



SJAA EPHEMERIS

SJAA Activities Calendar

Jim Van Nuland

(late) June

- 21 **General Meeting at Houge Park.** 8 p.m. Our speaker is Dr. Helen Quinn on the "Mystery of the Missing Antimatter."
- 27 Houge Park star party. Sunset 8:32 p.m., 30% moon rises 1:39 a.m. Star party hours: 9:30 until midnight.
- 28 Astronomy Class (beginner's workshop) at Coyote Lake County Park
- 28 Coyote Lake County Park public star party. Sunset 8:32 p.m., 20% moon rises 2:14 a.m.

July

- 2-5 **Golden State Star Party. See March Issue.**
- 5 Dark Sky weekend. Sunset 8:31 p.m., 13% moon sets 10:40 p.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 11 Houge Park star party. Sunset 8:29 p.m., 69% moon sets 1:18 a.m. Star party hours: 9:30 until midnight.
- 19 **General Meeting at Houge Park.** 8 p.m. Our speaker is John Dillon on "When Astronomy Became a Science: The Museum of Alexandria."
- 25 Houge Park star party. Sunset 8:21 p.m., 43% moon rises 12:13 a.m. Star party hours: 9:30 until midnight.
- 25 Astronomy Class at Houge Park. 7:30 p.m. TBA
- 26 Coyote Lake County Park public star party. Sunset 8:20 p.m., 33% moon rises 12:53 a.m.

August

- 2 Dark Sky weekend. Sunset 8:14 p.m., 4% moon sets 9:07 p.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 8 Houge Park star party. Sunset 8:07 p.m., 53% moon sets 11:50 p.m. Star party hours: 9:00 until midnight.
- 16 **General Meeting at Houge Park.** 8 p.m. Our speaker is UCB astronomer Dr. Frank Marchis, on the topic of Binary Asteroids.
- 22 Astronomy Class at Houge Park. 7:30 p.m. TBA
- 22 Houge Park star party. Sunset 7:50 p.m., 59% moon rises 10:53 p.m. Star party hours: 9:00 until midnight.
- 23 Coyote Lake County Park public star party. Sunset 7:48 p.m., 47% moon rises 11:38 p.m.
- 30 Dark Sky weekend. Sunset 7:39 p.m., 0% moon sets 7:33 p.m.

The Board of Directors meets before each general meeting. Call the hotline for the exact time.

July General Meeting

John Dillon

Houge Park, 8 p.m.

July 19, 2008

It's usually said that Astronomy became a Science 400 years ago with the revolutionary discoveries of Copernicus, Kepler and Galileo. But those men credited their insights to being able to "stand on the shoulders of giants". The "giants" were the ancient Greeks who worked nearly 2000 years before, primarily at the great Museion of Alexandria and its legendary Library. The astonishing Antikithera device which made recent headlines is only one expression of the intellectual fervor that marked that time and place.

John Dillon will explore the work of several generations associated with Alexandria's Museum and show why what they did was more than just nature philosophy and fully meets our modern standards of real science. He will also show how that sophisticated knowledge became the basis for the Copernican Revolution – and why that "revolution" was anything but!

John Dillon is the Science Curator of San Francisco's Randall Museum. He did his graduate work at Duke University in zoology and philosophy and has studied history and philosophy of science at Cambridge and Oxford Universities. He has lectured for many years at UC Berkeley and Santa Cruz Extensions and the California Academy of Sciences. John has also lead more than 40 international ecotourism programs, including 5 solar eclipse trips, and is Past President of the San Francisco Amateur Astronomers.



24 hour news and information hotline:

(408) 559-1221

<http://www.sjaa.net>

DEEP SKY OBSERVING

Mark Wagner

July 2008 third quarter to new moon observing list. The list begins in the north and moves southward. Targets are rated 1 to 3 for challenge, with 1 being easier. All objects are within one hour of right ascension, north to south, in the east at astronomical dark.

More objects are in the full list which is at <http://www.resource-intl.com/Deep.Sky.Jul.08.html>

Rating	Object	Const.	Type	Size	Mag	R.A.	Dec.
1	M57	Lyr	PN	1.8'x1.4'	9.7P	18 53 35	33 01 44
	"13 ^{mm} NGC 6720, very bright, moderately large, slightly elongated WSW-ESE, high surface brightness						
1	M56	Lyr	GC	8.8'	8.4	19 16 35	30 11 05
	"17.5 ^{mm} NGC 6779 about 30 stars resolved including many mag 15 stars."						
2	N6800	Vul	OC	5.0'		19 26 59	25 05 03
	"17.5 ^{mm} , Bright, very large, fairly rich in spots but not concentrated"						
2	NGC 6781	Aql	PN	1.8'	11.8P	19 18 28	06 32 15
	"18 ^{mm} , 225x moderately bright, fairly large, round, at least 1.5' diameter."						
2	NGC 6633	Oph	OC	27'		18 27 13	06 30 37
	"13.1 ^{mm} very bright, very large, loose, scattered. At 62x 150 stars visible in 60' field"						
2	NGC 6756	Aql	OC	4'	10.6	19 08 43	04 42 19
	280x two dozen mag 11.5 and fainter stars in surrounding bright knot E of center.						
2	NGC 6755	Aql	OC	14'	7.5	19 07 48	04 14 00
	"17.5 ^{mm} , 140x this is a bright group of 80 stars mag 10-14 in a 10' diameter."						
1	M11	Sct	OC	13'	5.8	18 51 06	-06 16 00
	"13.1 ^{mm} 140x, several hundred stars mag 11-15 and mag 8 star, remarkably rich, some dense knots."						
2	NGC 6664	Sct	OC	16'	7.8	18 36 31	-08 11 00
	"17.5 ^{mm} 220x about 100 stars in a 15' scattered field, many in strings, no dense parts."						
2	NGC 6712	Sct	GC	9.8'	8.1	18 53 04	-08 42 44
	"18 ^{mm} , 435x roughly three dozen stars resolved in a 6' region, mostly western half of cluster."						
1	M26	Sct	OC	14'	8	18 45 12	-09 23 00
	"Distinctive cluster stands out well at 100x. At 220x, ~60 stars are resolved in a 7' diameter."						
2	NGC 6645	Sag	OC	10'	8.5	18 32 36	-16 53 00
	"17.5 ^{mm} 82x striking, rich cluster of 20' diameter, rich in faint stars, "hole" in center devoid of stars."						
1	M25	Sag	OC	32'	4.6	18 31 45	-19 07 00
	"17.5 ^{mm} about 100 stars in 30' field although fills 45' field at 82x."						
2	N6717	Sag	GC	3.9'	9.2	18 55 06	-22 42 06
	"18 ^{mm} Pal 9 280x stands out prominently as unconcentrated low surface brightness hazy glow 1' in diameter."						
2	NGC 6642	Sag	GC	5.8'	8.9	18 31 54	-23 38 35
	"18 ^{mm} 393x fairly small fairly bright globular with very bright 30 ^{mm} core and 2' halo, small core very mottled."						
1	M22	Sag	GC	32'	5.2	18 36 24	-23 54 12
	"18 ^{mm} 220x 10' diameter, outliers increase total diameter, very bright core irregularly round but not concentrated."						

Note: Source catalogs are Messier, Arp, Abell Planetary, Abell Galaxy Cluster (AGC), Hickson Compact Galaxy (HCG), Sharpless III Regions, Barnard Dark Nebulae, Herschel 400-I, Herschel 400-II. Herschel 400-I are identified as NGCXXXX, Herschel 400-II as NXXXX.

Phoenix from fire into ice

Akkana Peck

The Phoenix has landed! NASA's latest Mars lander has survived the Mars curse and landed safely in the north polar region of the red planet, where it has been checking out its various tools and is just now getting started on its business of analyzing soil samples to learn about the past and present of water on Mars.

Phoenix's mission is a short one — just three months, through September.

After that, as sunlight wanes in the Martian autumn, Phoenix stops digging and turns to the easier work of broadcasting weather information. No one's really sure how long it will last — once winter comes, there will be no sunlight at all falling on the solar panels, and since winters get COLD in the Martian Polar Regions, it's not clear whether the batteries will survive until the spring.

Back here on Earth, we'll see Jupiter at opposition on July 9. But it's very low, barely over 30° up, so we won't see as much detail as you might hope for during this opposition. Still, the beginning of Jupiter-watching season is always worth celebrating.

Mars and Saturn are both visible in

early evening. They make a very close pass on the night of the 10th, down in the belly of Leo where there are so many interesting galaxies. In fact, they're pretty close to M95, M96 and M105 (and assorted NGC galaxies nearby). Mars and Saturn are magnitudes 1.7 and 0.8 respectively — you don't have to worry too much about spoiling your

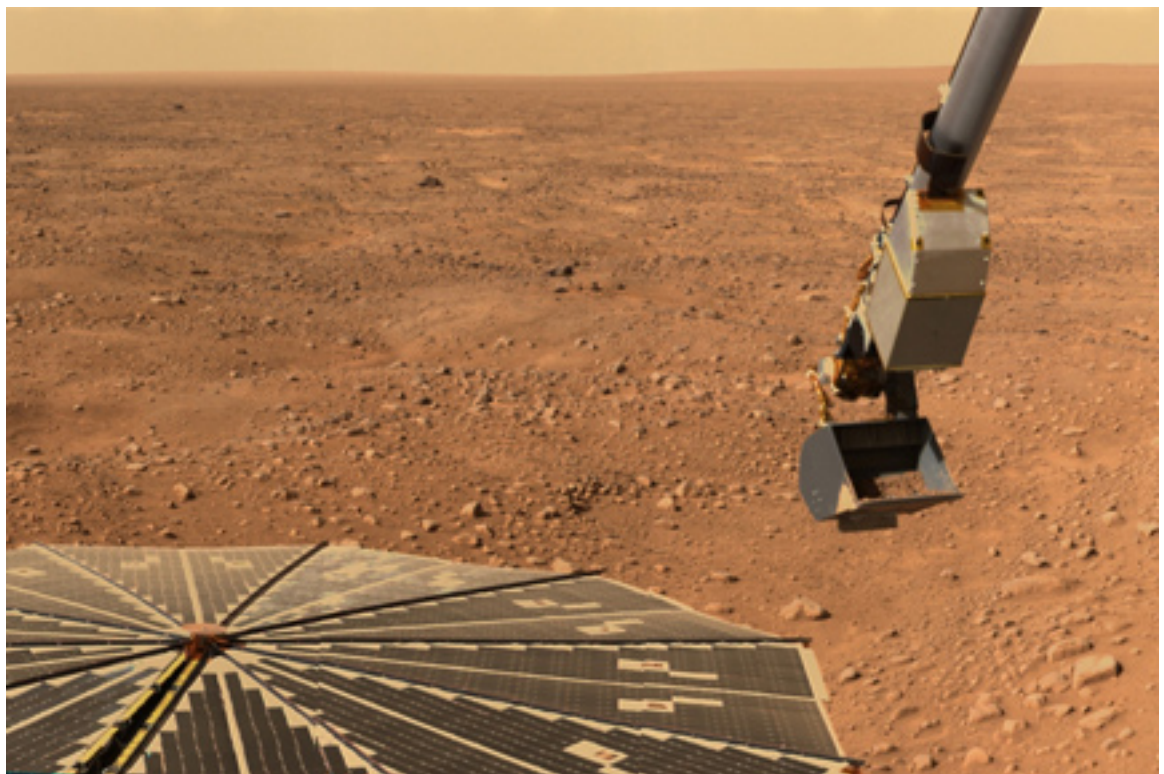
night vision if you take a little planet-break from galaxies every now and then.

“...the beginning of Jupiter-watching season is always worth celebrating”

Partway through July, Venus moves into the evening sky to join Mars and Saturn. It will remain for the rest of the year — a very long Venus season this time!

Mercury is bright in the dawn sky during the first half of the month.

Uranus, on the border between Aquarius and Pisces, and Neptune, in Capricornus, rise late in the evening and are high by morning. Pluto is better placed: it's already up at sunset and transits a bit before midnight (though it's fairly low in the south, at 35°), and it's nicely placed a little less than 2° due north of open cluster M23. Of course, that also puts it right in the heart of the Milky Way, where there are lots of other stars to confuse the hunt. But that region also has lots of eye candy, so you'll have a good time while you're still hunting for Pluto.



The Phoenix lander on Mars with its scoop already carrying some soil and ready to move it to one of its science stations. Photo courtesy of NASA/JPL/U. of Arizona

Solar Eclipses

Rob Hawley

When a moon gets between its planet and the sun then the moon casts a shadow on the planet. This is no different from holding your hand in front of you and noticing the shadow on the ground. This shadow is rather complex, but this is discussed below.

Eclipses on the earth were once the subject of shamans and superstition. Even today in many countries well meaning local press put fear into their citizens that sunlight during an eclipse is somehow dangerous. (The sunlight itself is dimmer and thus less dangerous, but the extreme stories try to discourage people from looking at the sun).

Eclipses happen wherever moons cross in front of the sun. The only other planet that has easily observable eclipses is Jupiter. Jupiter's moons regularly cross between the planet and the sun. Sky and Telescope publishes tables of these eclipses each month. Google offers a tool to make predictions on your PC¹.

Eclipse Months

However, we are concerned with eclipses on the Earth. Eclipses on the earth are so spectacular because the moon and sun have about the same apparent size in our skies². This allows the moon to mask the brightest parts of the sun while not masking the corona.

There are two "Eclipse Months" each year. During each of these lunations³ a solar eclipse (when the moon is between the sun and earth) and/or a lunar eclipse (when the earth is in between) can occur. This variability is due to the way the moon orbits the earth. The plane of the moon's orbit is tilted by about 5° relative to the plane of the earth's around the sun. The orientation of the plane is fixed. 12 lunations is not exactly a year so the plane drifts relative to the earth. We all know that because the calendar date of the new moon varies from

year to year.

Eclipses can happen when the plane of the moon's orbit crosses the plane of the earth's. This happens 24 times each year. However, in only two months of the year is there a chance that the earth, sun, and moon will properly align. At other times the crossing is not oriented correctly. A movie of a solar eclipse from my web site⁴ shows this. In 2008 two solar eclipses will occur (Feb 7 and Aug 1) and two lunar eclipses (Feb 21 and Aug 16). Not every year has all four events. The figure (bottom, left) shows how the orbits of the moon and sun intersect during totality.

Even during these "Eclipse Months" there are no guarantees. One of the caveats is that the orbit of the moon is an ellipse, not a circle. Thus the moon is sometimes closer and sometimes further away. If it is just slightly further away the moon will not completely cover the brightest parts of the sun. This causes an "annular" eclipse.

Returning to my hand analogy. If you hold your hand further from the ground you will notice the edges are indistinct. Since the sun is not a point source of light, one edge of the sun is illuminating areas that are hidden by the other. Similarly only a narrow band on the earth is fully in the shadow of the moon. In the rest some portion of the sun remains visible. These areas experience a partial eclipse.

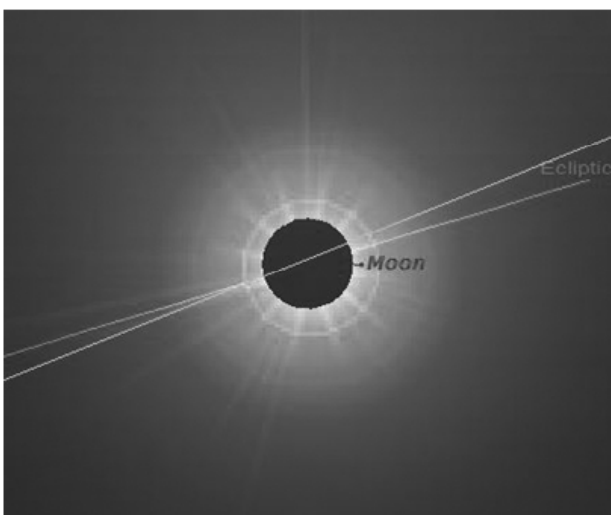
The track of the shadow over the earth varies greatly. Since the plane of the moon's orbit varies relative to the tilt of the earth, and the direction to the sun, the path of totality varies. The path repeats in regular cycles discussed here (http://en.wikipedia.org/wiki/Saros_cycle)

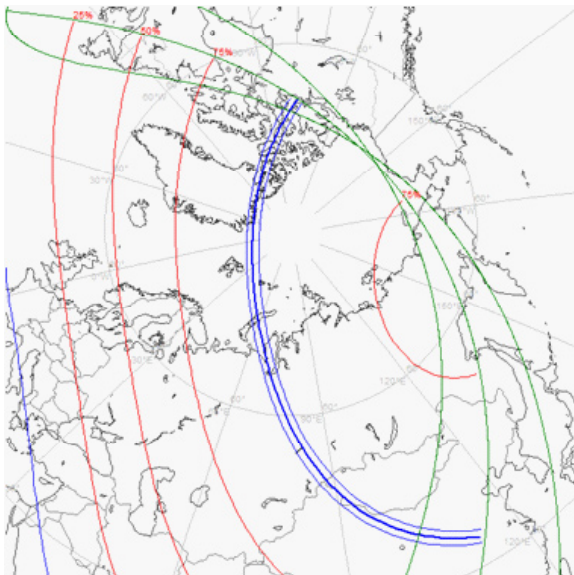
August 1 Eclipse

The next eclipse will occur this summer starting in the north polar regions and then passing almost due south through Siberia and then China.

A community of observers regularly travels to eclipses. I joined that community in 1999 in the Black Sea. The serious observers this year are going to Western China. I will be observing from Siberia (never been there, going to China next year). Some are even going to try to catch the eclipse by plane over the north pole!

Of course, weather may be a problem in Siberia. Oh Well I hear they have good vodka (and mosquitoes the size of birds)!





August 2008

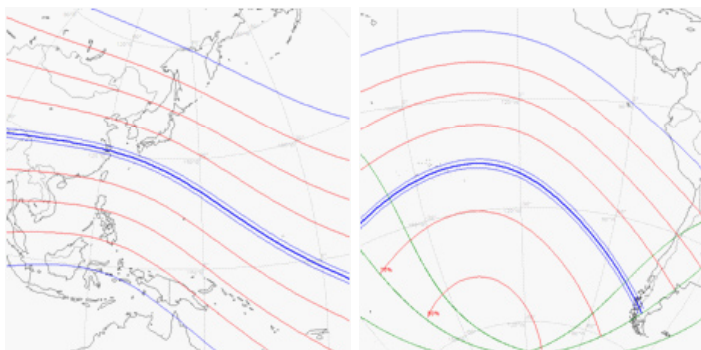


August 2017

Coming Soon

China July 2009

Next year the moon's shadow will again visit China. This time it will pass nearly west to east entering the ocean near Shanghai. Interestingly Iwo Jima is near the centerline.



July 2009

July 2010

South Pacific July 2010

The following year the track will cross the South Pacific. Ships will likely visit Pitcairn Island again as they did in 2005. Easter Island will also be under the track. Tahiti will be near the track.

Next US Visible Eclipse

Don't want to travel to exotic locations to see one of these? In 9 years the track will be accessible by car. The track will enter the US in Oregon, pass through Idaho and Colorado, and into the Midwest.

Just want to stay at home? You are going to have a wait! The next total eclipse visible from San Jose is in 2252.

Visiting an Eclipse

At this point it is likely too late to book a trip to the August eclipse. As I mentioned earlier, eclipses attract a crowd of regulars. Trips tend to book quickly. This would be a good time to think about 2009 and 10. While you can go on your own to Shanghai in 09, the logistics will be easier if you go with a group. The two companies I recommend are TravelQuest International and MWT Associates. Others are in the business, but I can personally vouch for these two.

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(Endnotes)

- 1 <http://code.google.com/p/jupiter-eclipse-plugin/>
- 2 Unfortunately the moon is moving away from the earth. Our distant ancestors will no longer see total solar eclipses.
- 3 Lunar Cycle from New Moon to New Moon.
- 4 <http://www.robhawley.net/sjaa/moon-orbit.mov>

We all know that ozone in the stratosphere blocks harmful ultraviolet sunlight, and perhaps some people know that ozone at the Earth's surface is itself harmful, damaging people's lungs and contributing to smog.

But did you know that ozone also acts as a potent greenhouse gas? At middle altitudes between the ground and the stratosphere, ozone captures heat much as carbon dioxide does.

In fact, pound for pound, ozone is about 3000 times stronger as a greenhouse gas than CO₂. So even though there's much less ozone at middle altitudes than CO₂, it still packs a considerable punch. Ozone traps up to one-third as much heat as the better known culprit in climate change.

Scientists now have an unprecedented view of this mid-altitude ozone thanks to an instrument aboard NASA's Aura satellite called the Tropospheric Emission Spectrometer—"TES" for short.

Most satellites can measure only the total amount of ozone in a vertical column of air. They can't distinguish between helpful ozone in the stratosphere, harmful ozone at the ground, and heat-trapping ozone in between. By looking sideways toward Earth's horizon, a few satellites have managed to probe the vertical distribution of ozone, but only to the bottom of the stratosphere.

Unlike the others, TES can measure the distribution of ozone all the way down to the heat-trapping middle altitudes. "We see vertical information in ozone that nobody else has measured before from space," says Annmarie Eldering, Deputy Principal Investigator for TES.

The global perspective offered by an orbiting satellite is especially important for ozone. Ozone is highly reactive. It is constantly being created and destroyed

by photochemical reactions in the atmosphere and by lightning. So its concentration varies from region to region, from season to season, and as the wind blows.

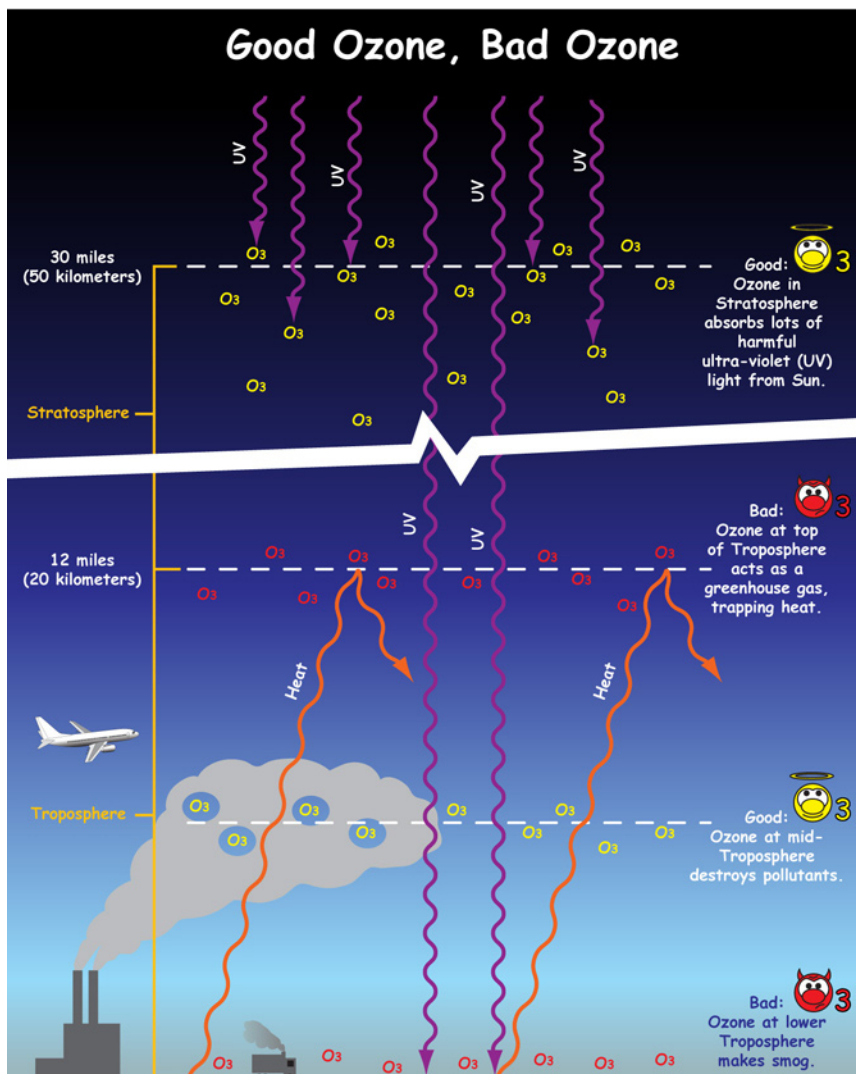
Data from TES show that ozone's heat-trapping effect is greatest in the spring, when intensifying sunlight and warming temperatures fuel the reactions that generate ozone. Most of ozone's contribution to the greenhouse effect occurs within 45 degrees latitude from the equator.

Increasing industrialization, particularly in the developing world, could lead to an

increase in mid-altitude ozone, Eldering says. Cars and coal-fired power plants release air pollutants that later react to produce more ozone.

"There's concern that overall background levels are slowly increasing over time," Eldering says. TES will continue to monitor these trends, she says, keeping a careful eye on ozone, the greenhouse gas.

Learn more about TES and the science of ozone at tes.jpl.nasa.gov/. Kids can get a great introduction to good ozone and bad ozone at spaceplace.nasa.gov/en/kids/tes/gases.



Ozone behaves differently at different altitudes in the atmosphere. High in the stratosphere and at mid-troposphere it has positive effects on life at the surface. At the top of the troposphere ozone is a greenhouse gas and at the surface it makes smog

Selecting the Right Loan

Rob Hawley

It has been about a year now since I agreed to be the acting manager of the loaner program. The response to the program has been very encouraging. Many of the scopes loaned last fall are now ready for new owners. Based on the response to the program we reduced the loan period back to the three month period used prior to 2007.

Part of my responsibility is to make sure that we are loaning the right scopes. The right scope is the one that the loanee will learn from (and use).

“...first recommendations for beginners are 6 to 8 inch Dobs.”

Whenever a loanee (particularly a beginner) wants to borrow a scope, they and I exchange some email. Naturally, the answer depends largely on what the loanee wants to look at and how far they are willing to travel. This article distills the general advice I give. Others may disagree, but it is my byline so I do not represent this as other than my opinion.

The Beginner Sweet Spot

In the interest of full disclosure I am a Dob bigot. I have owned or used all of the other types of scopes (Schmitt Cassegrains, Refractors, Equatorial Mounts, etc), but nothing equals the price performance of a Dob.

Given that bias it is not too surprising that my first recommendations for beginners are 6 to 8 inch Dobs. These are relatively light. They will fit in the back seat of most sedans. The bases fit in most trunks. You do need to learn to star hop, but the club will teach you star hopping¹. One of our 6" scopes has Digital Setting Circles that assist in

locating objects (at the cost of making the scope more complex to set up).

The club also owns a Celestron Ultima. This is an 8" Schmitt Cassegrain with full GO TO. Despite my own preference against this design I found I enjoyed the night I worked with this instrument. It is heavier than a Dob, but not prohibitively. It is also more compact. And then there is the GO TO. That makes setting up more complex, but the scope is able to accurately find most objects.

Other Smaller Scopes

The program also has some scopes smaller than 6". Of those, the StarBlast is the only one I would unconditionally recommend. I list this scope in the low cost section of my beginner program². It is light enough for a child to lift and use.

What about the other small scopes in the program? From a price performance perspective a 6" Dob (\$230) is a better buy than a 4.5" (\$190). The smaller scope offers little advantage other than its price. On the other hand if you primarily just want to look at the planets (and are not fussy about the optics) then these will work. (The Starblast is still a better choice.)

What about the Equatorial Mounts? Scope 44 is a 4.5" and is a manual scope that is optically similar to the 4.5" Dob. The Equatorial Mounts (and wedge SCTs) have motors that allow the scope to keep an object in the field of view. The disadvantage with all of these is that they are harder to set up and use. Equatorial mounted scopes 23 and 35 also have the disadvantage of requiring AC power.. The board understands this limitation of our offerings.

More Advanced Scopes

The club has two 10" Dobs. These are larger scopes (heavier and bigger) than the beginner scopes. I do not recommend these to someone just starting. On the other hand 10" is an excellent size. Going from 8" to 10" will increase the number of objects and amount of detail you can see. This is small enough to still be grab and go, but large enough to keep you interested for years. I advise beginners to become familiar with one of the smaller scopes first.

The club's 4" APO Refractor is the premier scope for planet hunting. While that sounds like the size of the smaller scopes discussed above, this scope has a different goal. If planets and double stars are your thing, this scope will show them the best.

“ ... the StarBlast is the only one I would unconditionally recommend ... It is light enough for a child to lift and use.”

The club also has some larger scopes. These are intended for members who have mastered the smaller scopes and want a taste of what "Big Glass" will allow them to do. Using these scopes is necessarily more difficult. They are heavier. Most require more car space. They will require you to observe standing on a ladder.

Which is the right scope for me?

As I said above the best way is to email me and we can discuss it. Once we select a scope I will arrange to transfer it to you. Most scopes are stored with the

Continued on page 8

previous loanee so it may take some time to arraign the transfer.

How will SJAA Support Me After the Loan?

SJAA offers “Beginner’s Workshops”. Normally we hold these once per quarter in place of a “Beginner’s Astronomy Class”. These allow you to bring your scope (loaner or otherwise) and SJAA will give you help using your scope.

(Endnotes)

- 1 For example, <http://www.sjaa.net/bw/adv-chart-read/>
- 2 <http://www.sjaa.net/bw/telescopes/img20.html>

Total Solar Eclipse 2008 From Xinjiang Province in Northwestern China Raphael Rosen

An Exploratorium and NASA Sun-Earth Connection Education Forum Event Overnight Eclipse Viewing Party at Exploratorium Begins July 31, 2008 at 9pm And Continues Through Friday, August 1 in the Wee Hours Over 100 Museums Internationally Also Participating Live Webcast Begins at 3:30am (PDT), and Totality at 4:09am (PDT)<http://www.exploratorium.edu/eclipse/2008>

San Francisco’s Exploratorium brings its fifth eclipse expedition team to remote Xinjiang Province in Northwestern China, very close to the Mongolian border, where the Exploratorium will webcast a total solar eclipse live to the world. From this remote desert on the ancient Silk Route, we’ll point four cutting-edge telescopes skywards to capture the eclipse from beginning to end — in white light, hydrogen alpha (for amazing details), and Calcium-K (to see surface structure). In addition to live feeds of the eclipse, Exploratorium scientists Dr. Rob Semper and Dr. Paul Doherty will provide commentary on prominences, sunspots, and the corona as they occur. NASA Hemisphere physicist Dr. Erik Christian will show some of the latest imagery of the sun from NASA’s SOHO and STEREO missions, and explain how the solar wind can impact us here on Earth. We’ll also be joined by Dr. Na Wang, Director of the Urumqi National Observatory. From coronal mass ejections to snapshots of the Silk Road to the newest U.S. and Chinese moon missions, we’ll cover it all while watching one of the world’s most awe-inspiring celestial events. As the date nears, please check back at <http://www.exploratorium.edu/eclipse/2008> for more details.

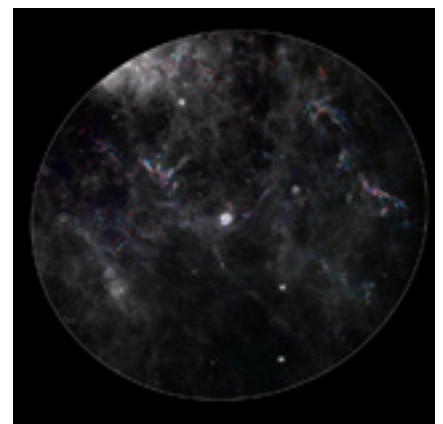
For full press release, go to:<http://www.exploratorium.edu/pr/documents/08-7Total.html>

Spend the Night at the Exploratorium! See the eclipse in person live at the Exploratorium. Pack your sleeping bag and camp out on the museum floor for an overnight eclipse party. This event will capture and actively observe the full eclipse, and investigate space weather and the sun as a power source. It is both a celebration and party, a look at Chinese culture, and pure Sun-Earth Connection science. The celebration begins with astronomers, food, music, and of course, tea/caffeine, to keep you alert for the big event. Doors open at 9pm, Thursday July 31. Films and solar science activities, like spectroscope making, will be held, as well as the sorts of traditional Chinese performances that mark special occasions, and in the name of science, roving astronomers to answer questions. General admission will be open from 9pm-midnight. Museum capacity is limited; we may sell out early. We strongly encourage advance reservations through <http://www.ticketweb.com>.

New Information from Cassiopeia A

A supernova remnant has given up new information thanks to Spitzer according to a recent article in Science. Cass A blew up 11,300 years ago and its light should have passed Earth in the late 1600s but there are few mentions of it. John Flamsteed made one observation of what an apparently dim star. But maybe now we know why. “Type IIb supernovas fade quickly,” said co-author George Rieke of the University of Arizona in Tucson. “This, plus a few cloudy nights, might explain the historical enigma around Cassiopeia A.”

“This is an exciting result,” said Alex Filippenko of Berkeley. “Cassiopeia A has been studied extensively with many telescopes over a wide range of wavelengths. It is gratifying that we finally know what kind of star exploded so long ago.” The image on the right shows the remnant and its light echoes. NASA/JPL-Caltech.



The Last 31 Days In Astronomy

JUNE-11-2008 *Let's keep it plutonic* The International Astronomical Union has reclassified Pluto as a "plutoid". The new definition is actually a result of the 2006 decision to declare Pluto a "dwarf planet". At that time, the IAU said it would further clarify what that really meant. But the astronomical community is not happy. Alan Stern lead investigator for the New Horizons mission to Pluto says "there is a disturbance in the force". If you don't know what that means, "Everything will be OK". Otherwise, there are those who think the IAU is becoming irrelevant and that a new organization may be necessary. There are also those who think "planet" should be define by geophysicists, not astronomers. As for the lack of fanfare from the IAU "this is normal procedure" according to IAU president Catherine Cesarsky. By the way, the New Horizons spacecraft just passed the orbit of Saturn on its voyage to Pluto. Pluto has, so far, had 3 different classifications since it's launch 2 and half years ago. <http://www.space.com/scienceastronomy/080612-pluto-planet.html>

JUNE-11-2008 *GLAST Blasts off* The GLAST (Gamma-Ray Large Area Space Telescope) spacecraft was launched and headed toward its mission of studying gamma-rays. Unlike Swift and other gamma-ray detectors in space, GLAST can study a wide expanse of the universe at one time. The name GLAST is not likely to stick. It will probably be renamed once it has completed its setup activities and started its scientific mission (about August 10). It orbits the Earth at a height of 350 miles. http://www.nasa.gov/mission_pages/GLAST/main/

MAY-27-2008 *Largest extragalactic star* A star has been found in the Large Magellanic Cloud that is larger than Betelgeuse. If centered at the location of the sun it would reach out to Saturn. It is the first time that an extragalactic star has been resolved. The study was done using the VLT (Very Large Telescope - what else could it be) owned by the European Organization for Astronomical Research in the Southern Hemisphere (ESO). <http://www.eso.org/public/outreach/press-rel/pr-2008/pr-15-08.html>

MAY-25-2008 *Phoenix Lands* The Phoenix spacecraft successfully landed on Mars in the North Polar Region. To understand how far north it is, if it landed on Earth it might be in the Yukon territory. Early operations have been dinged by communication glitches, equipment malfunctions and dirt that clumps together too much (they should see my backyard). But all of these challenges have been met and the lander continues its quest to actually touch water (ice) on Mars. <http://phoenix.lpl.arizona.edu/>

MAY-10-2008 *Universe: Not so dim* A recent study of 10,000 galaxies looked at light output from stars. It found that only 11% of the light output in the .1 micrometer range managed to get through the dust of its own galaxy though this rises linearly as you move toward the infrared. 87% of the 2.0 micrometer radiation gets out. The upshot of all of this is that the universe is actually twice as bright as previously thought. <http://www.journals.uchicago.edu/doi/abs/10.1086/588582>

JUN-03-2008 *New Spitzer Mosaic of MW*
A total of 800,000 pictures taken by Spitzer has been combined into the most detailed image of the Milky Way ever created. "I suspect that Spitzer's view of the galaxy is the best that we'll have for the foreseeable future. There is currently no mission planned that has both a wide field of view and the sensitivity needed to probe the Milky Way at these infrared wavelengths," said Barbara Whitney of the Space Science Institute, Madison, Wis. See the full page picture on the following page. <http://jpl.nasa.gov/news/news.cfm?release=2008-095> Spitzer images were also used to reach a stunning conclusion about the Milky Way. It has only two spiral arms. Actually, this is in keeping with barred spiral galaxies that we can see. The spiral arms, at least the major ones, are appended to each side of the bar. An artistic rendering of this is seen at the right. <http://jpl.nasa.gov/news/news.cfm?release=2008-094>



Telescope Loaner Program

The loaner program offers members a means to try scopes of various sizes and technologies before you buy. It is one of the real jewels of being a member of the club. Scopes are available for all experience levels.

The inventory is constantly changing. As of this writing (early June) these scopes were available.

Scope Number	Scope Description
43	4.5" f/8 Orion XT Dob
44	4.5" f/8 Orion Skyview Newt
32	5.5" f/7.6 Signature Dob
23	6" f/8 Edmund Newt on EQ Mount
11	6" f/8 Orion XT Dob
34	8" f/10 Dynamax S/C
29	8" Celestron S/C Astrophoto
45	10" f/5 Dob, Earletron
7	12.5" f/7 Homemade Dob
10	Star Spectroscope
37	4" Celestron Flourite Refractor
13	6" f/8 Orion XT Dob
34	8" f/10 Dynamax S/C
6	8" f.10 Celestron S/C
14	8" f8.5 Homemade Dob
35	8" f/6 Meade Newt on EQ Mount

For up to date information please see the loaner program web page: <http://www.sjaa.net/loaners>

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