

# IO – April 2007

Issue 2007-04  
Eugene Astronomical Society



Eugene Astronomical Society,  
Annual Club Dues \$25, Board Members:  
President: Sam Pitts - 688-7330  
Secretary: Jerry Olton - 343-4758  
Jacob Strandlien, Tommy Lightning Bolt  
& Fred Domineack

[www.eugeneastro.org](http://www.eugeneastro.org)

EAS is a Proud Member of:

**The Astronomical League**  
The World's Largest Federation of Amateur Astronomers

IO editor- sampitts@comcast.net 688-7330

*Io (EYE-oh) is nearest to Jupiter and fastest orbiting of the four Galilean moons*

## Monday- April 2<sup>nd</sup> MEETING EUGENE ASTRONOMICAL SOCIETY

Held at:

**"Science Factory Children's Museum & Planetarium"**  
2300 Leo Harris Parkway, Eugene  
SW of Autzen Stadium

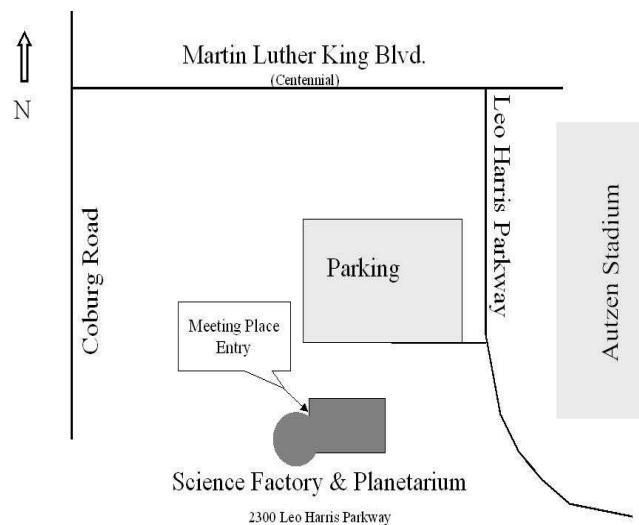
## Ancient Astronomy and Cosmology in North America

By: Guy Prouty

Guy Prouty, Dept. of Anthropology at Oregon State and Eastern Oregon Universities, will give a talk titled "Ancient Astronomy and Cosmology in North America." He will discuss the remarkable prehistoric archaeological sites in the Northern Plains, the Midwest, and the Southwest that have astronomical significance. He will also explore the cosmologies of indigenous Native Americans who view the heavens quite differently from modern day professional and amateur astronomers. Guy will conclude the talk with some selected scenes from the phenomenal video "The Mystery of Chaco Canyon," located in New Mexico.

Jacob Standlien will follow Guy Prouty with his monthly presentation on current event and news in Space & Astronomy. Jacob always has some interesting news and great images to share with the group. Come and enjoy the wonders of the night sky with the Eugene Astronomical Society at The Science Factory's comfortable Planetarium. The meeting will begin at **7:00 PM** in the Planetarium.

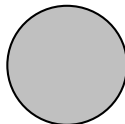
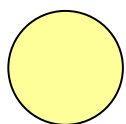
The Eugene Astronomical Society is a group of amateur astronomers dedicated to observing the sky, learning about the Universe, and sharing that understanding and appreciation of astronomy with students and the general public. EAS has been doing astronomy education and public outreach for many years. The EAS holds club meetings on the first Monday of each month at 7 PM at The Science Factory Children's Museum & Planetarium. Guests are welcome to visit; we ask for a \$1 guest contribution. Meetings feature speakers with presentations on topics of interest to club members, current viewing opportunities, telescope help, and star party planning.



EAS thanks the Science Factory Children's Museum & Planetarium for providing the Planetarium for our monthly meetings.



# Observing in January



| April 2              | April 10              | April 17              | April 23              |
|----------------------|-----------------------|-----------------------|-----------------------|
| Mercury Rise 6:11 AM | Mercury Rise 6:07 AM  | Mercury Rise 6:03 AM  | Mercury Rise 6:01 AM  |
| Venus Set 10:54 PM   | Venus Set 11:14 PM    | Venus Set 11:30 PM    | Venus Set 11:43 PM    |
| Mars Rise 5:20 AM    | Mars Rise 5:03 AM     | Mars Rise 4:48 AM     | Mars Rise 4:35 AM     |
| Jupiter Rise 1:16 AM | Jupiter Rise 12:41 AM | Jupiter Rise 12:12 AM | Jupiter Rise 11:47 PM |
| Saturn Rise 2:43 AM  | Saturn Set 4:33 AM    | Saturn Set 4:06 AM    | Saturn Set 3:42 AM    |
| Uranus Rise 6:01 AM  | Uranus Rise 5:30 AM   | Uranus Rise 5:04 AM   | Uranus Rise 4:41 AM   |
| Neptune Rise 5:00 AM | Neptune Rise 4:29 AM  | Neptune Rise 4:02 AM  | Neptune Rise 3:39 AM  |
| Pluto Rise 1:29 AM   | Pluto Rise 12:53 AM   | Pluto Rise 12:25 AM   | Pluto Rise 12:02 AM   |

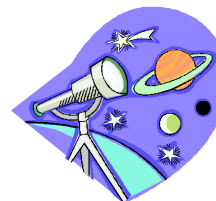
All times: U.S. Pacific Daylight Time (March 11-November 4, 2007) = UT - 7 hours. Pacific Standard Time (Nov.-March) = UT-8

| Date      | Moonrise | Moonset | Sunrise | Sunset | Twilight<br>Begin | Twilight<br>End |
|-----------|----------|---------|---------|--------|-------------------|-----------------|
| 4/1/2007  | 19:03    | 06:25   | 06:54   | 19:39  | 05:14             | 21:20           |
| 4/2/2007  | 20:05    | 06:41   | 06:52   | 19:41  | 05:12             | 21:21           |
| 4/3/2007  | 21:09    | 06:58   | 06:50   | 19:42  | 05:10             | 21:23           |
| 4/4/2007  | 22:14    | 07:18   | 06:49   | 19:43  | 05:08             | 21:24           |
| 4/5/2007  | 23:21    | 07:41   | 06:47   | 19:44  | 05:06             | 21:26           |
| 4/6/2007  | -----    | 08:10   | 06:45   | 19:46  | 05:04             | 21:27           |
| 4/7/2007  | 00:26    | 08:46   | 06:43   | 19:47  | 05:02             | 21:29           |
| 4/8/2007  | 01:29    | 09:33   | 06:41   | 19:48  | 04:59             | 21:31           |
| 4/9/2007  | 02:24    | 10:29   | 06:40   | 19:49  | 04:57             | 21:32           |
| 4/10/2007 | 03:11    | 11:37   | 06:38   | 19:50  | 04:55             | 21:34           |
| 4/11/2007 | 03:48    | 12:50   | 06:36   | 19:52  | 04:53             | 21:35           |
| 4/12/2007 | 04:19    | 14:08   | 06:34   | 19:53  | 04:51             | 21:37           |
| 4/13/2007 | 04:44    | 15:27   | 06:33   | 19:54  | 04:49             | 21:39           |
| 4/14/2007 | 05:07    | 16:46   | 06:31   | 19:55  | 04:46             | 21:40           |
| 4/15/2007 | 05:29    | 18:07   | 06:29   | 19:56  | 04:44             | 21:42           |
| 4/16/2007 | 05:51    | 19:31   | 06:27   | 19:58  | 04:42             | 21:44           |
| 4/17/2007 | 06:15    | 20:55   | 06:26   | 19:59  | 04:40             | 21:45           |
| 4/18/2007 | 06:44    | 22:21   | 06:24   | 20:00  | 04:38             | 21:47           |
| 4/19/2007 | 07:21    | 23:43   | 06:22   | 20:01  | 04:36             | 21:49           |
| 4/20/2007 | 08:07    | -----   | 06:21   | 20:02  | 04:33             | 21:51           |
| 4/21/2007 | 09:05    | 00:55   | 06:19   | 20:03  | 04:31             | 21:52           |
| 4/22/2007 | 10:12    | 01:53   | 06:18   | 20:05  | 04:29             | 21:54           |
| 4/23/2007 | 11:23    | 02:37   | 06:16   | 20:06  | 04:27             | 21:56           |
| 4/24/2007 | 12:34    | 03:11   | 06:14   | 20:07  | 04:25             | 21:57           |
| 4/25/2007 | 13:44    | 03:37   | 06:13   | 20:08  | 04:23             | 21:59           |
| 4/26/2007 | 14:49    | 03:58   | 06:11   | 20:09  | 04:20             | 22:01           |
| 4/27/2007 | 15:53    | 04:15   | 06:10   | 20:11  | 04:18             | 22:03           |
| 4/28/2007 | 16:55    | 04:32   | 06:08   | 20:12  | 04:16             | 22:05           |
| 4/29/2007 | 17:57    | 04:48   | 06:07   | 20:13  | 04:14             | 22:06           |
| 4/30/2007 | 19:01    | 05:05   | 06:05   | 20:14  | 04:12             | 22:08           |

## Current Occultations & Other Events

Visit Derek C Breit's web site  
**"BREIT IDEAS Observatory"**  
[www.poyntsource.com/New/Paths.htm](http://www.poyntsource.com/New/Paths.htm)

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often. Thanks, Derek for such a fine site and becoming an EAS member.



All times are for Eugene, Oregon Latitude 44° 3' 8"  
 Longitude 123° 5' 8" for listed Date

## Events

### April 2007

|           |   |
|-----------|---|
| 3         | Asteroid 2007 EJ88 Near-Earth Flyby (0.080 AU)  |
| 4         | Comet Comas Sola Near-Jupiter Flyby (0.311 AU)  |
| 5         | 10th Anniversary (1997), Galileo, Ganymede 7 Flyby  |
| 7         | Soyuz TMA-10 Soyuz FG Launch (International Space Station 14S)  |
| 8         | Easter Sunday   |
| 9         | Asteroid 2007 EL88 Near-Earth Flyby (0.071 AU)  |
| 10        | Cassini, Titan Flyby; Asteroid 2007 FO3 Near-Earth Flyby (0.053 AU)   |
| 11        | Mid-South Star Gaze 2007, Rainwater Observatory, Mississippi  |
| 12        | Lecture: Hot Topic, Cool Science - The Greenhouse Effect and the Orbiting Carbon Observatory, Pasadena, California;<br>World Space Party: Yuri's Night 2007; Symposium: The Future of Space Exploration - Solutions to Earthly Problems?, Boston, Massachusetts |
| 13        | Asteroid 1994 GL Near-Earth Flyby (0.020 AU) 1.86 million miles   |
| 14        | Asteroid 2007 DS84 Near-Earth Flyby (0.042 AU)  |
| 16        | 35th Anniversary (1972), Apollo 16 Launch (Manned Moon Landing); Wilbur Wright's 140th Birthday (1867); Leonardo DaVinci's 555th Birthday (1452); Apr 16-22 - Astronomy Week  |
| 17        | 40th Anniversary (1967), Surveyor 3 Launch (Moon Lander)  |
| 21        | Astronomy Day   |
| <b>22</b> | <b>Lyrids Meteor Shower Peak</b>  |
| 24        | Cassini, Distant Flyby of Dione and Telesto   |
| 25        | AIM Pegasus XL Launch; Comet C/2007 E2 (Lovejoy) Closest Approach To Earth (0.042 AU)   |
| 26        | Cassini, Titan Flyby; Genesis 2 Dnepr 1 Launch  |
| 28        | Asteroid 2003 WW26 Near-Earth Flyby (0.096 AU)  |
| 29        | 13th Annual Meeting of the SETI League, Little Ferry, New Jersey  |
| 30        | NFIRE Minotaur Launch; Asteroid 2003 FU3 Near-Earth Flyby (0.082 AU)  |
|           |   |
|           |   |

**AU**=Astronomical Unit (92,955,800 miles)

## **Planetary Imaging**

Jeff Phillips will present an outstanding talk about web cameras and imaging the planets & moon

at the May 7<sup>th</sup> 2007, EAS meeting . Don't miss it.

# Prineville Reservoir Star Party

Dates are June 14-16.

This is a FREE event sponsored by Oregon Parks and Recreation and includes all sorts of family activities including Nature Hikes, free Kayaking, Omsi High Desert Museum, John Day Fossil Beds, speakers (mostly SRNC speakers and one from NASA) as well as door prizes. Camping is free in the parking lot by your set up---priority is given for paid camping to attendees. Location for Star party (this is the 7th annual one) is on the side of the Prineville Reservoir at about 3500 feet and 14 miles out of Prineville all on paved roads and NO dust... Skies are just about as dark as OSP with NO light dome at all from Prineville. We have had several Eugene astronomers come in the past and they have been enthusiastic about this star party.

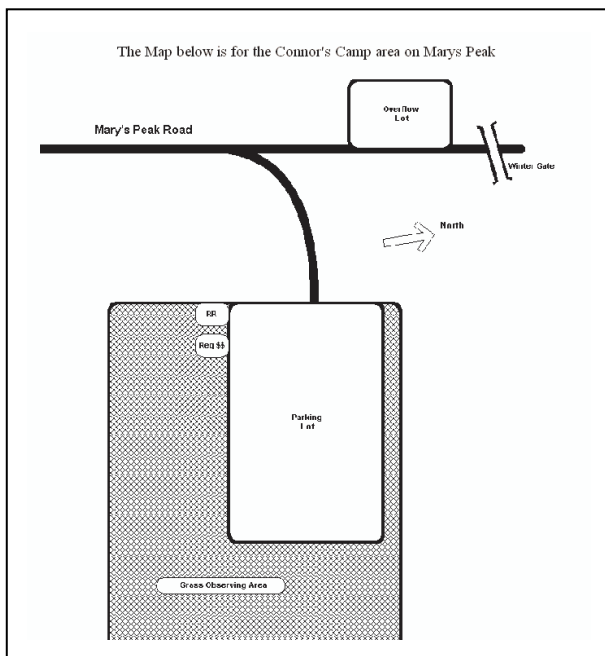
## Mary's peak Star Party June 9<sup>th</sup>

|           |   |
|-----------|---|
| 5:00-7:00 | Arrival and setup   |
| 7:00-8:00 | Welcome, Announcements, introductions, get to know people |
| 7:30-8:00 | equipment & book swap meet ?                              |
| 8:00      | sunset  |
| 8:00-9:00 | telescope tune up and help                                |
| 10:00     | twilight ends   |

Directions:

### CONNOR'S CAMP on MARYS PEAK

To reach Mary's Peak from I-5: Take the Route 34 exit (to Corvallis) off I-5 and turn west onto Route 34. As you're approaching Corvallis (before the bridge over the Willamette) the route turns left at a stop light. Take this turn and continue on Route 34 all the way to Philomath. After passing the downtown portion of Philomath, you'll come upon an intersection (just past the wood mill to the left) indicating a continuation of Rt. 34 – by turning to the left, staying straight will put you on Rt. 20 to Newport. Take this left turn, Rt 34 to Waldport, and drive for several miles. Route 34 eventually takes you on a winding journey through the Mary's Peak foothills, then leads you to a hillcrest where the Mary's Peak access road (marked by a sign to the right) begins. Turn right, onto this road, and drive for just over 5 miles. After this distance, you'll encounter a brief patch of gravel road, just beyond is an intersection for a road to the left. Do NOT turn on this, just continue on the paved road for another hundred yards and the Conner's Camp turn-off (marked by signs) will be seen to the right. Take this turn and continue to the parking area, which is only a few hundred yards away.



North Sky 45 Club

<http://www.nightsky45.com/>

&

Heart of the Valley Astronomers

<http://www.hvastronomy.com/>

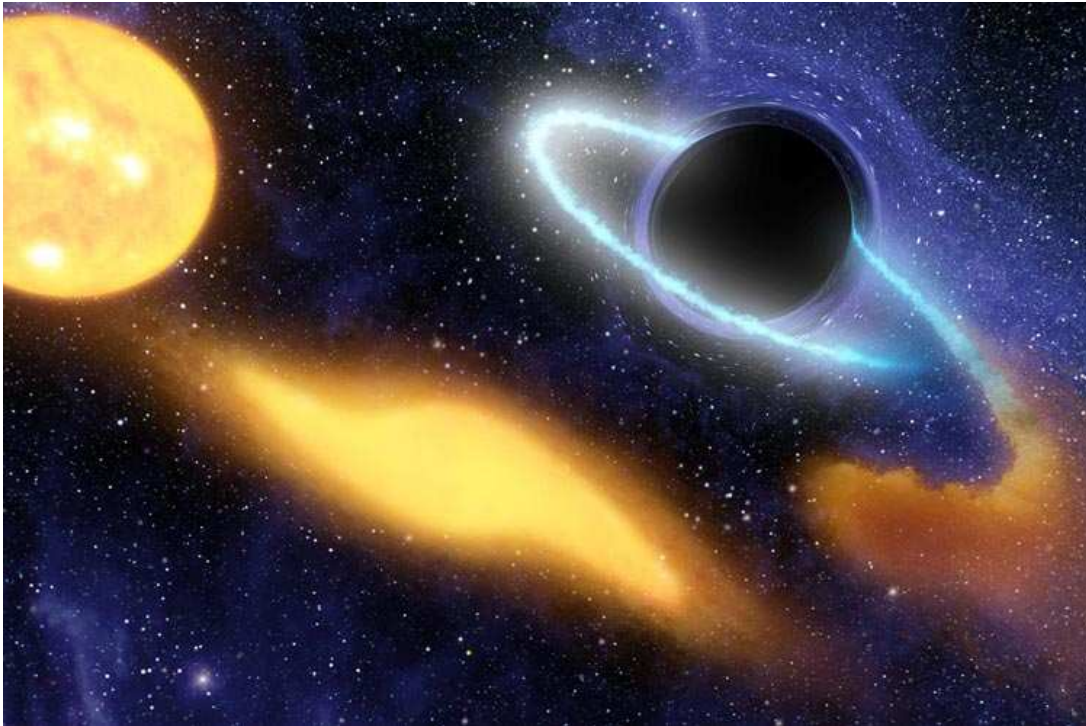
# Early Bird Gets the Worm

## or “Black Hole Breakfast”

by Dr. Tony Phillips

We all know that birds eat worms. Every day, millions of birds eat millions of worms. It’s going on all around you! But how often have you awakened in the morning, stalked out in the dewy grass, and actually seen a bird having breakfast? Even though we know it happens all the time, a bird gulping a worm is a rare sight.

Just like a black hole gulping a star...



*In this artist’s concept, a giant black hole is caught devouring a star that ventured too close.*

Every day in the Universe, millions of stars fall into millions of black holes. And that’s bad news for the stars. Black holes exert terrible tides, and stars that come too close are literally ripped apart as they fall into the gullet of the monster. A long burp of X-rays and ultraviolet radiation signals the meal for all to see.

Yet astronomers rarely catch a black hole in the act. “It’s like the problem of the bird and the worm,” says astronomer Christopher Martin of Caltech. “You have to be in the right place at the right time, looking in the right direction *and* paying attention.”

A great place to look is deep in the cores of galaxies. Most galaxies have massive black holes sitting in their pinwheel centers, with dense swarms of stars all around. An occasional meal is inevitable.

A group of astronomers led by Suvi Gezari of Caltech recently surveyed more than 10,000 galactic cores—and they caught one! In a distant, unnamed elliptical galaxy, a star fell into a central black hole and “burped” a blast of ultraviolet radiation. “We detected the blast using the Galaxy Evolution Explorer (GALEX), an ultraviolet space telescope,” explains Gezari. Her team reported the observation in the December 2006 issue of *The Astrophysical Journal Letters*. “Other telescopes have seen black holes devouring stars before,” she adds, “but this is the first time we have been able to watch the process from beginning to end.”

The meal began about two years ago. After the initial blast, radiation diminished as the black hole slowly consumed the star. GALEX has monitored the process throughout. Additional data from the Chandra X-ray Observatory, the Canada-France-Hawaii Telescope and the Keck Telescope in Hawaii helped Gezari’s team chronicle the event in multiple wavelengths

Studying the process in its entirety “helps us understand how black holes feed and grow in their host galaxies,” notes Martin. One down, millions to go.

“Now that we know we can observe these events with ultraviolet light,” says Gezari, “we’ve got a new tool for finding more.”

For more on this and other findings of GALEX, see [www.galex.caltech.edu](http://www.galex.caltech.edu). For help explaining black holes to kids, visit The Space Place at [spaceplace.nasa.gov](http://spaceplace.nasa.gov).

IO –March 2007  
www.eugeneastro.org



## Planetary Nebula Club Chair:

*Ted Forte*  
2649 Alameda Drive  
Virginia Beach, Virginia 23456  
(757) 427-3894  
E-mail: [twforte@cox.net](mailto:twforte@cox.net)

Planetary Nebulae are perhaps the most interesting and beautiful objects in the heavens. A genre full of wonderful variation, they exhibit complex shapes, and may even show vibrant colors. The last hurrah of a sun-like star, their study is essential to the understanding of stellar evolution. If you don't already have an appreciation for these most magnificent of objects, it is hoped this program will inspire you. We stand ready to welcome you into the ranks of the planetary nebula aficionado!

It is hoped that this observing club will whet your appetite. There are at least a thousand planetary nebulae visible in amateur size instruments and many marvelous ones are not on our list. We hope you enjoy the program and your subsequent observations of planetaries.

## The Catalog of Objects

One hundred ten planetary nebulae were chosen for this program. Among them are some of the most famous showpieces in the northern sky, but the list contains examples across the entire range of planetary nebula morphology. Some are tiny star-like points that will challenge you to pick them out of their crowded star fields. Others will appear as ghostly apparitions that will severely test your powers of observation. In addition, we have included four examples of "proto-planetary nebulae" as additional challenges.

This program was developed as a club project by the Back Bay Amateur Astronomers of southeastern Virginia and the list contains only objects that rise above the horizon from there. The most southerly object on the list is at a declination of -40 degrees 26 minutes.

## The Awards

The program can be completed visually or by imaging. We have opted to make it possible for an observer to complete this program even if his telescope and the quality of the observing site make detection of some of the objects impossible.

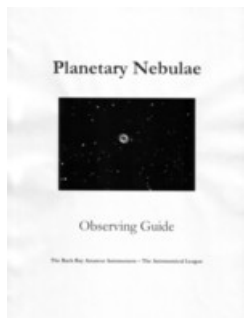
First, we offer two levels of accomplishment, basic and advanced. The basic program should be achievable with very modest equipment and from less than dark sites. The basic program awards a certificate only. To earn a certificate for the basic visual program you must observe at least 60 of the objects on the list.

Second, we have acknowledged the possibility that a few of the objects may simply be beyond detection for some observers and will allow negative observations in the completion of the advanced program. Evidence of diligent effort to observe the object is required (see the observing rules), but actual detection is not. Completion of the advanced program earns a certificate and award pin. The pin sports a colorful image of the Dumbbell Nebula, M27, taken by BBAA member Richard Dickson. To earn the certificate and pin for the advanced program, you must attempt to observe all 110 objects on the list.

To complete the program by imaging, 90 objects must be successfully imaged. Any or all of the four proto-planetary nebulae can be used for the imaging certificate and pin.

Four additional objects are provided as examples of proto-planetary nebulae. Their observation is encouraged but not required.

## Rules and Regulations



To obtain your certificate and award pin for this program, you will need to purchase the Planetary Nebula Observing Guide from the AL Bookstore specifically written to support this observing club. This guide includes the list of 110 planetary nebulae, chosen for this program, along with a nice introduction to planetary nebulae and hints on observing these majestic objects.

You must be a member of the Astronomical League, either through membership in an affiliated astronomical society or as a Member-at-Large.

Device aided searches are allowed. Observers reporting that 100% of the objects observed were located manually by traditional star-hopping techniques will receive special recognition on their certificate.

"Negative observations" will be accepted for the ADVANCED program if sufficient evidence is submitted to establish that the proper field was examined on at least two separate attempts and every reasonable effort was made to detect the object.

To record a negative observation, the observer must make at least two observing attempts on different nights, record all of the data required for a standard observation and describe in detail the methodology used to confirm that the proper position was examined. Each negative attempt **MUST** include a sketch of the star field. Observers are encouraged to make as many attempts to detect the object as possible and to submit negative observations only when resigned that detection is impossible. Negative observations **WILL NOT** be accepted for the basic program.

The observer may use the log sheet provided by this program's observing guide or may use a log of his/her own design so long as all of the required information is recorded. The record of observations shall include for each object:

1. Specifics of the observer's site.
2. Date and time of the observation.
3. Conditions including seeing, transparency, and the darkness of the site, to include the degree to which the moon interferes with the observation.
4. Telescope used including aperture and focal ratio.
5. Eyepiece and magnification information.
6. Filters used.
7. A detailed description of the object that includes at a minimum:
  - Is the central star visible?
  - Is a filter required to observe the PN?
  - How does the PN respond to different magnifications?
  - Is the object visible by direct vision, or does it require averted vision?

- A detailed description of the object's appearance in the observer's own words, OR a detailed sketch of the object.

Visual observers are encouraged, but not required, to observe and submit their observations of the four "challenge" objects.

The record of observations for the imaging award shall be the same as for the visual certification, except that instead of a detailed description of the object, the specifics of the instruments used to make the image should be recorded. Additional information relevant to the production of the image such as exposure times, film types, image software, number of stacked images, and the like should be provided.

Any process that records an image through the optics of a telescope may be employed for the imaging certificate and pin.

### **Submitting for Certification**

Visual observers should submit their observing logs to their member society's awards coordinator. The awards coordinator shall check the log and report completion of the program to the League's Planetary Nebula Club Award Coordinator either by mail or email. Please indicate if the certificate should signify that 100% of the objects were located manually.

Members-at-Large or members of societies that do not have awards coordinators should submit logs directly to the Planetary Nebula Club Award Coordinator. It is recommended that copies of your log be sent; we will not return the logs unless the observer provides for postage.

Imagers should submit images either to their society's awards coordinator or to the League's Planetary Nebula Club Award Coordinator.

Images in electronic format may be forwarded by any convenient means that accomplishes transfer or makes the images available for review. This may include mailing of a storage device such as a CD or 'posting' of the images on the web.

Please check with the awards coordinator to insure that the transfer method will be acceptable if images are to be sent. Please avoid sending prints or slides unless you do not require them back.

A certificate will be mailed to the address provided, either to the observer or to a society officer for presentation at a society event.



The Moon is the nearest celestial object in our observable universe and is always a public favorite at star parties. It was the target of past manned and robotic exploration missions, and it is likely that public interest will be stimulated again as new lunar missions are announced and executed. Many avid lunar observers voiced their desire for a second, more challenging program to follow the very popular Lunar Club. In response the Astronomical League formed a club for experienced lunar observers called Lunar II.

Lunar II Club goals include stimulating and maintaining a continued interest in lunar observing. This new program will also require participants to make at least 100 observations of the Moon. It is designed to help members improve their observing skills and expand their knowledge of the visible lunar surface. It is similar in some ways to the Messier Club, and it requires participants to go farther than the Lunar Club had before. For example, prominent features like the Sea of Crises and Tycho Crater will be revisited, observing them in greater detail and/or in varied sun-lighting. New targets, such as the Cordillera Mountains have been added. Some observations will be relatively easy, such as finding and describing the Sea of Isles; others, like hunting domes and rilles will be more challenging and require greater observing skill. Participants will also create a small, basic map of the visible face of the Moon.