



Temecula Valley Astronomer

The monthly newsletter of the Temecula Valley Astronomers July 2021

Events:

- Virtual meeting via Zoom on 12 July at 7 PM. Note that this is the **SECOND** Monday of July. Watch your club email for meeting ID and password.
- Star Parties at South Coast Winery every Friday evening in July.
- Hurkey Creek Star Parties 7/3 and 7/17.

Until we can resume our monthly meetings, you can also interact with your astronomy associates on Facebook or by posting a message to our mailing list.

WHAT'S INSIDE THIS MONTH:

Cosmic Comments
by President Mark Baker

Editor's Note
by Paul Kreitz

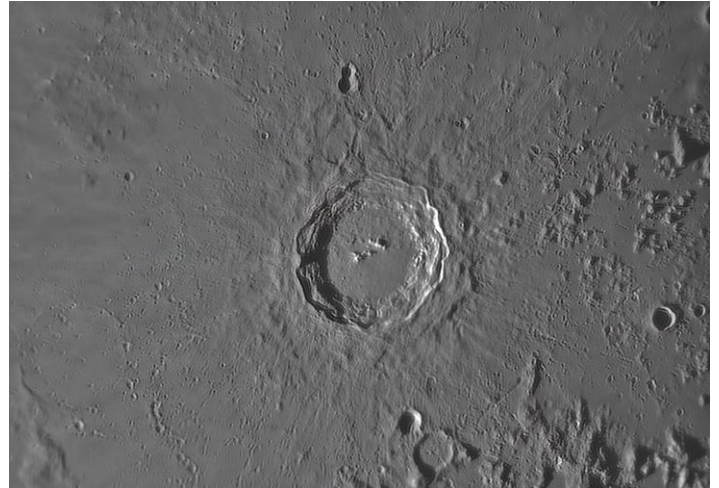
Looking Up Redux
compiled by Clark Williams

Random Thoughts – "Ut In Posterum"
by Chuck Dyson

Observe the Milky Way and Great Rift
by David Prosper (NASA/JPL)

Send newsletter submissions to Paul Kreitz <pkreitz@sbcglobal.net> by the 20th of the month for the next month's issue.

TVA's Steve Thornton is our local Lunatic. This is one of his recent Lunar images, Crater Copernicus:



General information:

Subscription to the TVA is included in the annual \$25 membership (regular members) donation (\$9 student; \$35 family).

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<shknbk13@hotmail.com>

Vice President: Sam Pitts <sam@samsastro.com>

Past President: John Garrett <garrjohn@gmail.com>

Treasurer: Curtis Croulet <calypte@verizon.net>

Secretary: Deborah Baker <geedeb@gmail.com>

Club Librarian: Vacant

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Star Party Coordinator and Outreach: Deborah Baker

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Cosmic Comments by President Mark Baker

It's unfortunate, but another victim of the recent pandemics lingering effects is not having the Star-B-Q again this July... I so enjoy those gabfests and being with people from diverse places and backgrounds, all getting together to take in the gorgeous Summer Sky from Anza. And we will again miss out on the incomparable Ostahowski hospitality...!!!

I am proud, however, that this organization bucked the trend of other similar groups, and kept The Star Party in effect for the last year at the South Coast Winery. Some may have felt it a foolish thing to do, even amongst ourselves, but we followed safety protocols and kept the skies open for a lot of people... some of whom said it was a welcome catharsis to all the negativity pervasive in their lives!!! We inspired many people to feel better about themselves and the world in general, just by letting them Look Up in awe and wonder... we have also seen an influx of many new members whose participation and support greatly bolstered our ability to provide a quality experience!!!

But, that's one thing that cannot ever be taken away, to quote the Firefly miniseries theme song – Our Skies!!! Some live in a high Bortle area and have minimal viewing, and others have low Bortle skies, but regardless, the most important thing is to Look Up... something we all can do!! This last weekend TVA made a name for itself again by being at South Coast on Friday with a large and enthusiastic crowd, and at Hurkey Creek Park on Saturday with an even larger crowd, enhanced by a Garrett Gab... the WOW's and ooh's n aah's made the late nights well worth it!!! And we are starting to book school events for this Fall already, so be prepared for many opportunities to serve our communities and be edified in so doing... and who knows, maybe our in-person meetings resume about then as well. We can only hope...

So, keep looking up and chatting to all that will listen about doing so themselves... the rewards are lasting and deep!!

Clear, Dark Skies my Friends...

Editor's Note by Paul Kreitz

It's hard to believe that despite my fervent pleas for "new blood" in our Newsletter, Mark Baker, Clark Williams, and Chuck Dyson continue to be the only members submitting articles. Surely someone of our membership has something interesting to add! It needn't be a commitment for a series such as Mark, Clark, and Chuck have done. A one-timer about your experience with a new telescope, how you collimated a Dob, or participating in the National Parks' Volunteers In Parks program are a few potential topics. Send your submission to pkreitz@sbcglobal.net, (by the 20th of the month) and see it in print next month! How about you?



Looking Up Redux – July 2021

Compiled by Clark Williams
from these sources:

SeaSky.org

Wikipedia.com

in-the-sky.org

The American Meteor Society, Ltd.

cometwatch.co.uk

NASA.gov

TVA App (2.0.1296)

FullAndNewMoon App (2.0)

Starry Night Pro Plus 8

SkySafari 6 Pro

Stellarium

timeanddate.com/astronomy

<https://www.fourmilab.ch/earthview/pacalc.html>



ALL TIMES ARE LOCAL PACIFIC TIME (PDT / PST) UNLESS NOTED OTHERWISE

Times are given in 24-hour time as: (hh is hours, mm minutes, ss seconds)

hh:mm:ss or hhmmss

hhmm+ (time of the next day)

hhmm- (time of the previous day)

hhmm (seconds not shown)

yyyymmddThhmmss (Full date as: year month day Time separator hours minutes seconds)

Moon Phases for the month by date:

Friday	the 23rd	@ 1938 FULL in SAGITTARIUS
Thursday	the 1st	@ 0025 THIRD QTR in PISCES
Saturday	the 31st	@ 0617 THIRD QTR in AQUARIUS
Friday	the 9th	@ 1817 NEW in TAURUS
Saturday	the 17th	@ 0311 First QTR in VIRGO

Apogee comes on 2021-07-05 @ **0749** – 405,341 km (251,867 mi)

Perigee comes on 2021-07-21 @ **2103** – 364,519 km (226,502 mi)

2021 has: (12) new moons, (13) 1st Qtr moons, (13) Full moons, (12) 3rd Qtr moons
(1) Blue moon and (0) Black moons

Daylight Savings: Starts: 2021-Mar-14 : Ends: 2021-Nov-07



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Luna: Luna is 3rd Quarter on the first of the month, headed for NEW on the 9th rising at **0104**, transiting at **0723** and setting by **1346**. Luna by mid-month is a 27% illuminated, Waxing crescent. Rising at **1015** and transiting late afternoon at **1652** setting at **2324**. By the-end-of-the-month Luna is once again in 3rd Quarter, 51% illuminated rising at **2359**- transiting at **0641** and setting by **1329**.

Highlights: (distilled from: **SeaSky.org** and **Clark's planetary Orrey** program[s])

July 4 - Mercury at Greatest Western Elongation. The planet Mercury reaches greatest western elongation of 21.6 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet low in the eastern sky just before sunrise.

July 09 - New Moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at **1817**. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

July 23 - Full Moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at **1938**. This full moon was known by early Native American tribes as the Buck Moon because the male buck deer would begin to grow their new antlers at this time of year. This moon has also been known as the Thunder Moon and the Hay Moon.

July 28, 29 - Delta Aquarids Meteor Shower. The Delta Aquarids is an average shower that can produce up to 20 meteors per hour at its peak. It is produced by debris left behind by comets Marsden and Kracht. The shower runs annually from July 12 to August 23. It peaks this year on the night of July 28 and morning of July 29. The nearly full moon will be a problem this year. It's glare will block most of the faintest meteors. But if you are patient, you should still be able to catch a few good ones. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Aquarius, but can appear anywhere in the sky.



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Algol minima: (All times Pacific Time)

07/03/2021	0429
07/06/2021	0118
07/08/2021	2206
07/11/2021	1855
07/14/2021	1544
07/17/2021	1232
07/20/2021	0921
07/23/2021	1809
07/26/2021	0258
07/28/2021	2347
07/31/2021	2035



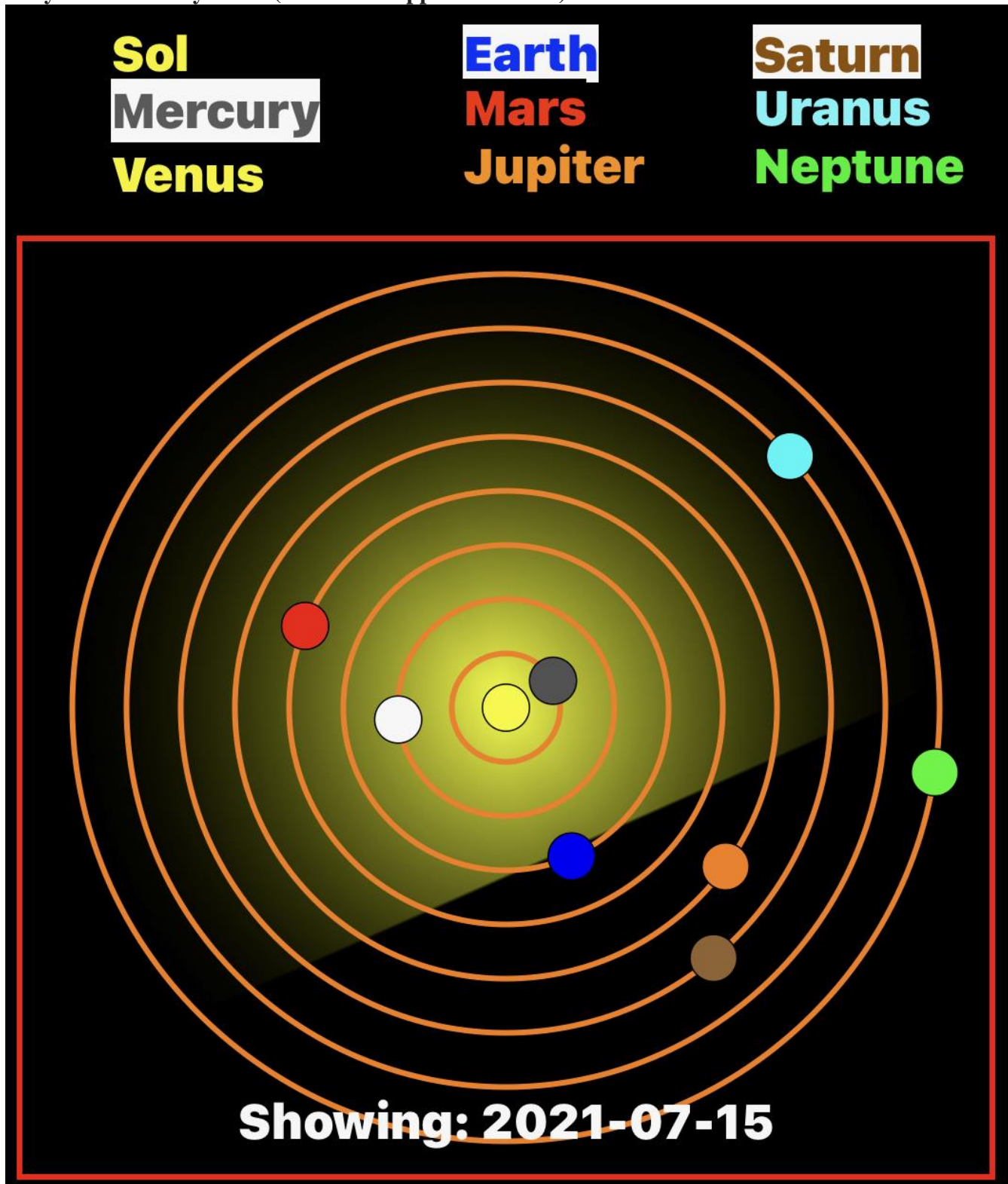


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Planets:

Planetary Positions July 2021: (from TVA App iOS version)





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- **Mercury:** Mercury is a morning object in the beginning of the month. It is illuminated at 28% and 0.89 apparent magnitude. Mercury rises at **0425** with the sun following at **0540**. Mercury by mid-month is rising by **0430** with the sun following by **0548**. By the 31st Mercury is lost to the sun.
- **Venus:** Is the Evening Star on the first of the month, setting by **2144**, preceded by sunset at **2004**. By mid-month Venus is setting at **2142** preceded by sunset at **2001** with a waxing crescent moon following **44°37'** and setting at **2354**. By the 31st Venus is setting at **2131** preceded by sunset at **1951**.
- **Mars:** Mars is still in the sky on the first setting at **2204**. By mid-month Mars is transiting at **1449** and setting at **2135**. End-of-month finds the Warrior transiting at **1424** and not setting until **2101**.
- **Jupiter:** Jupiter is an evening object on the first of the month rising at **2047**. However a Last-Quarter Moon is rising by **0139** and almost 50% illuminated. By mid-month Jove is rising at **2354** while the sun follows at **0538+**. Come the end of month Jupiter is peaking above the horizon by **2047**. However the 45% illuminated Moon will be rising at **0028+** and chasing Jove the rest of the night.
- **Saturn:** Saturn rises about **2151** on the 1st while sunrise is at **0540+**. Saturn by mid month is rising by **2054** preceding sunrise at **0548+**. By the end-of-the-month Saturn is rising at **1947** followed by sunrise at **0559+**. There is a 44% illuminated Moon that will be rising at **0028+** and chasing Saturn the rest of the night.
- **Uranus:** On the first of the month Uranus is rising by **0209** followed by sunrise at **0540**. By the ides Uranus rising at **0115**, followed by sunrise at **0548**. End-of-month finds Uranus rising at **0013** followed by sunrise at **0559+**. There will already be a 52% last quarter Moon 9° to the west along the Ecliptic.
- **Neptune:** Neptune is rising at **2349** in the beginning of the month. With a 46% illuminated Moon only 23° to the West along the Ecliptic. By the 15th Neptune is rising at **2254**. By the end of the month Neptune is rising at **2150**.
- **Pluto:** Pluto rises by **2059** on the first of the month, with a 47% illuminated moon not rising until **0104+**. By mid-month Pluto is rising by **2003** while the Moon is on the other side of the sky in the west getting ready for moonset at **2354+**. By the 31st Pluto is rising at **1859** with a 44% illuminated moon not rising until **0028+**.

Asteroids:

- Still a dearth of asteroids. I searched for asteroids in 2021 with a reasonable magnitude; say less than or equal to +10 in July there is nothing except the regulars: Juno, Vesta, Hebe, Eros and Herculina. So consult your local planetarium software or try:
<https://www.asteroidsnear.com/year?year=2021>

Meteors:

- July is fairly quiet.

Comets: come in various classifications:

- 1) Short Period comets – further broken down into:
 - Halley Type: The Halley Types are believed to come from the Kuiper Belt and have periods in excess of 20-years.
 - Jupiter Type: The Jupiter types have a period less than or equal to 20-years.

- Short period comets have a near circular orbit or an elliptical orbit. The latter being far more common.
 - 2) Long Period comets – thought to originate from the Oort cloud these comets have periods of over 200 years and have random inclinations around the celestial sphere.
- Nothing brighter than mag 10 this month at time of compilation.

Deep Sky:

Notes:

L/Z abbreviation for ALT/AZ

R/D abbreviation for Right Ascension/Declination

α is right ascension

δ is declination

In each case, unless otherwise noted, you should look for the following on or about the 15th Day of July 2021 at 2100 PDT and you will have about 20 minutes of viewing time total.

It's summertime and The Virgo Diamond is high in the sky so let's look for some less familiar objects:

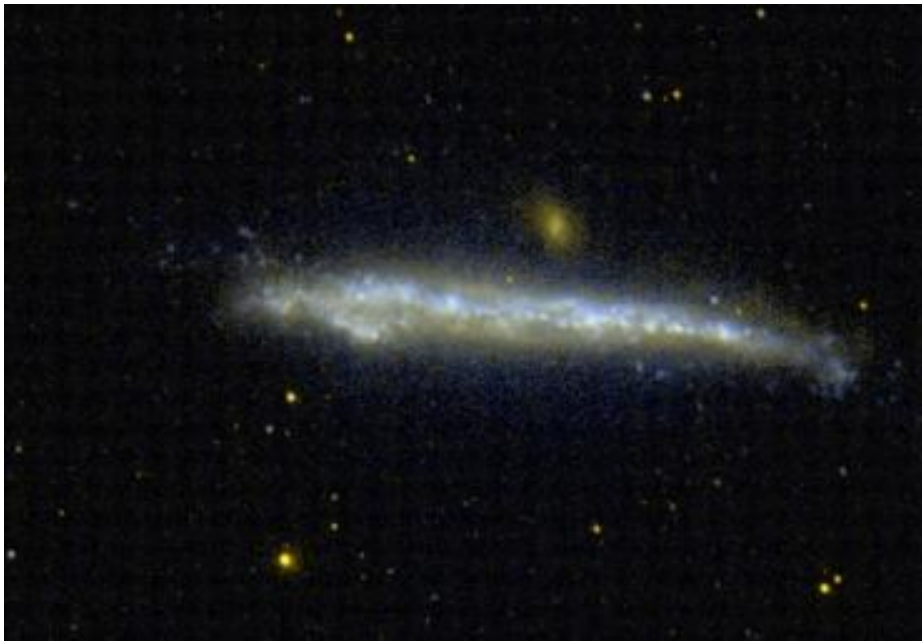
- Iris Nebula (NGC 7023):



The Iris Nebula (also known as NGC 7023 and Caldwell 4) is a bright reflection nebula in the constellation Cepheus. The designation NGC 7023 refers to the open cluster within the larger reflection nebula designated LBN 487. The nebula, which shines at magnitude +6.8, is illuminated by a magnitude +7.4 star designated SAO 19158. It is located near the Mira-type variable star T Cephei, and near the bright magnitude +3.23 variable star Beta Cephei (Alfirk). It lies 1,300 light-years away and is six light-years across. ([Wikipedia](#))

Illustration 1: By Hewholooks - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=6886265>

◦ NGC 4631 – The Whale Galaxy:



NGC 4631 (also known as the Whale Galaxy or Caldwell 32) is a barred spiral galaxy in the constellation Canes Venatici. This galaxy's slightly distorted wedge shape gives it the appearance of a herring or a whale, hence its nickname. Because this nearby galaxy is seen edge-on from Earth, professional astronomers observe this galaxy to better understand the gas and stars located outside the plane of the galaxy.. ([Wikipedia](#))

*Illustration 2: By NASA - NASA, Public Domain,
<https://commons.wikimedia.org/w/index.php?curid=2509931>*

July is great for both viewing and imaging. Spend some time outside with your scope. Summer is here.

For now – Keep looking up.

RANDOM THOUGHTS – “Ut In Posterum”

By Chuck Dyson (This title is not bad English, it is good Latin)

At 4:31 AM on January 17, 1994, an undetected blind fault located between Northridge and Reseda California ruptured. The resulting 6.8 earthquake leveled overpasses, parking structures, apartments, and houses along with rupturing water and gas lines; it was, in short, a Hollywood disaster movie come to life. The other thing that the earthquake and its magnitude 6.0 aftershocks did was to drive people out of their homes and into the darkened streets. The streets were darkened because most of the electrical grid for Los Angeles was down and for the first time in over a century, (the first streetlights in Los Angeles were turned on in 1883) the streets of Los Angeles were dark and you could see the sky. People looked up and some were horrified at what they saw. In the middle of the pitch-black sky was a



glowing cloud of gas. Some, because of the earthquake, thought that there had been a failure and containment vessel rupture at San Onofre nuclear powerplant and the cloud was a glowing gas of radioactive material. The 911 lines lit-up with calls from the concerned, terrified, and hysterical people reporting the cloud, and a lot of earthquake related other stuff too. Finally, someone in the 911 center was able to get outside and look at the terrifying cloud and then came in and informed the 911 operators that the “cloud” was actually the Milky Way and was the glow from the stars in the plane of our own galaxy. It may seem incredible that a person could live for forty or fifty years and never see the night sky but we need to remember that over 4.2 billion people worldwide live in light polluted cities, and that is 56% of the world population and the number is expected to rise to 68% by 2050. We who live in the commuter cities of the 15 and the 215 corridors, and you know who you are, have seen the lights of the stars become extinguished as the lights of the streets have proliferated over the last ten years. When I first moved to Menifee I could, on the best summer nights just see the Milky Way but now, eight years later, the Milky Way is completely lost in Menifee’s urban glow.

When I moved to Menifee and joined T.V.A. Paul Kreitz was giving talks to students at two local middle schools on all things astronomy. After I settled into the neighborhood and became comfortable with the area I joined Paul in giving some of the talks. How difficult and demanding could it be to give 20 minute talks to 6,7, and 8th graders? There is the old school saying, “If you really want to learn a subject, teach it!” When you have erroneous facts or concepts exposed three or four times in one talk by several really smart sixth graders you suddenly realize that you will be hitting the books, computer, and purchasing CD lectures on the subjects that you will be presenting, and yes, with the seventh and eighth graders things only got worse for me.

Are these lectures worth both the time you need to spend to avoid the gaffes or the embarrassment you get when caught out on your gaffes? **UT IN POSTERUM** (So that in the future) there are those people who, even though they grew up under a city light dome and have never actually been able to see the nights ephemeral objects let alone most of the stars, can explain to a panicked population that the glowing cloud of gas they see is in reality just the glow of the stars that comprise our own home galaxy. As almost a side benefit, you too will gain a greater understanding and appreciation for the objects in your eyepiece and this will make your observing more enjoyable.

Another advantage of working with students is that when we again are able to do outreach events at schools you will have a big heads-up as to what questions are likely to be asked about the objects in your telescope’s eyepiece. Having ready answers and then challenging students with questions of your own on the object or subject that they are curious about is how you spark interest and excitement and spur students to go out and learn more about a subject.

I try to divide my lectures up into two broad categories. The first is general and basic science on the subject, such as a lecture entitled “Is Astronomy A Science?” Of course, astronomy is not a science but an observational activity and the science is math, physics, chemistry, geology, and we will even throw in the occasional meteorologist and hydrologist. Another introductory lecture, that can really get the students thinking and excited, can be just asking



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the question “How high up do I need to go before I am in space?” And if you think that this is an easy question to answer just ask yourself “Where do I think space starts and why?” These first lectures will establish a common basis of understanding for the students and me to operate from. Once we have a common area that we can work from I will start preparing lectures in areas that the students are interested in and want to know more about. What the students are usually interested in is NASA’s latest satellite (especially if it is having trouble or crashed), any rover activity, (of course) black holes, faster than light travel, and in the coming years’ talks I will be absolutely shocked if the students do not absolutely demand a talk on UFO’s.

The final thing that I try to do with the students is to prep them for the school’s star party so that they get the most out of it and are excited about some of the things that we have talked about. I also work with the parents to get them excited about what is actually in the night sky because excited parents have a positive influence and effect on what their children get excited about. Win, win I say. I will also emphasize, when asked, how little it can cost to buy a decent starter telescope; or, better yet, a pair of binoculars that you can take with you anywhere you go and are easy to setup for a viewing session, i.e., pick up and look. I currently will be giving talks at two middle schools, Dorothy McElhinney and Warm Springs middle schools, when normalcy, whatever that is, returns. If you would have any interest in giving some of the talks or just want to see what students are interested in then by all means give me a call and we can arrange for you to shadow me on a talk or two. If you have been contacted by a school and are considering starting a student astronomy program or if you want to add to a STEM program definitely give me a call and I will do whatever I can to help.

Cheers, Chuck

Editor’s Note: As Chuck mentioned in this article, I spent a number of years doing monthly programs for the Middle School Astronomy Clubs on behalf of TVA. I first took turns every other month with John Garrett at Dorothy McElhinney Middle School, then took on the role solo as John’s other commitments left him no time for this project. Somewhere along the line Warm Springs was added to the program. I found the experience extremely rewarding personally. I always learned a lot about my topic in researching for the presentation. I was often rewarded by having one of the students ask a question that told me “Wow, they really were listening!”

The sessions are held during lunch time for the schools. Therefore, you know that the students attending are really interested in Astronomy, as they are giving up their lunch time and missing out on time with their buddies.

Unfortunately, as I have entered the “middle eighties” phase of my life I find that too often I am fumbling for the name of a friend I have known for years, and other symptoms of ageing. Forgetting the name of Betelgeuse in the middle of a presentation would not go over well. So I am phasing out of this program, and hope sincerely that someone else will jump in and share the load with Chuck. All you need is an interest in the subject, a willingness to share what you know, and maybe a little experience with PowerPoint.

PK



Observe the Milky Way and Great Rift

By David Prosper, NASA / JPL

Summer skies bring glorious views of our own Milky Way galaxy to observers blessed with dark skies. For many city dwellers, their first sight of the Milky Way comes during trips to rural areas - so if you are traveling away from city lights, do yourself a favor and look up!

To observe the Milky Way, you need clear, dark skies, and enough time to adapt your eyes to the dark. Photos of the Milky Way are breathtaking, but they usually show far more detail and color than the human eye can see – that’s the beauty and quietly deceptive nature of long exposure photography. For Northern Hemisphere observers, the most prominent portion of the Milky Way rises in the southeast as marked by the constellations Scorpius and Sagittarius. Take note that, even in dark skies, the Milky Way isn’t easily visible until it rises a bit above the horizon and the thick, turbulent air which obscures the view. The Milky Way is huge, but is also rather faint, and our eyes need time to truly adjust to the dark and see it in any detail. Try not to check your phone while you wait, as its light will reset your night vision. It’s best to attempt to view the Milky Way when the Moon is at a new or crescent phase; you don’t want the Moon’s brilliant light washing out any potential views, especially since a full Moon is up all night.

Keeping your eyes dark adapted is especially important if you want to not only see the haze of the Milky Way, but also the dark lane cutting into that haze, stretching from the Summer Triangle to Sagittarius. This dark detail is known as the Great Rift, and is seen more readily in very dark skies, especially dark, dry skies found in high desert regions. What exactly is the Great Rift? You are looking at massive clouds of galactic dust lying between Earth and the interior of the Milky Way. Other “dark nebulae” of cosmic clouds pepper the Milky Way, including the famed Coalsack, found in the Southern Hemisphere constellation of Crux. Many cultures celebrate these dark clouds in their traditional stories along with the constellations and Milky Way.

Where exactly is our solar system within the Milky Way? Is there a way to get a sense of scale? The “Our Place in Our Galaxy” activity can help you do just that, with only birdseed, a coin, and your imagination: bit.ly/galaxyplace. You can also discover the amazing science NASA is doing to understand our galaxy – and our place in it - at nasa.gov.



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*The Great Rift is shown in more detail in this photo of a portion of the Milky Way along with the bright stars of the Summer Triangle. You can see why it is also called the "Dark Rift."
Credit: NASA / A.Fujii*



*If the Milky Way was shrunk down to the size of North America, our entire Solar System would be about the size of a quarter. At that scale, the North Star, Polaris - which is about 433 light years distant from us - would be 11 miles away! Find more ways to visualize these immense sizes with the Our Place in Our Galaxy activity:
bit.ly/galaxyplace*



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!



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The TVA is a member club of [The Astronomical League](#)

