SJAA EPHEMERIS

SJAA Activities Calendar

Jim Van Nuland

(late) November

24 Houge Park star party. Sunset 4:52 p.m., 19% moon sets 8:10 a.m. Star party hours: 7:00 to 10:00

25 ATM Workshop at Houge Park. 7:30 p.m.

December

2 **General meeting at Houge Park**. Shiloh Unruh on the Egypt Eclipse. 8 p.m. The annual holiday party follows the talk. See page 2.

7 ATM Workshop at Houge Park. 7:30 p.m.

15 Astronomy Class at Houge Park. 7:30 p.m.

15 Houge Park star party. Sunset 4:51 p.m., 16% moon rise 3:24 a.m. Star party hours: 7:00 to 10:00

16 Dark sky weekend. Sunset 4:52 p.m., 10% moon rise 4:37 a.m.

23 Dark sky weekend. Sunset 4:55 p.m., 16% moon sets 8:05 p.m.

29 Houge Park star party. Sunset 4:59 p.m., 80% moon sets 3:28 a.m. Star party hours: 7:00 to 10:00

30 ATM Workshop at Houge Park. 7:30 p.m.

January

6 **General meeting at Houge Park**. Our speaker is Bob Fies, talking about the process of aluminizing telescope mirrors. 8 p.m.

11 ATM Workshop at Houge Park. 7:30 p.m.

12 Houge Park star party. Sunset 5:11 p.m., 34% moon rise 2:21 a.m. Star party hours: 7:00 to 10:00

12 Astronomy Class at Houge Park. 7:30 p.m.

13 Dark sky weekend. Sunset 5:12 p.m., 25% moon rise 3:22 a.m.

20 Dark sky weekend. Sunset 5:19 p.m., 6% moon sets 7:20 p.m

26 Houge Park star party. Sunset 5:26 p.m., 64% moon sets 2:32 a.m. Star party hours: 7:00 to 10:00

27 ATM Workshop at Houge Park. 7:30 p.m.

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

Observing Crater Rosse

Jane Houston Jones

Recently, I aimed my 12.5-inch reflector at the slender five day old waxing crescent moon. My eye was instantly drawn towards a tiny crater in Mare Nectaris in the southeast quadrant of the moon. Named for William Parsons, third Earl of Rosse, this small crater stands out despite is diminutive size. It has both a higher albedo than the surrounding lunar mare, and a signpost of sorts -- a bright lunar ray appears to bisect it and cross the Nectaris basin.

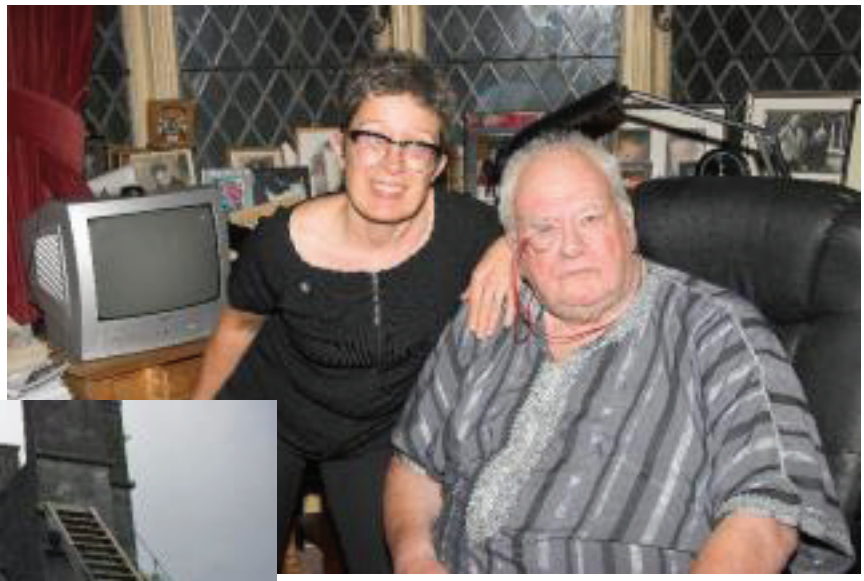
This image shows crate Rosse in Mars Nectaris. Photo courtesy of John Murphy. Also see Jane's article on page 4 and some photos from her on page 2.

In a few lunar days, the origin of this ray will become apparent. It's part of the massive ray structure from Tycho. At full moon, you can see this ray span over 1800 kilometers from Tycho to Rosse. Bowl-shaped Rosse, 12 kilometers in diameter, according to Antonin Rukl's "Atlas of the Moon", is easily visible for much of the lunar month. I have enjoyed viewing it as a bright speck on the waxing crescent terminator, as part of the vivid lunar tapestry of the full moon, and at sunset on the waning moon a few days after full.

The Sea of Nectar (Mare Nectaris) is a small lunar mare or sea, a volcanic lava plain noticeably darker than the rest of the moon's surface, located between the Sea of Tranquility (Mare Tranquillatis) and the Sea of Fecundity (Mare Fecunditatis). Montes Pyrenaeus borders the mare to the west. To the southwest is the large, flooded Fracastorius crater.

I love to aim my telescope at this small but significant crater because it reminds me of my visit to the 72-inch Leviathan reflector telescope and the great time we had in Ireland at the 2006 Whirlpool Star Party.

Photos from Jane and Mojo Jones



Clockwise starting above: The Leviathan Telescope at Birr Castle, view from the south in its rest position; Jane with Sir Patrick Moore on a visit to his home, Farthings; the octagon room at Flamsteed house, and time signal ball, at the Royal Greenwich Observatory; Mojo assembled this panorama from four individual pictures. Photos by Mojo and Jane, using a Canon EOS 20D, with 17-85 IS lens.

Holiday Party – Dec. 2

Bring your favorite dessert or appetizer to share. Contributions of food or drink are appreciated but not necessary. No alcohol, please.

We will again be running the "white elephant" gift drawing. To participate, please anonymously wrap (no name tag) an astronomical item of small value and/or large humor and bring it along. It can be a used item you no longer want, an inexpensive new item, and can be either useful or funny. We'll do the exchange as a "draw or steal" lottery, which is always great fun.

The Shallow Sky

A Quiet Month in the Shallow Sky

Akkana Peck

I hope you had a chance to see the Mercury transit! It was close where I was: overcast skies and some drizzle, then patches of blue sky visible far to the northwest (darn, exactly the wrong direction!), slowly moving this way ... oh, the drama! In the end, the sky around the sun finally cleared about five minutes before ingress and stayed clear for the rest of the day.

The next transit is Venus, which will cross in front of the sun in June of 2012 (not 2021 as I wrote last month -- sorry for the typo!) It's still a long wait, but at least our June weather should be a lot more reliable.

Getting back to the current time, it's a quiet month for planet observers. The dominant planet in our December 2006 evening skies is Saturn. The ringed planet rises around 9pm and so is an easy target for observing, though it doesn't transit until well after midnight.

Saturn's rings are closing up: down to 12.5 degrees, quite a bit narrower than they were earlier this year. We won't see them actually "edge on" until 2009.

Mercury puts on a good show in the mornings of the first two weeks of December. On the 10th, look for a very close grouping of gibbous Mercury, Jupiter and Mars. They should all fit fairly comfortably in the field of a low powered eyepiece, with less than a quarter of a degree separating Mercury and Jupiter, and Mars about a degree away from the pair.

Uranus and Neptune are still visible in the early evening, with Uranus setting by midnight, Neptune a few hours earlier. Venus (gibbous) moves into the dusk sky during the latter half of December.

Pluto is too close to the sun to observe this month.

Women in Astronomy

Annie Jump Cannon

Paul Kohlmiller

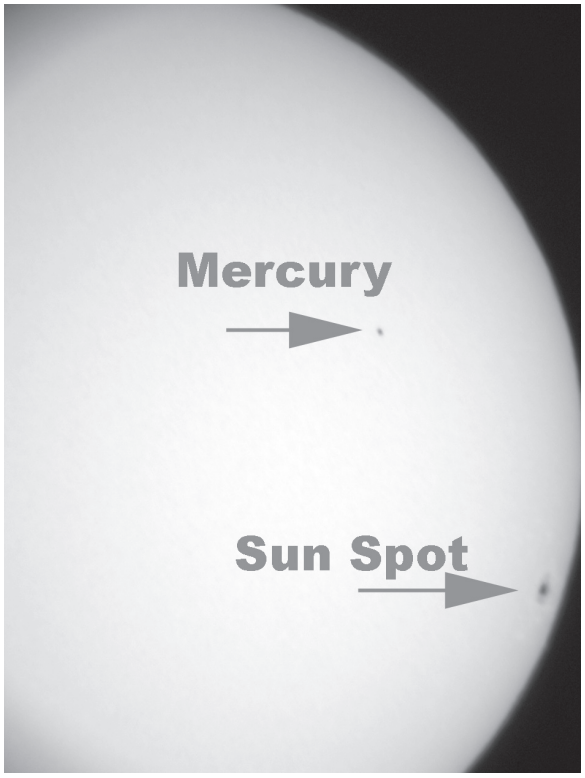
Annie Jump Cannon was born on December 13, 1863. Her middle name came from her mother's maiden name. It was from her mother that Annie first learned to love to look at the night sky. From her father she got more than a little of her political side. Wilson Cannon was a shipbuilder before he was elected to the Delaware State Senate. Just two years before Annie was born, he cast the deciding vote that kept Delaware within the Union. Annie was a suffragete.

But astronomers are more familiar with Annie's astronomical endeavors. Although the climate was not good for women entering scientific fields in the late 19th century, Annie had three things in her favor. First was her family. Her father saw to it that Annie got into Wellesley College in Massachusetts – a rare opportunity for a woman from another state. Second was a sudden mass of work that needed to be done that included classifying stars according to their spectra. The third piece was a job opportunity for women as "computers."

You see, long before the electronic computer was invented in the 1940's, the word "computer" was applied to humans – people who did the computations necessary for scientific work.

Anna Draper was the widow of Henry Draper. Henry wanted to put together a comprehensive star catalog which would include classifications based on stellar spectra. But Henry died in 1882 with most of the work undone. Anna gave a large sum of money to the Harvard Observatory and its director, Edward Pickering. She also gave Pickering some advice – hire women. Pickering did so and he paid them 25% of what he would have to pay men for the same job. Still that was better than what women could make in a factory job at that time. It was also work that could be done by someone who is deaf. Annie was partially deaf as a result of scarlet fever that she got while at Wellesley. Another

Continued on page 6



Club member Charles Pillers took this picture of Mercury's transit on November 8, 2006. Here are the equipment details.

Camera = Olympus E=500

Exposure & Ap = Auto

Scope = 10" Orion SkyQuest Dob

eyepiece = 2" 22mm Tel-Vue Nagler

Eyepiece Projection

The arrows were added by the editor but you can see the original in the HTML version at http://ephemeris.sjaa.net.

Observing across the Atlantic September-October, 2006

Two weeks, four observatories, new friends, old stones

Jane Houston Jones

Longitude 0° 47'W, Latitude 50° 43'N – Selsey, Sussex, UK

Near the 17th century thatched roof of Sir Patrick Moore's "Farthings" residence in Sussex stand two observatories. The larger one contains a 15-inch f/6 Fullerscope reflector, and the smaller one holds a 5-inch Cooke refractor. The night we spent at Farthings was magical despite increasing clouds. Sir Patrick ("just Patrick, please") was admitted as a member of the British Astronomical Association at age 11 in 1934, 5 years after he first read The Story of the Solar System, by G. F. Chambers, F.R.A.S. This little book, written in 1898, was a gift from his mother. Local amateur astronomer Ian Sharp, who refurbished the 15-inch joined us in the observatory on the night of our visit, and the BBC crew from Patrick's "The Sky at Night" TV show were there to film his October show in the morning. My biggest thrill, in addition to talking about sketching with Patrick, was to view a couple of his 7 Moon sketching journals, and some of his Jupiter, Saturn, Venus and Mars sketch collections. His first sketches were dated 1933, shortly before he joined the B.A.A. We were able to view a few stars through the 15-inch, but soon the clouds obscured the skies and we headed inside for conversation and stargazing of a different kind. Link to Sir Patrick's telescope refurbishment by Ian Sharp and others here : http://www.astro-sharp.com/pm_restoration_page1.asp

Longitude 1° 50'W, Latitude 51° 11'N – Stonehenge, Wiltshire, UK

It is not likely that ancient observers used Stonehenge for astronomical predictions. More likely, any astronomical observations made at Stonehenge were of a simple kind carried out for religious and ritual practices.

The main axis of the monument faces the horizon where the Sun rises on midsummer morning, the longest day of the year. But the axis really only lines up roughly. The Sun actually rises to the left of the Heel Stone (the marker for the axis). And because of the Earth's precession, 4,000 years ago, the Sun would have risen even farther off the center axis.

Is Stonehenge a tribute to Stone Age brilliance or the farmer's commen knowledge of the sky? A visit to Stonehenge or megoliths in Europe, Russia, the Americas, Africa, Asia, the Pacific reveal the remnants of ancient or accidental astronomers, who looked up in wonder just as we do today.

Longitude 7° 54'W, Latitude 55° 5'N – The Leviathan, Birr Castle and the Whirlpool Star Party, Co. Offaly, Ireland

For over 150 years, amateur and professional astronomers alike have been inspired by the science of William Parsons, the 3rd Earl of Rosse. The annual Whirlpool Star Party, held adjacent to the Earl's castle and telescope, honors the work of the past with results of the present. On September 29, 2006, we met many of our fellow speakers and attendees at Dooley's Hotel, the home of the Whirlpool Star party, in the shadow of Birr Castle and the great 72-inch Leviathan Telescope.

After wine and cheese,we all headed through the stone arch to the grounds of Birr Castle, inhabited by the current Lord Rosse, the patron and supporter of the Whirlpool Star Party. With only the starry sky to guide us, we were soon standing against the great 72-inch Leviathan telescope. Originally operated by chains and pulleys, the telescope is being renovated. Many attendees set up their own telescopes adjacent to the Leviathan and soon star party murmurs mixed with stunning views of the fall sky splendors.

Mojo (ed. note: Mojo is Morris Jones, the author's husband) and I were honored to be invited speakers at this year's Whirlpool Star Party. My talk was about my work on the Cassini Mission and a snapshot of Cassini's second year at the Saturnian system. Mojo's talk was about astronomy in the national parks of the US, part travelogue followed by the Milky Way talk he gives each summer in the national parks. These were just a small part of the speaker lineup, which included one other American visitor, Johnson Space Center's research pilot, Triple Nickel.

Any amateur astronomers thinking of an Autumn trip to Ireland would enjoy this wonderful star party. We left after just a few days with dozens of new friends. I can't wait to go back! Link to Birr Castle and telescope history here

Longitude 0° 0', Latitude 51° 28'N – Royal Observatory Greenwich, London, UK

The Royal Observatory, home of Greenwich Mean Time and the Prime Meridian line, is one of the most important historic scientific sites in the world. Founded in 1675, it is the official starting point for each new day, year and millennium. We took a stroll though the time galleries in Flamsteed House and listened to a Flamsteed lecture in the Octagon Room. John Harrison's marine timekeepers H1-H4 are on display along with regulators, precision clocks and watches, chronometers in the 1,000 object collection. Telescopes of Halley, Flamsteed and Airy fill the observatory. Out in the drizzling rain, we spotted an 8-foot section of William Herschel's 40-foot reflector telescope. No photographs were allowed in the museums. A virtual tour of the museum collections are here: http://www.nmm.ac.uk/collections//explore/listCollections.cfm

The Planet in the Machine

Diane K. Fisher & Tony Phillips

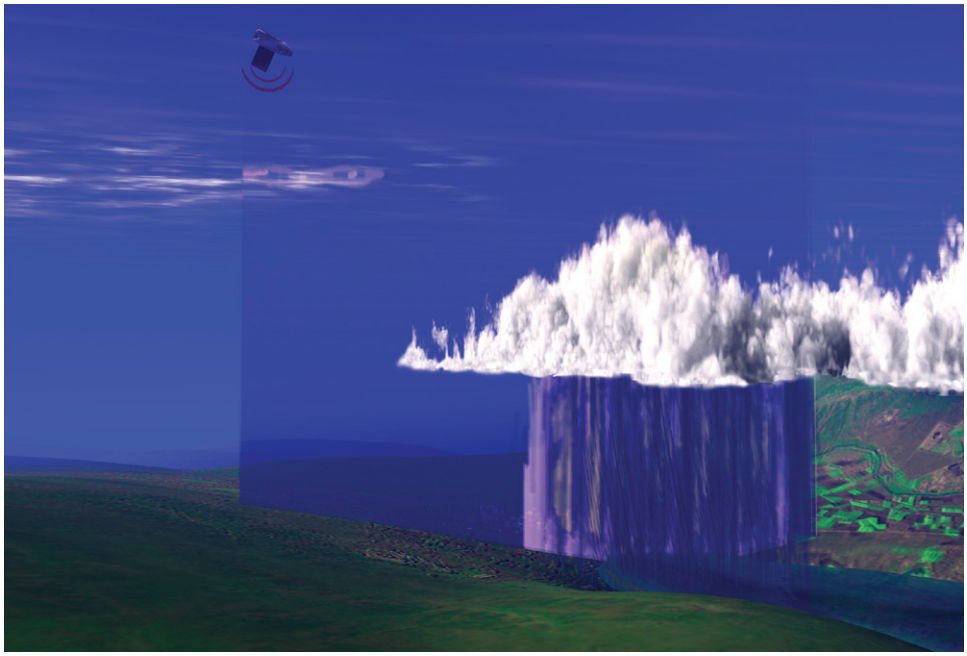
The story goes that a butterfly flapping its wings in Brazil can, over time, cause a tornado in Kansas. The "butterfly effect" is a common term to evoke the complexity of interdependent variables affecting weather around the globe. It alludes to the notion that small changes in initial conditions can cause wildly varying outcomes.

Now imagine millions of butterflies flapping their wings. And flies and crickets and birds. Now you understand why weather is so complex.

All kidding aside, insects are not in control. The real "butterfly effect" is driven by, for example, global winds and ocean currents, polar ice (melting and freezing), clouds and rain, and blowing desert dust. All these things interact with one another in bewilderingly complicated ways.

And then there's the human race. If a butterfly can cause a tornado, what can humans cause with their boundlessly reckless disturbances of initial conditions?

Understanding how it all fits together is a relatively new field called Earth system science. Earth system scientists work on building and fine-tuning mathematical models (computer programs) that describe the complex inter-relationships of Earth's carbon, water, energy, and trace gases as they are exchanged between the terrestrial biosphere and the atmosphere. Ultimately, they hope to understand Earth as an integrated system, and model changes in climate over the next 50-100 years. The better the models, the more accurate and detailed will be the image in the crystal ball.



CloudSat is one of the Earth observing satellites collecting data that will help develop and refine atmospheric circulation models and other types of weather and climate models. CloudSat's unique radar system reads the vertical structure of clouds, including liquid water and ice content, and how clouds affect the distribution of the Sun's energy in the atmosphere. See animation of this data simulation at www.nasa.gov/mission_pages/calipso/multimedia/cloud_calip_mm.html.

NASA's Earth System Science program provides real-world data for these models via a swarm of Earth-observing satellites. The satellites, which go by names like Terra and Aqua, keep an eye on Earth's land, biosphere, atmosphere, clouds, ice, and oceans. The data they collect are crucial to the modeling efforts.

Some models aim to predict short-term effects—in other words, weather. They may become part of severe weather warning systems and actually save lives. Other models aim to predict long-term effects—or climate. But, long-term predictions are much more difficult and much less likely to be believed by the general population, since only time can actually prove or disprove their validity. After all, small errors become large errors as the model is left to run into the future. However, as the models are further validated with near- and longer-term data, and as different models converge on a common scenario, they become more and more trustworthy to show us the future while we can still do something about it—we hope.

For a listing and more information on each of NASA's (and their partners') Earth data-gathering missions, visit science.hq.nasa.gov/missions/earth.html. Kids can get an easy introduction to Earth system science and play Earthy word games at spaceplace.nasa.gov/en/kids/earth/wordfind .

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

Solar System Stats for December 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	15^h11^m	17^h04^m	15^h36^m	15^h58^m	9^h50^m	22^h50^m	21^h19^m	16^h27^m
	11	16^h09^m	17^h58^m	16^h05^m	16^h07^m	9^h50^m	22^h51^m	21^h20^m	17^h11^m
	21	17^h13^m	18^h53^m	16^h35^m	16^h16^m	9^h50^m	22^h51^m	21^h21^m	17^h55^m
Dec	1	-15°47'	-23°07'	-19°18'	-19°45'	14°14'	-8°15'	-15°53'	-21°44'
	11	-20°10'	-24°08'	-20°54'	-20°11'	14°16'	-8°11'	-15°49'	-22°57'
	21	-23°24'	-23°55'	-22°12'	-20°35'	14°22'	-8°06'	-15°44'	-23°26'
Dist	1	1.13	1.69	2.50	6.35	8.89	20.02	30.40	0.986
	11	1.30	1.67	2.47	6.32	8.73	20.20	30.55	0.985
	21	1.40	1.65	2.43	6.26	8.59	20.36	30.69	0.984
Mag	1	-0.6	-3.8	1.6	-1.7	0.4	5.8	7.9	
	11	-0.6	-3.8	1.5	-1.7	0.4	5.9	8.0	
	21	-0.7	-3.8	1.5	-1.7	0.3	5.9	8.0	
Size	1	6.0"	9.9"	3.7"	31.0"	18.7"	3.5"	2.2"	32'26"
	11	5.2"	10.0"	3.8"	31.2"	19.0"	3.5"	2.2"	32'29"
	21	4.8"	10.1"	3.9"	31.5"	19.4"	3.4"	2.2"	32'31"

Annie Jump Cannon

Continued from page 3

one of Pickering's "harem" was Henrietta Leavitt. She was also deaf.

Annie Cannon went to work at the Harvard Observatory in 1897. Very soon after she started she noted that there was a problem with the ways that stellar spectra were being classified. The classifications went from A to O with the A stars having the strongest and clearest lines. But Annie noticed that the B stars were actually hotter and represented a more "evolved" star. Later it would be clear that the O stars were even hotter than B stars. Other classifications such as C, D and E were similar to other stars but the spectragraphs showed doubled lines which were most likely errors in the equipment. So the order of the stellar spectra became O, B, A, F, G, K and M. It was Annie herself who came up with the mnemonic used by many students since then to remember the order: "Oh be a fine girl, kiss me."

From 1911 to 1915, the intense work on the stellar spectra was done and in 1918, the first volumn of the Henry Draper Catalogue was published. It would be fully published in 1924 when the ninth and "final" volume was published. I say final in quotes because there were extensions. The last was published in 1949, 8 years after Annie died but with her name still on it.

Annie Jump Cannon (1863-1941). This photo is from her days at Wellesley College. References for this article are in the HTML version.

During her lifetime, Annie received many awards and honorary degrees. The awards included the Draper medal. Even to the present day, only one other woman has won this award and that person shared it with her male collaborator.

There were so many accolades after she died. She had a "priceless ability of being good company for all kinds of people ... her character, distinguished by modesty and unselfishness, was human nature at its best". She was called "a continued source of inspiration to all who knew her. This is especially true for women who work in astronomy". Another notice said that besides being a pioneer she was "genuinely interested in all persons".

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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
11	Orion XT6 Dob	Ravi Shankar Erram
12	Orion XT8 Dob	Sarah E. Jones
13	Orion XT6 Dob	Rajiv Vora
14	8" f/8.5 Dob	Bill Kerns
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
32	6" f/7 Dobson	Sandy Mohan
34	Dynamax 8" S/C	Yuan-Tung Chin
35	Meade 8" Equatorial	Mike Horzewski
37	4" Fluorite Refractor	Peter Young
38	Meade 4.5" Digital Newt	Tej Kohli
39	17" Dobson	Steve Nelson
42	11x80 Binoculars	Ritesh Vishwakarma
43	Orion XT4.5 Dob	Gary Mitchell
44	4.5" Skyview/ P Mount	Mantle Yu

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
10	Star Spectroscope	Greg Bradburn	12/15/06
29	C8, Astrophotography	Rodney Moorehead	11/18/06

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	?
8	14" Dobson	Charles Santori	10/2/06
9	C-11 Compustar	Bill Maney	Indefinite
16	Solar Scope	Mike Koop	Repair
21	10" Dobson	Michael Dajewski	Repair
28	13" Dobson	Craig Scull	11/1/06
33	10" Deep Space Explorer	Art Kalb	12/30/06
36	Celestron 8" f/6 Skyhopper	Kristi Whitfield	12/16/06
40	Super C8+	Srinath Krishnan	1/15/07
41	18" Sky Designs Dob	Kevin Roberts	12/17/06

Waiting list: No Waiting!

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