The Ephemeris

March 2014

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Houge Park March Events

Sunday, March 02
Solar observing: 2-4PM
Fix-It Day: 2-4PM

Friday, March 07
In-Town Star party (Houge): 7-10pm

Friday, March 14
Imaging SIG Meeting: 7:30-9:30pm

Saturday, March 15
Board of Directors Meeting: 6-7:30pm
No general meeting

Sunday, March 16
SJAA Club Auction

Friday, March 21
Beginner Astronomy Class: 7:15-8:15pm
In-Town Star party (Houge): 8:15-11pm

SJAA events are subject to cancellation due to weather. Please visit website for up-to-date info.

The Twenty Inch Club Dob

‘The Twenty’, ‘The Beast’, ‘The Metal Monster’, ‘The Bad Boy’, whatever you want to call it, it is BIG. It’s the Club’s donated 20”. The telescope saw first public light last Saturday at Rancho.

Harsh Kaushikkar filed the following observing report:

Saturday evening Feb 22 at Rancho Cañada del Oro, Ed Wong and I were docents for the monthly Starry Nights program. It was a pleasant surprise to see Chris Kelly join us with the recently donated 20 inch Dob with him.

It took the two of us about 15 minutes to set it up and adjust it. After it was ready to go, Chris had to take a break away from the program and he left me with the coveted job of manning the huge scope.

Sky conditions were excellent with good seeing, and the scope took full advantage! I started the observing with spectacular views of M42. I was able to glean outstanding amounts of detail from its core, all the way to the outer edges, almost looking like a circle across the field of view. As I gave it some time, faint nebulosity around the trapezium became apparent. I was also able to pick out nebulosity in the nearby Running Man nebula. I moved away from Orion to Gemini and hunted around a bit to locate Eskimo Nebula. I swapped the eyepiece with a higher power, and I have never seen so much detail in this tiny planetary. There was some hint on faint blue, or maybe it was my imagination! I then spent time browsing through the nearby open clusters M41, M46, M47 and M93. All of these dazzled. All this while I had a steady stream of members of public getting drawn by the massive scope and I was fortunate to share the views with them and hearing their reactions of disbelief. The best was saved for last. I requested Ed to let me borrow an eyepiece with his DGM optics NPB filter to see if I can get a glimpse of Rosette Nebula. This was the best view of Rosette I have seen yet. Significant amounts of nebulosity were popping out. I could easily discern the dark central core of the nebula and a cloudy circular structure making the rose shape around it.

It was great to be able to share these views with some of the fellow astronomers and also a few members of the public who got a good taste of what serious aperture can do!

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SJAA Contacts

President: Rob Jaworski
Vice President: Lee Hoglan
Treasurer: Michael Packer
Secretary: Teruo Utsumi
Director: Greg Claytor
Director: Dave Ittner
Director: Ed Wong
Director: pending
Director: pending
Beginner Class: pending
Fix-it Program: Ed Wong
Imaging SIG: Harsh Kaushikkar
Library: Sukhada Palav
Loaner Program: Dave Ittner
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E-mails: http://www.sjaa.net/contact.shtml

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***Annual Meeting***

**Member Recognition**

From Michael Packer

At the February 15th annual meeting, the board gave recognition rewards to the following individuals for their volunteer help:

**Phil Chambers:**
For his key participation in SJAA’s Fixit Program. Phil has constantly shown up at the Fixit sessions with his tool box in hand and ready to help. Phil brings with him years of knowledge with telescopes and the hobby and is always willing to share that knowledge.

**Terry Kahl:**
For her general volunteer help and help to make the new Solar Program at Houge Park a success. Terry is a veteran member of SJAA but moreover has been an “active” member attending SJAA programs and Star Parties for years. She also helps out at our school star parties.

**Carl Reisinger:**
For his generosity and technical support of the Solar Program. Carl is a veteran member of SJAA and an active member with SJAA and the astronomical community. Carl has contributed solar images to the newsletter and solar blog and has shared his Calcium K-line filter at solar parties for public viewing.

**Bill and Susan O’Neil**
For their across-the-board astronomy outreach. This past year Bill and Susan O’Neil have set up scopes at SJAA’s local star parties and outreach programs we hold at Open Space Reserves and City Festivals throughout the South Bay and beyond. And last year they became volunteer rangers sharing astronomy at our National Parks.

**Frank Geefay:**
For performing all the heavy lifting to move to the new SJAA website. Frank personally took it upon himself to not only help move the website content, but as a side effect, he also helped test the new site, and spent considerable time and effort formatting the data.

**Richard Stone:**
For his enthusiastic public star party participation and outreach efforts.
Richard is a regular contributor at our Star Parties at Houge Park as well as Rancho and other sites. These public outreach events can’t be done without volunteers, and Richard is “the constant”.

**Paul Mancuso:**
For his years of being a very regular part of the regular School Star Party program.
The School Star Party program is probably the most low-key of all SJAA programs, but one of the most appreciated by its ‘customers’, local schools and educational institutions. Paul is one of the few individuals who can be counted on to be there, sharing a variety of telescopes with students, their families, and their school communities.

Thanks again to all for a great Annual Meeting. See you in the field and upcoming meetings!
The Supernova in M82, a galaxy that is over 11 million light years away, is now visual magnitude 11 – still bright enough for a moderate sized scopes (6-8 inches) under moderate skies.

I’m up at 3:00 after a super pot luck at SJAA Houge Park! We had a chance to show our picture of the recent supernova in M82. We took the data on 01/25/2014 at RCDO from about 10:30-10:50. Our setup was an Orion Sirius EQ mount, Celestron C8 and Canon T3i SLR back and no auto guiding. We’ve been evolving our technique which now includes operating the camera from our Mac iBook Air using a USB cable and the free Canon camera software utility. Controlling the camera from a laptop was a big step forward for us. Finding the right camera scope connection was the hardest bit. There is a lot of things we tried that didn’t work. We settled on a T-ring/Cannon adapter ring connected to the SLR back with a short Celestron 1-1/4 inch t-ring adapter found with the help of an SJAA star party neighbor who loaned us one to try. We took about 15 shots mostly at ISO of 800 using 30 sec exposure time. A couple ISO 6400 shots were also taken. I used about 12 images (JPEGS) stacked with FIGI (Image on my iMac) which is free. Image has an interface that is kind of like talking to space aliens but worth the effort to figure out (might make a nice SJAA class). It also allows you to create the label art like seen in the photo.

Photo credit: Paul Colby and Marion Barker:

Stunning Picture of Earth from Mars

Earth and Moon as seen by Curiosity from Mars. According to NASA, “a human observer with normal vision, if standing on Mars, could easily see Earth and the moon as two distinct bright ‘evening stars’.

Credit: NASA.gov
The hunt for these scarce antiquities goes back to the early 1950s, when scientists recognized that not all stars have the same metal-rich chemical composition as the sun. “At the time, they didn’t know what to do with the metal-poor stars,” Dr. Frebel, 33, said. But astronomers have since established what she called “a framework for the chemical evolution of the universe.” The first stars were made up entirely of hydrogen, helium and negligible traces of lithium. With no heavy elements to cool the gas clouds, they grew massive, rapidly burned through their fuel and exploded in supernovas. During various burning stages of those first stars’ evolution, before and after they exploded, their intense heat fused the hydrogen and helium atoms into heavier elements — the first metals — which in turn enabled the formation of long-lived, low-mass stars. Some of those early second- and third-generation stars eventually made their way to our corner of the universe, where they long remained unnoticed by astronomers among a sea of even younger stars. Most of the stars we see in the sky are relatively rich in metals like iron and are known as Population I stars because they were once thought to be the only type existing.

In a paper in Nature, Dr. Frebel and a group of colleagues, including Stefan Keller of Australian National University, the lead author, described a star in the Milky Way constellation Hydrus with a metallicity of less than −7.1 (only an upper limit could be determined). The star, SMSS 0313-6708, is presumably very old, perhaps the oldest yet identified. The astronomers who found it estimate that it formed over 13 billion years ago. But they cannot say exactly how old it is. One of the few ways to get a precise age for a star is to find one with radioactive elements like uranium and thorium, whose half-lives are known and can be used — like carbon 14 on earth — to date an object with certainty.

Only about 5 percent of stars are thought to have such a chemical signature. Still, Dr. Frebel described one such star in 2007: a red giant 7,500 light years from Earth that at 13.2 billion years old is one of the two oldest known stars in the universe that have actually been dated. “We would hope for a consistent relationship” between metallicity and age, she said, “but the problem is that the uncertainties are so large and the samples so few that it’s hard to map out.” By now, astronomers have found six stars with less than one ten-thousandth of the sun’s iron abundance, −4, and those are the ones that interest them the most. “The signatures in the stars we’ve discovered since 2000 are quite different from what we find in other, what you might call ‘normal’ metal-poor stars,” Dr. Norris said. He and others believe that they could have come only from the supernova of a single first-generation star.

Astronomers, Dr. Frebel said, “are finding stars that are over 13 billion years old — what we think are plausible second-generation stars.” The Methuselahs of the cosmos have divulged some tantalizing hints of how it all happened. Their chemical compositions suggest, for instance, that the first supernovas may not have carried as much explosive energy as astronomers once believed. In turn, this implies that the first stars may not have been as massive as thought, and that some of the first supernovas “sort of failed,” as Dr. Frebel put it — with much of the star’s material falling back into a black hole rather than being ejected into space. Another critical observation is that five of the six known stars with metallicities below −4.0 have unusually high levels of carbon relative to iron. Dr. Frebel said that could be a sign that the element played an important role from the outset, instigating the cooling of interstellar gas that allowed the first low-mass stars to form. On the other hand, one of the stars is not similarly enriched with carbon — suggesting that dust molecules could also have acted as a cooling mechanism. The discovery announced on Sunday supports these conclusions. But six stars are not enough to be sure of anything, so astronomers are counting on a variety of new sky surveys, including Australian National University’s SkyMapper project, which is already producing large new catalogs of stars for study. “It is very exciting that SkyMapper has now shown to be capable of finding these rare, ancient stars,” Dr. Frebel said. “It is already a great achievement for this new survey and promises many great returns in the near future.”

Credit: The New York Times
The James Webb Space Telescope (sometimes called JWST) will be a large infrared telescope with a 6.5-meter primary mirror. The project is back on track after years of delays and running over budget. The Webb will be the premier observatory of the next decade, serving thousands of astronomers worldwide. It will study every phase in the history of our Universe, ranging from the first luminous glows after the Big Bang, to the formation of solar systems capable of supporting life on planets like Earth, to the evolution of our own Solar System.

Webb is an international collaboration between NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA). The NASA Goddard Space Flight Center is managing the development effort. The main industrial partner is Northrop Grumman; the Space Telescope Science Institute will operate Webb after launch.

Several innovative technologies have been developed for Webb. These include a folding, segmented primary mirror, adjusted to shape after launch; ultra-lightweight beryllium optics; detectors able to record extremely weak signals, micro shutters that enable programmable object selection for the spectrograph; and a cryocooler for cooling the mid-IR detectors to 7K.

Credit: NASA

Comparisons of the Hubble vs. JWT
Ganymede Mapped

More than 400 years after its discovery by Galileo, the largest moon in the solar system has finally claimed a spot on the map. A team of scientists has produced the first global geologic map of Ganymede, a Galilean moon of Jupiter. The map technically illustrates the varied geologic character of Ganymede's surface, and is the first complete global geologic map of an icy, outer-planet moon. Credit: Science Daily

Sochi from Space

Viewed From the International Space Station: An Expedition 38 crew member aboard the International Space Station took this photograph of Sochi Olympic Park at night. Fisht Olympic Stadium and the flame are visible. Image Credit: NASA
Kid Spot Jokes:

- **What kind of light goes around the Earth?**
  A satel-lite.

- **How do we know that Saturn was married?**
  Because he has many rings.

Kid Spot Quiz:

1. What is the closest star to the Earth?
2. What is the name of the seventh planet from the Sun?

Kid Spot Night Sky Challenge: March 2014

See if you can spot the following objects in the sky:

- Jupiter - Throughout the night
- Venus - Dawn
- Mars - Late night and before dawn
- Saturn - Midnight
- Mercury - Early morning

http://skyandtelescope.com/observing/ataglance

Gemini—The Twins

**Gemini** is one of the constellations of the zodiac. It was one of the 48 constellations described by the 2nd century AD astronomer Ptolemy and it remains one of the 88 modern constellations today. Its name is Latin for “twins,” and it is associated with the twins Castor and Pollux in Greek mythology.

Gemini lies between Taurus to the west and Cancer to the east, with Auriga and Lynx to the north and Monoceros and Canis Minor to the south.

To look at Gemini is to look away from the Milky Way; as a result, there are comparatively few deep-sky objects of note. The Eskimo Nebula and Medusa Nebula, Messier object M35, and Geminia are those that attract the most attention.

The Geminids are a prominent, bright meteor shower that peaks on December 13-14. It has a maximum rate of approximately 100 meteors per hour, making it one of the richest meteor showers.

In Babylonian astronomy, the stars Castor and Pollux were known as the Great Twins.

In Greek mythology, Gemini was associated with the myth of Castor and Pollux, the children of Leda and Argonauts both. Pollux was the son of Zeus, who seduced Leda, while Castor was the son of Tyndareus, king of Sparta and Leda's husband. Castor and Pollux were also mythologically associated with St. Elmo's fire in their role as the protectors of sailors. When Castor died, because he was mortal, Pollux begged his father Zeus to give Castor immortality, and he did, by uniting them together in the heavens.


Kid Spot Quiz Answers:

1) The Sun
2) Uranus

Photo Credit: Chris Kelly
Observe The Sun Safely!
*Never look at the Sun without a proper filter!*
*Solar Programs are held 1st Sunday of every Month*
*2:00-4:00 PM*

**Sol Saturday @ Campbell Park**
**January 25, 2014**
by Michael Packer

Some SJAA solar folks decided to share some solar views on Saturday January 25th at a new spot - Campbell Park. The beautiful park is not only located near bustling Campbell Ave, it lies along the Los Gatos Creek Trail and so gets a steady stream of passers-by. Not unexpectedly parking is a bit harder to find but we had a good 75 kids and adults stop by and take a look.

Kevin Lahey can't often observe on Sunday so this was a treat for him and the public to look through his 10-inch canon of a scope equipped with a filter:

This scope details sunspots something wicked and the number of active regions on Saturday did not disappoint with 150 total (NOAA):

These spots were definitively interesting in a grab and go scope such as Bill O’Neil's C5 (below). Much thanks goes to Bill for also bringing an excellent NASA poster of sun mounted to an easel. This really helped the public/kids get what they were viewing in all the scopes.

Though parking was a bit of an issue at Campbell Park, sharing the views with trail and park goers more than made up for the little extra work and we’re open to observe here again. Stellar cheers and mag. -26.74.
SJAA Library
Books Say Hello!
From Sukhada Palav

SJAA has lot of fun books on variety of topics related to astronomy and we thought it would be great if our members could make use of that. So here I am… announcing the kickoff our library program! While I am still working on setting up the library with the books we already have, I am also looking for interesting books for kids to read. I will soon be posting two lists of books on our website - one for the books we already have available for our members and another for the books we would love to have in our collection. We are excited to grow our knowledge base, specially for young children who are budding astronomers!

We will make another announcement when the library is ready for you! Then you can come in at Houge Park to check the books out. Also, it would be greatly appreciated if you want to donate to our library. For this and any other great ideas you might have for SJAA library, please email me at librarian.sjaa@gmail.com.

Looking forward to making SJAA library another great resource our club has to offer!

Advanced Loaner Telescope Program
From Dave Ittner

The purpose of this program is for SJAA members to evaluate equipment they are considering purchasing or are just curious about. Check out the growing list of equipment on the web page. Please note that certain items have restrictions or special conditions that must be met.

If you are an SJAA member and an experienced observer or have been through the SJAA QuickSTART program please contact Dave Ittner to request a particular item. Please consider donating unused equipment.

Announcements

- The annual Club Auction is scheduled for Sunday, March 16th.
- SJAA is signed up for Cupertino's 6th Annual Earth Day Festival, Saturday, April 5th, 2014 from 11am - 3pm
- SJAA is signed up for Astronomy Day and SJ MLK Public Library Saturday May 10 2014 from 11am - 3pm.

Board Meeting Excerpts

February 15, 2014

In attendance

Rob Jaworski, Lee Hoglan, Ed Wong, Greg Claytor, Dave Ittner, Teruo Utsumi, Rich Neuschafer, Michael Packer

Solar Viewing

Michael Packer held a very successful session at Campbell Park with 100+ viewers. Michael asked City of Campbell about parking availability and is waiting on a response. Michael proposed moving solar viewing from Houge Park to Campbell Park.

Houge Park Light Pollution

Rob Jaworski will contact the Cambrian School District to inquire about solutions to mitigate the recently installed bright lights adjacent to the SJAA Club observing area. Michael Packer will investigate alternative lighting and shielding solutions. SJAA may choose to contribute funding.

New Alternate Viewing Site

An alternate viewing site located at Bear Creek Stables is under consideration. Part of the motivation is due to light pollution issues at Houge Park. The current plan is to hold the April 4th In-Town Start Party at Bear Creek.
San Jose Astronomical Association Membership Form
P.O. Box 28243 San Jose, CA 95159-8243

☐ New  ☐ Renewal (Name only if no corrections)

Membership Type:
☐ Regular — $20
☐ Regular with Sky & Telescope — $53
☐ Junior (under 18) — $10
☐ Junior with Sky & Telescope — $43

Subscribing to Sky & Telescope magazine through the SJAA saves you $5 off the regular rate. (S&T will not accept multi-year subscriptions through the club program. Allow 2 months lead time.)

☐ I prefer to get the Ephemeris newsletter in print form (Add $10 to the dues listed on the left). The newsletter is always available online at:

http://www.sjaa.net/sjaa-newsletter-ephemeris/

Questions? Send e-mail to sjaamemberships@gmail.com

Bring this form to any SJAA Meeting or send to the address (above). Make checks payable to “SJAA”, or join/renew at http://www.sjaa.net/join-the-sjaa/

Name: __________________________________________________________________________
Address: __________________________________________________________________________
City/ ST/ Zip: __________________________________________________________________________
Phone: __________________________________________________________________________
E-mail address: __________________________________________________________________________