

BULLETIN

volume 82, issue 12 *December 2008*

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**OUR 82nd YEAR OF
ASTRONOMY IN LOS
ANGELES**

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

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David Sovereign



**Editor's
Message**



ur election night is the December 8th meeting. On page 9 you can find our foolproof, chad free ballot. There are blank lines for write-in candidates. If you cannot attend the meeting, you may use email or use regular mail to send in your ballot. ALL such submissions must be received by the LAAS Secretary before the December meeting. Send mail-ins to the LAAS address in the box at left.

The annual banquet is on Sunday January 11th at the Odyssey restaurant in Mission Hills in the San Fernando Valley. See the map on page 10 for directions and details. The cost has gone up due to increases in the fees charged by the restaurant; it's \$60.00 per person. Reserve early, as this is usually a well attended event. The speaker is Matt Golombek. Send your reservation and check to the LAAS Treasurer at:

LAAS Treasurer
P.O. Box 56084
Sherman Oaks, CA 91413

My thanks to all who have contributed to the success of the bulletin. Please consider writing or submit images. Articles need to be 1,500 words or less. Submit only a few images at one time, each with its own caption. The deadline for submitting bulletin material is the 10th of each month. If possible, please submit electronically to:

(Continued on page 3)

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

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.
- 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

1572

By Timothy Thompson

“On the 11th day of November in the evening after sunset, I was contemplating the stars in a clear sky. I noticed that a new and unusual star, surpassing the other stars in brilliancy, was shining almost directly above my head; and since I had, from boyhood, known all the stars of the heavens perfectly, it was quite evident to me that there had never been any star in that place of the sky, even the smallest, to say nothing of a star so conspicuous and bright as this. I was so astonished of this sight that I was not ashamed to doubt the trustworthiness of my own eyes. But when I observed that others, on having the place pointed out to them, could see that there was really a star there, I had no further doubts. A miracle indeed, one that has never been previously seen before our time, in any age since the beginning of the world.”

Tycho Brahe, from Burnham’s *Celestial Handbook*, volume 1, page 505

The Danish astronomer Tycho Brahe (1546-1601) died only a few years before the first telescopes were used for astronomy. He represents the pinnacle of pre-telescopic astronomy. He was of course very familiar with the sky, so it is not surprising that on the night of November 11, 1572, he noticed that a new star had appeared in the sky. He was seeing the light of what we now call Tycho’s Supernova. The supernova remnant left behind by SN 1572, typically called Tycho’s Supernova Remnant, is also known as 3C 10 (the 10th source in the 3rd Cambridge catalog of radio sources), or radio source G120.7+20.1 (a reference to its galactic coordinates, galactic longitude 120.7 degrees, galactic latitude 20.1 degrees).

At its peak the supernova was as bright as Venus, and remained visible to the naked eye for 2 years. The light curve reconstructed from historical records most likely indicates a type Ia supernova, but type Ib and type II-L cannot be ruled out. So it has remained a mystery whether or not this was a core collapse supernova, or perhaps an underluminous type Ia. Until now, that is.

In a paper yet to be published in the English science journal *Nature*, a team of German, Japanese and Dutch astronomers report their measurement of the spectrum of the supernova, confirming that it is type Ia. Note that I did not say they measured the spectrum of the supernova remnant (SNR), but rather of the supernova explosion itself, despite that fact that it went off 436 years ago. Measuring something that happened that long ago is certainly a tour-de-force of modern science. They did it by detecting a light echo. We have seen the same kind of echo around SN 1987-A in the Large Magellanic Cloud, but its quite bright, as the echo comes hot on the heels of the explosion. The echo from SN 1572 peaks at a surface brightness of 23.5 magnitudes per square arcsecond (i.e., take one square arcsecond of light

echo, and it has an apparent brightness of magnitude 23.5, which you will recognize as fairly dim). That light echo carries the spectrum of the original flash from 436 years ago, and was measured with the Faint Object Camera and Spectrograph (FOCAS) instrument on the Subaru 8.2 meter telescope on Mauna Kea, Hawaii, on 24 September 2008. The spectrum shows the absence of hydrogen absorption that is typical of type I supernovae, and a strong Si II absorption feature characteristic of type Ia. The Si II absorption is Doppler shifted at 12,000 km/sec, a typical expansion velocity for a type Ia supernova at peak brightness. Prior to the spectroscopic observation, photometry was obtained with the 2.2 & 3.5 meter telescopes at Calar Alto, Spain. These observations open the door to observing the echo all the way around the supernova, which in turn can lead to a 3-dimensional reconstruction of the explosion.

Now that we know for sure it was a type Ia explosion, we re-open the question of the companion star. A type Ia supernova involves the catastrophic destruction of a white dwarf star gravitationally siphoning mass from a much larger companion. The companion star should still be there, somewhere, but nobody is sure where. In another Nature paper, published 28 October 2004, another international team identified a star they simply call "Tycho G" as the companion star. Tycho G is spectral class G0 to G2, about 1 solar mass, and an apparent surface temperature of 5750 Kelvins, also quite similar to the Sun. But it has a surface gravity rather lower than does the Sun, so it may be as large as 3 solar radii, a subgiant star. All the stars around Tycho G have measured radial velocities from -20 to -40 km/sec, but the radial velocity for Tycho G is -108 km/sec, about 3 times faster. That is the main reason for picking this star out of all the others at site of the supernova. The anomalously high velocity of Tycho G could be left over from the supernova event. The identification of Tycho G as the companion is not definitive, but it remains the most likely candidate for that honor. In a preprint posted on 3 September 2008 the same team finds a slightly higher surface temperature 5900 +/- 100 Kelvins, and report more detailed spectroscopy of Tycho G. Spectra of Tycho G were made using the High Resolution Echelle Spectrometer at the Keck I 10 meter telescope on Mauna Kea, Hawaii. They reveal elemental abundances that trace the galactic average for stars in that neighborhood, except that Nickel & Cobalt are both overabundant relative to iron. That makes sense as pollution from the supernova ejecta, and enhances the probability that Tycho G is in fact the surviving companion star to the white dwarf, which set off SN 1572.

The SNR of SN 1572 also remains "in the news" as it were. Observations of the SNR from the Chandra X-ray telescope in 2005 revealed a surprise. Astrophysicists anticipated that the fast moving shockwave from the explosion would be about 2 light years ahead of the slower moving stellar debris. But they found that the shock leads the debris by only about 0.5 light

years. The implication is that a larger fraction of the shock wave goes into accelerating the stellar debris than was previously thought. And that means a lot of electrons & protons accelerated to speeds close to the speed of light. Earth encounters particles with that kind of velocity all the time; we call them “cosmic rays” (despite the fact that they are not rays). How they manage to reach such high speeds has long been a puzzle, and supernovae were thought to be not quite energetic enough to do the deed. But the Chandra observations of Tycho’s SNR motivate a re-think, and give us reason to think we may know how cosmic rays are accelerated to such high energies.

Some of the papers referenced here can be found & downloaded as PDF documents on the web:

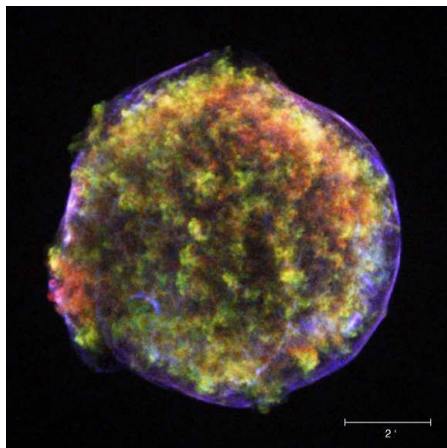
Tycho Brahe’s 1572 supernova as a standard type Ia explosion revealed from its light echo spectrum; accepted for publication in Nature
<http://arxiv.org/abs/0810.5106>

The Chemical Abundances of Tycho G in Supernova Remnant 1572; accepted for publication in The Astrophysical Journal
<http://arxiv.org/abs/0809.0601>

The binary progenitor of Tycho Brahe’s 1572 supernova; Nature, volume 431, 28 October 2004
<http://arxiv.org/abs/astro-ph/0410673>

Cosmic Ray Acceleration at the Forward Shock in Tycho’s Supernova Remnant: Evidence from Chandra X-ray Observations; The Astrophysical Journal, volume 634, November 2005
<http://arxiv.org/abs/astro-ph/0507478>

◇



Chandra X-ray image of Tycho’s SNR shows the expanding stellar debris, in red & green, chasing a high energy electron shock wave, in filamentary blue. The red & green colors represent temperatures of a few million Kelvins. The high energy electrons are much hotter. The outer shell is expanding at about 5600 miles/sec (9000 km/sec) or about 3% of the speed of light (300,000 km/sec). The scale bar shows 2 arcminutes.



A drawing of Cassiopeia showing the supernova, the largest star in the drawing; from Tycho's *Stella Nova*, 1573.

Equipment for Sale

Meade 12inch lx 200 classic.

Very good, tracks great. Comes with key pad, 2 instructions books, Telrad, spotter scope, power cord, tripod, Telvue 24 mm eyepiece, canvas foam case, and Meade DSI Pro CCD camera.

Asking \$1500.00

Meade 12 inch lx 200 R:

4 cases:

First has Telvue 12 mm, Meade 26 mm, Telvue 31mm, filters, two inch narrow band #911n Lumicon deep sky, Orion # 80a blue, Lumicon h-beta #486, oxy 111 # 501, h-alpha filter

656 Lumicon h beta # 97.9

power cord, spotter scope, keypad autostar 2, Meade DSI Pro II CCD camera with cord, and program c/d, one storage cabinet with wheels, dew shield, tripod, Maxim DL 4.5 program with c/d

call Tave at (818) 362-5092

Hope you live in south cal; shipping is very expensive.

Iridium Flares

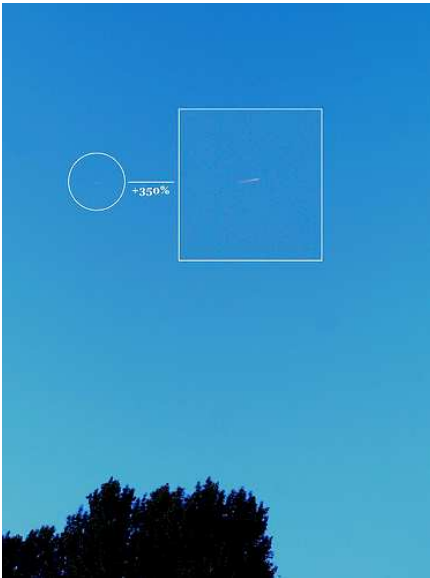
By Robert Contreras

It's a warm and cloudless afternoon your are outside observing Venus low in the west.

All of a sudden you see a moving star. It goes from slow to fast and gets brighter and brighter till it outshines Venus. It travels from one horizon to the other but suddenly disappears. Did you just see a slow meteor? a bright airplane? a UFO! Its none of the three but it does seem possible to be any of them.

What you really saw was an iridium flare. An Iridium flare is a satellite that luckily got its solar panels to reflect sunlight. And here on the ground you will see the light from the panels as really bright lights in the sky. Iridium's magnitudes range from +5 hard to see moving stars to -8 magnitude daylight flares!

There is a web site that provides information on when and where an iridium flare will show up, the web site is Heavens-Above.com. The web provides a huge range of tools to find the next iridium crossing the sky. So with the right information and a clear twilight sky you will be able to see a bright satellite slowly moving across the sky gaining magnitude. ✧



2008 LAAS Officers and Board Member Ballot

President:

David Sovereign

Vice President (vote for one):

David Nakamoto

Larry Steenhoek

Secretary:

Stephen Dashiell

Treasurer:

Herbert Kraus

Board Members (vote for 9):

Herman Meyerderks

Richard Roosman

Lance Hotz

Timothy Thompson

Michael White

Don DeGregori

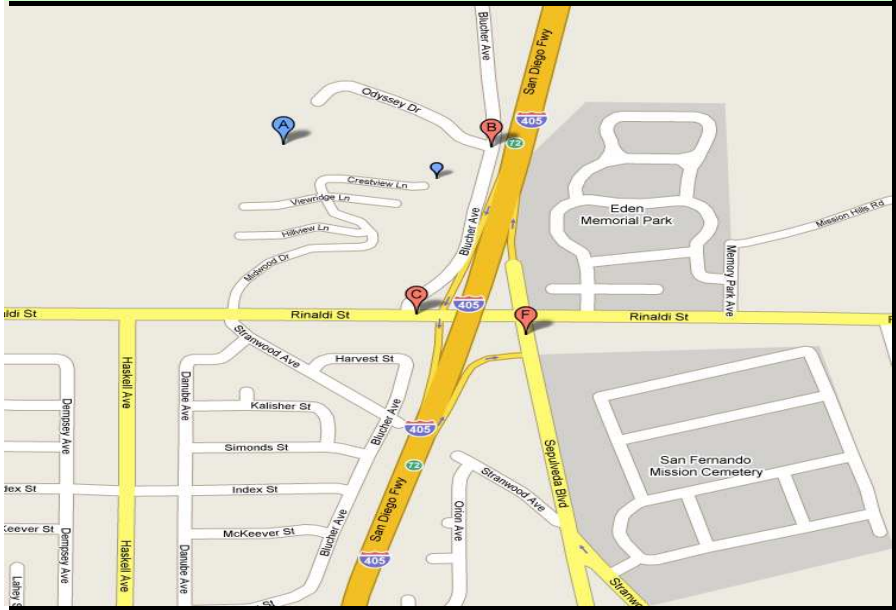
Reggie Flores

Michael Rudy

If you cannot attend the December mtg, please send your ballot to:

Los Angeles Astronomical Society
Griffith Observatory
2800 East Observatory Road
Los Angeles, CA 90027
ATTN: Secretary

The 2009 Annual Banquet



The annual banquet will be held at the Odyssey Restaurant on Sunday January 11th, happy hour starting around 5:00 pm. No speaker is announced yet. Reservations are \$60.00 per person. To reserve, send your name, the number of reservations, and a check made out to the LAAS and send to the LAAS Treasurer at:

LAAS Treasurer
P.O. Box 56084
Sherman Oaks, CA 91413

To get there, take the 405 freeway north past the 118 freeway and get off at Sepulveda, then turn left then left again to get on Rinaldi St. If you get on the 5 freeway you went too far. Those heading south on the 5 should get off on the 405 freeway and the next offramp should be Rinaldi, then turn right.

Head west. The FIRST street past the 405 is Blucher. Turn right on that and the signs should direct you to the Odyssey. I believe it's the first street on the left.

Our speaker will be Matt Golombek, the Landing Site Scientist for the Mars Exploration Program at JPL, and project scientist for the Mars Pathfinder Rovers. His topic is the exploration of Mars.

Equipment for Sale

Meade AR-5 LX555 \$550.00

OTA

German Equatorial Mount

#930 diagonal mirror

Autostar control

Standard tripod

Standard finder scope

Ten pound balance weight

Manual

Original box w/foam

Meade Super Plossl eyepieces,
multicoated \$140.00

6.4 mm 1.25 in

9.4 mm 1.25 in

12.4 mm 1.25 in

15 mm 1.25 in

20 mm 1.25 in

26 mm 1.25 in

32 mm 1.25 in

40 mm 1.25 in

56 mm 2 in

Meade Nebula filter #908N (1.25 in.)
..... \$89.00

Meade Nebula filter #910B (2 in)

..... \$119.00

Meade Plossl 9mm Illuminated reticle,
wireless \$77.00

Meade Electronic Eyepiece..... \$70.00

Meade 929 Diagonal Mirror UHTC, 2
in \$119.00

Meade #932 45 deg erecting prism
..... \$47.00

Meade 2x Teleneegative Amplifier,
model 140 \$20.00

Meade #905 Variable Polarizing Filter
..... \$48.00

Meade Universal AC Adapter. \$59.00

Meade Battery Pack (8 D-
cells).....\$0.00
\$1338.00

The scope and peripherals are in
excellent condition - used a half dozen
times. I no longer have space to set up.
If you're interested, contact:

Rick Smith

951-849-7640

Banning, CA (1)

Equipment for Sale

Backyard Observatory

Meade EXT-80AT Telescope - New
in the Box with tripod, backpack, self
guiding electronics

Retail \$300. Offered at \$240

Sunspotter The safe way to view the
sun. - Brand New

Retail \$350

Offered at \$275

Celestron Skyscout Personal
Planetarium

Retail \$399

Offered \$310

Coronado PST Personal; Solar
Telescope

Retail \$500

Offered \$500

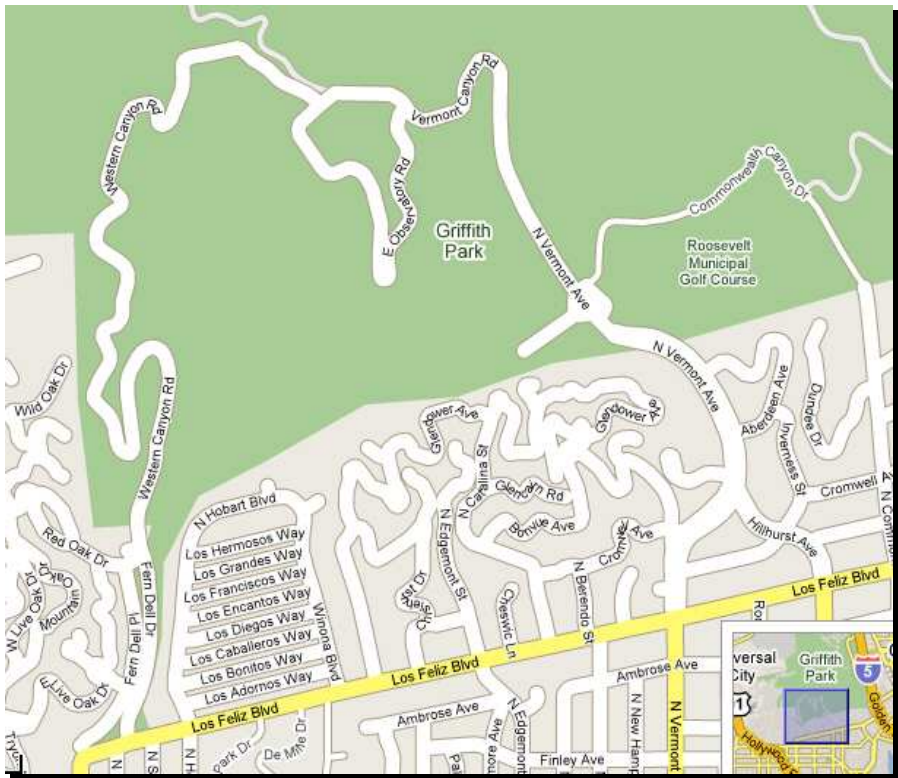
Celestron Giant 20x80 binoculars
Retail \$348

Offered at \$150

Celestron Tripod
\$40

Paul Wicker – TheGalileoGuy

310 546-1437 (1)



Greek theater events cause closure of Vermont Ave. to through traffic. Please save this map for future reference. I will post it in the bulletin from June to September, and then not for the rest of the year.

Use Ferndale, which changes into Western Canyon Road. Ferndale is about 1 mile further west on Los Feliz than either Hillhurst or Vermont. Ferndale becomes Western Canyon Road once you enter the park. Western Canyon Road is very windy, so drive carefully. You will have to go through the tunnel at the top of the road and turn right onto East Observatory Road. ✧

FOR SALE

8" f/6 Newtonian reflector in a fiberglass tube.
 Equatorial mount with AC clock drive.
 25mm Super Plossl from Meade.
 8X50 finder.

This instrument seems to be an older Optical Craftsman telescope.
 Asking price is \$400 and money goes to support LAAS functions.
 Contact David Sovereign at (626) 794—0646.

Outreach Program

Come on out to the school 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 you scope, you'll feel good. If no scope, 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 !

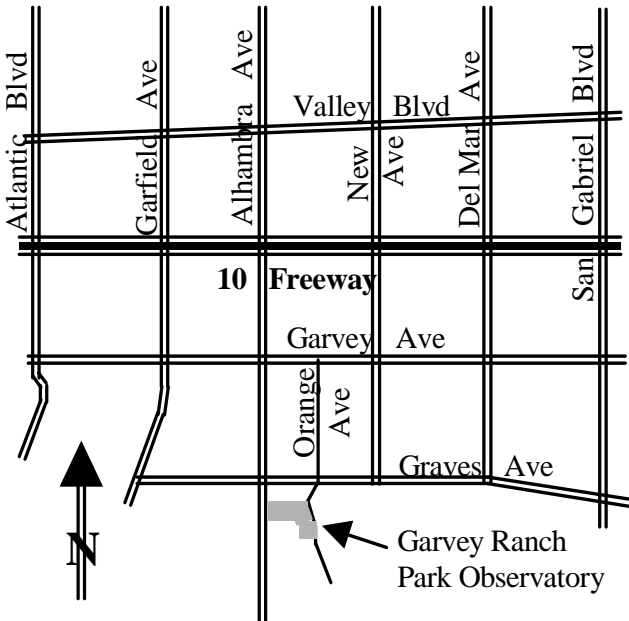
Outreach@laas.org

(818) 891-3087 ✧

Don DeGregori

Map to Monterey Park Observatory

(The place to build your telescope)



LOANER CORNER



It might not look like it, but the spring and summer star parties are just around the corner. Now is the time for new members and existing members that would like to try out something new to check out one of the LAAS loaner telescopes. At the present time there are several available. All are fully equipped with a set of eyepieces. A simple 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-2: 4.5" f/8 Tasco reflector on an Edmund equatorial mount with a clock drive. This telescope has been upgraded with a 1.25" focuser and 6x30 finder.

LAAS-4: 6" f/5 Telescopic 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-4

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 Rich Field Telescope 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
Dec 6th (Sat)	Public Star Party	Griffith Observatory. See pg 3 for details on how to attend.
Dec 8th (Mon)	General Meeting Board Elections	Griffith Observatory. ELECTION NIGHT ! Member's Show and Tell Night !
Dec 27th (Sat)	Dark Sky Night	Lockwood Valley
Jan 3rd (Sat)	Public Star Party	Griffith Observatory. See pg 3 for details on how to attend.
Jan 11th (Sun)	Annual Banquet (NO GENERAL MTG IN JAN)	Odyssey Restaurant. See page 10 for directions and information. Matthew Golombek will speak on the exploration of Mars.
Jan 24th (Sat)	Dark Sky Night	Lockwood Valley

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

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 \$34 a year, \$60 for two years. ✧

NEEDED

New Members Coordinator

We need a New Members Coordinator. If you're interested, please contact Tim Thompson at timthompson3@verizon.net. ✧

Membership Annual Dues:

Youth	\$ 20.00
Regular (18-65)	\$ 45.00
Senior Citizen (65 and up)	\$ 30.00
Senior Family	\$ 40.00
Family	\$ 60.00
Life	\$ 500.00

Additional fees:

Charter Star member	\$ 30.00
Star member, with pad	\$ 70.00
Star member, no pad	\$ 60.00
Printed Bulletin	\$ 15.00

(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