



Programs for Telescopes

Programs for Telescopes

- Okay, so you have a telescope and you know how to use it and you can find things in the sky.
- Now what?



Programs for Telescopes

Astronomical League Observing Clubs

Wide range of programs

- From naked eye to big telescope
- From very simple to very extensive
- From the sun and moon to very dim fuzzies
- I will only be covering programs for northern hemisphere objects.
- 33 awards made to 18 TAS members



Programs for Telescopes

- Full list of the clubs at
 - **<http://www.astroleague.org/observing.html>**
(Click the astroleague logo at the foot of the TAS website)
- All members that successfully complete a club are awarded a certificate and pin.
- These members are listed in the annals of the Astronomical League.
- All Clubs require logging basic information.
- These logs must be submitted to the TAS Alcor for verification.



Common Log Information

- All clubs require the basic information of
 - Place
 - Date
 - Time
 - Equipment
 - Seeing conditions
 - Comment on observation



Programs for Telescopes

- **Introductory**

- **Constellation Hunter Club**

- Recommended for all ages of beginners.
 - No equipment needed but a working pair of eyes.
 - Identify and draw 39 constellations in the northern sky.
 - All you need is your eyes, planisphere and reference material.



Programs for Telescopes

- **Introductory (continued)**
 - Lunar Club
 - Recommended for all ages of beginners
 - You will need binoculars and at minimum a small telescope or the use of a small telescope.
 - 18 naked eye, 46 binocular, and 36 telescopic lunar targets.



Programs for Telescopes

- **Introductory (continued)**

- Sky Puppy Club

- Specifically designed for kids.
- Workbook available from Astronomical League but not required.
- Must be able to –
 - draw, identify, and describe 15 IAU constellations
 - know the difference between an asterism and a constellation
 - be able to tell at least two traditional stories implied by the constellations (stories may originate from any documented cultural tradition.)
 - and, be able to use a pair of binoculars to locate 5 deep-space objects and identify what they are.



Programs for Telescopes

- **Introductory (continued)**

- Universe Sampler Club

- A \$10 workbook is required to complete this club. This covers all the basics of observing. A great place to start for the rank amateur.
- Recommended starting program before beginning any of the later programs. Members that complete the club would have covered the following areas –
 - Basic Sky Movement
 - How to Find North in the Sky
 - Star Charts and Constellation Patterns
 - Angular Measures and Distance
 - Stating the Location of Objects in the Sky
 - Star-Hopping
 - Eyepiece Field Orientation
 - Recording Your Observations
 - The Art of Seeing
 - The Moon
 - Variable Stars
 - The Sun
- Awarded a certificate and a pin for one of two paths, the naked eye path or the telescope path.



Programs for Telescopes

- **Binocular**

- Binocular Messier Club

- Two different lists depending on the size of your binoculars.
 - Each list has objects categorized as easy, tougher and challenge objects.
 - You must locate and document a minimum number of objects from each category. Anyone with a pair of binoculars will be able to complete this club.

- Deep Sky Binocular Club

- List of 60 non-Messier objects.
 - Takes up where Messier list leaves off.
 - Can be completed with a pair of 7x50 binoculars.



Programs for Telescopes

- **Telescopic**

- Arp Peculiar Galaxy Club

- Intended for advanced observers. Most objects are 12 to 14 magnitude.
 - CCD, Regular photography or visual observation.
 - Must image, photograph or observe 100 out of a list of 338 Arp objects.

- Caldwell Club

- 109 must see objects from 1 to 13 magnitude from $+85^\circ$ to -80° .
 - Two categories, the whole list or a sub list of 70 objects (gold or silver).

- Herschel 400 Club

- A list of 400 dim fuzzies of all kinds.

- Herschel II Club

- Another list of 400 dim fuzzies from the Herschel list.
 - Run by Rose City Astronomers.
 - Must buy a manual for \$15.



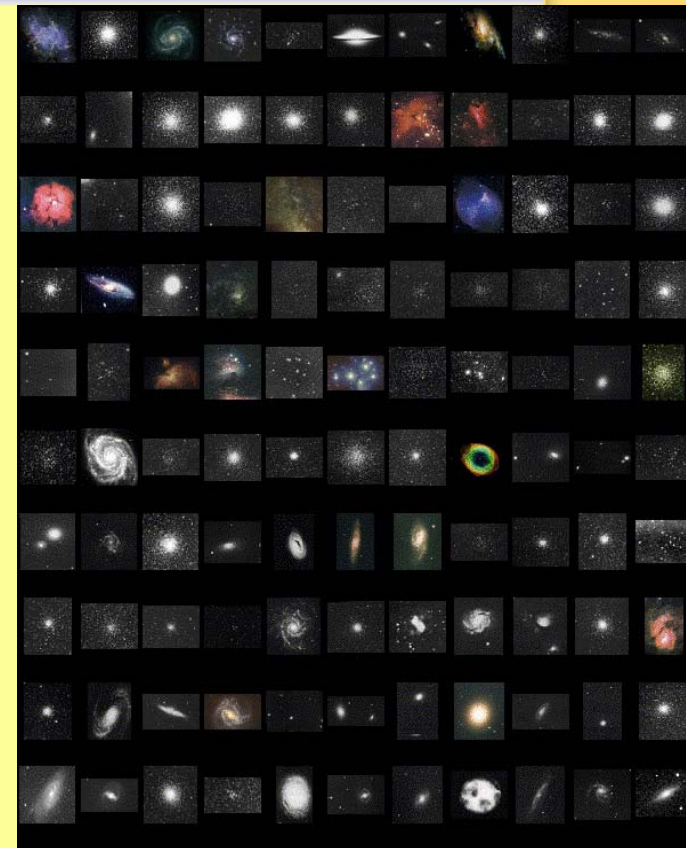
Programs for Telescopes

- **Telescopic (Continued)**
 - **Galaxy Groups & Clusters Club**
 - List of 250 galaxy groups and clusters.
 - CCD of visual.
 - Intended for mid-level to advanced observers.
 - Observe 30 objects and get a certificate.
 - Observe 30 objects in all four categories and get a pin.
 - Two categories of certificate, manual and device-aided.
 - **Globular Cluster Club**
 - Program is run by the Longmont Astronomical Society.
 - \$12 manual required.
 - Must observe and classify 50 of 190 globular clusters with a cluster from the challenge list.



Programs for Telescopes

- **Telescopic (Continued)**
 - Messier Club
 - Must do list for any serious amateur astronomer.
 - 110 of the finest astronomical objects in the northern hemisphere.
 - To obtain a certificate you must observe at least 70 objects.
 - Upon completing all the Messier objects you will receive an **Honorary Certificate**.
 - ***NO GOTO ALLOWED!***
 - ***Not recommended that you try to get your pin at a marathon.***
 - Since 1991 awarded 11 TAS members.





Programs for Telescopes

- **Telescopic (Continued)**

- Open Cluster Club

- Must observe and classify all 125 objects in the list under the Trumpler classification system.
- Observing manual available online.
- Must sketch any 25 objects on list.

- Planetary Nebula Club

- Program run by the Back Bay Amateur Astronomers.
- Must purchase a manual for \$12.
- 110 planetary nebula on this list.
- Observations can be visual or imaged.
- Two types of awards, basic and advanced
 - Basic must observe 60 objects
 - Advanced must attempt to observe all 110. Negative observations are allowed.
- If a CCD is used then at least 90 objects must be imaged.
- Special recognition for manual location of objects.



Programs for Telescopes

- **Telescopic (Continued)**
 - Urban Observing Club
 - Designed for urban observers.
 - Must observe 100 objects.
 - Only observations made under light polluted skies allowed.
 - No mention if Goto or CCD imaging is allowed.



Programs for Telescopes

- **Topical**

- **Asteroid Observing Club**

- Two levels of certificates – observe 100 asteroid to get the gold and 25 to get the regular certificate.
 - Observations must be sketched or recorded with a CCD.
 - At least two observations must be made for the same asteroid.
 - If a CCD is used position can be reported using standard astrometric procedures.
 - Guide is available online.

- **Comet Observers Club**

- Two levels of award. Observe 12 different comets for the basic award and observe an additional 18 comets for the gold award.
 - Observations can be visual or image.



Programs for Telescopes

- **Topical (continued)**

- Double Star Club

- Must observe all 100 double stars on the list.
 - Use of Goto not encouraged.
 - Drawings are required for each observation.

- Earth Orbiting Satellite Observing Club

- Observe and categorize wide variety of orbiting objects:
 - 4 - Active Payloads,
 - 2 - Manned Spaceflight,
 - 4 - Multinational Satellites,
 - 4 - Rocket Bodies,
 - 4 - Iridium Flares,
 - 2 - satellites on two separate passes,
 - 2 - sets of formation flights,
 - 2 - satellites with element sets of different ages
 - You must include a sketch of each observation.
 - This is a great club for Florida residents.



Programs for Telescopes

- **Topical (Continued)**

- Lunar II Club

- You must complete the first lunar club.
- You must observe all 100 targets on the LunarII list.
- Written descriptions or sketches are required of all objects.

- Master Observer Club

- Must complete at least 10 of the clubs which must include a core of five clubs
 - Messier Club
 - Binocular Messier Club
 - Lunar Club
 - Double Star
 - Herschel Club

- Meteor Club

- Observe meteors for at least six hours with a minimum of one hour for each session.
- Observations for an additional 12, 18, 24, 30 and 36 hours is eligible for additional Honorary certificates.



Programs for Telescopes

- **Topical (Continued)**

- Outreach Club

- Official AL recognition of outreach to the general public by amateur astronomers.
- **Outreach Award** - minimum of five-2 hour (minimum each outreach) outreach events
- **Stellar Outreach Award** - in addition to the (basic) Outreach Award, the Stellar Outreach recipients will need an additional fifty hours (minimum) in outreach events
- **Master Outreach Award** - in addition to the Outreach and Stellar Outreach Awards, the Master Outreach recipients will need an additional one hundred hours (minimum) in outreach events.



Programs for Telescopes

- **Topical (Continued)**
 - Planetary Observers Club
 - Complete any 25 of the listed projects.
 - Projects range of a variety of observation such as
 - positions of the sun
 - major features of the moon and occultations
 - daytime and night time observations of the inner planets and their brightness and phase.
 - Observation of features of Jupiter and Saturn and their moons.
 - Locating Uranus and Neptune.

 - Sunspotters Club
 - Two sets of drawings required
 - five detailed sketches of sunspot groups.
 - 20 or more sketches of the whole solar disk during two solar rotations (one rotation is about 30 days).
 - The program is based on the manual “Observe and Understand the Sun” available for \$12 from AL.



Programs for Telescopes

- Topical (Continued)
 - Galileo Club
 - All observations must be done at a magnification between 10 and 20.
 - Either binoculars or a telescope may be used.
 - Go-to equipment is allowed.
 - You must complete all of the requirements except those that are labeled “Optional”. (Observing Aurora is optional)
 - Repeat Galileo’s Observations of the heavens.



Programs for Telescopes

- Topical (Continued)
 - Local Galaxy Groups and Neighborhood Club
 - You must purchase the guide for this program from AL for \$21
 - The rules for this club are in the guide.
 - Two kinds of certificates, manual and “Device-aided”, are issued.
 - Two types of observing allowed, visual and imaging.
 - You must observe at least 88 objects listed in the guide to obtain your certificate and pin.



Programs for Telescopes

- Whew! And that is just the Astronomical League!
- There are also many other programs outside of the league that you can participate in.
- Many of them allow you to contribute to ongoing scientific research.
- You can see a list of some of them on the TAS links page under Amateur Research.



Programs for Telescopes

Amateur Research

- **The Association of Lunar and Planetary Observers (ALPO)** – dedicated to observing the solar system. They publish results in their journal.
- **American Association of Variable Star Observers (AAVSO)** – Variable stars are stars whose brightness varies. Amateur astronomers observe these unique stars and measure their brightness. Learn how you can join in the fun!
- **The American Meteor Society** – is an organization of amateur and professional meteor scientists and observers founded in 1911, with a common goal of studying meteors: - bright fireballs, the annual meteor showers, and the random sporadic meteors that appear every night.
- **Center for Backyard Astrophysics** - A global network of small telescopes dedicated to photometry of cataclysmic variables.



Programs for Telescopes

- **Amateur Research (continued)**
 - **International Meteor Organization** – the IMO was created in response to an ever growing need for international cooperation around the world to ensure the comprehensive study of meteor showers and their relation to comets and interplanetary dust.
 - **IOTA - International Occultation Timing Association, Inc.** - IOTA was established to encourage and facilitate the observation of occultations and eclipses. It provides predictions for grazing occultations of stars by the Moon and predictions for occultations of stars by asteroids and planets, information on observing equipment and techniques, and reports to the members of observations made.
 - **Transit Search** - The purpose of transitsearch.org is to coordinate and direct a cooperative observational effort which will allow experienced amateur astronomers and small college observatories to discover transiting extrasolar planets.
 - **The Webb Society** - international society of amateur and professional astronomers specializing in the observation of double stars and 'deep sky' objects.



Programs for Telescopes

- And of course there is nothing stopping you from making up your own observing program just for the joy of it.
- My favorite is the lawn chair program under a dark clear sky taking it in with fellow observers!