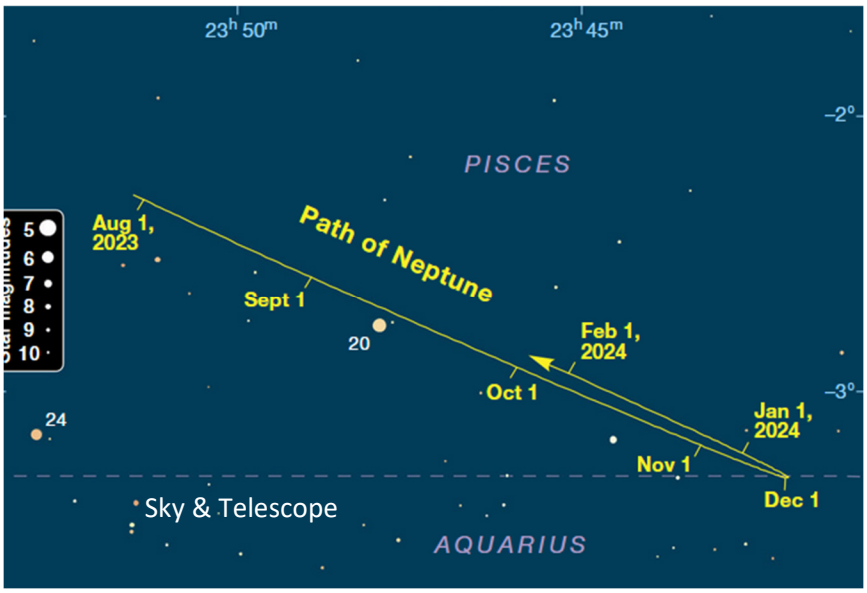
Best ISS viewing for Canyon Lake/New Braunfels - From Heavens Above

Date	Start Time	Start Loc	Max Alt °	End Loc	Note
10/18	06:15	SSW	38	NE	Exits Earth's shadow at 06:15:01. Gets close to Venus.
10/19	07:02	W	26	NNE	Exits Earth's shadow at 07:02:16. Gets close to Jupiter
11/04	06:54	NNW	11	E	Exits Earth's shadow at 06:54:42. Low above the N, NE, E horizon
11/06	05:53	NNW	29	ESE	Exits Earth's shadow at 05:53:14.
11/08	05:51	NW	78	SE	Exits Earth's shadow at 05:52:00
11/14	19:05	SW	47	NNW	Enters Earth's shadow at 19:10:35.Gets very close to VEGA
11/15	18:15	SW	77	NE	Enters Earth's shadow at 18:23:13
11/17	18:12	WSW	29	NNE	Enters Earth's shadow at 18:20:58.

- The Moon dances with planets and stars.
- Mars is heading toward conjunction with the Sun and lost in its glare.
- Jupiter is well placed, rising by 9pm. It reaches opposition on the night of November 2-3.
- Saturn is a beautiful target.
- Uranus is in Aries, and in a retrograde path now. It reaches opposition on November 13th.

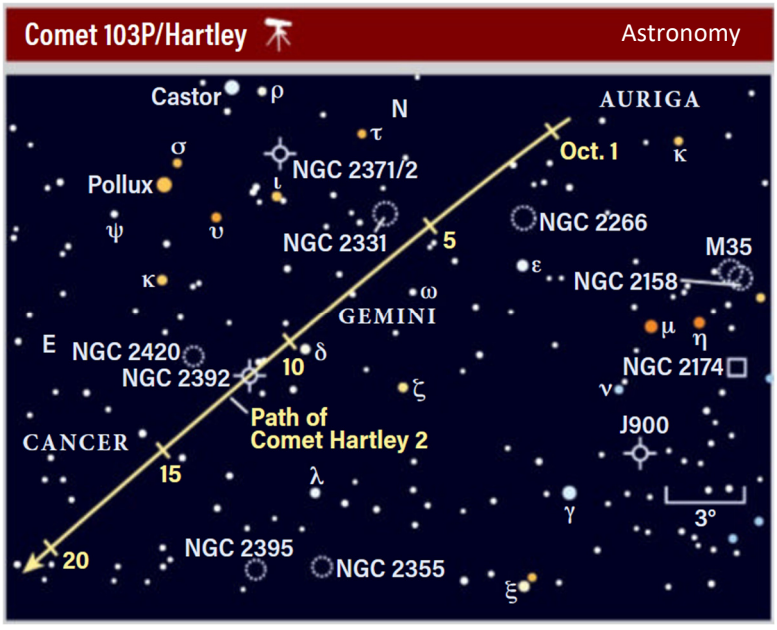


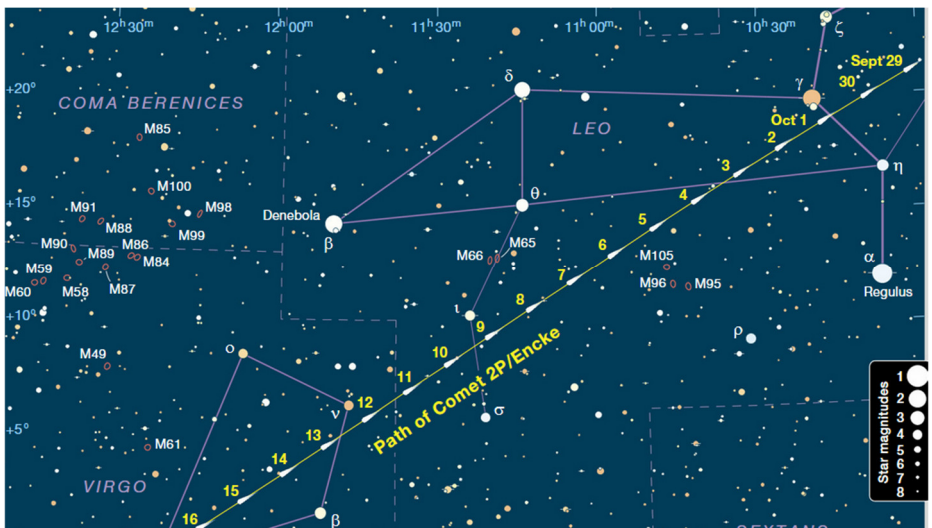
- Neptune is at its best, residing in Pisces.

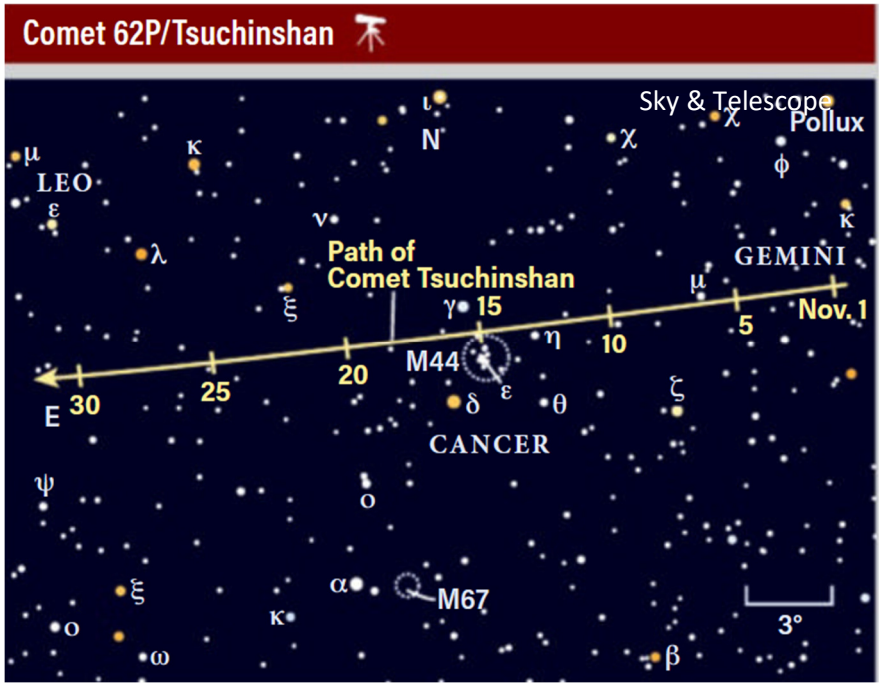


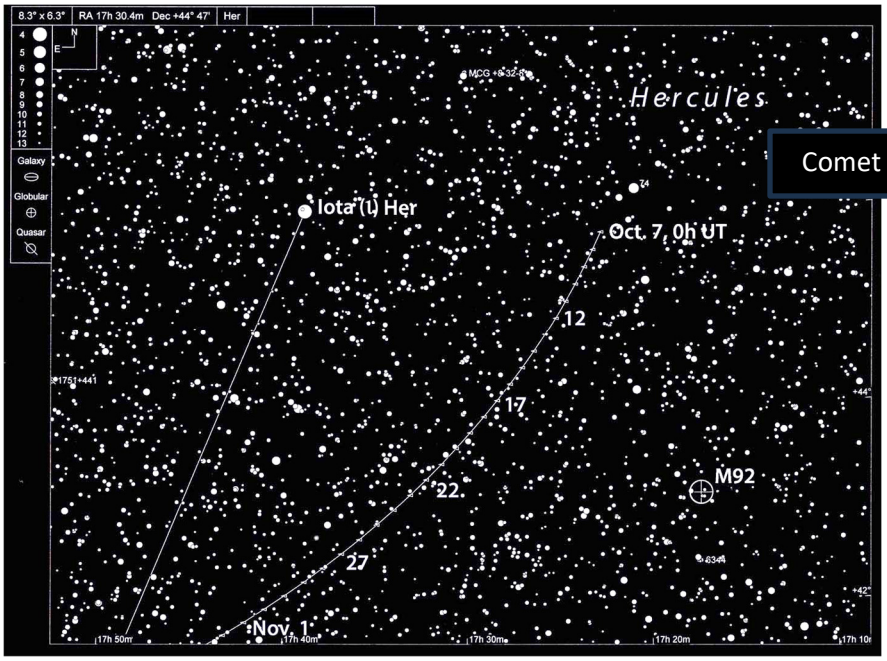
Comets:

- Comet 103P/Hartley 2 is a short period comet (6.5 years) and while a fairly dim magnitude 10, it's catchable in small instruments. Larger glass will bring out more of its character. Start look for it in the late evening hours.
- Comet 2P/Encke is a short period (3.3 yr) comet. It's early morning apparition is just right for early risers. As October progresses so does it's brightness, maybe reaching mag 7. Note imaging opportunities.
- Comet 62P/Tsuchinshan (say that fast 5 times) will grace the early AM sky (stay up past 1am), with its 10th magnitude charm. On November 15 it makes a photogenic paring with open cluster M44 (Beehive/Praesepe).
- Comet 12P/Pons-Brooks is periodic with a 71-year orbit around the Sun. It's also what's called an Outburst Comet, where it will suddenly increase in brightness over a 24-hour period. Currently it's quite dim at 11th magnitude but is expected to get brighter with outbursts.









Comet 12P/Pons-Brooks

My Celestial Pick: Big Planet Line-Up

Brilliant winter sights are on the way, you know, Orion, Auriga, Canis Major, Gemini…let them be for now. As October becomes November, then December, they will dominate our sky.

We currently have the four big outer planets nicely placed in our sky for viewing and/or imaging pleasure. Let’s give them some love.

Our line-up begins an hour after sunset with gorgeous Saturn high in the south-southwest.

Heading east along the ecliptic deep blue Neptune is between Pisces and Aquarius, slowly heading for the border between them.

Keep going east along the ecliptic and you can't miss Jupiter, in great position.

Finally, continue east and check out Uranus in southern Aries, and a bit west of the Pleiades.

The outer planet tour is an exercise in contrast as each planet has its unique beauty, even blandish, gray-green Uranus.

The sky chart below, from Stellarium, is for late October and into November.

Imagining Imaging: Imaging Articles Needed!

Cover Story> Living Away from Earth…or Not

What's wrong with the cover photo? Well, a long, gangly craft is in the gravitational grasp of massive Jupiter! Shouldn't there be differential torque threatening to tear this craft apart? Oh, and the intense ionizing radiation surrounding Jupiter can destroy electronics, not to mention living cells, in a jiffy.

Seems Arthur C. Clarke had it figured out and Stanley Kubrick gave us a taste of interplanetary space travel in 1968. In 2001: A Space Odyssey we had a crew heading for Jupiter to…they did not know…only HAL, their systems control computer knew the mission. Clarke even had AI figured out back then too.

On the Cover, In the sequel – 2010: The Year we Make Contact, the crippled, original craft hangs above Jupiter and the intrepid space travelers realize they need to get far away as quickly as possible. They could see millions of monoliths streaming into Jupiter, increasing its mass. Jupiter was in the midst of transforming into a star. Apparently, no matter that Europa was too close for comfort too. A detail not given respect.

That was science fiction. In 2023 we are, in terms of human space travel, infants giggling at and clumsily reaching for a colorful mobile spinning just out of reach.

We've been working at it for decades…living away from Earth. But not that far. The farthest humans have made it is to the Moon – and the longest total mission time away from the protective environs of near-Earth orbit equal to less than two weeks. Not exactly living away from Earth. Don't get me wrong, the Apollo missions were an astounding achievement.

But Mars is a lot, lot farther than the Moon, with way longer exposure to the Sun's ion wind, cosmic radiation, and gamma radiation! These are acute dangers. Less acute but no less critical are the metabolic and physiologic challenges facing those humans who dare to take the Mars trip. Microgravity messes you up!

OK, let's back up. Smaller steps like forming a colony on the Moon make more sense. We can at least find protective lava tubes to live in while figuring out how to survive a six-month journey to Mars. Oooo, and that's just the beginning, eh? Once there the intrepid travelers are there for the long run.

A few space cowboys are hell bent on hitting the trail (sending someone else of course) and conquering Mars. They will push the envelope no matter what and maybe that's good.

The immediate concern of course is ionizing radiation exposure. There are protective measures from the Sun's radiation, such as barriers of water. Water is pretty effective at stopping that form of radiation. Cosmic radiation is another matter. There is no known practical barrier, and what we have simply causes cosmic radiation to split into smaller particles and spread. Not good. There currently is no known protective material from gamma radiation. Our Earth has strong magnetic fields that warp the solar wind into radiation belts. These belts are effective protection for those orbiting below, such as in the ISS and we on Earth. Our atmosphere does a fair job of absorbing cosmic rays too, but many still pass through us all the time.

Above our atmosphere, radiation belts, and magnetic fields…it's a jungle! So, what to do. Can a strong magnetic field be generated around the space vessel, without causing havoc with electronics? Better not have any metal in your pockets! One avenue of research is a chemical agent the astronauts can ingest that will somehow protect them. That sounds scary itself. Research continues.

There are psychological challenges facing that first crew heading to Mars.

The crew will be living in close quarters for the journey to Mars. Current experience with the ISS and Biosphere 2 shows the right crew can keep it together. Once on Mars, they will need to rely heavily on each other to construct a habitat…close quarters still.

Then there's food and water. We currently do not have the technology to grow enough produce in an artificial environment to sustain more than 1-2 people. Freeze-dried meals will continue to be the primary source of nutrition. Wastewater recycling and eventually water extraction from below the surface of Mars will be critical.

Oh, yeah, and everything must work! Will spare parts be available? Amazon? Alibaba?

I think we will go before we're ready and even if we think we're ready, it will be a long, dangerous shot. Good luck.

Eric Erickson

Lagniappe

CANDORVILLE

CARPE DIEM

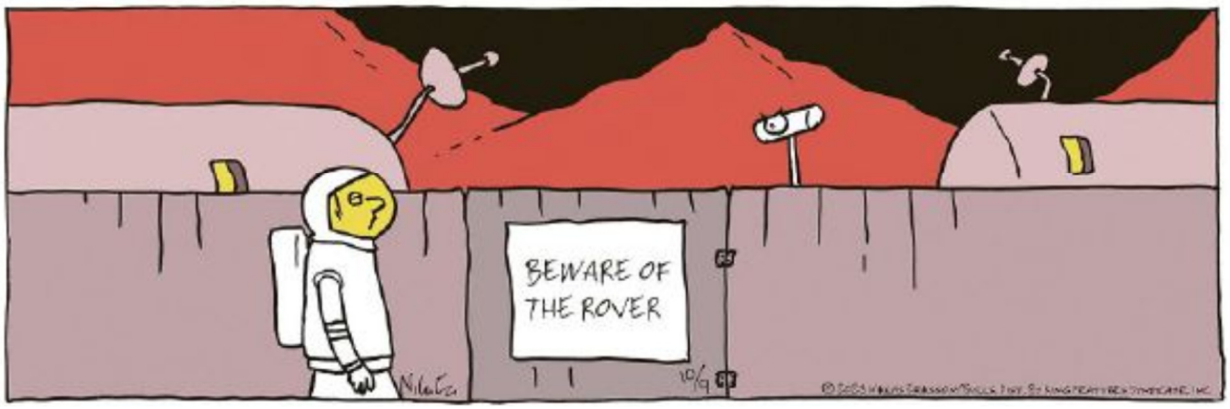
BABY BLUES

CANDORVILLE

CANDORVILLE

CANDORVILLE

CARPE DIEM



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