



SJAA EPHEMERIS

SJAA Activities Calendar

Jim Van Nuland

July

- 1 ATM Workshop at Houge Park. 7:30 p.m.
- 1 Coyote Lake Star Party (see page 2). 9:00 - mid-night.
- 8 **General meeting at Houge Park.** Albert Highe on Design of Lightweight Telescopes. 8 p.m.
- 13 ATM Workshop at Houge Park. 7:30 p.m.
- 21 Astronomy Class at Houge Park. 7:30 p.m.
- 21 Houge Park star party. Sunset 8:24 p.m., 8% moon rise 3:18 a.m. Star party hours: 9:30 to 12:00
- 21-22 SJAA Weekend at Glacier Point, Yosemite National Park
- 22 Dark sky weekend. Sunset 8:24 p.m., 3% moon rise 4:17 a.m.
- 29 Coyote Lake Star Party (see page 2). 9:00 - mid-night.

August

- 4 Houge Park star party. Sunset 8:12 p.m., 79% moon sets 1:44 a.m. Star party hours: 9:30 to 12:00
- 5 ATM Workshop at Houge Park. 7:30 p.m.
- 12 **General meeting at Houge Park.** Timothy Thompson of NASA/JPL on Infrared Astronomy and the Spitzer Space Telescope. 8 p.m.
- 17 ATM Workshop at Houge Park. 7:30 p.m.
- 18 Astronomy Class at Houge Park. 7:30 p.m.
- 18 Houge Park star party. Sunset 7:56 p.m., 18% moon rise 2:10 a.m. Star party hours: 9:00 to 12:00
- 19 Coyote Lake Star Party. Sunset 7:54 p.m. 11% moon rises 3:11 a.m.
- 26 Dark sky weekend. Sunset 7:45 p.m., 10% moon sets 9:06 p.m.
- 26 AANC Star-B-Q at Fremont Peak State Park

The Board of Directors meets at 6:00 p.m. preceding each general meeting. All are welcome.

Announcing CalStar 2006

Rob Hawley

SJAA will hold its annual Star Party at Lake San Antonio the nights of September 21 through 23 (Thursday through Sunday morning). For full details see our website at www.sjaa.net/calstar.

We have completely redone the CalStar Web Site this year. New features include a picture tour of the site and an enlarged area for more Casual viewing and camping.

SJAA wants to reemphasize that it closes the roads around the viewing inner areas at night to protect everyone's night viewing. Review the road closure policy BEFORE setting up in the closed areas. SJAA also asks everyone to try not to drive after 6PM when the optics are likely to be open.

We will also be working with the park staff to use the entire area where CalStar is held. This will better allow us to accommodate families and those that wish to not spend the night.

Once again SJAA offers hot meals for purchase on Friday and Saturday nights. After receiving many requests last year the Friday night meal will be a simpler and less expensive meal. Saturday night we will offer our traditional Tri-tip, chicken, and or vegetarian meals as we have in the past.

This year meals will all be prepaid. See the details on the web site. I will be selling a very limited number of tickets for walk in meals. These must be prepurchased by 5 PM. No money will be collected during the meal this year.

Registration will begin August 20.

How To Get To Lake San Antonio Park

Lake San Antonio Park is located 30 miles roughly south of King City, west of Hwy 101, and adjacent to the Fort Hunter Liggett Military base. It is mainly dry, desert-like country of dry grass and scrub brush and sparse trees. It takes almost 3 hours to get there from San Jose. Take 101 South to Exit 252 - J14/Jolon Road. This is a well kept but sparsely travelled two-lane highway conducive to ~60 mi/hr driving.

24 hour news and information hotline: (408) 559-1221

<http://www.sjaa.net>

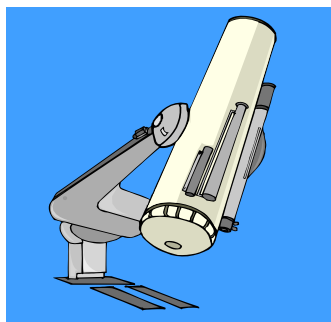
Two Additional Star Parties at Willow Springs

Rob Hawley

The owner of the Willow Springs site which may be donated to the SJAA (see June 06) is allowing us to hold two additional star parties this summer. The first will be July 21 and 22. The second will be Aug 18 and 19.

We will be working with the landowner to increase the number of viewing sites so hopefully we can accommodate more people for these events.

Additional information will be available on the SJAA-Announce and TAC mail lists.



Directions to Houg Park

Houg (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.



NEW SJAA MEMBERS

Scope City is offering to new members a \$25 credit towards the purchase of telescopes and binoculars. See an SJAA officer at one of the general meetings to receive the Scope City Discount Coupon.

Contact Sam Sweiss at Scope City to arrange for your discount.

Scope City
350 Bay Street
San Francisco, CA 94133
(415) 421-8800

Starry, Starry Night

Deneb

Paul Kohlmiller

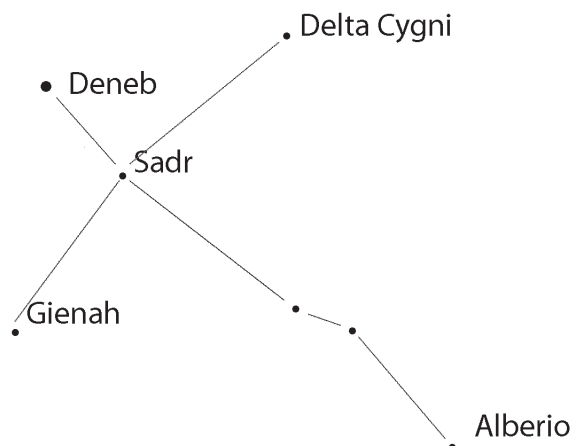
The summer triangle consists of three stars. Vega lies to one side of the Milky Way and Altair lies on the other. The third star in the triangle appears to be equally as bright and resides in Cygnus the Swan. It is called Deneb. Deneb means "tail" and it is the tail of the swan if you wish it. If you see a swan in Cygnus you are the rarity. Most see a kite or a cross. Cygnus is often called the Northern Cross.

Despite the fact that all three stars in the summer triangle are at nearly the same apparent magnitude, Deneb is much brighter intrinsically. Vega is only 22 light-years away and Altair is slightly closer. But Deneb is at least 1500 light-years away.

Deneb (Alpha Cygni) is an A2 star. Vega is slightly warmer but Deneb has the luminosity of 160,000 suns. It may be the most luminous class A star in the galaxy.

You can already guess that Deneb is a very large star and you are right. It is a supergiant star - 200 times the diameter of the sun. Place Deneb where the sun is and the star would reach out to Earth's orbit. This does not make it the largest star in the galaxy.

The constellation Cygnus is fun for other reasons. It contains the double star Alberio which the folks up in Berkeley



like to call the Cal Star because it is blue and gold (well, yellow). It contains a blackhole candidate called Cygnus X-1. It also contains at least two stars that are known to be planetary systems: 16 Cygni and HD 188753. It also contains the Messier objects 29 and 39 (open clusters) and the Dumbbell Nebula (M27) is in nearby Vulpecula.

See Spot. See Spot Merge?

Akkana Peck

Remember Red Jr? Officially known as Oval BA, this smaller reddish cousin to Jupiter's Great Red Spot (GRS) is still going strong in the South Temperate Band of the giant planet. It's currently following the GRS by about an hour, but it's catching up fast, and around July 7th (or possibly earlier) the two enormous storms will pass very close to each other.

Enormous? Well, Red Jr may seem like a small storm compared to the GRS, but think of a hurricane about the size of the whole Earth and you have Red Jr.

Red Jr is hard to see visually. I haven't been able to see it with a 5" refractor, but I've heard reports of people spotting it with larger telescopes. To hunt for it, first train your telescope at Jupiter when the GRS is near or a bit past the meridian. You can find GRS predictors in most planetarium programs, in the tables in astronomy magazines, or on the web at skypub.com or my own Java applet at <http://shallowsky.com/java.html>.

Once you've found the GRS, you know which direction is south (since the GRS is in the South Equatorial Band). The South Temperate Band is the next major band toward the pole. Use high power, as much as the sky permits: Red Jr. is fairly small and very subtle, so you want to magnify those small details as much as you can to have a chance of seeing it at all.

A photo may help to see exactly where it is in relation to the GRS. Red Jr has its

own web site now: check with <http://redspotjr.com> for recent photos and other information.

Around July 7th, the two spots will be very close together for a few days. It's even possible that they could merge into one larger storm; but the experts say it isn't going to happen. More likely, the larger storm might distort Red Jr as



Jupiter with GRS and Oval BA

June 9, 2006 12:43UT

I: 92 II: 130 III: 278 S: 6/10 T: 3/5

Oval BA (Red Spot Jr.) is just above and to the right of the Great Red Spot. Photo courtesy of Christopher Go.

it passes by, as happened a few years ago back before it amazed everyone by changing color. (Might the color change have been caused by the interaction with the GRS? The color of these storms still isn't well understood, so who knows?)

It's a good thing Jupiter is so interesting this month, because there aren't many other planets to observe! Mars and

Saturn both disappear into the sun's evening glow by mid-month, Venus is very low in the morning sky, and Mercury is too close to the sun to observe at all.

The outer planets are all accessible, though. Pluto transits just before midnight, so this month is perfect for a budding Plutocrat. Get yourself a good chart or planetarium program, a reasonably large telescope (start with 12" or bigger, at least if it's your first time) and start comparing stars. When you think you've found Pluto, make a sketch (showing the stars you see in YOUR telescope, as opposed to the stars shown on the chart), then try again in a few hours, or the following night, to see if it's moved.

Uranus and Neptune rise an hour or two before midnight and should be easy targets for late night owls. Uranus, in northern Ophiuchus, is fairly easy in a small scope as a small greenish disk; the small blue disk of Neptune, in Capricornus, is harder, but still within the reach of most amateur scopes.

The Earth reaches aphelion, its farthest point from the sun, on July 3. Aphelion is

a great time for observing the third planet, especially its mountains and beaches. You probably won't need a telescope for this, and you can do most of your observing in the daytime. But if you continue your observations into the early evening of the day after aphelion, you may see some interesting atmospheric phenomena that you won't see on any of the other planets!

Olbers' Paradox

Paul Kohlmeier

The comedian George Carlin used to do a bit where he was the hippy-dippy weather man. "And the weather tonight is ... dark, man." But he didn't ask the question, why is it dark? Once you get past the flippant answer "duh, because it's night time" you see why it is an interesting question. If there are an infinite number of stars, shouldn't the sky be bright. Since the sky is not that bright, why not? Today we call this question Olbers' Paradox.

Johann Kepler considered this question but he argued that the universe must be finite. Otherwise the total flux from all the stars would make the night sky "as luminous as the sun." Isaac Newton preferred the idea of an infinite universe because Newton's theory of gravity would seem to require either an infinite universe or one that would eventually collapse on itself. According to Newton, a finite universe would "fall down into the middle of the whole space, and there compose one great spherical mass."

Swiss astronomer Jean Phillippe Loys de Chéseaux (1718-1751) studied this paradox in the 18th century and gave it some mathematical background. Chéseaux considered the sky to be a series of concentric shells. He came up with shells up to a distance of 3 quadrillion light years. At that point the number of stars is enough to fully cover the sky – 10^{46} stars. Chéseaux's answer (in 1744) was that something must be attenuating the stellar light. Otherwise, since the sky covers 180,000 times more area than the sun does and since there should be sun like stars in every part of the sky, there would 180,000 times more light hitting the earth from the stars than from the sun. If that was so we would be toast, literally.

Enter Heinrich Wilhelm Olbers (1758-1840), a retired physician. Olbers' name sticks to this paradox for two reasons:

1. He gave the question its most succinct phrasing: if the universe is infinite then wherever you look your gaze should hit upon a star.

2. He put forth his study in a paper and Chéseaux put his in an appendix of a book about comets.

But it is not the case that Olbers came up with a new and better solution. He was much like Chéseaux; the dust in the interstellar medium must be attenuating the light. Olbers presented his study in 1826. Olbers again started with the idea of concentric spheres although, instead of summing up the star light, he summed up the area of visible stellar disks. Halley and Chéseaux assumed that the stars are uniformly distributed. Olbers did not but he determined that it wouldn't make much difference. Neither Chéseaux nor Olbers took into account that some foreground stars would block (occlude) background stars but that would mean they need even more stars.

In 1848, the attenuating dust answer was blown out of the water by John Herschel. If you have that much radiation hitting dust, that dust must have absorbed so much radiation that it must reradiate it back into space. Thus, if the sky isn't filled with the light of stars, it would be filled with the light of irradiated dust.

Another possibility is that stars are not distributed equally. For example, fractals have been shown to mimic nature's distribution capabilities. A fractal distribution of stars might result in a lot of gaps which causes the sky to be mostly dark. In fact, the latest detailed pictures of the CMB look like they might be a fractal. This possible solution was put forward by the person most closely associated with fractals, Benoit Mandelbrot.

The idea that it is the expansion of the universe that answers Olbers was

promulgated by Hermann Bondi's reformulation of the Olbers' paradox. From 1948-1965 it was widely held that the universe was in a steady state. After Hubble demonstrated the universe is expanding, the steady state proponents saw this as a possible answer to Olbers' Paradox: if there is a major systematic motion in the Universe, namely Hubble's expansion, then some of Olbers' assumptions are not correct. According to Wesson, this made some sense before the big-bang theory but not so much after it. Wesson says that the expansion answer was "uncritically repeated in research work and ... textbooks" because there was "no account of the relative importance of the expansion and finite-age factors".

Wesson used a computer model to compare these two possible answers to this paradox: expansion versus the finite age of the universe. His program was based on principles of General Relativity. One key point of GR is that the light from sources moving away from us is still traveling at the speed of light regardless of the speed of the source. Using input data such as the age of the galaxies and the rate of expansion it calculates the extragalactic background light. Then Wesson ran the model again setting the rate of expansion to zero. The result in both cases was exactly what we see: a dark sky. But setting the rate of expansion to zero only made it slightly darker. Most astronomers now agree that the finite age of the universe is the primary answer to the paradox.

And consider the answer to Olbers' when thinking about Fermi's Paradox — they haven't had time to reach us yet.

Not a Moment Wasted

By Dr. Tony Phillips

The Ring Nebula. Check. M13. Check. Next up: The Whirlpool galaxy.

You punch in the coordinates and your telescope takes off, slewing across the sky. You tap your feet and stare at the stars. These Messier marathons would go much faster if the telescope didn't take so long to slew. What a waste of time!

Don't tell that to the x-ray astronomers.

"We're putting our slew time to good use," explains Norbert Schartel, project scientist for the European Space Agency's XMM-Newton x-ray telescope. The telescope, named for Sir Isaac Newton, was launched into Earth orbit in 1999. It's now midway through an 11-year mission to study black holes, neutron stars, active galaxies and other violent denizens of the Universe that show up particularly well at x-ray

wavelengths.

For the past four years, whenever XMM-Newton slewed from one object to another, astronomers kept the telescope's cameras running, recording whatever might drift through the field of view. The result is a stunning survey of the heavens covering 15% of the entire sky.

Sifting through the data, ESA astronomers have found entire clusters of galaxies unknown before anyone started paying attention to "slew time." Some already-known galaxies have been caught in the act of flaring—a sign, researchers believe, of a central black hole gobbling matter from nearby stars and interstellar clouds. Here in our own galaxy, the 20,000 year old Vela supernova remnant has been expanding. XMM-Newton has slewed across it many times, tracing its changing contours in

exquisite detail.

The slew technique works because of XMM-Newton's great sensitivity. It has more collecting area than any other x-ray telescope in the history of astronomy. Sources flit through the field of view in only 10 seconds, but that's plenty of time in most cases to gather valuable data.

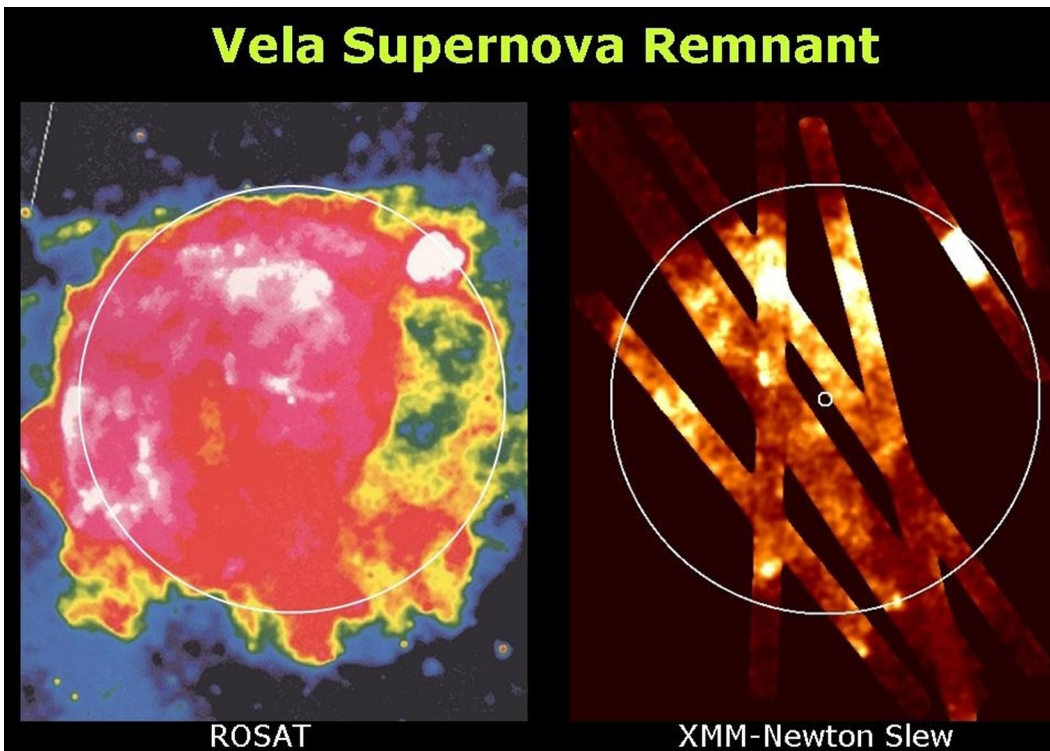
The work is just beginning.

Astronomers plan to continue the slew survey, eventually mapping as much as 80% of the entire sky. No one knows how many new clusters will be found or how many black holes might be caught gobbling their neighbors. One thing's for sure: "There will be new discoveries," says Schartel.

Tap, tap, tap. The next time you're in the backyard with your telescope, and it takes off for the Whirlpool galaxy, don't just stand there. Try to keep up with the moving eyepiece. Look, you never know what might drift by.

See some of the other XMM-Newton images at <http://sci.esa.int>. For more about XMM-Newton's Education and Public Outreach program, including downloadable classroom materials, go to <http://xmm.sonoma.edu>. Kids can learn about black holes and play "Black Hole Rescue" at The Space Place, <http://spaceplace.nasa.gov/>, under "Games."

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



The image on the left is the Vela Supernova Remnant as imaged in X-rays by ROSAT. On the right are some of the slew images obtained by XMM-Newton in its "spare" time.

An Invitation to SJAA Members

On Saturday, August 26, 2006, the Fremont Peak Observatory Association (FPOA) will be celebrating its 20th anniversary. Because the idea for the FPOA was born in the SJAA and the many cross memberships, I would like to extend a formal invitation to all SJAA members to attend the FPOA 20th Anniversary Party (Star-B-Que) at the observatory in Fremont Peak State Park.

For this occasion the FPOA plans to have the Star-B-Que catered. No final decision on the menu has been made, but the FPOA is considering barbecues and/or baked chicken. We shall also have specials for vegetarians. Each group or family should bring a dish to pass around. A larger than normal raffle with several grand prizes is planned. Also, as usual, we plan to have a well-known speaker for the event.

If you would like to attend, please make a reservation. You can logon and send an E-mail to schedule@fpoa.net or send an E-mail to me at kungfugina@aol.com. You can also leave a message on the observatory's voice mail at 831-623-2465. Please leave your name, number of people in your party, and that you are an SJAA member. If you are a member of FPOA, please note that also, so we don't count you twice. Finally, if you send an E-mail, please copy Mike Koop, so that he has an idea of the number of SJAA members that plan to attend.

Hope to see you there.

Patrick Donnelly, President FPOA

Solar System Stats for July 2006

Adapted from the Observer's Handbook published by The Royal Astronomical Society of Canada which in turn gets this data from the U.S. Naval Observatory's Nautical Almanac Office and Her Majesty's Nautical Almanac Office and contributions by David Lane, St. Mary's University, Halifax NS.

		Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune	Sun
RA	1	8 ^h 10 ^m	4 ^h 27 ^m	9 ^h 17 ^m	14 ^h 28 ^m	8 ^h 51 ^m	23 ^h 04 ^m	21 ^h 27 ^m	6 ^h 39 ^m
	11	8 ^h 05 ^m	5 ^h 18 ^m	9 ^h 41 ^m	14 ^h 28 ^m	8 ^h 56 ^m	23 ^h 04 ^m	21 ^h 26 ^m	7 ^h 20 ^m
	21	7 ^h 39 ^m	6 ^h 09 ^m	10 ^h 05 ^m	14 ^h 29 ^m	9 ^h 01 ^m	23 ^h 03 ^m	21 ^h 25 ^m	8 ^h 01 ^m
Dec	1	18°31'	20°15'	17°05'	-13°23'	18°27'	-6°48'	-15°13'	23°08'
	11	16°18'	22°01'	15°05'	-13°25'	18°08'	-6°51'	-15°17'	22°10'
	21	16°30'	22°48'	12°56'	-13°33'	17°48'	-6°56'	-15°22'	20°33'
Dist	1	0.67	1.38	2.35	4.83	9.99	19.64	29.27	1.017
	11	0.58	1.43	2.41	4.97	10.07	19.49	29.17	1.017
	21	0.59	1.48	2.45	5.12	10.12	19.37	29.10	1.016
Mag	1	1.5	-3.8	1.8	-2.3	0.4	5.8	7.9	
	11	3.5	-3.8	1.8	-2.2	0.4	5.8	7.8	
	21	4.8	-3.8	1.8	-2.1	0.4	5.8	7.8	
Size	1	10.0"	12.1"	4.0"	40.8"	16.6"	3.6"	2.3"	31'28"
	11	11.5"	11.6"	3.9"	39.7"	16.5"	3.6"	2.3"	31'28"
	21	11.3"	11.2"	3.8"	38.5"	16.4"	3.6"	2.3"	31'29"

Officers and Board of Directors

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Publication Statement

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San Jose, CA 95159-8243

Submit

Submit articles for publication in the SJAA *Ephemeris*. Send articles to the editors via e-mail to ephemeris@sjaa.net. **Deadline, 10th of previous month.**

SJAA loaner scope status

All scopes are available to any SJAA member; contact Mike Koop by email (koopm@best.com) or by phone at work (408) 473-6315 or home (408) 446-0310 (Please leave message, phone screened).

Available scopes

These are scopes that are available for immediate loan, stored at other SJAA members homes. If you are interested in borrowing one of these scopes, please contact Mike Koop for a scope pick up at any of the listed SJAA events.

# Scope	Description	Stored by
1	4.5" Newt/ P Mount	Annette Reyes
3	4" Quantum S/C	Hsin I. Huang
6	8" Celestron S/C	Karthik Ramamurthy
7	12.5" Dobson	Tom Fredrickson
8	14" Dobson	Colm McGinley
10	Star Spectroscope	Jim Albers
11	Orion XT6 Dob	Ravi Shankar Erram
14	8" f/8.5 Dob	Colm McGinley
15	8" f/9 Dobson	Mike Koop
19	6" Newt/P Mount	Daryn Baker
23	6" Newt/P Mount	Wei Cheng
24	60mm Refractor	Al Kestler
26	11" Dobson	Vivek Kumar
27	13" Dobson	Steve Houlihan
28	13" Dobson	Anupam Dalal
29	C8, Astrophotography	Mark Ziebarth
32	6" f/7 Dobson	Sandy Mohan
33	10" Deep Space Explorer	Jack Zeiders
34	Dynamax 8" S/C	Yuan-Tung Chin
36	Celestron 8" f/6 Skyhopper	Charles Santori
38	Meade 4.5" Digital Newt	Tej Kohli
39	17" Dobson	Steve Nelson
41	18" Sky Designs Dob	Len Bradley
42	11x80 Binoculars	Ritesh Vishwakarma
43	Orion XT4.5 Dob	Gary Mitchell

Scope loans

These are scopes that have been recently loaned out. If you are interested in borrowing one of these scopes, you will be placed on the waiting list until the scope becomes available after the due date.

# Scope	Description	Borrower	Due Date
12	Orion XT8 Dob	Judy Arauz	3/17/06
35	Meade 8" Equatorial	Mike Horzewski	4/20/06
37	4" Fluorite Refractor	Peter Young	5/11/06
40	Super C8+	Bill Kerns	4/20/06
44	4.5" Skyview/ P Mount	Mantle Yu	5/03/06

Extended scope loans

These are scopes that have had their loan period extended. If you are interested in borrowing one of these scopes, we will contact the current borrower and try to work out a reasonable transfer time for both parties.

# Scope	Description	Borrower	Due Date
2	6" f/9 Dob	John Paul De Silva	?
9	C-11 Compustar	Bill Maney	Indefinite
13	Orion XT6 Dob	Rajiv Vora	04/20/06
16	Solar Scope	Ken Frank	05/13/06
21	10" Dobson	Michael Dajewski	Repair

Waiting list:

(lots of scopes available!!!)

San Jose Astronomical Association Membership Form

You can join or renew with the SJAA online at <http://www.sjaa.net/SJAAMembership.html>

New **Renewal** (Name only, plus corrections below)

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 \$10 off the regular rate. (S&T will not accept multi-year subscriptions through the club program. Allow 2 months lead time.)

Bring this form to any SJAA Meeting or send (with your check) to:

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

Make your check payable to "SJAA" (not Sky Publishing).

I want the paper version of the newsletter.
(For questions, e-mail to membership@sjaa.net)

Name: _____

Address: _____

City/ST/Zip: _____

Phone: _____

E-mail address: _____

San Jose Astronomical Association
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