



Northwest Skies

The Official Newsletter of the Tacoma Astronomical Society
Tacoma, Washington State, USA

76 Years of Amateur Astronomy in the Pacific Northwest

October 2007

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TAS Patch Contest

Those who have been with the club for a while will remember the PGO pins members earned by providing support for TAS public nights. It didn't matter if you ran a 'scope, sold hot cocoa, directed traffic or presented the program by the end of the year if you had the magic number of attendance points you received the coveted pin or jewel. For many of us the pin was part of the fun of volunteering. We would like to bring back and extend our TAS recognition program and need help designing the patches!

Currently the recognition program ideas are:

TAS Service	TAS Public Night
TAS Outreach	TAS Star-watch

The patches should all incorporate the TAS logo seen on our website, be PG rated and undated. Date bars will be created for each patch allowing member to 'keep earning recognition' once the primary patch is earned.

The board will review the patch submissions and all the designs will be on display at our TAS Holiday party for voting. We will continue to draft the requirements for each of the service recognition program and solicit input as we go. Winning patch artists (could be you!) will work with the board and the patch company to refine their work before the final patches are created.

All patch designs should be submitted to the board no later than Dec 14th and may be emailed to Alice @ few_2001@yahoo.com or mailed to 32739 47th Ave SW Federal Way WA 98023 comments and question may be routed the same way.

The President's Letter

by Dave Armstrong

I hope everyone is taking advantage on these clear nights to look at comet 17P/Holmes. It was first discovered November 6, 1892 by Edwin Holmes. Holmes noticed it while studying M31, the Andromeda galaxy when the comet flared up in brightness to Magnitude 4 or 5. This comet doesn't come in near the Sun, but is in an elliptical orbit between Mars and Jupiter with approximately a 7 year period. After seeing the comet through several more orbits in the following years it was lost until 1964 when it was rediscovered by Elizabeth Roemer at the U.S. Naval Observatory in Flagstaff Arizona. (I have met Ms. Roemer a couple of times back in the 1960's.) The comet has been tracked each orbit since 1964.

On October 23-24, 2007, the comet

again flared up dramatically from magnitude 17 to magnitude 2.8 in just a few hours. Last time (1892) it faded over several weeks. Who knows what will happen this time? There is no tail since it is in opposition and the tail would be pointed away from us. The comet is big and fuzzy and is located in Perseus near alpha Persei. The coma of the comet is growing larger each night. On October 31, it was 70% of the diameter of the Sun!!

Onto other matters. We are in the middle of accepting nominations for the 4 Board members whose terms are up (can be re-nominated). This is my last letter as President. A BIG THANKS to all who have helped me through these last two years while in this position.

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Northwest Skies is a bi-monthly publication of the Tacoma Astronomical Society. All opinions expressed in this newsletter are those of the contributors and not necessarily those of the Tacoma Astronomical Society.

Original article contributions are strongly encouraged and may be submitted as an email attachment to editor@tas-online.org

People to Contact

You can also contact us via email through our website at

www.tas-online.org

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(Continued from page 1)

Continue to support the many outreach events the club has. Ray Stinson is currently carrying the bulk of that work now – support him.

Many thanks also to all who turned out for the star party at the Olympic Air Museum in October. Every telescope (about 15 of them) had long lines waiting to view – great time.

See you all at the meetings and the Holiday Party.

BT

What's Up In Astronomy by Bert Brown

"Black Holes and their Environments" is the title of an article in the August 2007 issue of Physics Today (pp42-47.) The authors are Jon M. Miller of the University of Michigan, and Christopher S. Reynolds of the University of Maryland. Here is a summary of selected topics in the article.

You will recall that a black hole is believed to be the final result of the collapse of a massive star which has exhausted all its thermonuclear fuel. The remaining matter in the star collapses and gravity overcomes the repulsive nuclear forces. For a black hole to form, it is believed that the star must have a mass of at least 25M, where M is the mass of our sun; smaller mass stars become neutron stars or white dwarfs. It is called a "black hole" because not even light cannot escape from the thing; general relativity says that light is red-shifted by gravity, and in a black hole the gravity is so intense that even the light cannot make it out.

So, if no light can escape a black hole, how do we detect it? It turns out that in the formation of black holes there are "side effects" that do produce radiations of various types which can be analyzed and studied. Also, black holes retain their gravity... so that

anything close enough to be affected, such as a companion star, can be observed. Matter falling into a black hole does not just disappear, it forms an "accretion disc" of matter in Keplerian orbits around the center of attraction. Satellite observatories, such as the Chandra X-ray Observatory, have contributed much to this information.

It is now believed that black holes may also exist in the centers of galaxies...massive ones, with masses maybe millions of times that of our sun. Apparently black holes play a part in such strange phenomena as active galactic nuclei, radio galaxies, and gamma ray bursts. They may even be involved in regulating the formation of large-scale cosmological structures such as galaxies.

Known stellar-mass black holes are members of binary systems. Mass transfer from a companion star causes the black hole to accrete matter and flare in X-rays. The orbital velocity of the visible star can be measured by the Doppler shifts in its spectrum, and by applying the Kepler laws the mass of the other star can be inferred; and if that mass is more than the upper mass limit of a neutron star, it is assumed that a black hole is the companion.

The best evidence that super-massive black holes occur in the centers of galaxies comes from observations of elliptical orbits of single stars around Sagittarius A*, in the center of our galaxy. Mass values of 3 to 4 million solar masses are believed to exist for this "biggie."

Astronomers now suspect that "intermediate-mass" black holes could exist--with masses of 100M to 10000M--although no direct evidence for these has been obtained so far. They believe that early in the universe's history, extremely massive stars could have left intermediate-mass black holes, and that about 100 such objects could be in typical galaxies today. A merger of these black holes could have been the beginnings of the super-massive black holes at the centers of galaxies. Another possibility for formation of intermediate-mass black holes would be collisions in the centers of dense star clusters, such as globular clus-

(Continued on page 3)

Photographing M51

by Jerry Cotey

This year at the Table Mountain Star Party I set up on the south end of the field to try some astrophotography. My set up was to be; my new digital camera and 110 mm refractor from William Optics with a focal length of 770 mm atop my Losmandy G11 equatorial mount .

I was using a DSLR, the Canon 30D. I have been using film cameras for astrophotography for some years but I could no longer ignore the advantages of the digital cameras. Some of these include the ability to check the image immediately to see that it is centered, oriented properly and in focus. The exposure time can also be checked and all of these adjusted for the next picture. The film speed can be selected and adjusted as needed plus the Canon 30D has the ability to remove the noise or "hot pixels"

from the picture eliminating the need to take a dark frame and removing it later with computer processing.

I experimented with my exposure times and ran some as long as eight minutes, beyond this I don't know how effective this noise reduction feature will be. One of the disadvantages of film is something called reciprocity failure. A film has a particular ISO rating and this drops and the film loses its sensitivity to light during a long exposure. The chips in digital cameras do not suffer from this reciprocity failure. After a night of astrophotography you can set the ISO back to 200 and use the camera for general shots as well but with a film camera you would have to change film or carry a second camera just for day use.

When I first started taking pictures through telescopes I expected to bring home dozens of great shots from each session. I now realize that bringing home one or two good pictures is better than many poor shots and that taking that extra time to double check the focus or camera settings or lens to see if it is fogged or so many other details is well worth the time. I don't get many chances to get out and do pictures thanks to our northwest weather and my schedule but the digital camera increases my chances for a successful outing and I do like that !

And oh yes, this shot of M 51 was an 8 minute exposure at ISO 800. It was shot at the prime focus of the 110mm f7 refractor and was enlarged somewhat from the original. I boosted the contrast a little with Photoshop but no other processing was done. (editors note: We needed to crop and resize the image to fit the news letter format. The original photograph will be posted to the TAS website) ~



(Continued from "What's Up" page 2)

ters. These studies should reveal useful information about early galaxy evolution and stellar clusters.

Black holes can convert an appreciable specific fraction of their accretion energy into X-radiation and into energy of jets emitted in the process. As shown in a graph on p.45 of the article, this is true for stellar-mass black holes, Seyfert active galactic nuclei, and quasars. These studies raise questions, such as "How do black holes drive the jets?" and, "What impacts do the jets have on environments close to black holes?" A combination of X-ray and radio observations is starting to provide answers to such questions.

Figure 5 on p.46 of the article shows a Chandra X-ray image of the Perseus cluster of galaxies. Shockwaves from outbursts of the supermassive black hole in the middle of the central galaxy, Perseus A, are evident in the image. So it is clear that black holes affect not only their immediate vicinity, but can have profound influence over regions as large as clusters of galaxies. ~

Challenge:

Name the list or catalogue referred these initials and their creator:

M	CH
NGC	h
H	C
D	Lac
IC	Ben

Douglas Adams said it well...

"Space is big. Really big. You just won't believe how vastly hugely mindbogglingly big it is. I mean you may think it's a long way down the road to the chemist, but that's just peanuts to space."

The reason I love lists! Well not all lists of course...not the list of household chores woefully undone (that particular list is embarrassing long) but specifically lists of astronomical targets and challenges.

The Journeyman Astronomer

The novice astronomer clings to the Messier list as their first hallowed roster of the night sky, mostly because we tell them it is so. They work to find each and every cluster, nebula, asterism and galaxy happily plowing along the list... it is safe, tested, valued and there is the comfort of knowing what you will find. Your skills grow and you start to understand the secret language of astronomers...M31, M57, averted vision... letters and numbers call to mind specific images and places.

The journeyman branches out cautiously adding to his or her compendium those "non-M" stellar objects shared by their more proficient fellows...NGC 457, Mel 111. We appreciate the Messier list as a beautiful sampler of cosmic bodies but a point comes when confidence or curiosity outstrips resources in hand. We are not yet ready to grab a page from the Sky Atlas and just go hunting, we still need the security of "what, when, where, and how bright". We still need *suggestions*.

Interactive Star Charts

Different than online planetarium software these tools allow the observer to customize their viewing sessions, learn more about particular objects, and create their own mixed lists of objects.

NGC 891 (Jim Cornwell): A strong database with advanced filtering tools and an easier learning curve. One click master lists.—<http://www.ngc891.com/index.php>

Try it! On the left side bar under catalogue select "all objects" then from the resulting list, using the down arrow boxes at the top of each column, select Perseus and then Mag 10+

Messier45: The Deep Sky Browser: Very detailed database with good searching capabilities. Powerful but a steep learning curve.—<http://messier45.com/>

Try it! Type "Mag <10 HERSCHEL 400" in the query box

The NGC/IC Project: Where everyone goes for images

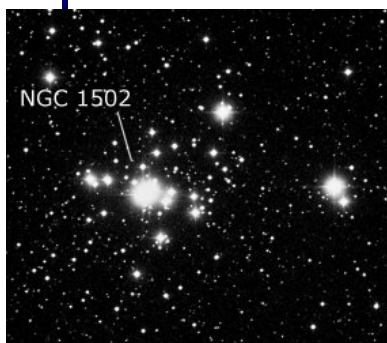
Try it! Click on "Generate Observing List"

Deep sky challenge

Using tools in hand can you find the following:

Easier: NGC 457, C10(NGC 663), NGC 1502

Harder: NGC 6946, NGC 6826, IC 5146, Trumpler 3, NGC 2403, IC 342, Mel 15, Markarian 50, NGC 6951 ☺



Beyond the Messier List

by: Alice Few

Ben 34, NGC 1904, M79...a rose by any other name....traditional lists in order of creator's birth

Lists to contemplate:

Abbe Nicholas Louis de la Caille (Lac), French deacon and astronomer (1713-1762) This catalog was compiled during his 2-year journey to the Cape of Good Hope

Charles Messier (M), French astronomer (1730 - 1817) Between 1758 to 1782 compiled a list of 'non-comet' items. The SEDS site is one of the best resources for Messier Objects.

Pierre Francois Andre Mechain, French astronomer (1744-1804) co-worker with Charles Messier at the small observatory at Hotel de Cluny in Paris.

Wilhelm (William) Herschel (H), (1738-1822) was a German-born British astronomer and composer who became famous for discovering the planet Uranus.

Herschel published a catalogue of 2500 objects

Johann Elert Bode, German astronomer (1747-1826)

Bode was the director of the Berlin Observatory, where he published the Uranographia in 1801

Caroline Herschel (CH), German born English astronomer (1750-1848) was an avid astronomical observer, who's objects are now included in William Herschel's catalogue.

John Herschel (h), (1792-1871 son of William Herschel) English born In 1833 Herschel traveled to South Africa in order to catalogue the stars of the southern skies.

James Dunlop (Dunlop), Scottish born Australian Astronomer (1793-1848), James Dunlop's Catalog of southern Deep Sky Objects

John Louis Emile Dreyer (NGC, IC), (1852-1926) Danish-Irish astronomer major contribution was the monumental "New General Catalogue of Nebulae and Clusters of Stars" (NGC) and two Index Catalogues (IC);

Jack Bennett (Ben), (1914-1990) South African astronomer drew up two lists of southern objects that appeared comet-like in his telescope.

Sir Patrick Moore and the Editors of Sky & Telescope created "The Caldwell Catalog:"

The Astronomical League (membership required for prizes) <http://www.astronleague.org/observing.html>

III Deep-sky wonders for light polluted skies: <http://www.skyandtelescope.com/observing/objects/projects/3074841.html>

Saguaro Astronomy Club: Things to view page <http://www.saguaroastro.org/content/Things-to-view.htm> (includes the "Best of the NGC" lists) ☺

Robert Frost, in his poem "Mending Wall", pens the proverb "Good fences makes good neighbors". It was that sentiment that jumped into my head as I started the brochure "How to talk to your neighbor who has bad lighting". By the end of the article the proverb "people in glass houses shouldn't throw stones" taunted me to go take a closer look at my own lighting before talking to my neighbors! AF



The Scenario: Your neighbors have just installed a dusk-to-dawn 175 watt mercury vapor light because they are worried about security.

You can imagine what happened: They went down to

the discount supply house and said something like "Give me the brightest, cheapest outdoor lighting fixture you have." And that's exactly what they got, paying "only" \$29.95 (maybe even less).

They brought it home and hung it up. Now it's splattering light everywhere, including onto your lawn and into your house through your windows. Their blinds are drawn of course, because they can't stand the glare either. What did they get for \$29.95? A very bright light with very little light control and lots of glare. It creates light trespass, light pollution, and energy waste. Even though they probably now have a "feeling of security", their real security is probably no better than before.

Here are some ideas about what you can do: First and foremost, be tactful and understanding, don't argue. Do your homework first, be well prepared. Understand the essentials of the facts about energy savings given below, and about what makes a good security light. Know the local costs of electricity (cents per KWH). Is there is a local lighting control ordinance, and if so, what the details of it are, and what enforcement is being done, who is involved? Look around for available good security lighting fixtures and how much they cost. Facts are not enough, however. Personal relations are very important and emotions and perceptions are there all the time.

Specific Issue you can discuss with your neighbor:

The Energy Issue, and Cost Savings: When new, the 175 watt mercury vapor lamp puts out about 8000 lumens (a lumen is a measure of light output). The typical lumen output of a mercury vapor lamp after some years of use is about 7000 lumens. Compare mercury vapor light output to other lamps that use considerably different amounts of energy to produce the about the same lumens of light:

- 400 watt incandescent lamp;
- 100 watt metal halide lamp;
- 70 watt high pressure sodium lamp;
- 55 watt low pressure sodium lamp
(60% less electricity).

How to talk to your neighbor about bad lighting

by Tina Rataj

Real Safety vs. Perceived Safety: The 175 watt dusk-to-dawn security light may give the illusion of safety, because it's so bright, but it is really counterproductive to good vision. The criminal can hide in the glare or in the deep shadows around such poor lighting. (Look around near one. See the deep shadows next to the over lit areas? It is difficult for the eye to adapt to such sharp transitions in brightness.) Light used for security should illuminate what the owner is trying to see, rather than glaring in our eyes.

Suggestions for good lighting: Use a low wattage (18, or 35, or 55 watt) low pressure sodium (LPS) light in a fixture that shields glare. The fixture should direct the light output so that it goes only where its needed, not into a neighbor's yard or windows, or up into the sky. LPS provides lots of light (a good 35 watt LPS fixture will put out more useful light than the typical 175 watt dusk-to-dawn security light; even an 18 watt one will probably do a better job, at one tenth the energy cost). There should be no light trespass or sky glow produced. Well-designed LPS fixtures produce essentially no glare at all, so we are not blinded and can see into the dark. There are no dark, deep shadows for criminals to hide in. Visibility is the goal of night lighting, and quality LPS fixtures offer excellent visibility.

Use a spotlight fixture with an infrared sensor. The spotlight only comes on when the sensor sees movement. Any intruder will be scared off by the sudden light. You will be alerted by the light coming on, and your neighbors are more likely to notice, too. You can also buy fixtures which will sound an alarm inside the house. If you need the added security, what could be better? This type of fixture is a great security lighting system, and it provides effective, quality lighting. Infrared sensor lights are widely available, in stores or by mail order. The cost ranges from about \$20 to over \$100, depending on the quality, features and source. They are easy to install: just mount them, plug them in, and adjust the sensitivity. Be sure that the fixture is mounted under the eaves so that there's no wasted light, and point the light beam where it's needed -- not into your neighbor's yard. ~

Online version of this brochure: <http://www.uwsp.edu/cnr/uwexplakes/humanimpact/neighborbrochure.pdf>

A wonderful article on light pollution: "The Dark Side" from the New Yorker
http://www.newyorker.com/reporting/2007/08/20/070820fa_fact_owen

Lunar Observations

by Ken Slavens

The Lunar Observing Program started out as a recognition program for our TAS Students. The goal? To work on observing the moon in set stages each with increasing difficulty. As we started building the lists we became



more excited and more surprised with what could be observed on the lunar surface. Now that the club is no longer part of the Astronomical League having a TAS Lunar Observing program seemed important for not only the Students but the entire club.

Over the past 18 months Alice and I have added, subtracted, discussed, argued, sorted, categorized, and ranked 200+ lunar objects into this award. We will present the program to the Student Club at our annual year end party and will submit the program to the Board for acceptance as a recognized TAS Club Observing award.


How it is organized

There are four levels; Beginner, Experienced, Advanced, and Master. Objects do not overlap between the levels so the transition from one to the other should be seamless. Beginner objects are naked eye, binocular and telescope objects, Experience and Advanced have some binocular object but mostly telescope objects and the Master objects are all telescope and libration zone objects.

The list is currently in an Excel spreadsheet with information on location, size, name, extra site information, and inclusion in other lists. We found so much overlap in other lists we decided to incorporate popular observing

lists to accommodate members who have memberships-at-large with the Astronomical League or plan to work the Lunar 100 list. For example; upon completion of the Beginner level of the TAS Lunar Observing program you will have also finished parts of the "Lunar 100" and the AL "Lunar Observer's Program 1".

Interested in Beta Testing the List?

If you are interested in looking at the list of objects and testing our data and sorting the entire list will be available on November 15, 2007. This will also begin the review of the program for adoption by Club. All feedback should be email to Ken Slavens (astroken@msn.com) 

Online Tools for Lunar Observation

Lunar and Planetary Institute: Lunar Atlases

http://www.lpi.usra.edu/resources/lunar_atlases/

Hitchhiker's Guide to the Moon

<http://www.shallowsky.com/moon/hitchhiker.html>

"The Lunar 100" by Charles A Wood (S&T May 2004)

<http://www.astrospider.com/Lunar100list.htm>

Full Moon Atlas

<http://www.lunarrepublic.com/atlas/index.shtml>

29 Days of the Moon

<http://www.stargazing.net/David/moon/index29days.html>

Inconstant Moon

<http://www.inconstantmoon.com/atlas.htm>

Books and charts for Lunar Observation

"Atlas of the Moon" by Antonin Rukl

"Sky & Telescope's Field Map of the Moon" by Antonin Rukl

"The Modern Moon: A Personal View" by Charles A. Wood

Sample entries						
Beginners						
Name	Diameter (km)	Latitude	Longitude	Tool	Lunar 100	AL Lunar
Posidonius	95	31.8	29.9	B	20	I
Mare Frigoris	1596	56	1.4	E	26	I
Experienced						
Lambert R	55	23.9	-20.6	T	78	
Lacus Doloris	110	17.1	9	T		
Advanced						
Dorsa Smirnov	156	27.3	25.3	B	33	
Harpalus	39	52.6	-43.4	T		
Master						
Promontorium Agassiz	20	42	1.8	T		
Montes Cordillera	574	-17.5	-81.6	T		

1. Thou shalt have no white light before thee, behind thee, or to the side of thee whilst sharing the night sky with thy fellow stargazers.
2. Thou shalt not love thy telescope more than thy spouse or thy children; as much as, maybe, but not more.
3. Thou shalt not covet thy neighbor's telescope, unless it exceeds in aperture or electronics twice that of thy wildest dreams.
4. Thou shalt not read "Astronomy" or "Sky & Telescope" on company time, for thine employer makes it possible to continue thine astronomical hobby.
5. Thou shalt have at least two telescopes so as to keep thy spouse interested when the same accompanies thee under the night sky or on eclipse expeditions to strange lands where exotic wild animals doth roam freely.

Centre Spotting - Quick, Easy and Precise

by Steve H (janoskiss) IcelnSpace; Australian Amateur Astronomy

This short article describes my preferred way of centre spotting. It is a method I have not seen anywhere else, but I believe it is one of the best. It is very easy to do and very precise, without the need for templates, or to risk anything touching the optically active areas of the mirror surface. Simple geometry will guarantee high precision. It takes a lot longer to describe than do, so especially for those who don't like to read instructions, Figures 1 and 2 show a self-explanatory graphical summary of the method. Figure 3 shows the actual end result for a 6-inch mirror.

Required Tools

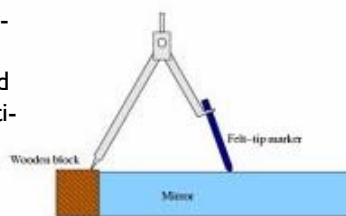
1. a wooden block that can rest firmly against the side of the mirror without wobbling. (Cut a "V" into the side of a small block or file a curve that has more curvature than the edge of the mirror.)
2. compass (the kind for drawing circles, not for pointing north)
3. felt-tipped permanent marker secured in the compass
4. optional "spot" to stick on the mirror and tweezers to handle it

What to do with them (practice first on a piece of cardboard)

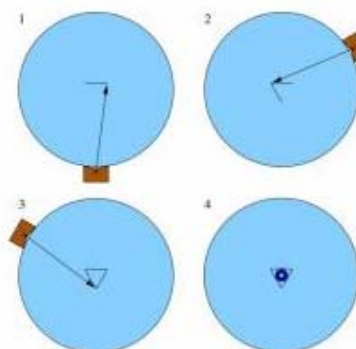
1. Rest the wooden block firmly against the side of the mirror.
2. Place the needle end of the compass into the wooden block and leave it in the same spot till everything is done.
3. Open the compass so that the pen's tip is at or just past the centre of the mirror. Just esti-

The Ten Commandments for Amateur Astronomers

6. Thou shalt not allow either thy sons or thy daughters to get married during the Holy Days of Table Mountain or Oregon Star Party.
7. Thou shalt not reveal to thy spouse the true cost of thy telescope collection; only the individual components and that shall be done with great infrequency.
8. Thou shalt not buy thy spouse any lenses, filters, dew shields, maps, charts, or any other necessities for Christmas, anniversaries, or birthdays unless thy spouse needs them for their own telescope.
9. Thou shalt not deceive thy spouse into thinking that ye are taking them for a romantic Saturday night drive when indeed thou art heading for a dark sky site.
10. Thou shalt not store thy telescope in thy living room, dining room, or bedroom, lest thou be sleeping with it full time. ☺



Click to Enlarge
Figure 1 - Graphical Summary of this article



Click to Enlarge
Figure 2 - Graphical Summary of this article

mate by eye. There is no need to be precise, just close enough to the centre to be sure that the tip of the pen is marking the primary mirror only in optically inactive areas (in the shadow of the secondary mirror).

4. Draw a small arc with the compass near the centre of the mirror.
5. Rotate the wooden block and compass combo about the centre of the mirror by approximately 120 degrees (one third of a full circle).
6. Repeat steps 4 and 5 twice, then go to step 7.

Now you have a very precise indication of where the centre of the mirror is, and you can carefully place a sticky-backed paper/plastic marker around it if you want, using a pair of tweezers. I did not put a centre spot sticky on my mirror. If a good quality permanent marker is used, the markings will be as easy to see from the focuser as a stick on spot, and will last a long time. ☺
-editor's note...yes I intentionally left the British spelling centre instead of Americanizing it to Center.

Monthly Messier Objects: November

This month we will search for seven more objects from the Messier Catalog. These include four globular clusters, the largest and the smallest planetary nebulas in the catalog, and a small oddity. Two of the objects are fairly easy in binoculars, while four others will require dark skies, patience, and keen eyes to find.

M57 The famous Ring nebula in the constellation Lyra. Low power telescope views show a very small blue/green disk, not much bigger than a star. Medium to high power will magnify the size of the nebula while leaving the surrounding stars the same size, confirming you have found it.

M56 In a telescope look for a small round ball of light, slightly brighter in the center. This is a difficult binocular object appearing as a small fuzzy patch.

M27 Also known as the Dumbbell nebula. In small to medium scopes it appears as a rectangular patch of light. In large scopes it may even appear round in shape with a bright rectangular, or dumbbell shaped core.

M71 Lying in Sagitta, this globular cluster appears as a faint oval hazy patch of light in a telescope. This is a very difficult but possible binocular object, requiring dark skies and trained eyes.

M30 This globular cluster, in telescopes, show a small fuzzy ball of light, bright in the center fading to the edges.










M72 This is a small faint globular cluster in Aquarius. Look for a faint oval patch of light, gradually brighter towards the middle. A very difficult binocular object.

M73 This asterism is located near M72 in Aquarius. In a low power telescope view it looks like a very small fuzzy patch of light at first glance. When stared at it reveals itself as a small collection of stars. Medium to high power shows the view best described by Messier "cluster of three or four stars...containing very little nebulosity".

- **Nov 3rd:**
Public Night.
Pierce College, Olympic Bldg
'Telescopes and Binoculars' 7:30 PM.
- **Nov 6th:**
General Meeting.
Please note we are meeting at Wyatt Hall, Room 109 at UPS 7:30 PM.
- **Nov 9th:**
Student Observing
Sunrise Hill
- **Nov 10th:**
Member only star-party Bill Briggs home
- **Nov 16th::**
Student Meeting
Cascade Bldg 7:30 PM
- **Nov 17th:**
Public Night
Pierce College, Olympic Bldg 'The Moon' 7:30 PM.
- **Nov 20:**
Board of Directors Meeting 7:30 PM
UPS Wyatt Hall Room 109

November 2007

-  Public Night
-  Student Activity
-  Outreach event
-  Member activity
-  Meeting

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
						
4	5	6	7	8	9	10
						
11	12	13	14	15	16	17
						
18	19	20	21	22	23	24
						
25	26	27	28	29	30	

Monthly Messier Objects: December

This month will view two small, but bright globular clusters, two open star clusters, and a monster galaxy and her two companions. All of these objects are possible to find in binoculars, most are fairly easy.

M2 This is a small, bright globular cluster in Aquarius. To find it in binoculars look for a fuzzy star in a star poor field. A low power telescope field will show a round fuzzy patch, brighter in the center and fading to the edge, in a field with no other bright objects.

M15 This globular cluster in Pegasus is very similar to M2 in size and brightness, except it is surrounded by several bright stars. Fairly easy to find in binoculars but the best view is through a telescope at medium to high power.

M29 This galactic cluster is a small, sparse group of stars in Cygnus. It appears as a small fuzzy patch amongst a rich star field in binoculars. A telescope will easily resolve the members of this cluster. The shape of the cluster reminds me of the Pleiades as viewed through binoculars.













M39 Dark skies will allow this large, bright cluster in Cygnus to be seen with the naked eye as a hazy patch of light. Binoculars easily resolve this cluster into its bright and widely scattered members, and provide a better view than can be seen with most telescopes.

M31 This is the famous Andromeda Galaxy, our closest galactic neighbor, and the largest, brightest galaxy to be seen in the Northern sky. The ability to see M31 with the naked eye provides a good test of the darkness of your skies. M31 is so large that binoculars provide the best view, allowing the entire galaxy to be seen in one field of view. Look for an elongated patch of light, with a bright, round central core.

M32 This is an elliptical companion galaxy to M31. Through a telescope look for a slightly oval ball of fuzz in the same low power field as the core of M31. M32 is very possible to find in binoculars as a star like point of light.

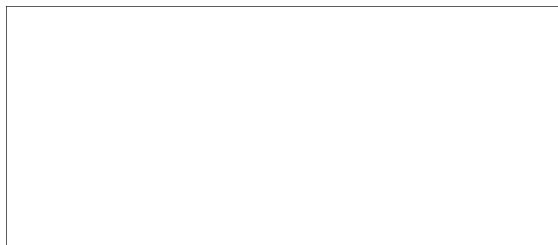
M110 Another elliptical companion galaxy to M31, lying on the opposite side of the core as M32. Through a telescope look for a large, oval patch of light. Although M110 is as bright as M32 it is much larger and thus has a lower surface brightness making it a difficult object in light polluted skies. M110 is a very difficult binocular object requiring dark transparent skies, and trained eyes to have a chance at finding it.

December 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 
2	3	4 	5	6	7	8 
9 	10	11	12	13	14 	15 
16	17 	18 	19	20	21	22 
23	24 	25	26	27	28	29 
30	31 					

- Dec 4th: General Meeting.** Please note we are meeting at Wyatt Hall, Room 109 at UPS 7:30 PM.
- Dec 8th: Public Night.** Pierce College, Olympic Bldg 'Winter Sky Splendors' 7:30 PM.
- Dec 14th: Student Observing** Sunrise Hill
- Dec 15th: TAS Member Holiday Party!** Trinity Lutheran Church across from PLU 5:30 set up dinner @ 6pm **TAS Board Meeting** is the same night!!
- Dec 18th: TAS Board meeting** moved to Dec 15th
- Dec 22nd: Public Night** Pierce College, Olympic Bldg 'The Christmas Star' 7:30 PM.
- Dec 29th: TAS Student Year-end Party and annual Spoons**

Northwest Skies



First Class

If undelivered, please return to

Tacoma Astronomical Society
PO BOX 8881
Tacoma, WA 98419

We're on the web!
WWW.TAS-ONLINE.ORG

Membership

Subscriptions for 2008

Membership subscriptions for 2008 are now due. Please mail your membership renewal to

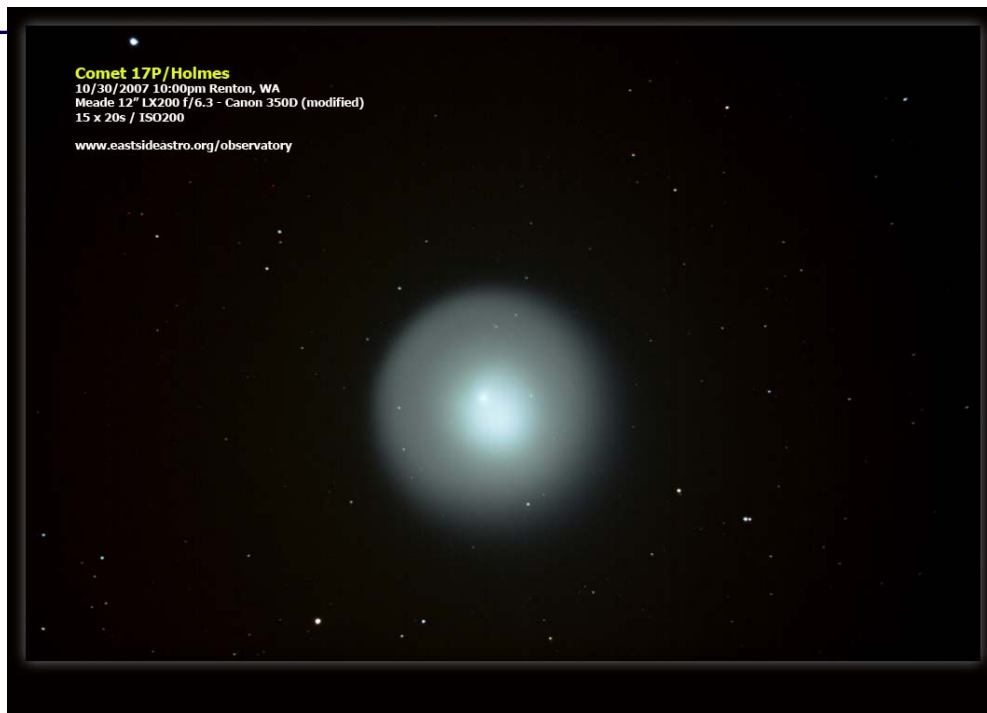
**The Tacoma
Astronomical Society
PO BOX 8881
Tacoma, WA 98419**

or bring your check along to the next General Meeting.

Membership dues are the primary income for the society and it allows us to fund member activities and parties as well as the Outreach and Student Programs. Your membership is very important to us.

The annual fees are:

Family: **\$35.00**
Adult: **\$25.00**
Student: **\$15.00**
Senior: **\$10.00**



Comet 17P/Holmes
10/30/2007 10:00pm Renton, WA
Meade 12" LX200 f/6.3 - Canon 350D (modified)
15 x 20s / ISO200
www.eastsideastro.org/observatory

Comet 17P/Holmes: Tom Gwilym

President; Eastside Astronomical Society: <http://www.eastsideastro.org/>

Photo taken from Renton!

The recent flare-up of comet 17P/Holmes has caused quite a stir around the globe. TAS has stepped in to help introduce this 'surprise' comet to the public through several 'Comet Watch' in November.

Other comets to keep an eye on: C/2007 F1 (LONEOS,) currently in Scorpio and setting, 8/P Tuttle in UMinor and brightening to ~6 mag by January