EPHEMERIS

July 2011

SJAA Activities Calendar

Jim Van Nuland

June (late)

24 Astronomy Class at Houge Park. 8:45 p.m. The topic: Eyepieces, filters, finders and accessories.

24 Houge Park star party. Sunset 8:32 p.m, 34% moon rises 1:35 a.m. Star party hours: 9:45 until midnight.

25 Dark-Sky weekend. Sunset 8:32 p.m, 25% moon rises 2:07 a.m.

July

2 Dark-Sky weekend. Sunset 8:32 p.m, 4% moon sets 9:35 p.m. Henry Coe Park's "Astronomy" lot has been reserved.

8 Houge Park star party. Sunset 8:31 p.m, 60% moon sets 12:59 a.m. Star party hours: 9:30 until midnight.

16 General Meeting. Our speaker is Rick Morales, on the history and programs at the Fremont Peak Observatory. Board meeting at 6:30; General Meeting at 8:00

22 Astronomy Class at Houge Park. 8:30 p.m. The topic: Summer Constellations / Highlight Objects. (outdoors)

22 Houge Park star party. Sunset 8:24 p.m, 50% moon rises 12:06 a.m. Star party hours: 9:30 until midnight.

30 Dark-Sky weekend. Sunset 8:17 p.m, 0% moon sets 8:09 p.m. Henry Coe Park's "Astronomy" lot has been reserved.

August

5 Houge Park star party. Sunset 8:11 p.m, 47% moon sets 11:41 p.m. Star party hours: 9:15 until midnight.

13 General Meeting. Board meeting at 6:30; General Meeting at 8:00

19 Astronomy Class at Houge Park. 8:30 p.m. The topic: Star charts and planetarium programs.

19 Houge Park star party. Sunset 7:55 p.m, 66% moon rises 11:39 p.m. Star party hours: 9:00 until midnight.

27 Dark-Sky weekend. Sunset 7:44 p.m, 1% moon rises 6:08 a.m. Henry Coe Park's "Astronomy" lot has been reserved.

The Board of Directors meets before each general meeting at 6:30 p.m. All are welcome to attend.

24 hour news and information hotline:
(408) 559-1221
http://www.sjaa.net

A New Era for NASA's Space Place

Laura K. Lincoln

Two award-winning websites for kids have joined forces to further inspire a new generation of explorers.

NASA's science.nasa.gov/kids and spaceplace.nasa.gov have combined to provide several new Web features with interactive graphic design and easy, versatile navigation. The new site includes the extensive and rich science and technology content of the 'old' Space Place with over 50 NASA science missions enriched with content from http://science.nasa.gov/kids. These sites offer the best of NASA material for elementary school students.

The site includes over 300 separate modules available in English and Spanish. Modules are sorted into menus for Space, Earth, Sun, Solar System, People and Technology, and Parents and Teachers. Information mirrors the missions of the NASA's Science Mission Directorate, as well as the agency's commitment to education and public engagement.

Visitors can filter the menus on subject or type of activity (game, hands-on project, or exploration) and use the search field to produce customized menus. All pages are printer friendly.

Check out our other great sites for kids:
http://climate.nasa.gov/kids
http://scijinks.gov

Volume 22 Number 7 Official publication of the San Jose Astronomical Association, July 2011

Saturn and Spirit

Akkana Peck

Saturn is still the best target in July evening skies, its rings tilted about eight degrees.

Catch it in the southwestern evening sky after sunset.

It's getting a bit low to see detail, about 50 degrees up as night falls, but you'll still be able to see the major ring divisions described in last month's column — and more.

Take a look at the body of the planet: there's detail to be seen in Saturn's cloud bands. If the night is at all steady, you should be able to see some of the cloud bands on the planet's northern hemisphere, the one tilted toward us, with most small telescopes.

What colors do you see? Saturn's bands are much more subtle than Jupiter's, but look for contrasts in pastel shades of yellows, browns and greens.

If the seeing is good, crank up the magnification and try for further detail. There's a storm going on in the North Polar Region that's well within reach of good amateur scopes. You don't need huge aperture, just good optics and steady air. You may also be able to discern some storm activity in the North Equatorial Band, if you look carefully.

If you haven't tried sketching a planet, this is a great time to try it. Saturn is fairly easy to sketch, and you'll be amazed how well sketching trains your eye to see subtle details like those storms. With Saturn, it helps to start with a template, so you can concentrate on the interesting details of the rings and bands rather than fussing over trying to get the exact shape of the rings right. But I found it surprisingly difficult to locate Saturn templates online, so I've made one you can use for the next few months. (see http://ephemeris.sjaa.net/1107/saturn-8-template.jpg)

Had enough of Saturn? Mercury is visible after sunset, with greatest separation from the sun on the 20th.

Neptune rises a bit after 10pm, with Uranus an hour and a half behind it. They should be good late-night targets if you're staying up late at a star party, or morning targets if you rise before dawn.

July 12 marks a Neptune-related milestone: the completion of one Neptunian orbit (165 Earth years) since the planet was discovered on September 23, 1846. Except it's not quite as simple as that: factors like the precession of Earth's axes (which changes the coordinate system we use to specify planetary positions) affect how we measure Neptune's orbit. If you bought a copy of the 2011 RASC Observer's Handbook from the club this year, check out the interesting article on page 9 for the details. They conclude that July 12 is the date Neptune completes one sidereal year since its discovery — a measurement that relies on coordinates relative to radio sources outside our own galaxy, and not anything to do with the motion of the Earth. Happy first anniversary, Neptune!

Pluto transits at midnight, though it's low in the sky, only 33 degrees up, so you'll want clear skies to chase down this distant 14th-magnitude speck. It's still in the heart of the Sagittarius Milky Way, roughly halfway between the nebula M24 and the open cluster M25 — so it's a rewarding area for sweeping, but a very difficult place to identify one 14th-magnitude pinpoint among all the others. The chart in this year's RASC Observer's Handbook is less help than usual, since it doesn't identify the stars on the chart; it's indexed to Uranometria, so try matching the RASC chart to the Uranometria page. Otherwise, you might do better with a planetarium program. Either way, you're in for a tough fight ... good luck!

You can catch Venus in the dawn sky early in the month before it vanishes in the sun's glow. Jupiter and Mars, too, are in the morning sky.

And let's all raise our glasses to the Mars Spirit rover. NASA officially gave up trying to reach Spirit at the end of May. It's been more than a year since Spirit's last radio transmission; the dust storms and frigid Martian winter, combined with solar panels at the wrong angle to catch the sun, must have depleted the rover's batteries.

The rover team did an amazing job. Spirit and Opportunity were originally designed for a three-month mission, covering about a kilometer each. That was back in January of 2004! Spirit lasted over 6 years and 7.7 kilometers (4.8 miles). She beamed over 124,000 images back to Earth, along with copious other data pointing to Mars's wetter past.

She climbed hills steeper than anyone originally planned for, and overcame flash memory problems, dusty solar panels and a stuck wheel. While dragging that wheel, she uncovered bright white soil that turned out to be a concentrated silica deposit, pointing to past hot springs or steam vents.

Meanwhile, Spirit's sister rover, Opportunity, is still going strong. At just past 30 km (over 18 miles), Opportunity is enroute to Endeavour crater, taking spectra of rocks along the way.

Together, those two rovers have amassed quite a list of accomplishments ... not bad for what was planned as a 3-month, 1 km mission!

Photographs from the SJAA General Meetings

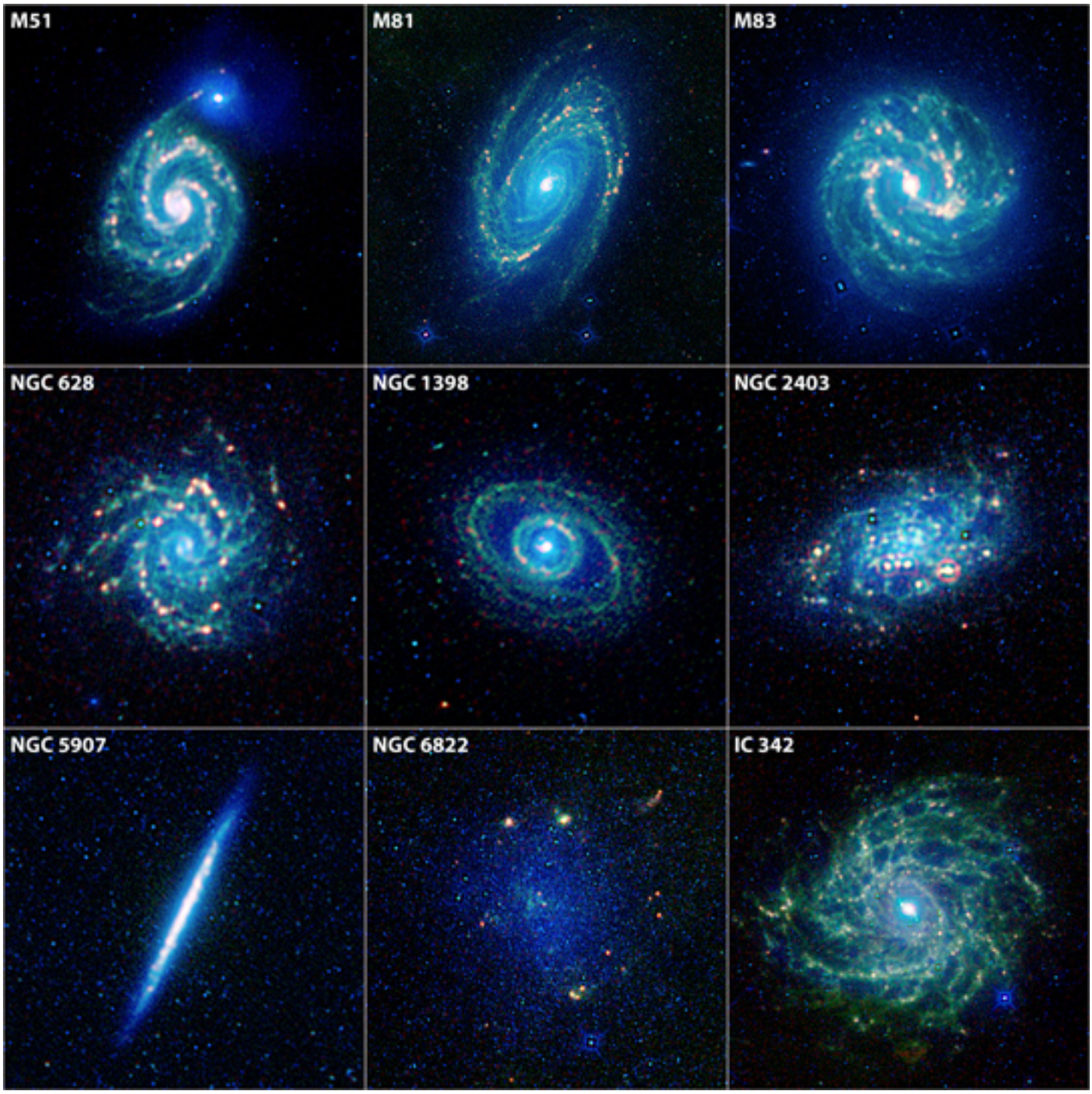
(Below Left) Our speaker on December 18th was Dr. Tim Dubbs, speaking on Particle Physics and on his work on the LHC's particle detector.

(Below Right) Our speaker on May 14th was Dr. Jessie Christiansen (SETI Institute); her topic: "Searching for other Earths: Latest results from the NASA Kepler Mission".

(Bottom) There were about 50 attendees at the May 14th meeting.

Pictures Speak WISE

NASA has released a set of galactic images taken by the Wide-field Infrared Survey Explorer mission, aka WISE. The images were taken with 4 narrow-band filters covering the infrared range of 3.4 to 22 microns.This means that most of the light comes from warm dust. The blue areas are in the vicinity of older stars while the red or yellow areas indicate new star growth. On the next page are some statistics about the galaxies shown followed by a trivia quiz. Image Credit: NASA/JPL-Caltech/WISE Team http://wise.ssl.berkeley.edu/gallery_menagerie.html



M51
Distance: 25 Mly
Size: 81 Kly

M81
Distance: 12 Mly
Size: 94 Kly

M83
Distance: 15 Mly
Size: 55.5 Kly

NGC 628
Distance: 25+ Mly
Size: 100 Kly

NGC 1398
Distance: 65 Mly
Size: 135 Kly

NGC 2403
Distance: 11.4 Mly
Size: 73 Kly

NGC 5907
Distance: 53 Mly
Size: 200 Kly

NGC 6822
Distance: 1.6 Mly
Size: 7 Kly

IC342
Distance: 10 Mly
Size: 62 Kly

Do you know your galaxies? Which of these 9 galaxies matches the following trivia? (answers on page 7)

The Southern Pinwheel

The galaxy that is called the "perfect spiral".

The Hidden Galaxy, so-called because it is hard to see due to our own galaxy being in the way.

One of these is only 1% the size of the Milky Way Galaxy.

The Lord Ross Galaxy

Bode's Galaxy

Looks like a ring but is actually two spiral arms that appear to connect.

The Knife Edge Galaxy

Hosted a very bright and long-lived supernova in 2004

GSSP
Golden State Star Party

The Golden State Star Party is a 4 night dark sky event held each summer at Frosty Acres Ranch in North-Eastern California, near Mount Lassen, alongside rural Adin, California. GSSP has dark skies from horizon to horizon, and room for 100s of astronomers. The Star Party starts June 29. For more information see: http://www.goldenstatestarparty.org/

CalStar 2011

Nights of Sept 29, 30, October 1

The annual CalStar star party starts September 29. It is located at Lake San Antonio, south of King City. More information will be available soon. Check http://www.sjaa.net for the latest news.

Directions to Houge Park

Houge (rhymes with "Yogi") Park is in San Jose, near Campbell and Los Gatos. From Hwy. 17, take the Camden Avenue exit. Go east 0.4 miles, and turn right at the light, onto Bascom Avenue. At the next light, turn left onto Woodard Road. At the first stop sign, turn right onto Twilight Drive. Go three blocks, cross Sunrise Drive, then turn left into the park.

From Hwy. 85, take the Bascom Avenue exit. Go north, and turn right at the first traffic light, onto White Oaks Road. At the first stop sign, turn left onto Twilight Drive. You will now be passing the park. Turn right at the first driveway, into the parking lot.

The Last Month In Astronomy

06-JUN-2011 ***Marcy Strikes Back*** Geoff Marcy is angry and he probably has every right to be. He is upset at the cancellation of the Terrerstrial Planet Finder (TPF). Marcy says "I think TPF is our human genome project ... Free-flying interferometers in space are the only plausible future for astrophysics." Instead, there was a lot of squabbling between the interferometer types and the coronagraph types. "Now we have nothing". A version called TPF-Lite did not make the cut for the 2010 Decadal Survey and with it went the $600 million that NASA had already spent. http://www.space.com/11877-alien-planets-search-canceled-missions-marcy.html

01-JUN-2011 ***Endeavour Lands*** Endeavour has completed its last mission. It is slated to find a home at the Los Angeles Science Center near USC. The mission installed the AMS-02 Alpha Magnetic Spectrometer which might end up being the most important scientific apparatus on the ISS. It may help in the hunt for dark matter. The last shuttle launch will be STS-135 onboard Atlantis and its launch date is NET July 8. http://www.esa.int/esaCP/SEM30L58BOG_index_0.html

27-MAY-2011 ***Green Rain*** The Spitzer telescope has made some observations of a star that is being rained on. The "rain" is actually crystals of olivine, a green mineral that seems to get a lot of press for showing up off of Earth. Tom Megeath, the PI for this research, thinks he knows what is happening. "We propose that the crystals were cooked up near the surface of the forming star, then carried up into the surrounding cloud where temperatures are much colder, and ultimately fell down again like glitter." The star, actually a protostar, is HOPS-68 in the constellation Orion. The olivine crystals are in the form of fosterite which can be found on Hawaiian beaches, a result of cooling lava. But it was also found in the Stardust and Deep Impact missions. http://www.msnbc.msn.com/id/43227048/ns/technology_and_science-space/t/stars-green-crystal-rain-may-solve-comet-mystery/

26-MAY-2011 ***Mars Early Start*** A computer simulation suggests that Mars formed relatively quickly, in just 2 to 4 million years. Earth, on the other hand, took 50-100 million years; starting Mars-sized but then growing via collisions with solar system debris. Some of the input for this simulation came from measurements of the radioactive decay of hafnium to tungsten. This measurement was done on meteorites that originally came from Mars. http://www.astronomy.com/News-Observing/News/2011/05/Mars%20formed%20rapidly%20into%20runt%20of%20planetary%20litter.aspx

25-MAY-2011 ***OSIRIS-REx*** The University of Arizona has been selected by NASA to lead an asteroid sample return mission. This is called OSIRIS-REx which stands for Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer. The target asteroid is 1999 RQ36 indicating the year that it was discovered was 1999. This asteroid is 575 meters in diameter. The $800 million dollar mission (not counting the launch vehicle) should launch in 2016. Another year to remember is 2182. That's the year 1999 RQ36 may hit Earth; current odds are 1 in 1800. The mission will act like the paparazzi with a touch of kleptomania. For a year the spacecraft will study the asteroid from close range. Then it will take samples from the asteroid and return them to Earth in 2023. This is the kind of asteroid that is expected to contain organic molecules. http://www.space.com/11808-nasa-asteroid-mission-osiris-rex-1999-rq36-infographic.html

25-MAY-2011 ***Spirit's Mission Ends*** The Mars Rover Spirit has come to the end of its mission. It has not responded to commands since March 22, 2010. According to program manager John Callas "Spirit, with her degraded 5-wheel driving, broke through an unseen hazard and became embedded in unconsolidated fine material that trapped the rover. ... We conducted a very ambitious extrication effort, but the extrication on Mars ran out of time with the fourth winter and was further complicated by another wheel failure.... Spirit likely ran out of energy and succumbed to the cold temperatures during the fourth winter. ... a lack of response from the rover after more than 1,200 recovery commands were sent to rouse her indicates that Spirit will sleep forever." The 3 month original duration turned about to be 6 years and some. Imagine if your laptop that came with a 2 year warranty lasted for 48 years. The Rover Opportunity continues to function. http://blogs.jpl.nasa.gov/2011/05/a-heartfelt-goodbye-to-a-spirited-mars-rover/

18-MAY-2011 ***Remember to duck!*** Astronomers have discovered a class of Jupiter-sized planets that are floating through the galaxy unattached to any stars. It was always believed that orbital dynamics could result in some planets being ejected from their stellar systems. The finding of hot Jupiters around some stars which may have formed at some distance from their star and then moved in, increased the likelihood that some planetary ejections occur. But a survey of the center of Milky Way galaxy originally done in 2006-2007, shows evidence of 10 such orphan planets. Unless the survey was looking at a particular good spot for such objects, the implications are that there must be twice as many free-range Jupiters as there are stars in our galaxy. Yes, that means possibly 400 billion such things. Then consider that Earth-sized orphans are even more likely to occur. http://www.jpl.nasa.gov/news/news.cfm?release=2011-147

It Must Be Astronomical ...

Loaners

The loaner program offers members a means to try scopes of various sizes and technologies before you buy. For more information please see the loaner program web page: http://www.sjaa.net/loaners

Just before this issue went to press we learned that Pentax now makes a GPS addon to their K-5 and K-r cameras that allows the image stabilization in the camera to track the natural star movement during long exposures. See more at: http://nycgrp.blogspot.com/2011/06/pentax-releases-o-gps1-add-on-for-dslrs.html

"The Sun, with all the planets revolving around it, and depending on it, can still ripen a bunch of grapes as though it had nothing else in the Universe to do."

Galileo Galilei

School Star Parties

Completed Events					
	Total Sched.	Good Sky	Partial Success	Cloudy Fail	Cancel at noon
Jul	1	1			
Aug	4	4			
Sep	0				
Oct	7	5	1		1
Nov	13	9	3		1
Dec	8	1	2	0	5
Jan	8	2	2	0	4
Feb	6	6			
Mar	11	3	1		7
Apr	5	1	2		2
May	2	2			
Total	*61*	*34*	*11*	*0*	*20*

As of mid-May

Answers from page 5: The Southern Pinwheel - M83; The galaxy that is called the "perfect spiral". - M74 (NGC 628); The Hidden Galaxy, so-called because it is hard to see due to our own galaxy being in the way. - IC 342; One of these is only 1% the size of the Milky Way Galaxy. - NGC 6822; The Lord Ross Galaxy - M51; Bode's Galaxy - M81; Looks like a ring but is actually two spiral arms that appear to connect. - NGC 1398; The Knife Edge Galaxy - NGC 5907; Hosted a very bright and long-lived supernova in 2004 - NGC 2403

Publication Statement

SJAA Ephemeris, newsletter of the San Jose Astronomical Association, is published monthly.

San Jose Astronomical Association,
P.O. Box 28243
San Jose, CA 95159-8243

The SJAA Ephemeris is published in three formats: hardcopy, Adobe Acrobat PDF, and HTML. The PDF and HTML versions are found at http://ephemeris.sjaa.net.

Articles for publication should be submitted by the 10th of the previous month. The PDF version is generally available by the 24th of the previous month and the HTML version by the last day of the previous month.

San Jose Astronomical Association
P.O. Box 28243
San Jose, CA 95159-8243

ADDRESS SERVICE REQUESTED

Nonprofit Organization
U.S. Postage Paid
San Jose, California
Permit No. 5381

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://ephemeris.sjaa.net
Questions?
Send e-mail to membership@sjaa.net

Bring this form to any SJAA Meeting or send to the club address (above). Please make checks payable to “SJAA”.
You can join or renew online:
http://www.sjaa.net/SJAAmembership.html

Name: _____

Address: _____

City/ST/Zip: _____

Phone: _____

E-mail address: _____