Planetary Nebula Club Chair:

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Welcome to the Astronomical League's Planetary Nebula Club!

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.

Astronomical League members who observe from the southern hemisphere can now complete the Planetary Nebula Club! The 40 objects on the regular Planetary nebula list that lie above +23 degrees have been replaced with objects with negative declinations to create an alternate list that is observable from far southern latitudes. Thanks go out to Member at Large Martin Griffiths and Steve Gottlieb (TAC) for contributing object

recommendations to this second list. All of the rules and procedures for the regular Planetary Nebula club apply to the southern hemisphere list.

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 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

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.