



SJAA EPHEMERIS

Eclipse 2006

Rob Hawley

We traveled to Libya on the Sky and Telescope/TravelQuest International trip aboard the MSC Sinfonia arriving in Tobruk harbor Tuesday evening.

About 60 of us decided to travel to the site the night before and sleep out there. In principle this would avoid

problems the next day getting to the site and would allow us to polar align our equipment. The site was about 2 hours south along the road to Al Jaghub.

Our overnight accommodations were a tent camp set up specifically for our group and one other. Our hosts provided

us with dinner and some of the nearby residents provided a program of music and local dance.

The next morning we were told that the viewing site was in a different location further from the road. We packed up and headed inland about 2 kilometers. The site there was like no other eclipse site I have been to. I heard estimates that almost 2000 people from the boat and other groups were bused to the site. There were people stretching into the distance plus Libyan TV, boy scouts, and other local groups.

The surface was hard packed dirt with a layer of rocks on top and clearly windblown. It was flat extending to the horizon in all directions. It evoked thoughts of the Utah Salt flats more than the traditional view of Sahara as sandy dunes. It had rained a couple of days before which probably reduced the dust. This was my sixth eclipse. The last two were on the sea and both had problems with clouds. This time I set for myself a couple of goals:

Watch the eclipse - in previous attempts I spent most of the time fussing with cameras.

Break my picture curse - I had tried to take photos in the past. Something always went wrong from stolen slides, to the captain turning the boat, to bad batteries, to weather. This time I really wanted to walk away with some photos.

These goals sounded like they were conflicting, but it meant that I had to automate the collection process much

SJAA Activities Calendar

Jim Van Nuland

May

- 5 Houge Park star party. Sunset 8:10 p.m., 61% moon sets 3:05 a.m. Star party hours: 9:00 to 12:00 a.m.
Astronomy Day
- 6 ATM class at Houge Park. 7:30 p.m.
- 13 **General meeting at Houge Park.** 8 p.m. Members present photos, videos and thoughts from recent Eclipse trips. See photos on page 4.
- 17 Silicon Valley Astronomical Lecture Series. 7:00 p.m. Foothill College. Astronomer Joshua Bloom of UC Berkeley will give a talk on: Giant Cosmic Explosions: The Gamma-ray Burst Boom
- 18 ATM class at Houge Park. 7:30 p.m.
- 19 Astronomy Class at Houge Park. 7:30 p.m.
- 19 Houge Park star party. Sunset 8:13 p.m., 50% moon rise 2:11 a.m. Star party hours: 9:30 to 12:00
- 20 Dark sky weekend. Sunset 8:14 p.m., 38% moon rises 2:40 a.m.
- 27 Dark sky weekend. Sunset 8:19 p.m., 1% moon sets 9:29 p.m.

June

- 2 Houge Park star party. Sunset 8:23 p.m., 44% moon sets 1:30 a.m. Star party hours: 9:30 – midnight
- 3 ATM Class at Houge Park. 7:30 p.m.
- 10 **General meeting at Houge Park.** 8 p.m.
- 15 ATM Class at Houge Park. 7:30 p.m.
- 16 Astronomy Class at Houge Park. 7:30 p.m.
- 16 Houge Park star party. Sunset 8:30 p.m., 64% moon rises 0:43 a.m. Star party hours: 9:30 – midnight
- 17 Dark sky weekend. Sunset 8:30 p.m., 53% moon rises 1:10 a.m.
- 24 Dark sky weekend. Sunset 8:32 p.m., 0% moon rise 5:26 a.m.
- 30 Houge Park star party. Sunset 8:32 p.m., 28% moon sets 11:55 p.m. Star party hours: 9:30 – midnight

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

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

<http://www.sjaa.net>

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It's an even-numbered year so Kevin Medlock was the auctioneer.



Auction 2006

The 26th SJAA Auction was held on April 9th at Houge Parks. The auction was packed with potential bidders & bargain hunters. Some were very picky when it come to small SCT scopes. On the other hand, the action picked up for smaller items particularly high quality eyepieces. Nonetheless, everyone went home happy! The Auction netted about \$1300 for SJAA.

A big thank you goes to all who worked on the auction and made sure it ran smoothly. Special thanks to Parks Optical, Lumicon International, and to Sam Sweiss of Scope City for all items donated. Sam has been an avid supporter and promoter of the SJAA. Orion Telescope, Ken Frank, Jeff Horne, The Medlocks, and Lick Observatory also donated items. And thanks to Kevin Medlock who was our auctioneer this year. Kevin announced that he and his wife Denni are moving to a new place near Redding later this spring. It sounds dark and that's great. For more photos, go to photos.yahoo.com/sanfranscopcity.

– Mike Koop



A small sample of what was available. The picture went for \$35, the laserjet printer (still in the factory sealed carton) went for \$10 and the small refractor could have gone to a new home for \$1 but it did not generate any interest.



Sellers and buyers check out what's available before the auction begins.



Kevin Medlock holds up a small scope and the bidding commences. On the left is SJAA president Mike Koop, on the right is SJAA treasurer Gary Mitchell, behind Kevin is Rob Hawley who did the computer logging which allowed Jim Van Nuland to sit in the crowd for the first time in 24 years.

Blue Ring Around Uranus

Akkana Peck

Jupiter reaches opposition on May 4 and is visible all night, though of course it's best near midnight when it's highest in the sky. Unfortunately, it's quite far south and never gets as high as 40 degrees even at transit.

So this may not be the best year for seeing fantastic detail on Jupiter (unless you're planning a trip to the southern hemisphere) -- but it's exciting nonetheless, because of Jupiter's small new red spot, the one I talked about in

evening sky as we move into June.

Uranus, in Ophiuchus, and Neptune, in Capricornus, are also available in the morning sky for dedicated observers, but you'll get a better look at them if you wait a few months. Pluto is a bit ahead of them, rising before midnight and transiting at 3am, but Plutocrats will still to stay up late to catch the dim roughly 14th-magnitude speck.

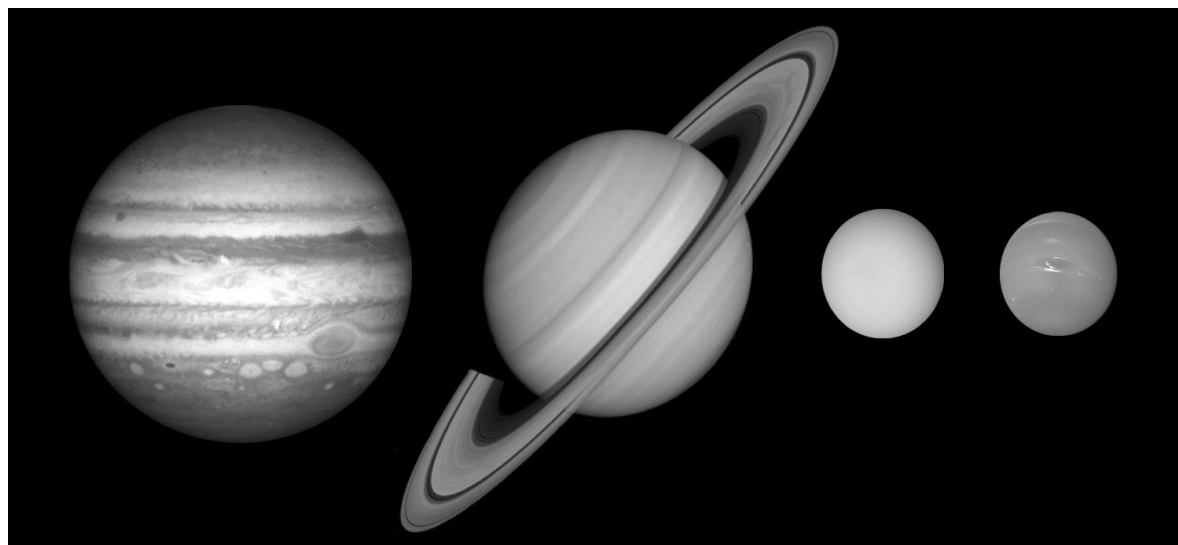
Uranus has been in the news this week

kept in line by a tiny moon named Mab, only 15 miles across). So some other explanation is in order.

The new explanation is that the blue rings are made only of the tiniest dust particles, less than a tenth of a micron in size. Some peculiarity of resonance with a moon keeps larger particles out of the ring. These tiny particles scatter blue light, just as the particles in our own planet's sky do. The blue rings are

blue for the same reason Earth's sky is blue!

You can demonstrate scatter and how it affects the color of the sky by mixing small particles into a clear container of water, then shining a bright white light



From left to right, Jupiter, Saturn, Uranus and Neptune in their relative sizes. Photo courtesy of NASA/JPL-Caltech.

last month's column. Maybe the rains will finally stop and we'll get a chance to observe this new feature on Jupiter, even low in the sky, in some good spring weather.

Saturn and Mars are both fairly low in the west as night falls, with Saturn setting a bit later. They're both catchable, but you'll have a hard time seeing much detail.

Mercury and Venus are both low in the morning sky at the beginning of May, so you'll have to work to see much of any of those planets this month. Venus remains there, but Mercury disappears after the first week, reappearing in the early

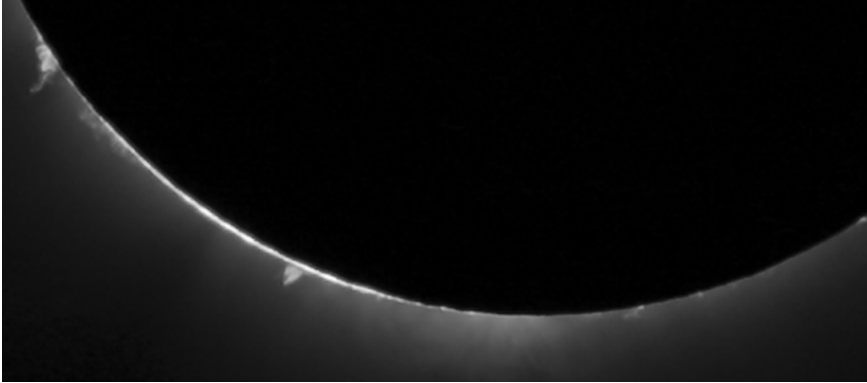
because of its recently discovered "blue ring". The outer ring of Uranus was actually seen for the first time last year, but a new paper in April said that the ring was colored bright blue, just like Saturn's E ring. Of course, these are very small, subtle rings, far too faint for us to see at all in a telescope from Earth. But it's interesting to contemplate: what makes the rings blue?

Previous theories about Saturn's blue E ring speculated that the ring, unlike Saturn's brighter rings of tiny rock and ice particles, was made of gases erupted from plumes on Enceladus. But Uranus isn't thought to have a moon similar to Enceladus (its outer ring is thought to be

into the container. Try flour, silt from a local stream (should be easy to find after this season of heavy rains), or a small amount of milk to see what gives the best effect. If you get the particle size right, the blue light shining in will scatter, creating a "blue sky" in your container, while most of the red light will pass right through, mimicking a beautiful red sunset. What happens when you shine only monochromatic light, such as a red laser or a green laser, into your container?



Eclipse 2006



Solar prominences are captured very nicely in this picture. Photo by Rob Hawley.

FYI

The May General Meeting is about the total eclipse that occurred March 29, 2006. Members and friends of SJAA are invited to speak about their experiences starting at 8 p.m. on May 13 at Hogue Park.



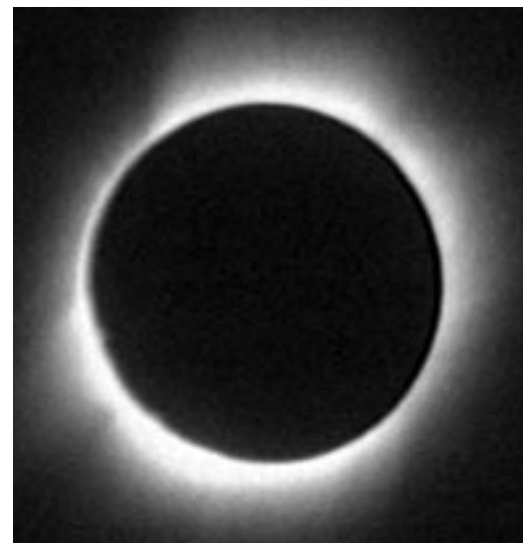
The diamond ring effect is shown very nicely by David Baumgartner's photo taken in Egypt.



This intriguing photo is the moon during totality. It shows the Earthshine reflecting off of the moon. Photo by Rob Hawley.



Rob Hawley prepares for the coming eclipse. The scope is a TeleVue 76 and his camera is the new Canon 20Ad. Photo courtesy of Chris Erickson.



It was possible to watch the eclipse in real time over NASA TV or catch the full replay the following day. Photo courtesy of NASA.

Planets in Strange Places

Trudy E. Bell

Red star, blue star, big star, small star—planets may form around virtually any type or size of star throughout the universe, not just around mid-sized middle-aged yellow stars like the Sun. That’s the surprising implication of two recent discoveries from the 0.85-meter-diameter Spitzer Space Telescope, which is exploring the universe from orbit at infrared (heat) wavelengths blocked by the Earth’s atmosphere.

At one extreme are two blazing, blue “hypergiant” stars 180,000 light-years away in the Large Magellanic Cloud, one of the two companion galaxies to our Milky Way. The stars, called R 66 and R 126, are respectively 30 and 70 times the mass of the Sun, “about as massive as stars can get,” said Joel Kastner, professor of imaging science at the Rochester Institute of Technology in

New York. R 126 is so luminous that if it were placed 10 parsecs (32.6 light-years) away—a distance at which the Sun would be one of the dimmest stars visible in the sky—the hypergiant would be as bright as the full moon, “definitely a daytime object,” Kastner remarked. Such hot stars have fierce solar winds, so Kastner and his team are mystified why any dust in the neighborhood hasn’t long since been blown away. But there

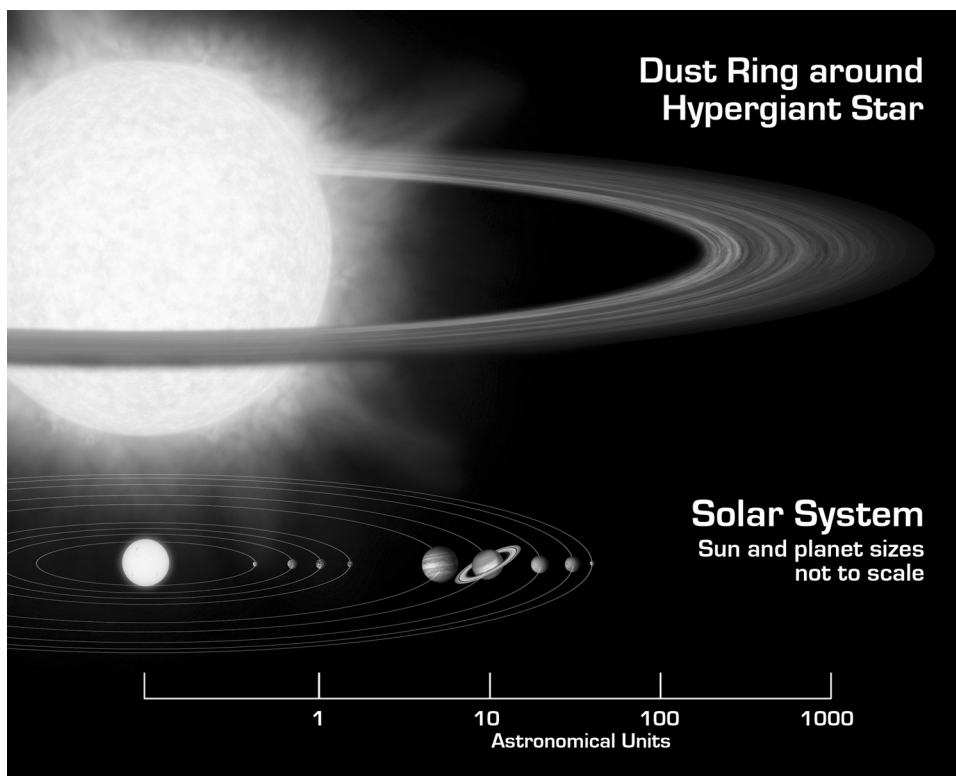
it is: an unmistakable spectral signature that both hypergiants are surrounded by mammoth disks of what might be planet-forming dust and even sand.

At the other extreme is a tiny brown dwarf star called Cha 110913-773444, relatively nearby (500 light-years) in the Milky Way. One of the smallest

University.) Although actual planets have not been detected (in part because of the stars’ great distances), the spectra of the hypergiants show that their dust is composed of forsterite, olivine, aromatic hydrocarbons, and other geological substances found on Earth. These newfound disks represent “extremes of the environments in which

planets might form,” Kastner said. “Not what you’d expect if you think our solar system is the rule.”

Hypergiants and dwarfs? The Milky Way could be crowded with worlds circling every kind of star imaginable—very strange, indeed. Keep up with the latest findings from the Spitzer at www.spitzer.caltech.edu/. For kids, the Infrared Photo Album at The Space Place (spaceplace.nasa.gov/en/kids/sirtf1/sirtf_action.shtml) introduces



Artist’s rendering compares size of a hypothetical hypergiant star and its surrounding dusty disk to that of our solar system. Photo courtesy of NASA/JPL-Caltech.

brown dwarfs known, it has less than 1 percent the mass of the Sun. It’s not even massive enough to kindle thermonuclear reactions for fusing hydrogen into helium. Yet this miniature “failed star,” as brown dwarfs are often called, is also surrounded by a flat disk of dust that may eventually clump into planets. (Note: This brown dwarf discovery was made by a group led by Kevin Luhman of Pennsylvania State

the electromagnetic spectrum and compares the appearance of common scenes in visible versus infrared light.

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

more than I did in the past.

Thus it meant:

1. The camera had to be fully computer controlled
2. The telescope needed to be on a tracking mount so minimal adjustments would be required during totality. (In practice I gave the dec adjustment a single tweak about 1 minute into totality)

Computer controlling the camera was high risk, but it also meant the possibility of capturing far more pictures. I started evaluating various image capture programs last fall. Right from the start ImagesPlus was the clear favorite. The author worked up a version (which eventually became 2.75) that was capable of taking a shot about every 3 seconds. For a 4 minute eclipse this presented the possibility of

capturing over 60 images of totality.

My old digital camera did not permit computer control (it did not even have a blub port). So I decided to get the Canon 20Da. This is a standard camera that has a number of modifications for astrophotography including higher sensitivity to H-alpha. It can be fully controlled using a USB cable.

For a telescope I chose a TeleVue 76. This is a relatively small APO and it mates well with the 20Da. The combination yielded an effective focal length of 768 mm at f/ 6.3.

The tracking mount was an Orion EQ-3. This is not a very high quality mount if it is being used for astrophotography, but it proved more than adequate for my use in Libya. I did a rough polar alignment the night before the eclipse at the tent site. When we moved the next day I aligned it using a compass.

The capture scenario, the thinking that went into it, and the results are a whole other discussion. I will revise my web page sometime in late April to cover this topic.

There were also some detailed items such as using an existing Atlas case as a suitcase/field table. Using a box that fit inside the case to shield the laptop from the sun. I bought a low end handheld GPS that allow me to sync the laptop to the correct time and (at least I was supposed to) also sync the camera to GPS time. Finally I bought a small program that made voice announcements during the eclipse. This was useful, but less so than in practice sessions since it got very noisy during totality.

Ed.Note: Be sure to check out Rob's website at <http://www.robhawley.net/libya06>

Solar System Stats for May 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	1 ^h 25 ^m	23 ^h 52 ^m	6 ^h 43 ^m	14 ^h 49 ^m	8 ^h 30 ^m	23 ^h 01 ^m	21 ^h 28 ^m	2 ^h 32 ^m
	11	2 ^h 36 ^m	0 ^h 34 ^m	7 ^h 09 ^m	14 ^h 44 ^m	8 ^h 32 ^m	23 ^h 02 ^m	21 ^h 29 ^m	3 ^h 11 ^m
	21	4 ^h 01 ^m	1 ^h 17 ^m	7 ^h 35 ^m	14 ^h 39 ^m	8 ^h 35 ^m	23 ^h 03 ^m	21 ^h 29 ^m	3 ^h 50 ^m
Dec	1	6°27'	-2°16'	24°39'	-14°52'	19°46'	-7°06'	-15°07'	14°57'
	11	14°06'	1°50'	24°02'	-14°30'	19°39'	-6°59'	-15°05'	17°46'
	21	21°16'	6°02'	23°09'	-14°09'	19°29'	-6°53'	-15°05'	20°06'
Dist	1	1.19	0.96	1.92	4.42	9.17	20.61	30.20	1.007
	11	1.30	1.04	2.00	4.42	9.33	20.47	30.03	1.010
	21	1.31	1.11	2.08	4.45	9.49	20.31	29.86	1.012
Mag	1	-0.5	-4.0	1.5	-2.5	0.3	5.9	7.9	
	11	-1.3	-3.9	1.6	-2.5	0.3	5.9	7.9	
	21	-2.1	-3.9	1.6	-2.5	0.3	5.9	7.9	
Size	1	5.6''	17.3''	4.9''	44.6''	18.1''	3.4''	2.2''	31'45''
	11	5.2''	16.1''	4.7''	44.6''	17.8''	3.4''	2.2''	31'41''
	21	5.1''	15.0''	4.5''	44.3''	17.5''	3.4''	2.2''	31'36''

Officers and Board of Directors

Pres Mike Koop (408) 446-0310
VP Rob Hawley (408) 997-6526
Sec Craig Scull (408) 292-9317
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Dir Bill O'Shaughnessy
(408) 984-8304
Dir David Smith (408) 978-5503
Dir Rich Neuschaefer
Dir Lee Hoglan
Dir Gordon Reade

Ephemeris Staff

Editors Paul & Mary Kohlmler
(408) 848-9701

Circulation

Bob Brauer (408) 292-7695
Lew Kurtz (408) 739-7106
Dave North north@znet.com

Printing Accuprint (408) 287-7200

School Star Party Chairman

Jim Van Nuland (408) 371-1307

Telescope Loaner Program

Mike Koop (408) 446-0310

Web Page

Paul Kohlmler pkohlml@best.com

SJAA Email Addresses

Board of Directors board@sjaa.net
Membership ?'s membership@sjaa.net
Chat List chat@sjaa.net
Ephemeris ephemeris@sjaa.net
Circulation circulation@sjaa.net
Telescope Loaners loaner@sjaa.net
Members Email Lists:
<http://www.sjaa.net/mailman/listinfo>

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San Jose Astronomical Association,
P.O. Box 28243
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*)

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