

BULLETIN

volume 82, issue 10 *October 2008*

Inside this issue

Contact Information	2
Editor's Message	2,3
Public Star Party Information	3
Mt. Wilson Nights.....	4
Article: Our Failed Star	5-8
Instructions & Directions to the Annual Banquet	9
NightFall Star Party	10
Equipment for Sale	11
Alternate Route to Griffith	12
Outreach Program	12
<u>Vintage Questar 3.5-inch telescope for sale</u>	13
Map to Monterey Park Facility	13
Loaner Corner	14
Events Calendar	15
LAAS Yahoo Group: How to Join	16
Sky and Telescope Club Subscriptions	16
Astronomy Subscriptions	16
<u>NEEDED: New Member Coordinator</u>	16
Membership Information	16

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

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

Change of Address, Membership:
Stephen Dashiell, 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
Richard Roosman

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 current 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 Printer..... Richard Roosman
Web Site Manager Jim McGee
admin@laas.org
Contributing Authors... Tim Thompson
Don DeGregori
David Sovereign



**Editor's
Message**

Thanks to the efforts of our treasurer Herbert Kraus and board member Tim Thompson, LAAS has secured an additional night on the Mt Wilson 60-inch Cassegrain on October 31st, Friday. That's a New Moon night See page 4 for details.

ATTENTION !!!

The October meeting is on the 20th, NOT the 13th as previously announced. This is due to Griffith being closed on that Monday due to Columbus Day. **PLEASE MAKE NOTE OF THIS !**

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 9 for directions. 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 has not been announced. Send your reservation and check to the LAAS Treasurer.

My thanks to all who have contributed to the success of the bulletin. Please consider writing or submit images. Please keep articles to 1,500 words or less. For images, submit only a few well-chosen images, with captions if possible. The deadline for submitting bulletin material is the 10th of each month. Please if possible 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.

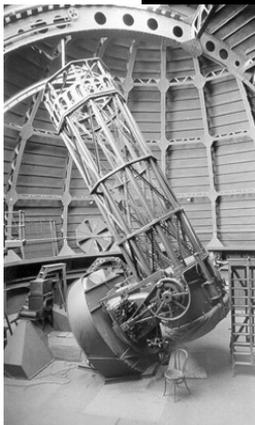
The list currently has been updated to 30 spots for LAAS members. First come, first serve.

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

Mt Wilson 60" Nights



LAAS has arranged for an additional full night at the Mount Wilson 60-inch telescope this year. The night of Oct 31st has been reserved all night for the LAAS. The Sept 26th night is sold out. Both are New Moon nights.

Oct 31st , Friday, full night

Only LAAS members are allowed to sign up. If there is still room two (2) weeks prior to the date, paying guests will be permitted. Everyone who shows up, whether family member, friend, or guest, will have to pay in order to be allowed in the 60-inch telescope observatory. The cost is \$75 per person for the full night (no half night reservations on a full-night outing). We are allowed to accommodate only a limited number of participants at each session, and your reservations are being accepted on a first come, first serve, basis.

To secure your reservation, send in your request AND A CHECK payable to LAAS to our Treasurer at:

P.O. Box 56084
Sherman Oaks, CA 91413

Any LAAS member who has not been to a 60-inch night at Mount Wilson should consider it as an opportunity to visit astronomy history. To see the location and equipment used by giants such as Shapley and Hubble will add to your appreciation of their contributions.

The scope will belong to LAAS all night. We mutually agree upon which objects to view. Often, a member is the operator, so it is a very comfortable environment. (Do bring a coat, however). The viewing is without a doubt the best you are likely to see in your lifetime.

If you need any further information about attending these nights on Mount Wilson, contact our Treasurer at treasurer@laas.org or by mail at P.O. Box 56084, Sherman Oaks, CA 91413. ✧

Our Own Failed Star

By Timothy Thompson

Jupiter season has arrived and the largest planet in our solar system is coming into the evening sky. Put Jupiter on a scale and it would weigh in at 318 times the mass of our own Earth. If it were a bag, you could stuff 1321 Earths into it. Jupiter is so big it still hasn't had time to lose its heat of creation. Jupiter is still cooling off, and radiates into space about 70% more energy than it gets from the sun. Deep inside the core of our Earth the temperature rises to about 5,000 Kelvins, compared to about 6,000 Kelvins for the photosphere of the sun. Deep inside the core of Jupiter the temperature rises to about 30,000 Kelvins, more than 3 times the temperature of the sun, and twice the photospheric temperature of the conspicuous class B star Rigel. The temperature may be high, but the pressure is over 20,000,000 atmospheres, and the density extremely high, so dense that the hydrogen is packed into a metallic lattice.

When I was growing up in the 50's & 60's it was common to refer to Jupiter as a "failed star"; it was commonly believed that Jupiter could have ignited into stardom, had it been only a bit bigger. But we now know that is far from true. We now call failed stars "brown dwarfs". They are too cold to fuse hydrogen into helium, but they are hot enough inside to fuse deuterium into helium, which is a very slow process, so brown dwarfs last a long time. The smallest brown dwarf will be about 13 Jupiter masses, so Jupiter is well short of the maximum mass for anything we would call a planet, let alone the roughly 80 Jupiter masses required to make up the smallest possible red dwarf star. So Jupiter certainly failed to become a star, but it was not as close as we once thought.

King of the Planets

Although quite short of the mark for a star, or even a maximal planet, Jupiter is nevertheless the largest planet in our solar system. It is more than three times the mass and nearly twice the volume of Saturn, the next largest planet in our solar system. A retinue of 62 moons accompanies Jupiter; its largest moon, Ganymede, is bigger than either Mercury or Pluto and so would be a planet in its own right, if it were not imprisoned by the gravity of Jupiter. Once again, Saturn is the closest competitor for moon counting, and we know of only 43 moons around Saturn. The magnetic field of Jupiter is about 15 times stronger than Earth's, and its magnetosphere reaches out about 3,250,000 miles from Jupiter. The Jovian magnetosphere is vastly

(Continued on page 6)

larger than the sun, and therefore the single largest coherent structure in the solar system, save for the magnetosphere of the sun, which reaches out beyond 100 astronomical units. The tail of Jupiter's magnetic field is stretched out so long by the solar wind that it occasionally encompasses Saturn. As seen from Earth (if your eyes could see it) the Jovian magnetosphere is five times the size of the full moon, roughly 2.5 degrees across.

The name Jupiter comes from the Roman Empire, who named the planet after the King of their pantheon of pagan gods. In Asian cultures, dominated by Chinese influence, it was called the Wood Star, and Indian astrologers simply called it Guru. In Nordic mythology the planet is associated with Thor, who hammered out lightning. Thursday comes from Thor's Day and so is also Jupiter Day.

The Medici Stars

In 1609 the Italian mathematician Galileo became the first person to point a telescope towards the night sky and do astronomy by telescope. His first telescope was a refractor with a single plano-convex objective lens stopped down to about 1 inch in aperture, a focal length 30 to 40 inches, and a single plano-concave ocular with a focal length about 2 inches. The ratio of focal lengths gives the magnifying power somewhere between 15 and 20. The inferior glass had a green tinge due to iron impurities, had bubbles, and was not well shaped near the edges, forcing Galileo to stop down the aperture. It had a field of view about 15 arcminutes (the disk of the sun or full moon is about 30 arcminutes across). Nevertheless, Galileo quickly discovered the rings of Saturn, spots on the sun (he observed the sun through smoked glass, a very bad idea, and eventually went blind from the spots burned into his retina), and the four large moons of Jupiter. We call them the Galilean moons. Galileo was the kind of guy who might have also called them the Galilean moons, but he didn't. He called them the Medici Stars, carefully naming these major new discoveries after the richest and most powerful patrons he could think of.

In order of size, the four Galilean moons are Ganymede (radius 2631 km), Callisto (radius 2410 km), Io (radius 1822 km) and Europa (radius 1561 km). Only one of Saturn's moons, Titan, is comparable in size with a radius of about 2576 km. The radius of Mercury is about 2440 km, and the radius of former planet Pluto is about 1195 km. Ganymede and Titan are both larger than Mercury, and all 5 of them are bigger than Pluto. So even under the conditions of Pluto's demotion to Dwarf Planet status, both Ganymede and Titan would likely be planets on their own, were it not for their being held

(Continued on page 7)

by the gravity of even bigger planets. And Callisto is not far off the mark, being only about 30 km smaller than Mercury. Ganymede and Callisto have mean densities of 1.9 and 1.8 gm/cm³, respectively. Io and Europa have mean densities of 3.5 and 3.0 gm/cm³, respectively. Compare these to the mean density of water ice (1.0 gm/cm³) and the mean density of Earth (5.5 gm/cm³). Clearly Ganymede and Callisto have a lot more ice and a lot less rock, compared to Io and Europa, but all four of them have a significant fraction of water ice in the bulk.

Io is the innermost of the Galilean moons. Trapped between the gravitational pull of Jupiter on one side, and the other three Galilean moons on the other side, Io is subjected to a constant flexing not unlike holding a tennis ball in your hand and alternately squeezing and releasing it. The surface of Io rises and falls through about 100 meters (330 feet) as a result and the internal heating causes the active volcanism discovered by Voyager I in 1979. Europa is subject to similar internal heating, but not as much because it is farther from Jupiter, the next moon out. The flexing and heating of Europa's surface erodes craters fairly quickly, hence we see very few compared to other Jovian moons. The internal heating of Europa may have generated a liquid water mantle beneath the surface, which has become a possible target in the ongoing search for extraterrestrial life in the solar system.

The Weather on Jupiter

When I first began working at JPL in 1981, I used to eat breakfast in the same coffee shop every morning on my way in. I would sit at the counter, always in the same place (everybody did, just like Cheers), and always next to the same guy who was a graduate student in philosophy. Every morning he would ask the same question: What's the weather like on Uranus today? And every day he got the same answer: Cloudy, cold & windy. That weather prediction works for Jupiter too.

The strong internal heating coupled with the rapid rotation cause the clouds in the Jovian atmosphere to stretch into parallel bands that are easy to see in any amateur astronomer's telescope. Typical wind speeds are about 150 meters/second or about 335 miles/hour. That's faster than the wind speed in an F-5 tornado. If it were a hurricane it would be about category 12 on the Saffir-Simpson scale. The Galileo probe, which fell into Jupiter 7.4 degrees north of the equator, measured wind speeds from 200 miles/hour at a pressure about 0.4 atmospheres up to 400 miles/hour at a pressure of about 5 atmospheres. The wind speed remained steady at about 400 miles/hour all the way down to about 20 atmospheres, when it stopped transmitting.

(Continued on page 8)

This is one of the few areas where Saturn is even more extreme than Jupiter, for the zonal winds on Saturn blow about 900 to 1000 miles/hour. But the fastest winds in the solar system are found on Neptune, where the clouds zip along at about 1250 miles/hour.

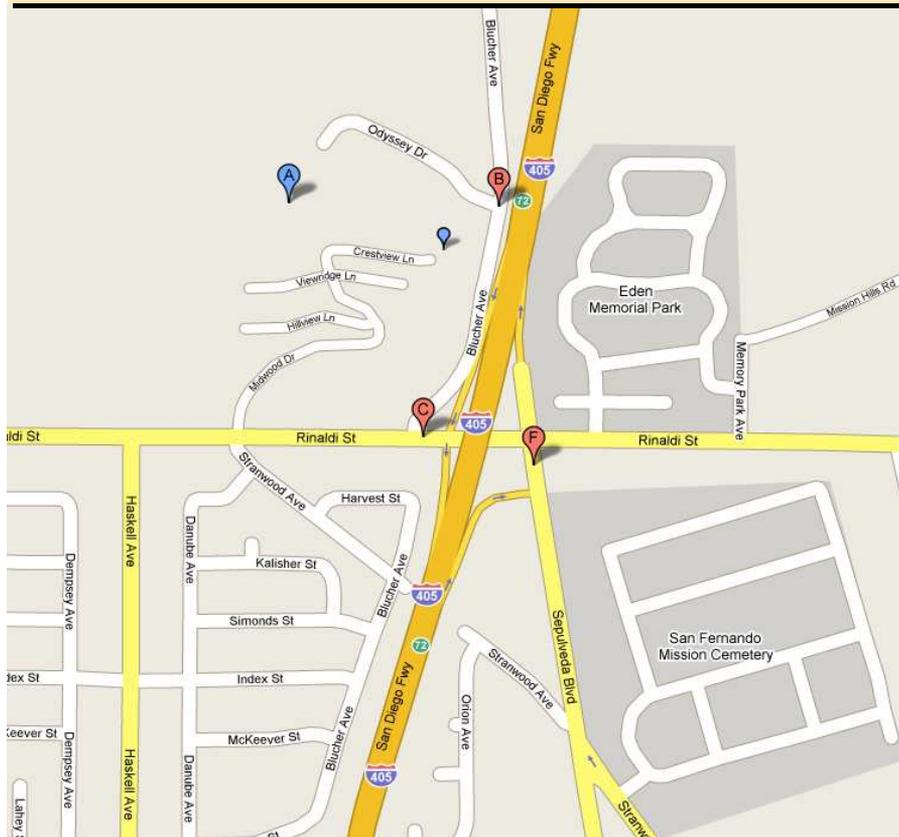
One of the more conspicuous features in the clouds of Jupiter is the Great Red Spot. It's a Jovian high pressure system three times the size of our entire Earth. The cloud tops of the Great Red Spot are about 5 miles higher than the surrounding clouds. The winds circulating around the rim of the spot blow about 270 miles/hour but the interior of the spot appears stagnant with little or no wind. Conspicuously elliptical it has still lost about half the length of its major axis in the last 100 years, and gained a bit in its minor axis, becoming notably more circular than it was. The Great Red Spot has been continuously visible for 300 years, and appears to be stable, trapped between a strong retrograde jet stream to its north and a weak prograde jet stream to the south. How long it will remain stable is unknown. Voyager II found a Great Dark Spot on Neptune in August 1989. That spot was not held stable, but was moved by retrograde winds at about 670 miles/hour. Observations from the Hubble Space Telescope confirmed in 1994 that the spot had vanished. Perhaps the Great Red Spot will vanish some day too, but it does not seem likely to happen any time soon.

It's not just windy on Jupiter it's also cold. At least it is where we might hang out. Where the pressure is about one Earth atmosphere in Jupiter's clouds the temperature is about 165 Kelvins or -163 Fahrenheit. But the density even at that pressure is only about one tenth of the density of Earth's atmosphere at the surface. But it warms up as you go down. When the Galileo probe stopped transmitting at about 20 atmospheres it was reporting a temperature about 260 Fahrenheit. There is no real surface on Jupiter. It just gets denser & hotter as you go down under the clouds and find out why we call them "gas giants".

Go Out and Look

Throughout October and November Jupiter will be conveniently placed in the evening sky. The Galilean Moons are visible even in binoculars, if you can hold them stable. Even in a modest telescope, Jupiter is even visible in daylight, if you (or your computer) know where to look. This is a good time to take advantage of the long winter nights and early sunset to observe the King of the Planets. You can pretend you are Galileo, seeing the Medici Stars for the first time ever. ✧

Directions to 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 to the LAAS Treasurer.

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.

NIGHTFALL

DEEP SKY TREATS IN THE DESERT 2008

Thursday through Sunday
October 30 to November 2, 2008
Palm Canyon Resort
221 Palm Canyon Drive
Borrego Springs, California 92004
<http://www.nightfall2008.com>
info@nightfall2008.com

N I G H T F A L L B A S I C S

Nightfall 2008 is a four-day event held at a desert resort in Borrego Springs, California; this is the 16th annual edition. The resort supports the event by either switching off or changing to red all of the exterior lighting, and by making Nightfall the exclusive user of the property for its duration. There is no cost to come to Nightfall, but lodging or RV parking costs at the resort are the responsibility of the attendee (see below). You may also stay at a nearby hotel, or camp at the adjacent state park, and still set up on the main event grounds during Nightfall.



W H A T C A N I D O ?

You may attend Nightfall for one, two or three nights (minimum two-nights if you are staying at the Palm Canyon Resort). Many people make a mini-vacation out of it and come out on Thursday afternoon and stay until Sunday. Nightfall typically offers sunny, mid-fall days - great for exploring the nearby Anza Borrego Park; you can also attend workshops on astro-imaging and related topics during the day on Friday and Saturday (special registration/fees required). At night, there are several designated areas on the hotel grounds for telescope set-up; these areas have signs, and will be identified in the printed program. Large telescopes can be safely left outside, but participants are encouraged to keep cameras and other accessories in their cars, or take them back to their rooms, and you should provide protection against the sun and dust during the day. Other free activities during Nightfall include a Friday afternoon reception in the hotel saloon, a Saturday afternoon potluck dinner, and Saturday night sky tour.

H O W D O I R E G I S T E R ?



If you plan on staying at the Palm Canyon Resort, either in a hotel room or in the RV park, you need to call the resort at (800) 242-0044 or go online at www.pcreort.com. **You should reserve early - the resort is often sold out by the end of summer.** When calling, please tell the clerk you are attending Nightfall (aka "the telescope event"), or you may be told the resort is booked for the weekend. Rates this year range from \$94 to \$105 a night for rooms, and \$28 to \$34 a night for RV sites; both require a minimum two-night stay. If you are coming in an RV and want to have a separate space for your telescope gear,

you must pay for that space. If you are interested in attending the astroimaging workshops on Friday or Saturday, please check the website - www.nightfall2008.com - for registration information and cost.

Equipment for Sale

Meade AR-5 LXD55\$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 Telenegative 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

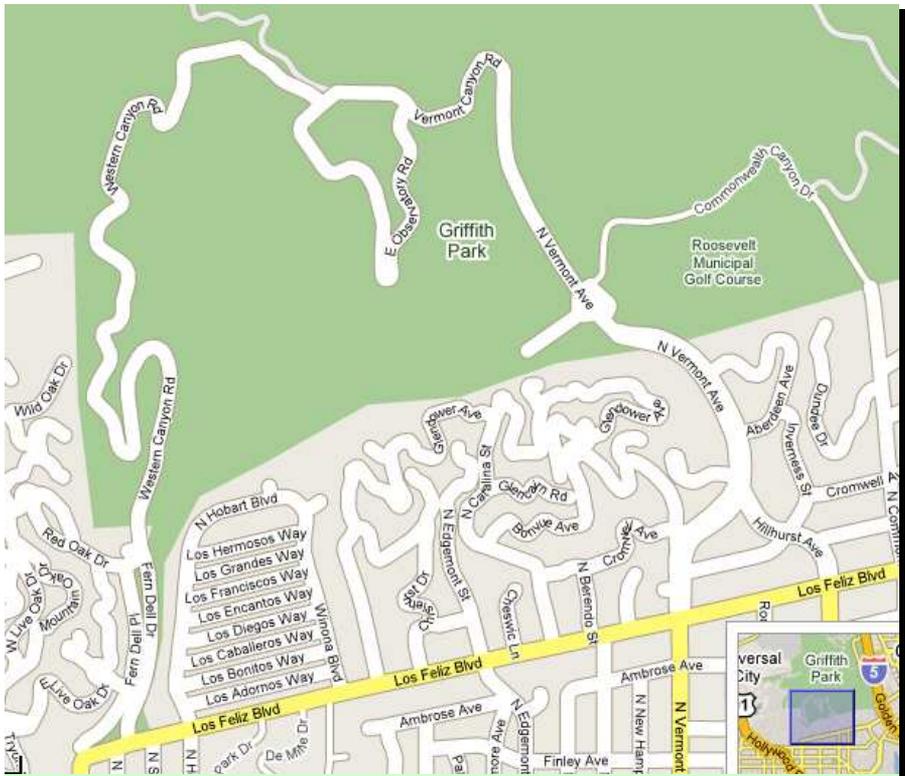
The scope and peripherals are in
 excellent condition - used a half dozen
 times. I no longer have space to set up.
 If you're interested, contact:

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. ✧

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

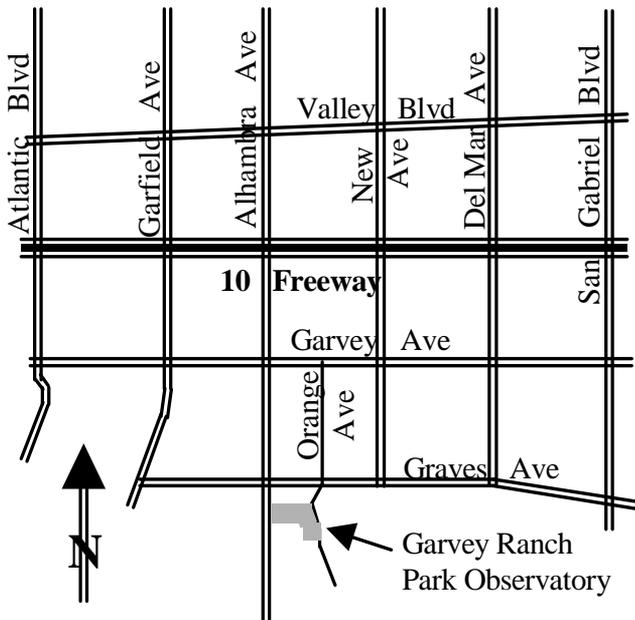
FOR SALE: Vintage Questar 3.5-inch Telescope

Your L.A. Astronomical Society is selling a 1971 standard 3.5-inch Questar (Serial No. 1-CV-4546-BB) that was donated to us by a generous friend. But this telescope is not well suited for use at LAAS' public star parties and other outreach activities or as a loaner scope for our members, and it is too valuable to languish in our shop. It's an excellent instrument that was fully reconditioned this year by Questar Corp. and is in pristine condition. Its premium features include a Cer-Vit mirror for increased reflectivity and broad band coatings to reduce light loss, and it comes with all the standard Questar components and accessories of its era, including two "Erfler" eyepieces (26 mm and 12 mm), an off-axis sun filter, a synchronous drive AC motor, and a cowhide leather carrying case with a luggage cover. It is being offered for sale at \$2,300, but reasonable offers will be considered. Contact the LAAS treasurer at treasurer@laas.org or by mail at P.O. Box 56084, Sherman Oaks, CA 91413.



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
Oct 4th (Sat)	Public Star Party	Griffith Observatory. See pg 3 for details on how to attend.
Oct 20th (Mon)	General Mtg	Griffith Observatory The speaker is Dr. Edward "Ned" Wright. He will talk about the Cosmic Infrared Background
Oct 31st (Fri)	60-inch Night	Mt Wilson. See page 4 for details.
Nov 1st (Sat)	Dark Sky Night	Lockwood Valley
Nov 8th (Sat)	Public Star Party	Griffith Observatory. See pg 3 for details on how to attend.
Nov 10th (Mon)	General Mtg	Griffith Observatory The speaker is John Schwarz, who will speak on String Theory.
Nov 29th (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