

# New Braunfels Astronomy Club

Texas, USA

June 19<sup>th</sup>, 2020

250<sup>th</sup> Meeting (Zoom 3)

## Larry's Celestial Calendar & Newsletter

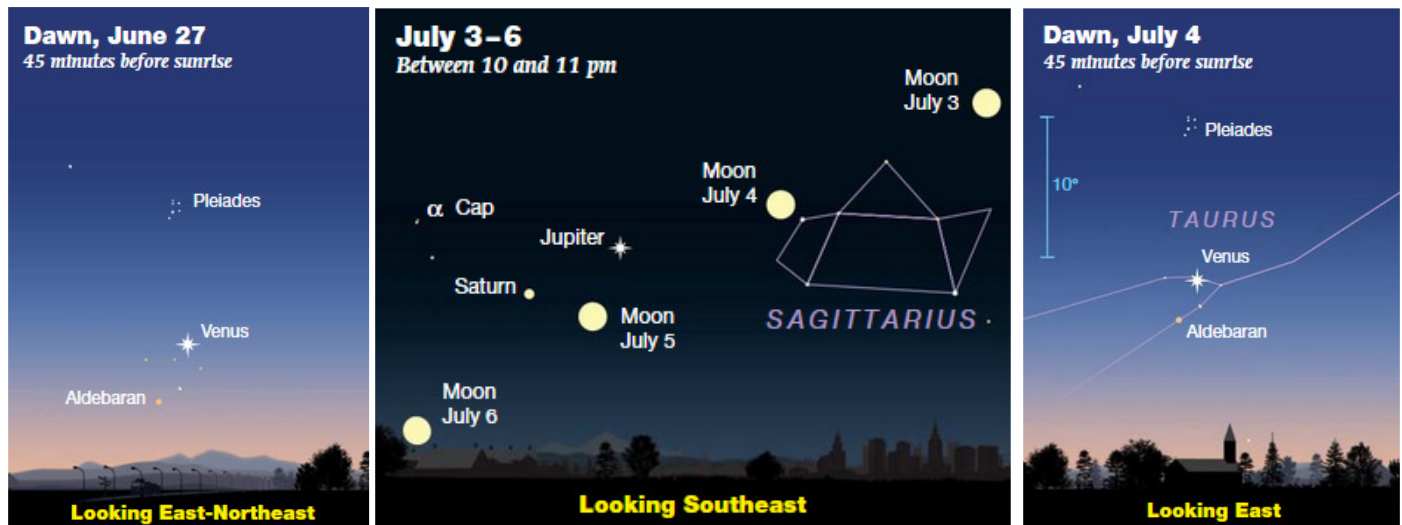
275<sup>th</sup> Edition

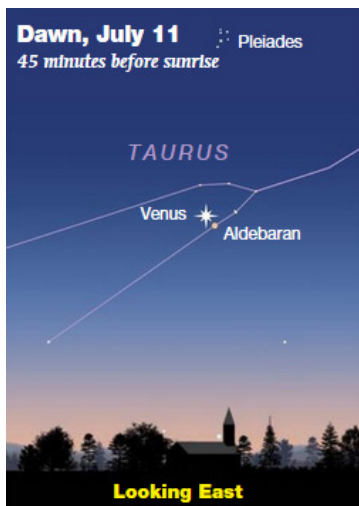
-by Eric Erickson

**Summertime, Summertime**  
**Comet PanSTARRS (C/2017 T2) Still Going**  
**Venus in the Morning**  
**Jupiter Reaches Opposition**  
**The Moon Joins J & S**  
**Mercury at Inferior Conjunction**

## Highlight Calendar for Clear Skies

-From Sky and Telescope Magazine





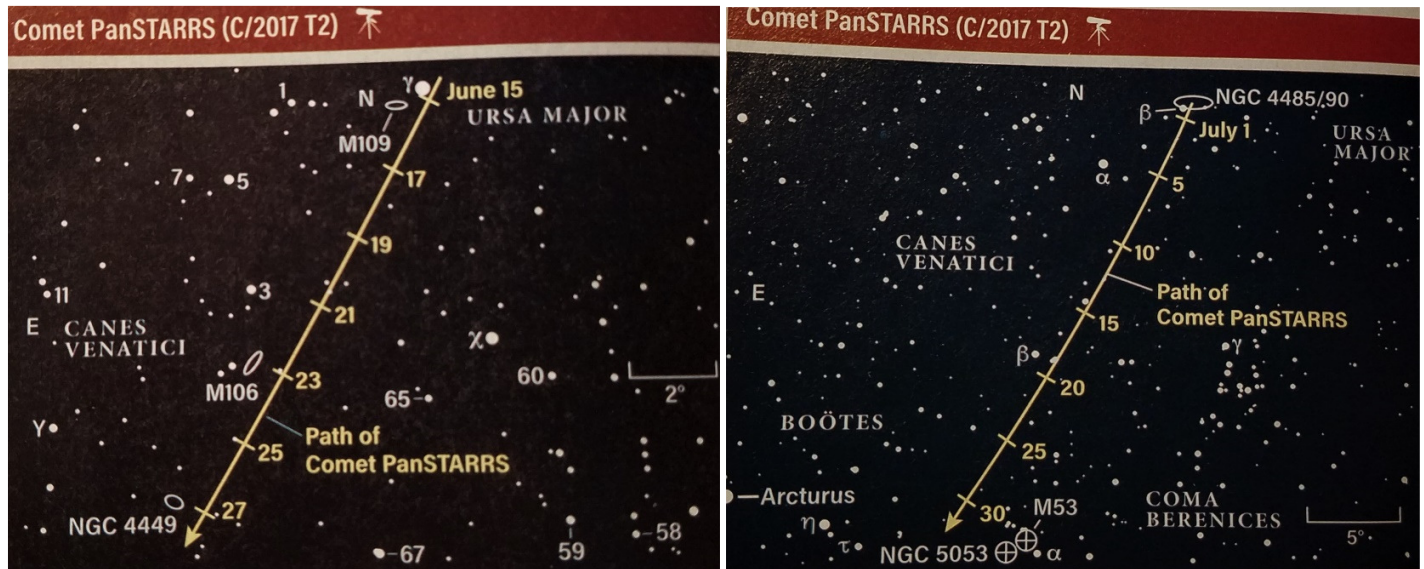
Month	Date	Time/Direction	Event
Jun	20	4:44pm CDT	Summer Solstice
Jun	21	1:41am CDT	New Moon
Jun	27-30	Pre-dawn/ENE	Aldebaran, Venus, and the Pleiades share the sky
Jun	28	3:16am CDT	First Quarter Moon
Jun	30	10pm CDT	Mercury is at inferior conjunction
Jul	4	11:44pm CDT	Full Moon
Jul	12	6:29pm CDT	Last Quarter Moon
Jul	14	3am CDT	Jupiter is at Opposition

## Solar System Roundup

- ✚ **Mercury** is low and dim, will be at inferior conjunction on June 30. See it after July 17.
- ✚ **Venus** is a morning planet, rising about 2 hours before the Sun. See its crescent mate up with the Moon's crescent on June 19<sup>th</sup>
- ✚ **Earth** still spins, and we are still here to marvel at the wonders of our universe
- ✚ **The Moon** is with Jupiter and Saturn in the mornings of July 3-6.
- ✚ **Mars** rises after midnight and its disk getting bigger while it approaches west quadrature
- ✚ **Jupiter** rises in the late evening and is in conjunction with Saturn – great conjunction. It reaches opposition on July 14
- ✚ **Saturn** rises in the late evening and is in conjunction with Jupiter – great conjunction
- ✚ **Uranus** is in Aries and rises about an hour after Mars
- ✚ **Neptune** is in Aquarius, rising an hour before Mars
- ✚ **Comet(s)**

- PANSTARRS (C/2017 T2) is around magnitude 9 and should be visible in binoculars at least 50mm, and 4" or larger scopes.

-From Astronomy Magazine



📅 ISS viewing for New Braunfels (works for Canyon Lake too).

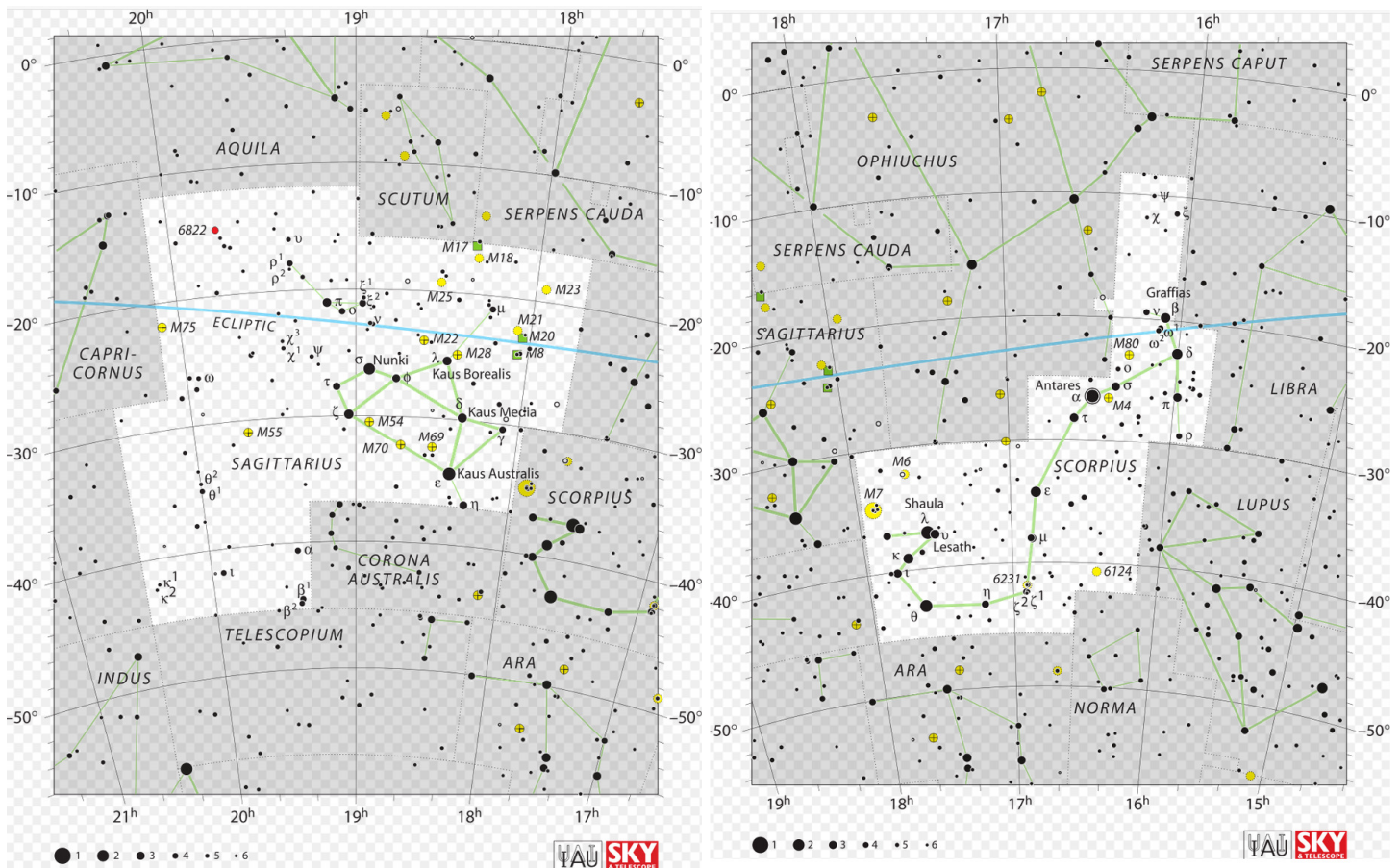
▪ From Heavens Above

Date	Start Time	Start Loc	Max Alt °	Travel Toward	Note
06/26	05:38	WSW	37	NE	Comes out of shadow above the horizon
07/13	21:38	SSW	38	NE	
07/13	23:17	W	15	NE	Low on the horizon
07/14	22:27	WSW	26	NNE	Comes close to the Big Dipper bowl
07/15	21:38	SW	49	NE	

## My Observing Pick: Scorpius & Sagittarius

It's summertime and that means all the thrill and beauty of the southern sky and Milky Way. We have the scary scorpion and the archer, both constellations of the Zodiac. And they're next door to each other. The shape of Scorpius is unmistakable. It's one of the best constellation examples of looking like what it is named. Sagittarius not so much. I have a harder time seeing a half-man, half-centaur. One asterism stands out in Sagittarius, the Teapot. Once Sagittarius rises above the city lights murk, the Teapot can be easily spotted. See below.

Both constellations have a wealth of objects visible in binoculars and telescopes. I suggest starting by scanning around in the constellations and then pick a few areas to focus on.



## Stellar Family Hierarchy

Like in a kinship chart, stars get placed into historical context and this helps us see how the universe progressed from the big bang.

We are star stuff. Most everything around us is star stuff. Yet, stars didn't exist until about 200 million years after the big bang so there was stuff before star stuff.

That stuff was mostly hydrogen and some helium. They appeared after the dark ages, that time when our universe was seething plasma, a dense goo of sub-atomic particles. Around 300 thousand years after the big bang the universe cooled just enough for hydrogen and helium to form and emerge. Space cleared and well, it was still dark. Photons existed but not in the human visible range. They were zipping around as microwaves with no popcorn to cook. No stars, just darkness! Maybe God see in microwave too.

This is where we begin, with the first stars.

All this hydrogen in the early universe formed massive molecular clouds. The clouds condensed, rotation started, and the first stars popped into existence. Let there be light! Helium isn't known to form stars but was there along with hydrogen. The first stars were unlike most stars today. Many were super massive, blue-white, super-hot, and burned through hydrogen so fast they just blew apart after a few million years. This was the beginning, the beginning of everything star stuff. These earliest, first generation of stars are termed population III stars, and none have been definitively found. While not surprising since most were short-lived, there should have been smaller, long-lived stars born as first-generation stars. The search is on.

Those first stars seeded the early universe with heavier elements. How? Fusion is how stars work. Hydrogen fused into helium, then helium into carbon. Subsequent violent core collapses and ultra-nova explosions spewed the elements carbon, oxygen, and metals like lithium. Most probably blew apart but some survived as monster black holes. Now our universe had some other star stuff, elements heavier than hydrogen and helium.

As these population III stars were growing and exploding, the next generation of stars was forming in molecular clouds. The new stars formed with a compliment of heavier elements from exploded population III stars. Astrophysicists classify these younger stars population II stars. Population II stars are still old, some as old as 13 billion years, and most reside in globular clusters or around the Milky Way's bulge.

Our Sun is a population I star, about 5 billion years old, with 10 times the heavier elements as population II stars. This "element seeding" process will continue, and new stars will have more and more metals and other heavier elements. But at some point, maybe a trillion years from now, hydrogen will be too sparse to fuse and form a star.

Will that be the beginning of the end?

Eric Erickson

## Coming up: OUR 251<sup>st</sup> ASTRONOMY CLUB MEETING

**July 16<sup>th</sup>** 2020, from 7 – 9:00 p.m.

**ZOOM meeting**

New Braunfels Astronomy Club



*Astronomy Friends New Braunfels*



*Comal County Friends of the Night Sky*

Mick Homer-First Contact

[astronomynbtx.org](http://astronomynbtx.org)

<https://www.facebook.com/groups/354953995432792/>

<https://www.facebook.com/groups/166098014710276/>

[mhomer2012@yahoo.com](mailto:mhomer2012@yahoo.com)

# New Braunfels Astronomy Club Meeting

Date: 06/19/2020

## Agenda

- Open meeting and introduce new members
- Interesting observations, experiences
- Show and tell
- What's in our sky this month? [Newsletter and Abrams Sky Calendars](#)
- What's going on – events, outreach
  - Comal County Friends of the Night Sky – Larry Wells, Tracy Byrne, and Eric Erickson are members. It's open to anyone. Please join.
- Main feature(s)
  - Review of the Revolution Imager – Bob Keyser
  - Donated telescope accessories – presentation and discussion regarding their disposition
  - Do we need to start formalizing our club, especially if we decide to sell some of the donated equipment and have a nest egg?
- Open for discussion
- Feedback and close the meeting