



# Northwest Skies

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

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75 Years of Amateur Astronomy in the Pacific Northwest

July—August 2006

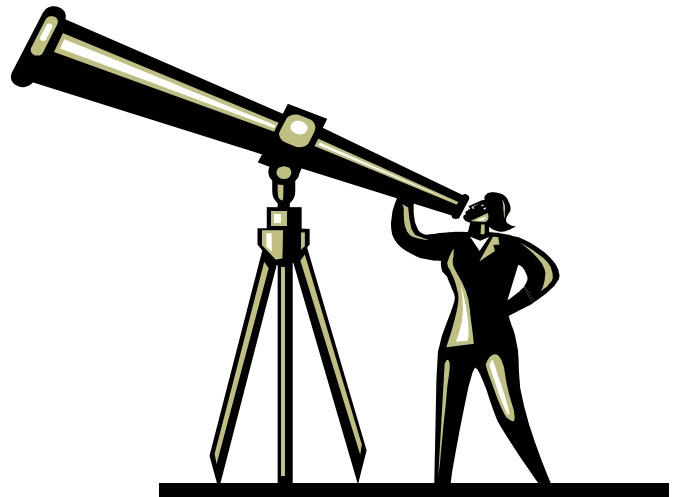
## The President's Message

by Dave Armstrong

I hope all who planned to go to Table Mountain in July have already registered, because it is full. The annual potluck will be on Saturday afternoon on the Mountain as usual.

Recently I had a Saturday that was not fully pre-planned by others needs and was able help out at the Puyallup Farmer's Market making stomp rockets. Lots of mad-house fun. this is an event that happens nearly every week-end during the summer. Come and help because Joe Witherspoon needs a break. I think Ray Stinson would also appreciate a day off. Often Joe has two events a day requested. Many times they are scheduled at the same time. He needs some help!

While on the subject of help, let me throw out some more. On August 26th we have our Astronomy Fair at Pierce Collage and we need some volunteers for this event.



Then in September we need many volunteers to 'man' or 'woman' the booth at the Puyallup Fair. It runs from September 8th through September 24th. We need enough people for 3 shifts a day. It is a lot more fun when there are two people on duty per shift. Remember you get free entry tickets to the fair. I guarantee you will meet some interesting "characters" uh, I mean "people".

If you have never done this, do try it. You don't have to have a PhD in Astronomy. If some one asks a question you don't

know the answer to, tell them so, or write it down and some one may be able to answer it later. We are mainly promoting the club to gain new members and let them know about the public outreach and nights at Pierce collage. There will be a shift sign-up sheet starting with July's general meeting on the 11th. Either before or after your shift you are free to tour the Fair. Come and join in!

Keep looking up,

*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](mailto:editor@tas-online.org)

***The Search for Extra-Terrestrial Intelligence (SETI) has recently extended its search into the optical wavelengths. Bert Brown details this new instrument looking for life beyond our solar system.***

## People to Contact

You can also contact us via email through our website at

[www.tas-online.org](http://www.tas-online.org)

Our mailing address is:

**The Tacoma  
Astronomical Society  
PO BOX 8881,  
Tacoma, WA 98418**

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## What's Up In Astronomy

by Bert Brown

The Search for Extra-Terrestrial Intelligence (SETI) has acquired a new tool... an optical telescope at the Oak Ridge Observatory in Massachusetts.

It was nearly 50 years ago that Philip Morrison and Giuseppe Cocconi suggested that a 21-cm microwave emission line from neutral atomic hydrogen would be the most likely wavelength that an alien civilization would use to try to signal its existence and since then most of those doing SETI studies have looked for anything resembling a message on that wavelength. More recently radio astronomers have also used shorter wavelength microwave lines which suffer less interstellar dispersion.

But with the development of high-power lasers, another possible area of search has opened up. There are now petawatt ( $10^{15}$  Watts) lasers that can emit highly collimated nanosecond pulses that briefly outshine our sun by a factor of 10000. But no known astrophysical source can put out that kind of pulse, so if such a pulse is detected by an optical telescope, it may mean that an advanced civilization is at work.

For several years Harvard physicist Paul Horowitz has been looking for such strong optical pulses using the 1.5 meter Wyeth telescope at the Oak Ridge Observatory in Massachusetts when it was available. Now they have a new 1.8 meter telescope that is dedi-

cated to such searching. While 1.8 m is not large by today's standards, it is still the largest telescope east of the Mississippi. The Planetary Society has provided much of the funding for this project.

The OSETI (Optical SETI) work with the Wyeth instrument had searched about 5000 sun-like stars within 1000 light years of the earth in six years. With the new instrument they have exceeded that total in a few hours. That is because the new 'scope has a much larger field of view, and is monitored by a array of about a thousand ultra high speed photo-detectors. The instrument looks at any one star for about a minute as it crosses the field of view. The new 'scope has an angular resolution of about 2 arc-minutes.

That's not too impressive (the human eye can do that); but for this work that is not a problem. They hope to cover the entire celestial sphere visible from Massachusetts within a year or two.

Current optical technology can collimate the output of a petawatt laser at the top of the atmosphere into a beam whose angular spread is only about  $10^{-7}$  radians. Anyone lined up with that direction would see a nanosecond pulse many times brighter than our sun... but those who are

not in line would see nothing.

If an alien civilization has enough knowledge to do that and to direct it toward our solar system then it might be seen in Massachusetts. Of course, if the alien instrument was not operating when we look, then we would miss it, so I imagine this is a never-ending search.

Professor Horowitz says that if they do observe nanosecond pulses, "We can't lose." If it is not from an alien civilization, it would be a new astro-

physical phenomenon.

I suppose one could argue that it would be more useful to ascertain whether intelligent life exists on Earth.

Source: Article by *Bertram Schwarzschild* in June, 2006 issue of *Physics Today*, pp.24-25.



The Optical SETI telescope at the Oak Ridge Observatory in Harvard, Massachusetts. Note the unusual "boxlike" structure.

Credit: **Harvard University**

### **Membership Subscriptions for 2006**

Membership subscriptions for 2006 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 Pettit, 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:	<b>\$35.00</b>
Adult:	<b>\$25.00</b>
Student:	<b>\$15.00</b>
Senior:	<b>\$10.00</b>

Thank you.



### **Snacks for the General Meeting**

Our thanks to these volunteers for providing snacks at our next meeting.

#### **July**

John Pettitt

#### **August**

Joe

Witherspoon

We will be providing coffee and tea during the break as usual. Thank you!



## **Astrophotography Part 4: Shooting The Moon**

by Jarvis Krumbein

The **MOON**, being the most prominent object in our night sky, is a good subject for our initial photographic attempts using the telescope as the image forming element for the camera. The moon, being an extended object requires more careful control of the light allowed to reach the film during exposure. The moon, being very bright also allows exposures that are very short so that tracking is not a problem.

Dobsonian telescopes and Alt-Azimuth mounted SCTs are fine for this purpose although having an equatorial drive will make keeping the Moon in the field of view easier. Fast films with ASA speeds of 400 or more are preferred and will allow high shutter speeds to be used. This will help to eliminate blurred images due to camera shake. The use of a cable release is also desirable. Use an appropriate adapter to allow the camera to be used in place of the eyepiece. These are available from all the larger suppliers such as Meade or Celestron.

The first thing to consider is the size of the

image on the film. This is entirely dependent on the focal length of the telescope. For 10 inches (about 250mm) of focal length, the Moon's diameter on the film will be .088" (about 2.25mm).

If the focal length of the telescope is 80 inches (typical 8" f10 SCT) the Moon's image will be about .7 in (18mm) in diameter. The size of the film frame area for the typical 35mm camera is 24mm X 36mm (.9" X 1.4") so that this would be a good image size for pictures of the entire Moon.

If your telescope is a typical 10" f4.5 Dobsonian (focal length 45") the image size will be about .4" (10mm). Using a 2X Barlow lens will increase the focal length to 90" and the image size will double to about .8" (20mm). This image will still fit inside the film frame and would be a good choice. The thing to remember is that the image size is dependent on the focal length.

If pictures of the various features on the moon's surface are desired, greater image size (more

magnification) may be required. As an example, close up detail of a cratered area might require an image of the whole moon of two inches with the area desired fitting into the film frame (24mm x 36mm).

Enlarging the image in this way requires that the apparent focal length of the system would now be the equivalent of 225 inches. This can be accomplished using a Barlow lenses or by eyepiece projection.

For the 10" f4.5 scope, a 5X Barlow will accomplish the required magnification. The same result can be achieved using an eyepiece projection adapter which uses an eyepiece to project a magnified image onto the film plane. Either method will produce the same end result.

Once the image size has been selected, the proper exposure for the film being used must be determined. The shutter speed of the camera is used to control the exposure and the accompanying exposure guide table will serve as a starting point.

First determine the # of

the system by dividing the equivalent focal length by the diameter of the objective. The *f*# is used to determine a shutter

speed multiplier. The multiplier is then used to determine the correct shutter speed from the exposure guide table.

Use the nearest *f*# on the table to the calculated value.

<i>f</i> # (focal length/diameter)	4.	5.6	8	11	16	22	32	45
Exposure Multiplier	16	8	4	2	1	0.5	0.25	0.125

SHUTTER SPEED MULTIPLIER

FILM SPEED	FULL	GIBBOUS	1 <sup>st</sup> QUARTER	THICK CRESCENT	THIN CRESCENT
400	1/250	1/125	1/60	1/30	1/15
800	1/500	1/250	1/125	1/60	1/30
1600	1/1000	1/500	1/250	1/125	1/60

THE MOONS PHASE vs. SHUTTER SPEED

As an example, the 1<sup>st</sup> quarter moon with 400 speed film and the 10”f4.5 scope with a 2X Barlow would use a

shutter speed of 1/250 second.

In actual practice, always bracket the expo-

sure by taking an additional exposure both higher and lower than the indicated shutter speed.

An interesting project would be to take a series of pictures during each of the moons phases starting with the earliest thin crescent after the new moon and ending with the latest thin crescent just before the new moon. These could be taken over a period of many months and would not have to be made in sequence.



Moon over Spanaway.

Credit: Ken Board

*In the fourth part of his series, Jarvis Krumbein details the complexities of capturing the image of our most prominent celestial object—the Moon*

**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.

## July Schedule of Events

- July 7th:**  
 Student Observing Night.  
 9:00 PM
- July 11th:**  
 General Meeting. Please note we are meeting at **Wyatt Hall, Room 109** at UPS until further notice. This month, and for this year, we are meeting on the second Tuesday given the holiday on the 4th.  
 7:30 PM.
- July 15th:**  
 Public Night at Pierce College, Sunrise Building. Program will be 'The Sun' presented by Ray Stinson.  
 9:00 PM.
- July 18th:**  
 Trustees Meeting.  
 7:30 PM.
- July 20th:**  
 Table Mountain Star Party starts.

- July 28th:**  
 Klickitat Star Party starts.
- July 29th:**  
 Public Night at Pierce College, Sunrise Building. Program will be 'Auroras' presented by Matt Flood.  
 9:00 PM.

- Outreach Events:**  
 As we move towards summer our Outreach Program has become more popular than ever. Unfortunately, there is simply not enough room here to detail all the exciting events Outreach is providing so please

check the website for further details. For more information and to participating in these events please contact Joe Witherspoon or Ray Stinson.

# July 2006

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

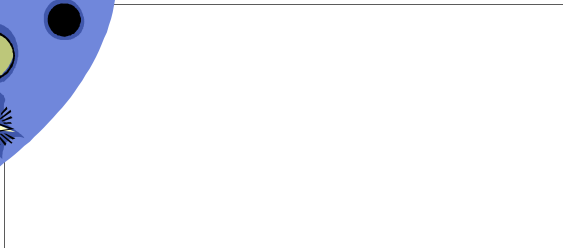
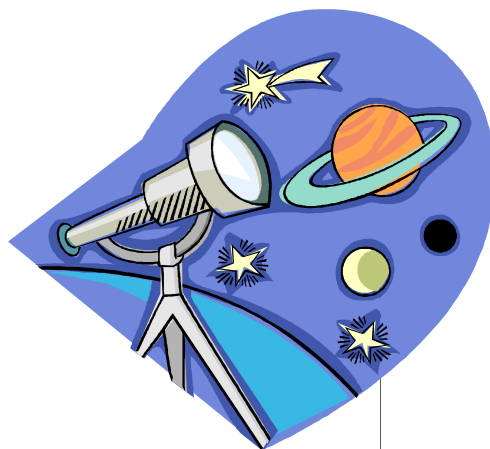
## August Schedule of Events

- **August 1st:** General Meeting. Please note we are meeting at **Wyatt Hall, Room 109** at UPS until further notice. 7:30 PM.
- **August 5th:** Public Night at Pierce College, Sunrise Building. Program will be 'Extra-Solar Planets' presented by Joe Witherspoon. 9:00 PM.
- **August 15th:** Trustees Meeting. 7:30 PM.
- **August 18th:** Student Observing Night. 9:00 PM
- **August 18th:** Klickitat Star Party
- **August 25th:** Student Meeting. 7:00 PM.
- **August 24th:** Oregon Star Party
- **August 26th:** **Astronomy Fair IV.** Midday to Mid-night. Pierce College.
- **Outreach Events:** As we move towards summer our Outreach Program has become more popular than ever. Unfortunately, there is simply not enough room here to detail all the exciting events Outreach is providing so please check the website for further details. For more information and to participating in these events please contact Joe Witherspoon or Ray Stinson.

# August 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 General Meeting.	2 ☾	3 Outreach event.	4	5 Outreach event. Public Night.
6 Outreach event.	7	8	9 ○	10 Outreach event.	11 Outreach event.	12 Outreach event.
13 Outreach event.	14	15 ☾ Trustees Meeting.	16	17 Outreach event.	18 Klickitat Star Party Student Observing.	19 Outreach event.
20 Outreach event.	21	22	23 ●	24 Oregon Star Party.	25 Student Meeting.	26 <b>Astronomy Fair IV.</b> Outreach event.
27 Outreach event.	28	29	30	31		

## Northwest Skies



First Class

If undelivered, please return to

Tacoma Astronomical Society  
PO BOX 8881  
Tacoma, WA 98418

### 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](http://WWW.TAS-ONLINE.ORG)

### Observations: The Essence of an Astro Society

by Sion Heaney

Speaking in front of the June General Meeting I found myself describing what I believe is the essence of an astronomical society. This is true of any other group of like-minded enthusiasts but it is worth reiterating this given our shared interest, Astronomy and related subjects, is often challenging for newcomers to our group to understand.

One of the key pieces of the development work I am creating on the website is the means to communicate one's contact information in order to share your understanding or meet others from

whom you may learn from. Astronomy, telescopes and optical systems, physics, astrophotography and cosmology, etc. are not simple things to understand for most people. It can often take time and patience on the part of others who have already traveled that road of learning to bring others up to speed but the first part of that is making oneself available to those who are looking for help.

Our most important asset is you—the member. Individually you bring an interest in Astronomy and a desire to learn and

share. Collectively, you all create an extremely valuable resource for others just starting on their first steps in Astronomy.

Opportunities come frequently and may be missed. It maybe someone with a simple question that we take for granted or the owner of their first telescope looking for assistance. When the need presents itself we should, as a group, help facilitate that learning because the end result could be another new member to the society making our collective expertise even stronger.