Northwest Skies

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

76 Years of Amateur Astronomy in the Pacific Northwest — January—February 2007

Inside this issue:

The President's Message	1
What's Up In Astronomy	2
TAS 2006 Christmas Potluck	3
Astrophotography 7: What To Shoot?	4
January Calendar of Events	6
February Calendar of Events	7
Observations: Stellarium Virtual Planetarium	8

The President's Message

by Dave Armstrong

Another year has come and gone, and many things have happened along the way. It is time to look to the future and continue to build the club even stronger. My anticipation is that 2007 will be a year of opportunity for the Tacoma Astronomical Society.

Our Outreach program continues to grow in demand and through the commitment and energy of Joe Witherspoon and those who volunteer with him we are bringing Astronomy to the community. If you have the opportunity to volunteer take the fullest advantage as the rewards and accolades are self-evident. Our partnership with Pierce College has grown over the past year and we should expect great things in 2007, especially with the construction of the new Science Building and the planetarium it will contain. Our members should be very excited about the opportunity to host programs ands special events using that facility.

Please continue to support the club and your new Board of Trustees… same as the old Board of Trustees. Take the opportunity to let them know what you would like to see and learn from the society. The Trustees are there for your service and to make the society grow.

We should all take the opportunity to spread the word about the good work and sharing that the Tacoma Astronomical Society does. It is important that we welcome new members when they join and welcome back members who have been absent. Our society is built upon a common interest and a desire to teach and learn from each other. Take the opportunity to utilize that network of knowledge and strengthen it.

I was very pleased to award Joe Witherspoon both the Astronomer of the Year award and my own President's Award for his hard work, diligent commitment and leadership in the bringing our Outreach programs to the community. Joe, and those that continue to volunteer along with him, are a great asset to the society. I am also pleased to welcome back to the Board of Trustees both Matt Flood and Joan Koch. Both Matt and Joan bring a great enthusiasm and energy to the Society and with them the opportunity for making further strides forward in our goals. I also welcome Chuck Jacobson and Alice Few as new members to the Board.

I also need to let you know that Alice Few and Ken Board have taken over two of the responsibilities Sion Heaney has been managing. Alice Few is now responsible for the TAS membership database and Ken Board is now putting together the new member welcome packs. Please support them in these tasks and show your appreciation for their stepping up to help. Sion Heany has been too busy to do these tasks but has promised to continue in his role as newsletter editor. If you have an interest in becoming the next newsletter editor please let him know.

I am excited about the forthcoming year and the opportunities it will present. I wish you all the very best for this New Year and many, many clear skies.

Dave Armstrong

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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What's Up In Astronomy

by Bert Brown

Our regular columnist Bert Brown reflects on various recent stories and events in the news concerning Astronomy.

Rather than go into a major astronomy topic at this busy time of year - and a time interrupted by a storm - I thought it better simply to provide some odds and ends of background on recent news stories.

The first such story is the Hawai'i earthquake of Oct 15. There was a 6.7 quake at 7:07 a.m., and it was followed by a 6.0 seven minutes later. Epicenters were just off the SW and NW coasts of the Big Island, where are located the big Keck telescopes on Mauna Kea. The timing was fortunate, becuse the telescopes had just been shut down for the day and technicians had left. If the instruments had been running at the time of the quakes there could have been some serious damage, but as it was the only damage was to some of the metal restraints and encoders underneath the instruments. The observatory control room is located in a town called Waimea, at about 2500 ft elevation (as compared to 13796 ft at the summit of Mauna Kea.) Even there the observers had left for the day 15 minutes before the quake--and there was damage in the form of pictures falling off walls and dishes and glassware hitting the floor. The observatory headquarters at Waimea/ Kamuela suffered significant structural damage. The observatory was shut down for several days pending repairs. The main telescopes had been upgraded in recent years to meet more stringent seismic codes, but the restraints and encoders had not been so upgraded. You will recall that TAS President Dave Armstrong and brother Jerry had both worked in the development stages of the Keck instruments. Source: Caltech News, Vol. 4, No. 3, 2006; pp.4 and 18.

And, speaking of earthquakes, there was an 8.3 monster off the coast of Japan in mid-November. Anything over 7.0 is considered a possible generator of tsunamis, and the Pacific warning system was activated so that there were tsunami watches on our coasts and those of Hawai'i. There was some wave action in both places but damage was minimal. The Honolulu Advertiser (newspaper) reported a dock overturned at a small boat harbor on Kaua'i, a tourist was injured at Waikiki, and it gave a veteran surfer the ride of his life off Turtle Bay. Earthquakes are caused when there is sudden slippage between two of the continental plates, and the size of any tsunami depends on the relative directions of the slippage: vertical motions are most likely to produce the big waves, while horizontal motions of the plates would produce less wave action (although undersea landslides from the quake could still cause a major wave event). Tsunamis don't have much to do with astronomy, other than they

occur on Planet Earth ...and you probably should not set up your telescope in a beach area if a tsunami warning is posted.

The last news item of interest is the award of the 2006 Nobel prizes. While "Astronomy" is not one of the fields so honored, it is so closely connected with physics that in recent years the Royal Swedish Academy has often made physics awards for work in astronomy. This year's winners are John Mather of the Goddard Space Flight Center, and George Smoot, Professor of Physics at University of California. Both were leading members of the team that designed and operated NASA's Cosmic Background Explorer (COBE.) This satellite measured details of the Cosmic Microwave Background, which had been discovered in 1964 and is thought to be the remnant of the so-called "Big Bang". Their work has given further support to that Big Bang theory. An explanation of the results and why they are so important would take up too much space here, so I will defer that to a later installment of "What's Up in Astronomy."

I hope the Tacoma Astronomical Society and its members will have a good and prosperous 2007, with many clear skies.

The TAS 2006 Christmas Potluck

by Ken Board

The Tacoma Astronomical Society held it's annual Christmas Potluck this year on December 16th at the Trinity Lutheran Church in Parkland. The society provided the turkey and ham for everyone to enjoy, which was cooked and sliced by Ken Board's wife Vikki. All members brought a hot dish or dessert to share with each other. There was lots of great food on hand and no one went away hungry.

Much appreciation and a big thank you to Vikki for purchasing and cooking the turkey and ham, and to everyone who brought a dish of their own to share. The event is made special by that sharing we have with everybody present. The warmth and sense of community is very important at this time of year.

During the potluck the new Board of Trustee members were introduced to the society membership. We are delighted to see Matt Flood and Joan Koch re-elected and welcome them back to the Board. Newly elected Trustees were Alice Few and Chuck Jacobson. The Officers for 2007 were also introduced. Dave Armstrong was re-elected for a second term as President, while Bill Briggs was re-elected as Vice President. Ken Board was also re-elected as Secretary, as was John Petitt re-elected as Treasurer. Familiar faces one and all.

Joe Witherspoon received the Astronomer of the Year award as well as the President's award for his outstanding work as the Outreach Director while Leon Hardman received the Student Astronomer of the Year award. Bob Harris, the father of Student Member Greg Harris presented both Alice Few and Ken Slavens adjustable observer's chairs for their excellent work and dedication to the Student Group. Joe Witherspoon also presented several members a copy of the Observer's Handbook for 2007 for their assistance with the Outreach Program.

Congratulations are extended to our newly elected board members and to all our award recipients.

Thank you also to all the members who contributed towards the 2006 Christmas Potluck.

It is our membership, those individuals who help and participate that deserve the appreciation and resounding thanks for making Tacoma Astronomical Society one of the most respected astronomy organizations in the country.

Membership Subscriptions for 2007

Membership subscriptions for 2007 are now due. Please mail your membership renewal to

The Tacoma Astronomical Society
PO BOX 8881
Tacoma, WA 98418

or bring your check along to the next General Meeting and hand them to John Petitt, our Treasurer.

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**

Thank you.

Astrophotography 7: What to Shoot?

by Jarvis Krumbein

In the previous six articles on astrophotography we have looked at the various methods and equipment used to image the many objects to be found in the night sky. For my seventh article it would be important and a good time to review the previous articles to establish the techniques we have learnt and apply them to the practice of imaging the night sky.

Examining the various types of celestial objects in the sky will allow us to determine the best way to image them. We can divide the types into categories associated with the equipment used for the photography. The first article, printed in the January - February edition of Northwest Skies, dealt with taking star trails and introduced the concept that motion needs to be accounted for in our efforts. The second article, in the March - April edition, covered using just the camera placed on an equatorial mount. The third article, in the May - June edition, covered the importance of good polar alignment and how to achieve that. The fourth article, printed in the July - August issue, went into photographing the Moon. That fourth article was extended into the fifth, printed in the September October issue, which dealt with the imaging of the Sun and the planets. The previous sixth article, 'Imaging Deep Sky Objects', was covered in the November – December issue of Northwest Skies and took us beyond the solar system and detailed the techniques, tips and tricks for capturing what the naked eye cannot see. All these articles provide you with a solid basis for taking those first steps into astrophotography and experiencing the rewards of lasting image of the night sky.

Table 1 shows the relationship between the focal length of the imaging optic (camera lens or telescope) and the area of the sky covered when that focal length is used. This table includes almost all the commonly available camera lenses. It's obvious that short focal lengths are used to cover large areas and as the focal length increases, the area covered is smaller. Pictures of large areas such as the Milky Way would require the use of short focal length lenses, 50mm and shorter, while smaller objects such as M42, the Great Nebula in Orion, which is a bit less than 1 degree square would need a much longer focal length lens. In this case, the telescope would be the imaging optic. As an example, the typical SCT with an aperture of 8" such as the Meade or Celestron has a focal length of 80" or a little over 2000mm. The area covered by a 35mm frame would be a bit less than 1.0 x 0.65 degrees. If a focal reducer is used (approximate 0.6 reduction typical) the focal length will be about 1200mm and the area covered would about 1.65 x 1.12 degrees which would be a good focal length for the Orion Nebula. The small star chart of Orion shown here would be completely covered by an 85mm lens while the area shown of the sword area would be covered by a 500mm lens. Another example would be the North American Nebula in Cygnus. This is a much larger object than the Orion Nebula and a shorter focal length would be required. A frame size of about 4.5 x 6 degrees would capture the whole nebula and would also include the Pelican Nebula. A camera lens of about 300 mm focal length would cover an area 6.5 x 4.4 degrees (a 270 mm lens would cover a slightly larger area and would be good) which should capture both nebula on the one

Lens Focal Length (mm)	35mm Frame Size (degrees)
20	82 x 55
24	71 x 48
28	63 x 44
35	51 x 34
50	38 x 26
85	23 x 15
105	18.6 x 12.2
135	14.5 x 9.5
180	11 x 7
200	9.9 x 6.3
270	4.3 x 2.9
300	6.5 x 4.4
500	3.9 x 2.6
1000	2.0 x 1.3

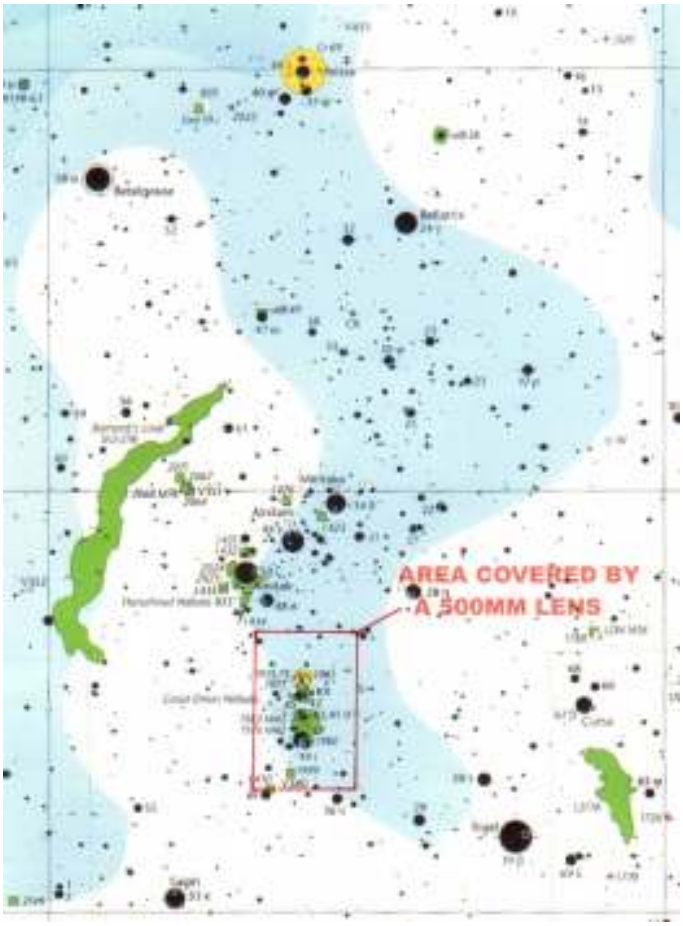
Table 1: Focal Length versus Sky Area (in degrees)

frame.

A necessary tool for photographing the sky is a good Sky Atlas such as the "SkyAtlas 2000" by Wil Tirion and Roger Sinnott. Using the star atlas, the astrophotographer can see exactly what focal length lens will be best suited to capture a specific area of the sky. A transparent overlay is commonly included with the star chart to aid in determining the size of an area in degrees in declination and minutes (4 minutes = 1 degree) in right ascension.

To obtain the best possible results, objects to be photographed should be as high in the sky as possible. This will insure the shortest light path through the atmosphere and the darkest sky background. Try to avoid objects low in the sky although this may not always be possible. Don't be afraid to try though as the results may be a pleasant surprise.

Of utmost importance is careful focusing of the camera. The best focus will concentrate the light into the smallest possible star image. Even a small amount of error in focus will cause some light loss and the faintest stars may not register on the film. If the focus adjustment of the telescope can be calibrated so that an exact focus position can be returned to, an evening spent taking test exposures to determine where the best focus is will be well worth while. Careful notes should be made for each exposure and the exact focus position to insure that the camera, when put on the telescope can be returned to the best focus position.



This is the last in the series of articles on astrophotography. Any questions or comments may be made to me at

jkoptic@centurytel.net

Editor's Note

I would like to thank Jarvis for this series of articles on astrophotography. I am sure I speak for us all for having learnt much from this and his previous series on optical systems. Thank you, Jarvis.

If you all would like to share your own examples of astrophotography in print I'll be happy to include them as a regular feature. Please email your images to me at

editor@tas-online.org

In the last of his series on astrophotography, Jarvis Krumbein reviews previous articles and points the prospective astrophotographer towards the skies.

Magazine Subscriptions

Don't forget to use your member benefit by receiving a discounted annual subscriptions to either Sky & Telescope or Astronomy magazines.

Sky & Telescope
$32.95 / year

Astronomy
$34.00 / year

Contact the Treasurer, John Petitt, for more information.

January Schedule of Events

- **January 2nd: General Meeting.** Please note we are meeting at Wyatt Hall, Room 109 at UPS until further notice. 7:30 PM.
- **January 11th: Outreach event** at Mc Alder Elementary School Science Club, Puyallup. Program on 'Comet Presentation' 3:00 — 4:00 PM
- **January 12th: Outreach event** at Sequoyah Middle School, Auburn. Stomp Rockets 8:00 — 10:30 AM
- **January 13th: Public Night** at Pierce College, Sunrise Building. Program will be 'Telescopes 101' presented by Dave Armstrong and Alice Few. 7:30 PM.
- **January 16th: Outreach event** at Fruitland Elementary, Auburn. Science Fair and Star Party. 5:30 — 8:00 PM
- **Board of Trustees Meeting** 7:30 PM
- **January 26th: Student Meeting.** 7:00 PM.
- **January 27th:** Public Night at Pierce College, Sunrise Building. Program will be '110 Celestial Objects' presented by Matt Flood. 7:30 PM.

January 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2 General Meeting.	3 ○	4	5	6
7	8	9	10	11 ☾ Outreach event.	12 Outreach event.	13 Public Night.
14	15	16 Outreach event. Trustee Meeting.	17	18	19 ●	20
21	22	23	24	25 ☽	26 Student Meeting.	27 Public Night.
28	29	30	31			

February Schedule of Events

- **February 6th: General Meeting.** Please note we are meeting at Wyatt Hall, Room 109 at UPS until further notice.
  7:30 PM.
- **February 10th: Outreach event** at Sumner High School, Sumner. Sumner School District Science Fair
  10:00—2:00 PM
- **February 17th:** Public Night at Pierce College, Sunrise Building. Program will be 'Constellation Basics' presented by TAS Students.
  7:30 PM.
- **February 20th: Board of Trustees Meeting**
  7:30 PM
- **February 23rd: Student Meeting.**
  7:00 PM

February 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2 ○	3
4	5	6 General Meeting.	7	8	9	10 ☾ Outreach event.
11	12	13	14	15	16	17 ● Public Night.
18	19	20 Trustee Meeting.	21	22	23 Student Meeting.	24 ☽
25	26	27	28			

76 Years of Amateur Astronomy in the Pacific Northwest

Northwest Skies

If undelivered, please return to

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First Class

We need your articles.

If you are interested in contributing an article or would like to make a suggestion as to what you'd like to read in **Northwest Skies** then please do contact the Editor. We are always in need of original contributions.

Deadline for submitting articles for inclusion in the next edition of **Northwest Skies** is the last Thursday of the month before publishing.

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

Observations: Stellarium Virtual Planetarium

by Sion Heaney

I'm a big fan of finding useful software and more so when it is reasonably priced. When it is free and open source then all the better.

Earlier last year I took a look at Stellarium (downloadable from www.stellarium.org) and made some basic comparisons to other planetarium software. However, it was not until seeing Alice Few use it in one of her presentations that I decided to take a second look. I was a little less critical and consequently much more impressed with what I found.

Stellarium is open source and freely available for Linux, MAC OS X and Windows. It provides much of the functionality one would expect in a regular virtual planetarium but it's graphics does give a very rich texture to the visual of the night sky, complete with twinkling stars and meteor showers.

It is highly configurable and support telescope control. The celestial object database may not be e as extensive as other planetarium software such as Starry Night or Red Shift but for the price it is more than adequate for casual or beginning observer looking to use an virtual planetarium as an observing aid.

I took the time recently to create the Pierce College Observing Hill panorama that can be used with Stellarium. You can find the Steilacoom Observing Hill files and the installation instruction on both the TAS website and Yahoo group. From the website, click on the Astronomy drop down menu and select the 'Utilities'. On the Yahoo group log into the list server website and look under the Files folder for the uploaded files. Enjoy!