

SJAA EPHEMERIS

Mooning

Handy Books

Dave North

Big news! The revised Rühl "Atlas Of The Moon" is out at last.

It's the standard reference for most lunar observers, and having it out of print for so long was an exquisite form of torture.

The long international nightmare is over. If you are into the Moon and don't have one, grab 'em while they got 'em.

I start this column each month by checking "The Sky Month By Month" in the Royal Astronomical Society of Canada's "Observer's Handbook." SJAA normally sells 20 or so of these each year at a very good price. By the time this sees print, they will have long been sold out. The monthly section has a "what's up" on the Moon, notes on the visible planets, and just about anything else remarkable. But what is all that gobbledegook about the Moon? Does it mean anything? How can you use it?

January's starts with "On Jan. 1.0 UT, the age of the moon is 19.9 d." Okay, they use universal time and decimal days, so you have to correct for that if you need local precision. But basically you get the idea: at the beginning of the month the Moon will be about 20 days old — well past full and a bit over

a week from new.

Almost third quarter.

"The sun's selenographic colongitude is 154.23 degrees and increases by 12.2 degrees each day thereafter." Let's go back to front on this one. Every single month, in that charming cryptobritish way, the increase of 12.2 degrees statement appears. That's because it's always true. In fact, it was true for the preceding days too. But

if you're going to call something "Royal" you have to talk like that. Besides, it's cute.

"Selenographic colongitude" is longhand for 'location of the sunrise terminator.' To make matters worse, it's measured from the central meridian westward from 0 to 360 degrees, while map coordinates are typically given values east and west of the central meridian. So a colongitude of 60 degrees is at "60 degrees west" on the map but a colongitude of 300 degrees is at "60 degrees east" on the map. Plus, the example this month is even a hair trickier.

If you start at the central meridian and travel west 154.23 degrees, you're on the far side of the Moon! What use is that? Well, the sunset terminator will generally be 180 degrees (plus a hair) from the sunrise terminator. 154 + 180 is 334 degrees. Subtract that from 360 and you get a sunset terminator at 24 degrees

Continued on page 2

"I'm picking up good librations."

SJAA Activities Calendar

Jim Van Nuland

January

- 1** Dark sky weekend. Sunset 5:00 p.m., 66% moon rise 10:53 p.m.
- 7** Astronomy class at Houge Park. 7:30 p.m.
- 7** Houge Park star party. Sunset 5:04 p.m., 6% moon rise 6:58 a.m. Star party hours: 7:00 to 10:00 p.m.
- 8** Dark sky weekend. Sunset 5:05 p.m., 1% moon rises 5:06 a.m.
- 14** Houge Park star party. Sunset 5:13 p.m., 28% moon sets 10:28 p.m. Star party hours: 7:00 to 10:00 p.m.
- 15** ATM class at Houge Park. 7:30 p.m.
- 22** **General meeting.** 8 p.m. Dr. Dale Cruikshank of NASA will tell us about the Cassini-Huygens mission to Saturn.
- 27** ATM Class at Houge Park. 7:30 p.m.

February

- 4** Houge Park star party. Sunset 5:36 p.m., 17% moon rise 4:36 a.m. Star party hours: 7:00 p.m. to 10:00 p.m.
- 4** Astronomy class at Houge Park. 7:30 p.m.
- 5** Dark sky weekend. Sunset 5:37 p.m., 9% moon rise 5:42 a.m.
- 12** Dark sky weekend. Sunset 5:45 p.m., 23% moon sets 10:23 p.m.
- 18** Houge Park star party. Sunset 5:51 p.m., 81% moon sets 4:27 a.m. Star party hours: 7:00 p.m. to 10:00 p.m.
- 19** ATM Class at Houge Park. 7:30 p.m.
- 26** **General meeting.** 8 p.m.

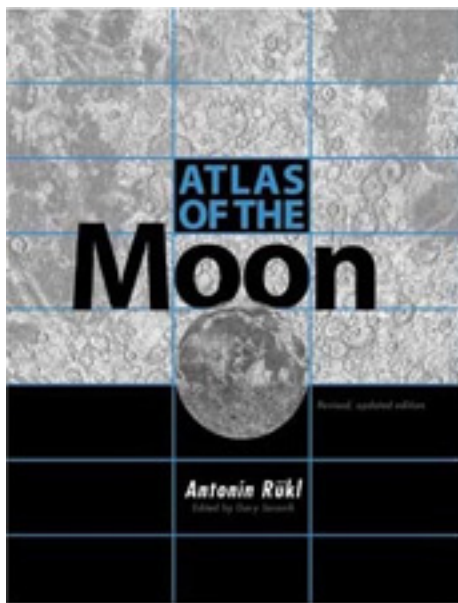
The Board of Directors meets at 6:30 p.m. preceding each general meeting. All are welcome.

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

<http://www.sjaa.net>

east — fairly typical for a Moon that’s roughly two days from 3rd Quarter (nicely matching with 2 x 12.2 as we saw above). Interesting? No? Rats.

“The libration in longitude is maximum (east limb exposed) on Jan. 16 (+8 degrees) ...” In human-readable form, that’s “the Crisium side will be tilted toward us eight degrees from center.” It’s also cause to sing a phrase of a Beach Boy’s song: “I’m pickin’ up Good Librations...” since eight degrees is a lot.



But that alone isn’t interesting.

The question is, where’s the terminator? A glance at the opposite page (“January Events”) tells me First Quarter is the 17th, so it’s one day shy. Which means the sun will be almost directly overhead the libration zone.

What really gets me going is a strong libration when the terminator will be on the limb (which is to say, near full). But this is second best, and means contrast between maria and highlands will be very good. A great night to see the Eastern Maria. Make a note, move on.

“...and minimum (west limb exposed) on Jan. 4” As luck would have it an almost identical event on the other side,

again with high sun. Check it out! It will be best an hour or so before dawn.

There are also greatest North and South librations, but let’s move along. You get the idea. Note, though, it’s particularly interesting when a strong North or South libration adds to an East or West libration (they happen on about the same day).

“The Moon reaches its greatest northern declination on Jan. 22 (+28) ...” Human readable: the Moon will be highest in the sky J22. That’s just a few days before full, but it’s actually great news. That means most of the stuff after 1st Quarter (and especially Mare Humorum and other great rille sites) will be Way Up with a good chance of steady seeing. It means the best Mooning season is opening right now!

“On Jan. 10, the Moon reaches its closest perigee distance of the year (356 570 km). With a new Moon occurring on the same day, extra-large tides will occur.”

Consider this a warning that ‘weird internet chatter’ will increase, particularly among the superstitious.

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.

Deep Impact

On page 3 is an artist’s depiction of the climactic moment for the Deep Impact space probe. This spacecraft is expected to launch on January 12 and will rendezvous with Comet Tempel 1. Well, maybe rendezvous isn’t quite right. The spacecraft will be runover by the comet at a speed of about 23,000 miles per hour. If all goes according to the schedule the fireworks are set for July 4.

The portion of the spacecraft that gets clobbered is the Impactor. A larger piece is called the Flyby. And what does it do? “We will be capturing the whole thing on the most powerful camera to fly in deep space,” according to Dr. Michael A’Hearn, Deep Impact’s principal investigator. “We know so little about the structure of cometary nuclei that we need exceptional equipment to ensure that we capture the event, whatever the details of the impact turn out to be.”

And there will be other cameras trained on the event as well. Chandra, Hubble and Spitzer will also be looking on. All of this television coverage may make you think about the impact of the impact. I mean, won’t this alter the Tempel 1’s orbit. “In the world of science, this is the astronomical equivalent of a 767 airliner running into a mosquito,” said Don Yeomans, a Deep Impact mission scientist at JPL. “It simply will not appreciably modify the comet’s orbital path.”

This episode of CSI:Comet is brought to you by the Discovery program of NASA – a series of moderately priced solar system exploration missions. And the time cycle is pretty cool. According to Rick Grammier, Deep Impact project manager at NASA’s Jet Propulsion Laboratory, “From central Florida to the surface of a comet in six months is almost instant gratification from a deep space mission viewpoint.”

The information for this article came from the Jet Propulsion Laboratory website at <http://www.jpl.nasa.gov>. Page 3 photo courtesy of NASA/ JPL-Caltech.

Splashdown!

Akkana Peck

The Huygens probe will reach the surface of Saturn's largest moon, Titan, this month. The probe is too small to see with an earth based telescope, of course, but Saturn and Titan will be perfectly placed for observers to take a look while contemplating the spacecraft's mission, to show Saturn and its moons to the public while explaining about the mission, or merely to "space out" staring at the prettiest planet in our sky. Saturn rises shortly before sunset, so it will be high in the sky most of the night, with its rings tilted about 22 degrees to us.

Assuming the mission is going as planned, Huygens separated from the Cassini orbiter on Christmas eve, at 6pm our time, and has been falling toward Titan ever since. It will enter

Titan's atmosphere on January 14 at 3am, the day after Saturn's opposition, traveling at about 5 meters per second (about 11mph); then it will deploy parachutes to slow its descent, and will spend the next two and a half hours drifting slowly down to Titan's surface. Will it splash into a liquid ocean, or smash into rock or ice? Whatever it finds, its instruments will radio the results to the Cassini orbiter, which will relay them back to Earth.

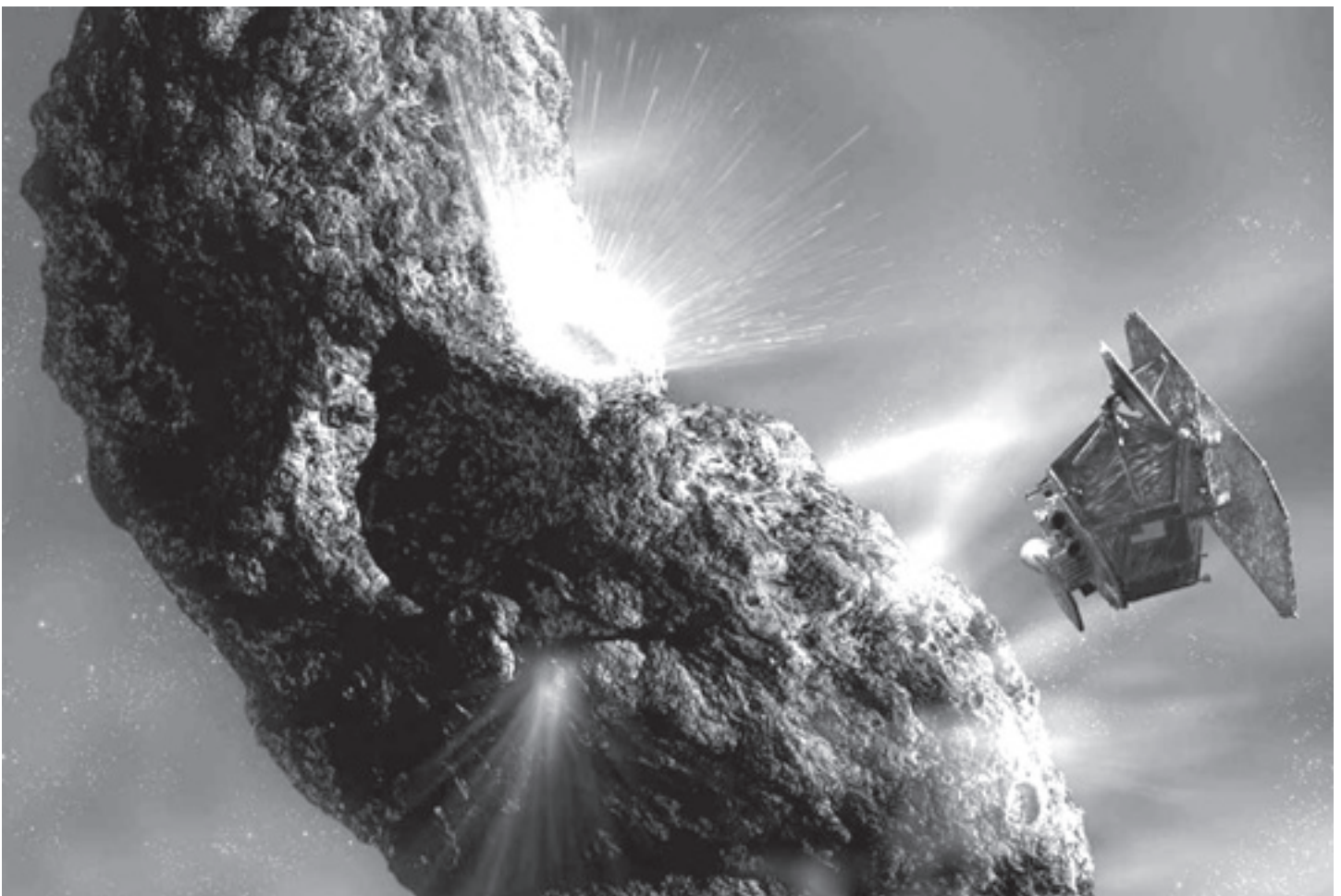
Jupiter rises around midnight. It makes two close passes with the moon this month, and actually is occulted for some southern hemisphere observers, but here in San Jose we won't see them pass closer than about a degree.

Mars rises just before dawn. Later this

year we will enjoy another good Mars opposition, but now it's at the far side of its orbit from us, just a tiny speck showing little detail to an earth-based telescope. Pluto rises about the same time as Mars, not early enough for there to be much hope of spotting this faint and distant planet.

Mercury and Venus are very close to the sun in the morning sky. Ambitious early morning observers might want to try to spot them on the mornings of the 12-14, when Mercury passes less than half a degree south of Venus.

Neptune is too close to the sun to be seen this month. Uranus sets a few hours after sunset, so this pale green disk is still a target, especially at early evening public star parties.



All event dates subject to change. Check <http://www.sjaa.net> for updates.
Check other dates at <http://www2.jpl.nasa.gov/calendar>.

January

Darkest Saturday – 8
General Meeting – 22
Astro Class – 7
ATM Workshop – 15, 27
Houge Star Parties – 7, 14

Biggest Event – Huygens probe lands on Titan – 14
Evening Planets – Saturn
Saturn Opposition – 13
Comet C/2004 Q2 (Machholz) closest approach to Earth – 5
Isaac Asimov would have been 85 and Leslie Peltier 105 – 2

February

Darkest Saturday – 5
General Meeting – 26
Astro Class – 4
ATM Workshop – 19
Houge Star Parties – 4, 18

Biggest Event – Chinese New Year – 9
Evening Planets – Saturn
Moon 1.2° South of Pleiades – 16
75th Anniversary of Clyde Tombaugh's discovery of Pluto – 18

March

Darkest Saturday – 12
General Meeting – 26
Astro Class – 7
ATM Workshop – 3, 19, 31
Houge Star Parties – 4, 18

Biggest Event – Messier Marathon – 12
Evening Planets – Saturn, Mercury (around the 12th), Jupiter
Lunar Occultation of Antares – 3
350th Anniversary of Huygens' discovery of Titan – 25

July

Darkest Saturday – 2
General Meeting – 23
Astro Class – 1, 29
ATM Workshop – 16, 28
Houge Star Parties – 1, 15, 29

Biggest Event – Shingletown Star Party starts – 6 (tentative).
Evening Planets – Jupiter, Venus, Mercury (9)
Earth at aphelion – 4
55th anniversary of the first launch from Cape Canaveral – 24

August

Darkest Saturday – 6
General Meeting – 20
Astro Class – 26
ATM Workshop – 13, 26
Houge Star Parties – 12, 26

Biggest Event – Perseids Meteor Shower – 12
Evening Planets – Mars, Venus, Jupiter
Neil Armstrong turns 75 – 5

September

Darkest Saturday – 3
General Meeting – 17
Astro Class – 23
ATM Workshop – 10, 22
Houge Star Parties – 9, 23

Biggest Event – CalStar starts – 29
Evening Planets – Mars
ASP Meeting in Tucson – 14-16
John Dobson turns 90 – 14

Evening planets refer to planets easily visible at least 1.5 hours after sunset and before 10 p.m.

April

Darkest Saturday – 2
 Auction XXIV – 24
 Astro Class – 1, 29
 ATM Workshop – 16, 28
 Houge Star Parties – 1, 15,
 29

 Biggest Event – Astronomy
 Day – 16
 Evening Planets – Saturn,
 Jupiter
 Darkness Squandering
 Time Begins – 3
 Solar Eclipse (Panama) – 8

May

Darkest Saturday – 7
 General Meeting – 21
 ATM Workshop – 14, 26
 Houge Star Parties – 13, 27

 Biggest Event – RTMC – 27-
 30
 Evening Planets – Jupiter,
 Saturn
 Earliest Possible Shuttle
 Flight – 12
Frank Drake turns 75 – 28

June

Darkest Saturday – 4
 General Meeting – 18
 ATM Workshop – 11, 23
 Houge Star Parties – 10

 Biggest Event – Mercury,
 Venus and Saturn near
 conjunction – 26
 Evening Planets – Jupiter
 Pluto Opposition – 14
*Charles Messier would have
 been 275 – 26*

October

Darkest Saturday – 1
 General Meeting – 15
 Astro Class – 28
 ATM Workshop – 8, 20
 Houge Star Parties – 7, 28

 Biggest Event – Orionids
 Meteor Shower – 21
 Evening Planets – Venus,
 Mars
 Darkness Squandering
 Time ceases – 30
 World Space Week starts –
 4

November

Darkest Saturday – 26
 General Meeting – 12
 Fall Swap – 13
 Astro Class – 25
 ATM Workshop – 17
 Houge Star Parties – 11, 25

 Biggest Event – Excellent
 Mars Opposition – 7
 Evening Planets – Mars,
 Venus
 Leonids Meteor Shower –
 17

December

Darkest Saturday – 31
 General Meeting – 17
 ATM Workshop – 10, 22
 Houge Star Parties – 9, 23

 Biggest Event – Geminids
 Meteor Shower – 13
 Ursids Meteor Shower – 22
 Evening Planets – Venus,
 Mars, Saturn
 Best Venus apparition for
 the year – 9

Jeff Cuzzi Discusses Cassini at Saturn on January 26, 2005 at 7 p.m.

Astronomer Jeff Cuzzi of NASA's Ames Research Center will give a non-technical, illustrated talk on: "Exploring the Lord of the Rings: Cassini at Saturn" in the Smithwick Theater, Foothill College, El Monte Road and Freeway 280, in Los Altos Hills, California

Free and open to the public. Parking on campus costs \$2. Call the series hot-line at 650-949-7888 for more information.

After a 7-year journey, the Cassini spacecraft arrived at Saturn in July 2004, to start a 4-year tour of the planet, its icy moons, and its vast ring system. In January, a probe from Cassini called Huygens will explore the haze-shrouded

Andrew Fraknoi

giant moon called Titan (the only moon in the solar system to have a thick atmosphere.)

Dr. Cuzzi, one of the world's experts on ring systems around planets, will describe the Cassini-Huygens spacecraft and the plans for this fascinating mission. He will highlight the most exciting results from the first few months of Saturn system exploration, with an emphasis on what we are learning about the complex structure and composition of Saturn's ring system and how such a dramatic set of rings may have originated.

Jeff Cuzzi is a research scientist in the Space Science Division at NASA's Ames Research Center and serves as the Interdisciplinary Scientist for Rings and Dust on the Cassini-Huygens. He was a "ringleader" in planning all the ring images taken at Saturn, Uranus, and Neptune by the Voyager spacecraft in the 1980s. Among his other research interests, he studies the formation of the first large objects during the birth of our solar system.

No background in science will be required for this talk, which will interest everyone who enjoys the latest news of exploration at the frontiers of astronomy.

Solar System Stats for January 2005

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	17 ^h 10 ^m	17 ^h 13 ^m	16 ^h 09 ^m	13 ^h 05 ^m	7 ^h 47 ^m	22 ^h 24 ^m	21 ^h 05 ^m	18 ^h 46 ^m
	11	18 ^h 05 ^m	18 ^h 07 ^m	16 ^h 39 ^m	13 ^h 09 ^m	7 ^h 44 ^m	22 ^h 26 ^m	21 ^h 06 ^m	19 ^h 30 ^m
	21	19 ^h 08 ^m	19 ^h 01 ^m	17 ^h 08 ^m	13 ^h 11 ^m	7 ^h 40 ^m	22 ^h 27 ^m	21 ^h 08 ^m	20 ^h 13 ^m
Dec.	1	-21°17'	-22°15'	-20°51'	-5°34'	+21°09'	-10°47'	-16°47'	-23°01'
	11	-23°12'	-23°07'	-22°04'	-5°50'	+21°18'	-10°38'	-16°41'	-21°50'
	21	-23°29'	-22°48'	-22°59'	-6°00'	+21°28'	-10°27'	-16°34'	-19°56'
Dist (AU)	1	1.06	1.54	2.25	5.48	8.10	20.63	30.88	0.983
	11	1.22	1.58	2.18	5.32	8.08	20.76	30.97	0.983
	21	1.33	1.61	2.11	5.16	8.08	20.87	31.02	0.984
Mag	1	-0.3	-3.8	1.6	-2.0	-0.3	5.9	8.0	
	11	-0.3	-3.8	1.5	-2.0	-0.4	5.9	8.0	
	21	0-0.4	-3.8	1.5	-2.1	-0.3	5.9	8.0	
Size	1	6.3"	10.8"	4.2"	35.9"	20.4"	3.4"	2.2"	32'32"
	11	5.5"	10.6"	4.3"	37.0"	20.5"	3.4"	2.2"	32'31"
	21	5.0"	10.4"	4.4"	38.2"	20.5"	3.4"	2.2"	32'30"

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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

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
7	12.5" Dobson	Tom Fredrickson
11	Orion XT6 Dob	Lia Klofas
13	Orion XT6 Dob	Eric Anderson
14	8" f/8.5 Dob	Colm McGinley
16	Solar Scope	Bob Havner
19	6" Newt/P Mount	Daryn Baker
23	6" Newt/P Mount	Wei Cheng
24	60mm Refractor	Al Kestler
27	13" Dobson	Steve Houlihan
28	13" Dobson	Anupam Dalal
32	6" f/7 Dobson	Sandy Mohan
34	Dynamax 8" S/C	Yuan-Tung Chin
35	Meade 8" Equatorial	Mike Koop
38	Meade 4.5" Digital Newt	Tej Kohli
40	Super C8+	Mike Macedo

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
6	8" Celestron S/C	Karthik Ramamurthy	1/8/05
33	10" Deep Space Explorer	Ion Coman	1/22/05
36	Celestron 8" f/6 Skyhopper	Saman Behjat	2/28/05
37	4" Fluorite Refractor	Steve Sergeant	1/6/05

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	?
8	14" Dobson	Jan Lynch	1/9/05
9	C-11 Compustar	Bill Maney	Indefinite
10	Star Spectroscope	Bill O'Shaughnessy	1/11/05
12	Orion XT8 Dob	Terry Rowe	3/8/05
15	8" Dobson	Scott Pelger	1/5/05
21	10" Dobson	Michael Dajewski	Repair
26	11" Dobson	Vivek Kumar	1/10/05
29	C8, Astrophotography	Mark Ziebarth	3/10/05
39	17" Dobson	Rob Hawley	2/28/05
41	18" Sky Designs Dob	Len Bradley	1/12/05
42	11x80 Binoculars	Ritesh Vishwakarma	1/10/05

Waiting list:

10	Star Spectroscope	Jim Albers
12	Orion XT8 Dob	Steve Loyd
37	4" Fluorite Refractor	Kevin Roberts

San Jose Astronomical Association Membership Form

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

Membership Type:

- Regular — \$15
 Regular with Sky & Telescope — \$48
 Junior (under 18) — \$6
 Junior with Sky & Telescope — \$39

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

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Make your check payable to "SJAA"
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