



**Inside this issue**

Contact Information .....2  
Editor's Message .....2-3  
Public Star Party Information .....3-4  
President's Message.....4  
Outreach News .....5  
Banquet Restaurant Directions .....6  
Feature Article: The Great Nebula.....7-11  
Tales Too Ticklish to Tell .....12  
Telescopes for Sale .....13  
Monterey Park Observatory Map.....13  
Loaner Corner .....14  
Events Calendar.....15  
LAAS Yahoo Group: How to Join.....16  
Sky and Telescope Club Subscriptions .....16  
Astronomy Subscriptions .....16  
New Members Coordinator Corner.....16  
Membership Information .....16

**OUR 81st YEAR OF  
ASTRONOMY IN LOS  
ANGELES**

**Los Angeles Astronomical Society**  
Griffith Observatory  
2800 East Observatory Road  
Los Angeles, CA 90027

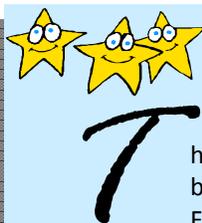
**Change of Address, Membership:**  
Peter De Hoff, LAAS Secretary

**LAAS Officers:**

President..... David Sovereign  
(626) 794-0646  
Vice President ..... Mary Brown  
nwwrgz@yahoo.com  
Treasurer ..... Herbert Kraus  
Treasurer@laas.org  
Secretary..... Stephen Dashiell  
Secretary@laas.org  
Recording Secretary ..... PJ Goldfinger  
pj@chara-array.org

**Volunteers:**

Library ..... Mary Brown  
nwwrgz@yahoo.com  
Outreach..... Don DeGregori  
& Herbert Kraus  
Outreach@laas.org  
Loaner Scopes..... Dave Sovereign  
(626) 794-0646  
Messier Program ..... Norman Vargas  
(626) 288-4397  
New Members..... No Contact  
Coordinator@laas.org  
Speakers Bureau ..... Tim Thompson  
tim@etacarinae.jpl.nasa.gov  
Youth Liaison ..... Brian Mok  
Youth@laas.org  
Bulletin Editor..... David Nakamoto  
BulletinEditor@laas.org  
Bulletin Printers..... Peter De Hoff  
& Minghua Nie  
Web Site Manager ..... Jim McGee  
admin@laas.org  
Contributing Authors... Tim Thompson  
Don DeGregori  
David Sovereign



**Editor's  
Message**

The annual banquet will be held on Sunday February 17 at the Monterey Hills restaurant in Monterey Park, the same venue as our 2006 annual banquet. Dinner is tentatively scheduled to be served at 6:00pm. The speaker is Mike Simmons and the topic is the history of Mount Wilson. Price is set at \$40 per person. Please reserve early. Send your payment to the LAAS address at right, attention Treasurer.

I have to pass on some very sad news. Muriel Brueckner, long-time guide for Griffith Observatory, died January 9th. She was not only a fine person and observatory guide, but one of the best promoters and supporters for the LAAS involvement at the Observatory. Many will remember her at our public star parties, particularly at the satellite facility; always friendly and lending us assistance. At the time of this bulletin, no information on memorial services or other details of her passing are available.

My personal thanks to all of those who attended the last public star party with or without equipment. It really of great assistance to those who bring equipment to have someone else cover for them when they need to go to the restroom or have a bite to eat. And it's always fun and educational to interact with the public. For those planning on buying equipment, it's always a good

*(Continued on page 3)*

place to check out equipment you might be interested in, seeing how it performs under “real” conditions.

Speaking of which, February is a busy month on the calendar. Because of the delay in setting up the banquet, we’ll have not only the regular general meeting on the 11th, but also the banquet on the 17th. The Saturday before the general meeting is the regular dark sky star party, weather permitting, and in-between the general meeting and the banquet is the Saturday night Griffith public star party ! In addition to these (whew !), we have a public star party on Wednesday 20th for the total lunar eclipse. The moon rises in near totality and so we’ll see the best part of the event early in the evening.

So February looks like this:

- 9th—Lockwood Valley dark sky star party.
- 11th—General meeting at Griffith.
- 16th—Public star party at Griffith.
- 17th—Annual Banquet.
- 20th—Public viewing of lunar eclipse at Griffith

My thanks to all who have contributed to the success of the bulletin. We always invite more input from members. Please consider writing or submit images. The deadline for submitting bulletin material is the 10th of each month. Please if possible submit electronically to [BulletinEditor@laas.org](mailto:BulletinEditor@laas.org)

All other material may be sent to the address listed at the top of the column at left, but timely reception and publication cannot be guaranteed. ✧

*David Nakamoto*

## *Griffith Observatory Public Star Party Procedure*

PJ Goldfinger handles our Griffith Observatory Public Star Party List. As patrons may drive up freely and reservations are no longer needed, we will continue to keep a sign up list for this event. Please note changes may occur in future PSP events and to read the policy below each month.

LAAS Members must still sign up on time - Deadline is no later than the Tuesday night prior to the Saturday GO Public Star Party each month. The list information required is:

- Your name, any LAAS Members and Non members in your car.

*(Continued on page 4)*

- Bring Telescope y/n.

**NOTE: Those attending without a telescope as a favor will be required to be of some assistance if asked, needed and able.**

It is primarily the main focus of any LAAS member who attends this event to be of Public Service with their telescopes in showing the patrons of Griffith

Observatory the delights of the nighttime sky. New Members are not expected to adhere to this policy. Please feel free to come up and enjoy the event given you are signed up.

Parking will be on the east side of the Griffith Observatory Hill designated for GO employees. A guard will be stationed with the LAAS GO PSP list. It is always wise to have one's LAAS name badge and/or club ID on them just in case. Unloading telescope and equipment will remain the same procedure as well, with a drive up , drop off and park down hill routine.

The list currently has been updated to 30 spots for LAAS members. First come, first serve.

Please check the LAAS website and Yahoo list for changes and updates in any LAAS event, as there are many communication mediums and some are missed.

To sign up for the Griffith Observatory Star Party the email address is: laas.starparty@gmail.com. Attendance is only granted once a confirmation email has been received. Most important though is to have fun and enjoy! ✧

*PJ Goldfinger*

## *President's Message*

LAAS activities in January will be rather sparse with only the public star party on the 12th. Conversely, February and the rest of the year will be very busy indeed. In February there will be a general meeting on the 11th, a public star party on the 16th, and our annual banquet on the 17th. For those newer members who have never attended one of the banquets, it is always well attended with lots of good food, a speaker, and many interesting door prizes. Later in the spring will be a new member pot luck and star party at our facility in Monterey Park and the Riverside Telescope Makers Conference in the mountains near Big Bear. It will be good to see new faces at these events. ✧

*David Sovereign*



## *Outreach Program*

*Friday, Feb 15th*

Time: 6–9 p.m.

School: Robert Fulton Middle School

Address: 7477 Kester Avenue, Van Nuys, CA 91405

Contact: Dan Levine ( 818) 523–4583

Exact location to set up: Playground.

Gate will be open.

Security dimmed or off: Yes

AC outlet nearby: Yes

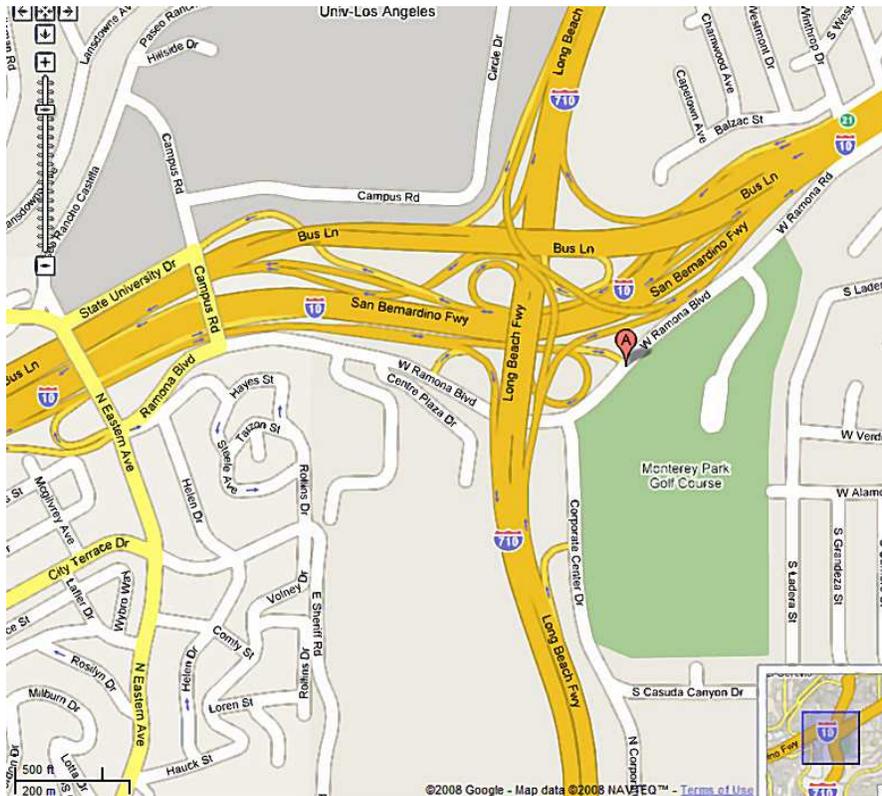
School will provide a bit of thank you food for astronomers?: Yes

Map is above.

The green arrow shows the location of the school.

If you are free on Tuesday, Wednesday, Thursday, Friday or Saturday nights, come on out and show all the enthusiastic kids, parents, and teachers the night sky. They always appreciate it. And if you get “**WOW**”’s when they look through your scope, you’ll feel good. If you come with no telescope, come out anyway and help up set up or answer questions from the kids. So, Outreach volunteers, let’s pitch in. I’m sure the kids and adults will appreciate our effort. Thanks ! ✧

*Don DeGregori*



*Directions to Monterey Hills Restaurant (see map above)*

- Westbound I-10 — Use the Long Beach Frwy exit, but proceed to Campus Rd exit. Turn left one street to Ramona, turn left again, go past the Long Beach Frwy, then take the second right up the hill. To locate the restaurant, see the instructions at the bottom.
- Eastbound I-10— Take the Eastern Ave exit, then head straight ahead to Ramona, go past the Long Beach Frwy, then take the second right up the hill. To locate the restaurant, see the instructions at the bottom.
- Northbound Long Beach Frwy— before reaching the I-10 frwy, get off at Corporate Center Dr, turn left, then right at Ramona, then take the 1st exit on the right and up the hill.

Monterey Hills is not the first restaurant you encounter on the right, but down the hill to a second restaurant.

# The Great Nebula

*By Tim Thompson*

The Great Nebula in Orion, also known as M42 or NGC1976, must be one of the most familiar objects to amateur and professional astronomers alike. With bright stars & glowing gas it is an excellent object in amateur telescopes. But as a nearby area of active star formation it is of particular interest to professional astronomers & astrophysicists as well. So I thought I would review M42 this month.

How far away is it? That is certainly a common enough question, but the answer is not that easy to come by. A team of German radio astronomers has used the Very Long Baseline Array, a radio interferometer, to measure the trigonometric parallax to stars in the Orion Nebula Cluster, using their non-thermal radio emission. They report a distance of  $414 \pm 7$  parsecs ( $1350 \pm 23$  light years). Another group using the same array measured a parallax distance to a specific star in the cluster, radio star GMR A, and got  $389+24-21$  parsecs ( $1270+78-68$  light years). Yet another group using the brightness and color of pre main sequence stars, compared to standard models, gets a distance of  $392 \pm 32$  parsecs ( $1278 \pm 104$  light years). These are the most recent distance determinations, and they are all somewhat less than the “standard” accepted distance of about 480 parsecs (1565 light years) that dates from older work. So the best we can say at the moment is that the distance to M42 is roughly 398 parsecs (1300 light years). Distances this large are hard to determine.

What is the Orion Nebula Cluster (ONC)? We are used to seeing the few bright stars of the Trapezium, and the surrounding glow, and not much more, even in relatively large amateur telescopes. Of course, if any of you have seen M42 in the 60-inch telescope during an LAAS night, you will have seen maybe 30 stars around the Trapezium, and a lot of detail in the emission nebula behind the stars. But in fact, there is a large, dense star cluster around the Trapezium, mostly hidden behind dust that you just don't see. There are about 2200 solar masses of stars, in the cluster, with a central density of about 20,000 stars per cubic parsec; by comparison, our sun is the only star at the center of its own cubic parsec, so most of the ONC stars are low mass stars. The entire cluster is only a few parsecs across. The stars range in age from about 1,000,000 to 10,000,000 years. So the cluster is still young, as stars go, and there are still stars forming in the cluster now.

What is M42? An enormous cloud of dust & molecular gas spans the entire constellation of Orion, and host both M42 and the Horsehead Nebula (see my article on Orion in the January 2007 LAAS newsletter). Ultraviolet & X-

*(Continued on page 8)*

ray emission from the bright stars of the Trapezium Cluster destroys the surrounding dust, and we are looking down into the bowl they have carved out of the side of that extensive dust cloud. The glow we see is gas around the sides of the bowl that is heated by the Trapezium stars and glows by fluorescence as a result. So the Trapezium stars are floating out in front of the background glow. A dark, opaque dust lane is visible in amateur telescopes, between the Trapezium and us and between M42 and its small cousin nebula

*(Continued on page 9)*

### Evolution of the Orion Nebula (M42) \*

Radiation and wind from a nebula's stars push surrounding gas away, creating cavities within the nebula's cloud. In the Orion Nebula, several hot, young central stars, called the Trapezium, have carved out the core of the nebula. This cavernous core has broken through the part of the cloud that faces Earth, enabling Hubble and other telescopes to observe within.



The central (Trapezium) stars begin to burn hydrogen. Ultraviolet radiation ionizes the central environment and produces a bubble.

The bubble swells until it reaches the edge of the neutral nebula and then opens, allowing material to flow away.

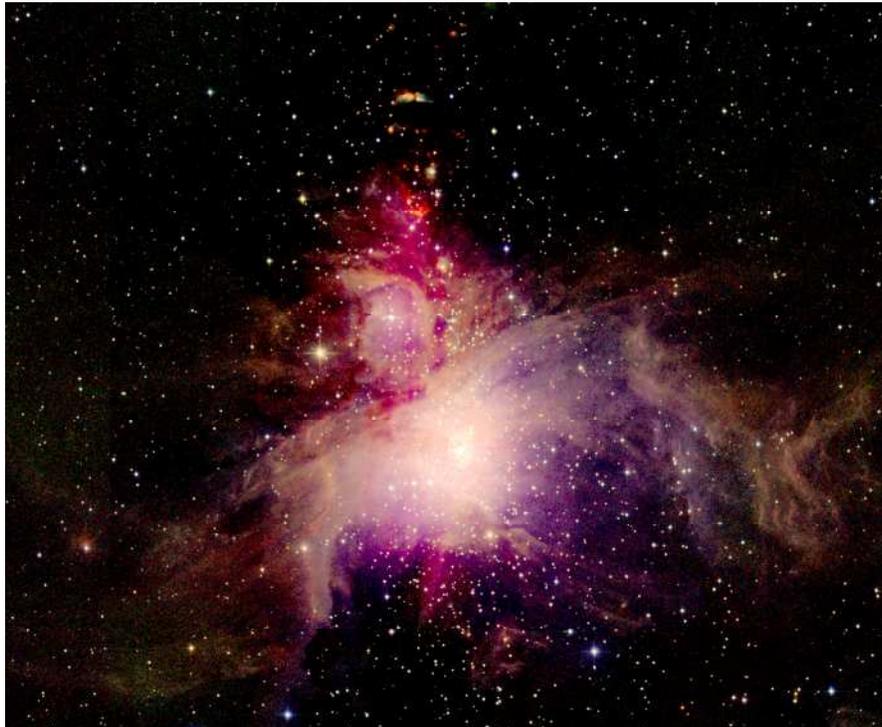
What remains is an empty cavity filled by ultraviolet light and winds from the stars and the cavity walls.

\*The Orion Nebula is approximately 1,500 light-years from Earth.

M43. The visible nebula is about 16 light years across, and a few light years deep; it's a lot harder to estimate the depth between the star cluster and the background nebula, than it is to measure the angular size of the nebula, and derive a diameter from the distance. The total mass of stars, dust & gas just around the ONC is about 4400 solar masses, so the entire nebula is good for substantially more mass than that.

What are the Trapezium stars? Ptolemy originally cataloged the Trapezium & M42 as a single star in 130 AD. Tycho Brahe did likewise in the late 1500's, and Johann Bayer designated it as  $\theta$  Orionis in his Uranometria atlas in 1603. Only after telescopes came along was the multiple nature of  $\theta$  Orionis recognized in the catalogs. The bright star  $\theta^1$  Orionis is the dominant star in the group. It weighs in at a hefty 40 solar masses, and with a temperature of 40,000 Kelvins, it is the hottest naked eye star in the sky (visual magnitude 5.13). It shines 210,000 times brighter than the sun, and by

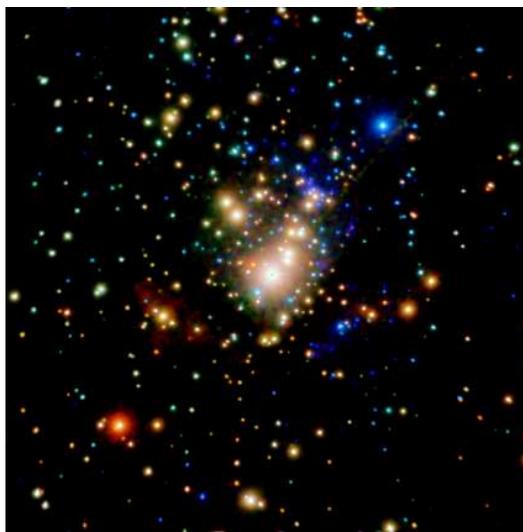
*(Continued on page 10)*



This 2-MASS infrared image is sensitive to the infrared emission from the many low mass stars which do not show up on the visible or X-ray images. It also shows emission from the nebula which is invisible in the X-ray image.

itself accounts for 85% of the light from the Trapezium stars. The ultraviolet emission from  $\theta^1$ C Orionis is entirely responsible for the florescent glow of the nebula that we see. When the Hubble Space Telescope imaged the area around the Trapezium, a large new collection of forming stars were found. And soon they realized that  $\theta^1$ C Orionis was blowing away material from these stars, inhibiting the formation of planetary systems around them.

What is the history of M42? Its cosmic history is about 10,000,000 years long, the age of the oldest stars in the ONC. As the star cluster grew, it increasingly carved out a deeper hollow around it until it broke out through the molecular cloud and formed the bowl of the nebula we see today. Its astronomical history on Earth is obviously not quite so long. The French lawyer & astronomer Nicholas-Claude Fabri de Peiresc first observed the nebula in 1610, but this is known only from his private notes, he never published the observation. Galileo saw the Trapezium stars in 1610, but did not see the glow of the nebula. The Jesuit astronomer Johann Baptist Cysatus of Lucerne observed the nebula in 1611 and was first to publish. M42 became the first nebula to be photographed, by Henry Draper, in 1880 & 1882. The gaseous nature of the nebula was revealed by spectra taken in 1865 by English amateur astronomer William Huggins, who observed from South London with an 8-inch Alvan Clark refractor. Since then M42 has become a major target of astronomers who discovered that nebula such as M42 are stellar nurseries, regions of active star formation, and M42 is the closest example. ✧



This Chandra X-ray telescope image does not see the nebula at all. It reveals only the X-ray point sources which correspond to very high temperature, massive young stars & protostars in the ONC.  $\theta^1$ C Orionis is at the center of the image and saturated the Chandra X-ray detectors.



**Orion Nebula - M42**  
*Hubble Space Telescope - ACS/WFC*

NASA, ESA, M. Robberto (STScI/ESA), and the  
HST Orion Treasury Project Team

STScI-PRC06-01a

This 2-MASS infrared image is sensitive to the infrared emission from the many low mass stars which do not show up on the visible or X-ray images. It also shows emission from the nebula which is invisible in the X-ray image.

## *Tales Too Ticklish to Tell*

### *Look What the Wind Blew In*

Astronomers have to deal with extreme weather, given that they often find themselves on top of mountains, or in the desert when living in Southern California, in general areas where trees are far and away to leave an unobstructed view from horizon to horizon. This also means other things encounter no obstacles.

Take the wind, for instance.

Many years back, at JPL, I witnessed a extremely violent windstorm tear off a heavy metal awning off the catwalk between two trailers and toss it against the building next to it. What I was doing out and about under such dangerous conditions, I cannot remember, only that thinking back on it, I must have been out of my mind and senses.

But the topper was at an RTMC many years ago. I was sitting in the Discovery Telescopes tent, right next to Celestron's, shooting the breeze, so to speak. Then the "breeze" took a shot. It had been one of the windiest RTMCs, with gale force winds. One minute all one could hear over the conversation was the howl of the wind, and see it try and move the tent. Then in the next minute a **VERY** loud crash of metal and glass, right next door. I and the sales person waited nervously until the noise had subsided, and hoped that whatever was going on would not affect our tent. I then cautiously looked around the back of the Discovery tent to see . . . no large Celestron tent. No organized setup. Just the crushed tent way off to one side, metal support legs and fabric crumpled as if some giant had crushed it like a piece of paper. And every telescope that had been in it was laying on its side, every corrector lens shattered, even some tripod legs bent and twisted.

And where were the Celestron people during all of this?

They were in town, Big Bear city to be exact, enjoying a nice dinner. Ah, the bliss of ignorance . . .

We tried to at least secure the remains of the tent from blowing around further, but the telescopes and other equipment we left as is, since it was not our property and responsibility. How the Celestron people reacted to the sight of their former tent, I don't know. ✧

*David Nakamoto*

## Telescopes for Sale

1st Telescope — New fully equipped 4" F/10 Celestron refractor w/finder scope, star diagonal, 2 Plossl eyepieces (25mm & 10mm), EQ3 mount, and a large sturdy wooden tripod. \$400.00. Contact Gabriel Reyna (323) 255—4346

2nd telescope — 10-inch F/5 Truss tube telescope in excellent condition w/ Telrad & Crayford Focuser. \$500.00. Contact Gabriel Reyna @ (323) 255—4346 (3)

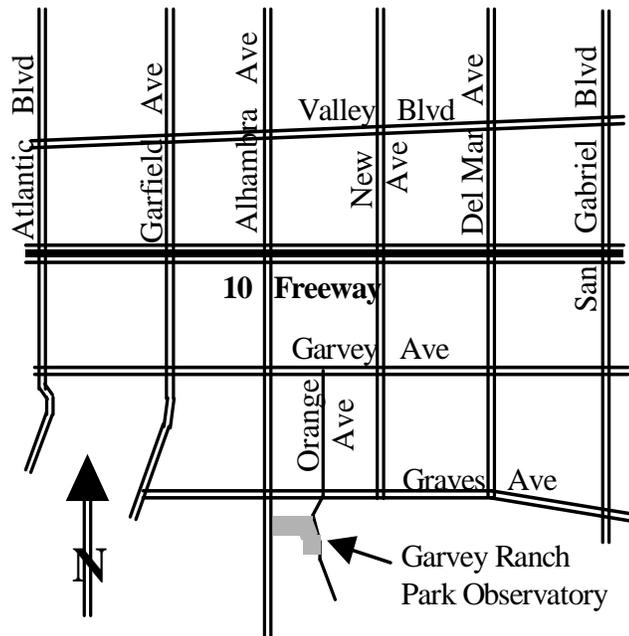
3rd telescope — CG-5 on a GoTo mount with tripod in excellent condition. It will support up to a 35lb OTA. It's 2 years old, asking \$400.

Please contact Ed Smither at (818) 845-6914, or at [twopilots2@mindspring.com](mailto:twopilots2@mindspring.com) (1)

4th telescope — Meade 10-inch SCT w/2 stands, one that bolts to the ground. Complete set of Televue lens. SBIG digital imaging CCD system. \$4600.00 OBO. Call Ray @ (661) 264 - 6627 (1)

## Map to Monterey Park Observatory

(The place to build your telescope)



## LOANER CORNER



The wonders of a crisp, clear winter sky are here. The king of the night sky, Orion, rides high and Mars and soon Saturn will be in good position for observation. Now is the time to check out one of the loaner telescopes. At the present time there are several available. All are fully equipped with a set of eyepieces. A collimating tool is included with all reflectors and a star diagonal is included with refractors.

LAAS-1: 4.5" f/8 Celestron reflector on a Polaris mount.



LAAS-4

LAAS-2: 4.5" f/8 Tasco reflector on an Edmund equatorial mount with a clock drive.

LAAS-4: 6" f/5 Telescopes reflector on a Dobsonian mount.

LAAS-6: 10" f/4.5 Discovery reflector on a Dobsonian mount. This fast telescope is also equipped with a Tele View Paracorr to correct off axis coma common with fast paraboloids.

LAAS-7: 80mm f/15 Meade refractor on an Orion Sky View Deluxe equatorial mount. This is an excellent instrument for the Moon and planets.



LAAS-2

LAAS-8: 80mm f/11.4 Selsi refractor on an equatorial mount.

LAAS-9: 80mm f/6.25 refractor with University Optics objective on an equatorial mount. This fine RFT is good for going through the Messier Catalog.

For more information call: David Sovereign at (626) 794—0646. ✧

*David Sovereign*

# EVENTS CALENDAR

Date	Event	Location and Information
Feb 9th(Sat)	Dark Sky Party	Lockwood Valley Check for weather conditions.
Feb 11th(Mon)	General Mtg	Griffith Observatory Speaker undetermined.
Feb 15th(Fri)	Outreach Event	See Outreach column for details
Feb 16th(Sat)	Public Star Party	Griffith Observatory. See pg 3 for details on how to attend.
Feb 17th(Sun)	Annual Banquet	Monterey Hills restaurant
Feb 20th(Wed)	Total Lunar Eclipse	Griffith Observatory See pg 3 for details on how to attend.
Mar 8th(Sat)	Dark Sky Party	Lockwood Valley Check for weather conditions.
Mar 10th(Mon)	General Mtg	Griffith Observatory Speaker undetermined.
Mar 15th(Sat)	Public Star Party	Griffith Observatory. See pg 3 for details on how to attend.

The board meeting is held at 8pm on the Wednesday night prior to the general meeting, at Garvey Ranch Park. The Monday general meetings start at 7:30 pm unless otherwise noted. See each month's bulletin for updates.



LAAS Home Page: <http://www.laas.org>  
 LAAS Bulletin Online: [http://www.laas.org/Resources\\_Newsletter.htm](http://www.laas.org/Resources_Newsletter.htm)

## *LAAS Yahoo Group—how to join*

The group is private, and therefore does not come up in a search. To join, send email to: LAAS-subscribe@yahoogroups.com. Include your full name so the moderator can verify your LAAS membership. Your full name is necessary so we can check our records to see if you really are a LAAS member. If approved, you will receive further instructions via email. ✧

## *Sky and Telescope Subscriptions*

Sky and Telescope subscriptions renewals should be sent directly to Sky Publishing. To start a Sky and Telescope subscription, contact the LAAS Treasurer (see the contact information on page 2) directly to get the club rates, then thereafter send the renewal bills directly to Sky Publishing. ✧

## *Astronomy Magazine Subscriptions*

For those that subscribe to Astronomy Magazine through the LAAS, the rate has gone up to \$35 a year. ✧

## *New Members Corner*

Welcome to the Los Angeles Astronomical Society! Right now, we have lost our previous New Members Coordinator to college, so we're looking for someone to take over this position. If you're interested, please contact one of the board members on page 2. ✧

Email: <mailto:coordinator@laas.org> coordinator@laas.org

<b>Membership Annual Dues:</b>	
Youth	\$ 20.00
Regular (18-65)	\$ 35.00
Senior Citizen (65 and up)	\$ 20.00
Senior Family	\$ 30.00
Family	\$ 50.00
Group or Club	\$ 50.00
Life	\$ 500.00
<i>Additional fees:</i>	
Charter Star member	\$ 30.00
Star member, with pad	\$ 70.00
Star member, no pad	\$ 60.00

**(Membership due date is indicated on the mailing label)**

## **HANDY PHONE LIST**



LAAS Answering Machine ..... (213) 673-7355  
Griffith Observatory  
Program..... (213) 473-0800  
Sky Report.....unavailable for now  
Lockwood Site ..... (661) 245-2106  
(not answered, arrange time with caller.  
Outgoing calls – collect or calling card)  
Mt. Wilson Institute..... (626) 793-3100