NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

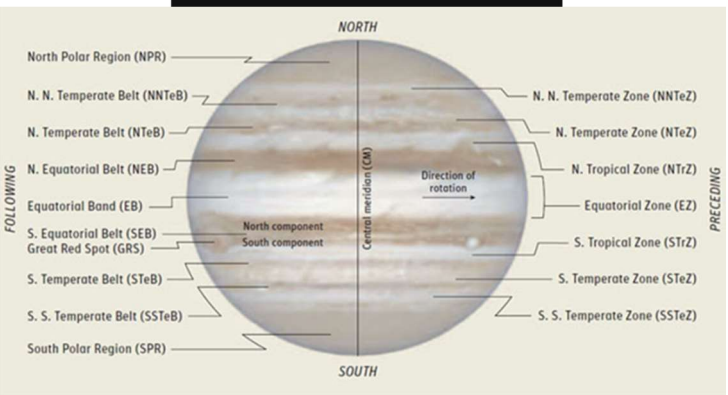
MAY 2018

PRESIDENT'S NOTES

Jupiter's Time to Shine

It is May 2018 and the inevitable can no longer be postponed: Jupiter's time to shine has come. Jupiter rises early enough (for even those who go to bed at reasonable hours), stays up all night, and is high enough to take some power at the eyepiece. Jupiter is always big, so there is very little reason not to seek it out every time you are out viewing.

JUPITER IMAGE AND ILLUSTRATION



Sources: Image by David R); Illustration from *Sky & Telescope*

It also so happens to play well into last month's article about filters to glean deeper definition when viewing. Several colored filters work great on the gas giant, and because of the planet's brightness, even dark colors, can be used in small telescopes. A blue filter might be your best choice for Jupiter. It improves contrast within the bright zones and sharpens boundaries. The belts will darken with either a green or a blue filter and help bring out the Great Red Spot.

Of course, by using a color filter the spot itself will not appear to be red. That is something you need to be aware of, filters usually change the colors of the very things you want to view or enhance. Use filters to see action, structure, and texture; not to view true color.

For example, some observers say a pale-yellow filter will darken the blue festoons that appear near the North Equatorial Belt's south edge and Equatorial Zone; it's the swirls and eddies to be looking for not the blue of the festoons. That said, I personally find the use of a yellow filter very subtle at most and usually doesn't seem to work at all for me. That may be because of the type and/or size of telescopes I use. Refractors generally have higher contrast than the Schmidt–Cassegrain telescopes I use. There is a balance you must decide upon when viewing planets. Given any telescope's aperture, inherent contrast, and resolution, there is a sweet spot somewhere in the mix of telescope power, planet surface darkening, and contrast. Too much power and you don't see the planet, you see the Earth's shifting atmosphere. Too little power may make the planet so bright that features are all washed out.

One last filter for Jupiter is not a color filter at all. I often use a broadband light pollution filter, such as the Lumicon Deep Sky or the Orion SkyGlow, to increase the overall contrast of the planet. Belts, zones, ovals, barges, and the Great Red Spot are all improved -- in my mind -- and that is where it counts. So, if you are going to try filters on Mars, don't forget to try them on Jupiter as well.

Clear Skies, everybody!

AT THE MAY 18, 2018 MEETING

"Gravitational Waves and Things that Go Boom in the Night"

Dr. David Sand received his undergraduate degree in Physics from UCLA and his PhD in Physics from Caltech. He is now an Assistant Professor in Astronomy at the University of Arizona, and an observational astrophysicist with many interests. He is particularly interested in time domain astronomy (how astronomical objects change in time), especially in the progenitors of supernova. In his free time, he enjoys the outdoors with his daughter Delilah and wife Debbie.

In his presentation, Dr. Sand talks about the 'time domain' revolution in astronomy, and how we are finding new ways to study stars that merge, burp and explode by looking at their imprints on space-time via gravitational waves. He will highlight recent results on the gravitational wave detection of the merger of two neutron stars and look to the future of this field. Dr. Sand's interest in things that go bump in the night led to his team's search for electromagnetic counterparts to gravitational waves.

Welcome our new members

Ed Swenson of Sierra Vista joined at the March meeting. Eugene Savage of Sierra Vista joined later in March. Welcome to the club, we are glad you joined!

Event Report (and NSN Kits)

By Ted Forte

I was invited to speak to a third-grade class at Leman Academy on Tuesday. I expected one class of 25 or 30 but found upon arrival that the whole third grade (70 kids) would be packed into a single room for my visit. It was a bit of an OMG moment but in the end, it worked out well; they were great kids and their teachers were on hand to settle them down when they got too rambunctious.

The theme was the Solar System, and I used parts of the "Planet Quest," "Planetary Investigations" and the "Space Rocks" Night Sky Network Kits along with the meteorite kit on loan from the Planetary Science Institute to illustrate how the solar system formed and how planets are put together. A lot of the time was spent on meteorites and how they are identified. I passed around a lot of meteorites from the PSI kit.

The Space Rocks NSN kit has an activity – a bag of rocks that includes two meteorites. At the end of my presentation, I gave each of the rocks to a group of kids and had them decide whether their rock was a meteorite or an earth rock. They didn't do too bad. The most rewarding part of the exercise was that a lot of the kids had solid reasoning for picking meteorite or meteorwrong. Made me feel like they actually learned a little something.

The NSN kits are a great teaching resource. If anyone is interested in using the Night Sky Network kits they are available to any HAC member that expresses an interest and is willing to train themselves. They are stored at Patterson – each kit in its own plastic organizer. Each kit contains a training CD and most contain printed manuals. There are a lot of training videos and PowerPoint presentations available on the NSN website too. https://nightsky.jpl.nasa.gov/ Nancy Hannaford and others spent considerable time organizing our kits and it's a real shame to see them sit mostly unused. Just let me know if you want to help change that.

The toolkits we have:

Our Galaxy, Our Universe

Distance and scale activities. Two of the most misunderstood concepts in astronomy are distance and scale. Related to those are the difference between the Solar System, the Galaxy, and the universe.

Exploring the Solar System

Includes hands-on activities to show the structure of our Solar System, including models for sizes and distances, and to connect what is seen in the sky with where the planets are in relation to Earth.

Life In the Universe

Aliens are a favorite topic for many visitors to public astronomy events. This Toolkit is designed to take science fiction questions and direct them toward scientific facts and exciting new discoveries being made in the search for life outside Earth.

Shadows & Silhouettes

Hands-on activities on Moon phases, lunar and solar eclipses, transits, and Venus phases.

Space Rocks

Activities about comets, asteroids, and craters. Includes information about meteorites and meteor showers.

Glass & Mirrors: An Inside Look at Telescopes

Explore how glass and mirrors make telescopes work. Optical activities galore.

SUPERNOVA!

The SUPERNOVA! ToolKit tells the story of the lives of stars, cosmic radiation, and how Earth is protected from that radiation.

Telescopes: Eyes on the Universe

Explore the ins and outs of telescope observing with your star party visitors, with answers (and explanations!) for common questions like "How much does the telescope magnify?" and "Can you see the flag on the moon?"

Our Magnetic Sun

This ToolKit provides activities and demonstrations that explore the Sun and its powerful magnetic fields, how these fields generate the features we observe, and how the Sun's magnetic activity affects our way of life and technologies here on Earth.

Black Hole Survival

Explore black holes and gravity with these activities.

PlanetQuest Kit

The Planet Quest ToolKit's complete manual provides hands-on activities and observing using telescopes to learn about discovering planets orbiting other stars.

Planetary Investigations Kit

This was a beta test kit, which has training aids aimed at demonstrating planetary interiors.

This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

Space Place Article APRIL 2018

What's It like inside Mars?

By Jessica Stoller-Conrad

Mars is Earth's neighbor in the solar system. NASA's robotic explorers have visited our neighbor quite a few times. By orbiting, landing and roving on the Red Planet, we've learned so much about Martian canyons, volcanoes, rocks and soil. However, we still don't know exactly what Mars is like on the *inside*. This information could give scientists some really important clues about how Mars and the rest of our solar system formed.

This spring, NASA is launching a new mission to study the inside of Mars. It's called Mars InSight. InSight—short for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport—is a lander. When InSight lands on Mars later this year, it won't drive around on the surface of Mars like a rover does. Instead, InSight will land, place instruments on the ground nearby and begin collecting information.

Just like a doctor uses instruments to understand what's going on inside your body, InSight will use three science instruments to figure out what's going on inside Mars.

One of these instruments is called a seismometer. On Earth, scientists use seismometers to study the vibrations that happen during earthquakes. InSight's seismometer will measure the vibrations of earthquakes on Mars—known as marsquakes. We know that on Earth, different materials vibrate in different ways. By studying the vibrations from marsquakes, scientists hope to figure out what materials are found inside Mars.

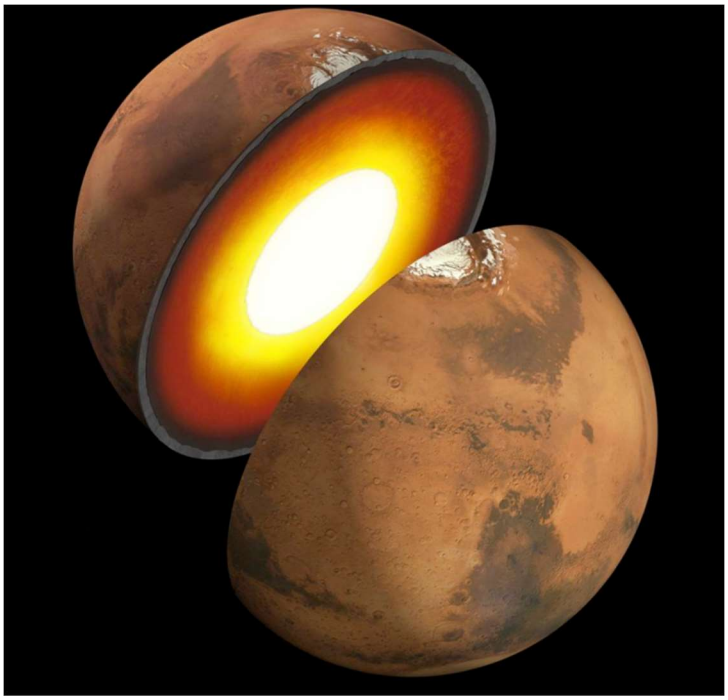
InSight will also carry a heat probe that will take the temperature on Mars. The heat probe will dig almost 16 feet below Mars' surface. After it burrows into the ground, the heat probe will measure the heat coming from the interior of Mars. These measurements can also help us understand where Mars' heat comes from in the first place. This information will help scientists figure out how Mars formed and if it's made from the same stuff as Earth and the Moon.

Scientists know that the very center of Mars, called the core, is made of iron. But what else is in there? InSight has an instrument called the Rotation and Interior Structure Experiment, or RISE, that will hopefully help us to find out.

Although the InSight lander stays in one spot on Mars, Mars wobbles around as it orbits the Sun. RISE will keep track of InSight's location so that scientists will have a way to measure these wobbles. This information will help determine what materials are in Mars' core and whether the core is liquid or solid.

InSight will collect tons of information about what Mars is like under the surface. One day, these new details from InSight will help us understand more about how planets like Mars—and our home, Earth—came to be.

For more information about earthquakes and marsquakes, visit: https://spaceplace.nasa.gov/earthquakes



Caption: An artist's illustration showing a possible inner structure of Mars. Image credit: NASA/JPL-Caltech

Want Ads

For Sale: Meade 10" 2120 OTA with HTMC

I bought it on Cloudy Nights from a guy in Wickenburg, had the secondary professionally cleaned at Starizona in Tucson. The OTA comes with either a Celestron 1.25 visual back or a 2" rotating visual back, an adjustable focus finder as shown in the picture, and a Vixen style dovetail bracket. Of course, there is also a front cover.

Asking $500

Contact Carl Swanson at (480)600-7353 or cswanson@gotsky.com

For Sale: Meade EXT60AT never used before, includes tri-pod.

Asking $200.00 B/O
Contact Keith Mullen at 266-4230

For Sale: Meade 10” LX200 classic telescope

In very good condition, with tripod, 120v AC and 12v DC power converters with 25’ power cords, dew shield, 8x50 finder scope, electric focuser, piggy back bracket, and soft sided carrying case. Also includes a set of Meade CCD color filters, Meade CCD 3.3 focal reducer and CCD variable T-adapter. Plus some other equipment.

Asking $ 1,800.
Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

For Sale: Pier Tech electric telescoping pier with Lati-wedge made for the latitude of Sierra Vista

All the hardware, bolts, nuts, washers and plates are with the pier. Pier Tech can make new legs for it to make it correct for anywhere in the world. The pier and wedge have never been used and the only time the pier was out of the box was to take the photos. New today, the pier and wedge are $3,400. Asking $2,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

For Sale: Meade Starfinder 8" Reflector Telescope

Will sell at a very reasonable price. Included are a Telrad Finder, Filters, and additional Lenses.

Contact Mr. Jim Moses at (520) 803-0913 or by email jjmoses2@gmail.com

For Sale: Planewave CDK14 corrected Dall-Kirkham telescope.

Includes the OTA, new November 2014, optional truss rod shroud and optional upper dovetail and the accessories that were included with the telescope (primary to secondary spacing tool). There is NO FOCUSER the adapter for an Optec TCFS3i is included. I also have the factory wooden shipping crate. The telescope has been in use every clear night in the observatory in Sonoita. This is an outstanding instrument and a great imaging scope.

For Sale: Celestron Celestar 8 inch S/C Deluxe - $1200.

Will also sell pieces individually

Contact Rhonda and Terry Taylor at (520) 366-2378 or by email at twrl2@yahoo.com. Or See Craigslist at http://sierravista.craigslist.org/bar/4523742100.html

For Sale: Older Optical Guidance Systems 12.5” f/9 Ritchey-Chretian telescope.

Very good Paul Jones ceramic optics, Robofocus secondary focuser, will include Takahashi collimating telescope. Some of the images through the scope are at Mshadephotography.com.

Contact Mike J. Shade at mshade@q.com

Fork Mounted C-14 for Sale

This monster telescope is not a grab and go but can be a one person setup. Nor is it a go-to, although I have added electronic setting circles and push-to computer. The Lumicon NGC-Max is a standalone computer, but can also be connected to a PC to use with planetarium programs, like “The Sky”. The cables are included.

Works wonderfully at f/11, pulling in faint fuzzies and tack-sharp planets. May I mention Mars is coming? Also included is the Lumicon Giant Easy Guider system for those times you want to view or image at a few f-stops faster. The giant easy-guider changes the telescope to either f/7 or f/5 for wide-field viewing and includes a prism guiding port for guiding eyepiece.

If f/5 isn’t fast enough for your imaging pleasure, then strip off all that stuff, put on the Starizona HyperStar Type 3 Lens, and shoot without guiding at f/1.9. I retrofitted the HyperStar kit, along with a new corrector plate with StarBright XLT optical coatings. One-minute subs are all you’ll need to grab most of what’s out there, down to about mag 18. It comes with a couple of camera adaptors, and if you need a different adaptor, Starizona is just up the road. I’ve also added a feather-touch 1:10 micro-focuser that really makes a difference.

This C-14 is a wonderful classic and comes with the original adjustable 2” mirror diagonal, heavy-duty wedge, heavy-duty field tripod; counter weight bars and weights, and all the original trunks. I even have the manuals.

I do not want to ship, and it is something you’ll want to try first anyway. I won’t break up the package. After much consideration, I am asking $4,500. Email me if you’re interested in a test drive. david_roemer@earthlink.net

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HAC May/June Calendar of Events

SU	MO	TU	WE	TH	FR	SA
6 MAY Eta Aquarid Meteors	**7** **7:09 PM** Eta Aquarid Meteors	**8** Jupiter at Opposition	**9**	**10** School Field trip at Patterson 9 AM to noon	**11** School Field trip at Patterson 9 AM to noon	**12** Member Star Party
13 	**14**	**15** **4:48 AM**	**16** School Field trip at Patterson 9 to 11 AM	**17** Patterson Public Night 7:30 PM	**18** Hac Meeting Student Union	**19**
20	**21** **8:49 PM**	**22**	**23**	**24**	**25**	**26**
27	**28** 	**29** **7:20 AM**	**30**	**31**	**1 Jun**	**2**
3	**4**	**5** Mercury in Superior Conjunction	**6** **11:32 AM**	**7**	**8** Hac Meeting Student Union	**9**
10	**11**	**12**	**13** **12:43 AM**	**14** Patterson Public Night 8 PM	**15**	**16** Venus 2° N of moon
17 	**18**	**19** Vesta at Opposition	**20** **3:51 AM**	**21** Summer Solstice	**22**	**23**
24	**25**	**26**	**27** **9:53 PM** Saturn at Opposition	**28** Mars Stationary	**29**	**30**
1 Jul	**2**	**3**	**4** 	**5**	**6** **12:51 AM**	

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com