

# Northwest Skies

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

## Inside this issue:

The President's Message	1
What's Up In Astronomy	2
TAS 2006 Christmas Potluck	3
The TAS Crossword—Number 1	4
TAS Equipment Checkout for 2007	5
March Calendar of Events	6
April Calendar of Events	7
Observations: Member Only Star Parties	8

76 Years of Amateur Astronomy in the Pacific Northwest

March—April 2007

## The President's Message

by Dave Armstrong

If you were at the general meeting a few months back you will remember we had a program by Paul Hines, Astronomy Professor at Pierce Collage and a TAS Board member and his boss. They presented the plans Pierce Collage has for a new three story Science building on the Steilacoom campus.

This would include a 40-foot Planetarium Dome with seating for about 100 viewers. They also presented a dream of building an Observatory on the hill where we currently set up our scopes for the general public. This is going to hinge on the availability of funding.

The Science building sounds like a go, but the Observatory is not firm. However, Paul is optimistic and is making plans to include it.

Several of us from TAS were asked to meet with Paul the end of January to

come up with some design ideas and what to include in the Observatory. We were to meet back with him on February 17<sup>th</sup> to present our thoughts.

I and a few others had been to the Sunriver Observatory in Sunriver, Oregon and thought they had incorporated ideas that might work well here.

Jerry Armstrong sent an e-mail list of questions to Bob Grossfeld the Observatory Manager as to how their design worked with large groups. Bob responded back right away. Jerry then did a computer design to put some of the ideas on paper.

We showed these to Paul at he February meeting and discussed pro's and con's. This will be given to the Architect to hopefully be included in the master plan.

We have a 24-inch mirror that we would like to see built into a telescope and

mounted in the proposed dome portion of the Observatory.

We think this would be a nice draw to bring more public to our public nights. This would be great if all goes as planned.

Have you taken a look at the bright light in the western sky at sunset? Venus is back in all its glory.

Be sure and pay your dues if you haven't already. You have until the end of March to remain a member in good standing.

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)

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

## 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**

President	<b>Dave Armstrong</b>	<b>(425) 277-2175</b>
Vice-President	<b>Bill Briggs</b>	<b>(360) 893-1152</b>
Secretary	<b>Ken Board</b>	<b>(253) 875-4761</b>
Treasurer	<b>John Petitt</b>	<b>(253) 848-4947</b>
Newsletter Editor	<b>Sion Heaney</b>	<b>(253) 460-0599</b>
Program Director	<b>Matt Flood</b>	<b>(253) 564-3302</b>
Information	<b>Bill Briggs</b>	<b>(360) 893-1152</b>
Historian	<b>Matt Flood</b>	<b>(253) 564-3302</b>

## What's Up In Astronomy

by Bert Brown

Last time we reported briefly on the award of last year's Nobel prizes in physics to two scientists for their work on the Cosmic Microwave Background (CMB), which was first discovered in 1964 and is thought to be the remnant of the Big Bang. But just what is this CMB? What are we looking at, and why is it important? Here is a partial explanation--without equations--of what we believe is going on.

We all know that stars come in colors...from blue-white down to yellow, orange, red and even brown dwarfs. The blue ones are said to be hot and red or brown ones are much cooler. These are examples of what physicists call "black body radiation", which sounds strange because

they are not black but bright. A "black body" in physics is a perfect absorber of radiation of any color or wavelength. Such an object is also a perfect emitter of radiation, and scientists study the spectral curve of how much radiation is emitted by a glowing object, at a particular temperature.

The resulting graph is a plot of emissivity (radiation power emitted per unit area) vs. wavelength. The curve rises steeply from zero at short wavelengths, reaches a peak, then drops back toward zero more slowly at long wavelengths. The general shape of this curve is the same at all temperatures, but of course the curve rises higher for high temperatures (more emission) and is quite low for

cool ones. Also, the wavelength of the peak of the curve depends on temperature, with high temperature emitters peaking at lower wavelengths. This explains qualitatively why blue stars are hot and red ones are cooler, for blue light has a shorter wavelength than red.

Now for the Big Bang, which is supposed to have been a massive explosion which took place some  $15 \times 10^9$  years ago. Even in the late 1940s theorists suspected that the remnants of such a blast might still be drifting around the universe. The explosion itself would of course cause a very high temperature.

Without going into details of the process, it took several hundred

thousand years for the universe to be fairly transparent to radiation, and by that time it had cooled to about 3000K (K is Kelvin temperature), and it is the remnant of this radiation that we now see as the CMB--but it would be greatly red-shifted because we are far from the center of that big event. So we should now look for a black body radiation curve corresponding to a temperature near absolute zero in Kelvins; the first calculations estimated 5K to 7K. (0°K is near -273°C or about -459°F.)

Later calculations put the value of the remnant radiation at about 2.7K. Thus we look for a black body radiation curve that peaks at about 2.7K. Such a radiation was accidentally discovered by Penzias and Wilson in 1964, using a radio telescope (since we can't see radiation of that wavelength optically.) It earned them the Nobel prize in 1978.

In January 1990, at a meeting of the American Astronomical Society, John Mather (one of the recent Nobel laureates) reported results from the Cosmic Background Explorer ("COBE"), a satellite that had been launched in 1989, that

they had observed a black body radiation curve corresponding to a temperature of  $2.735 \pm 0.06$ K. He got a standing ovation for that report, for it was a significant confirmation of Big Bang theory.

But wait. While the confirmation of Big Bang radiation theory was nice, it is not the whole story. As early as the 1970s Big Bang theorists had predicted that there ought to be very slight fluctuations in that black body temperature in different parts of the sky; variations of the order of a few parts per 10000, which obviously would be difficult to measure or even detect.

One device that has been applied to this problem is called the Differential Microwave Radiometer (DMR), one of the instruments on the COBE satellite, and there are similar devices in other experiments. One of the lead researchers on the DMR is George Smoot, the other Nobel winner last fall. Indeed they have detected these very small fluctuations in the temperature in different parts of the sky.

Analysis of DMR data thus has provided strong evidence of the inflationary Big Bang model--in

which gravitational accumulation of matter into galaxies was dominated by something called (the as yet unexplained) "dark matter"; and even more recently by "dark energy."

My first reference says the universe is 70% dark energy, 25% dark matter, and the remaining 5% that we can see is the only part we know anything about. Ideas, anyone?

References:

*Journal Physics Today*, Dec. 2006; article by Bertram Schwarzschild, pp. 18-22.

Text, "*Modern Physics for Scientists and Engineers*", 1993 Ed., by Thornton and Rex; mainly pp. 572-577 (about CMB and Big Bang.)

### 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 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.

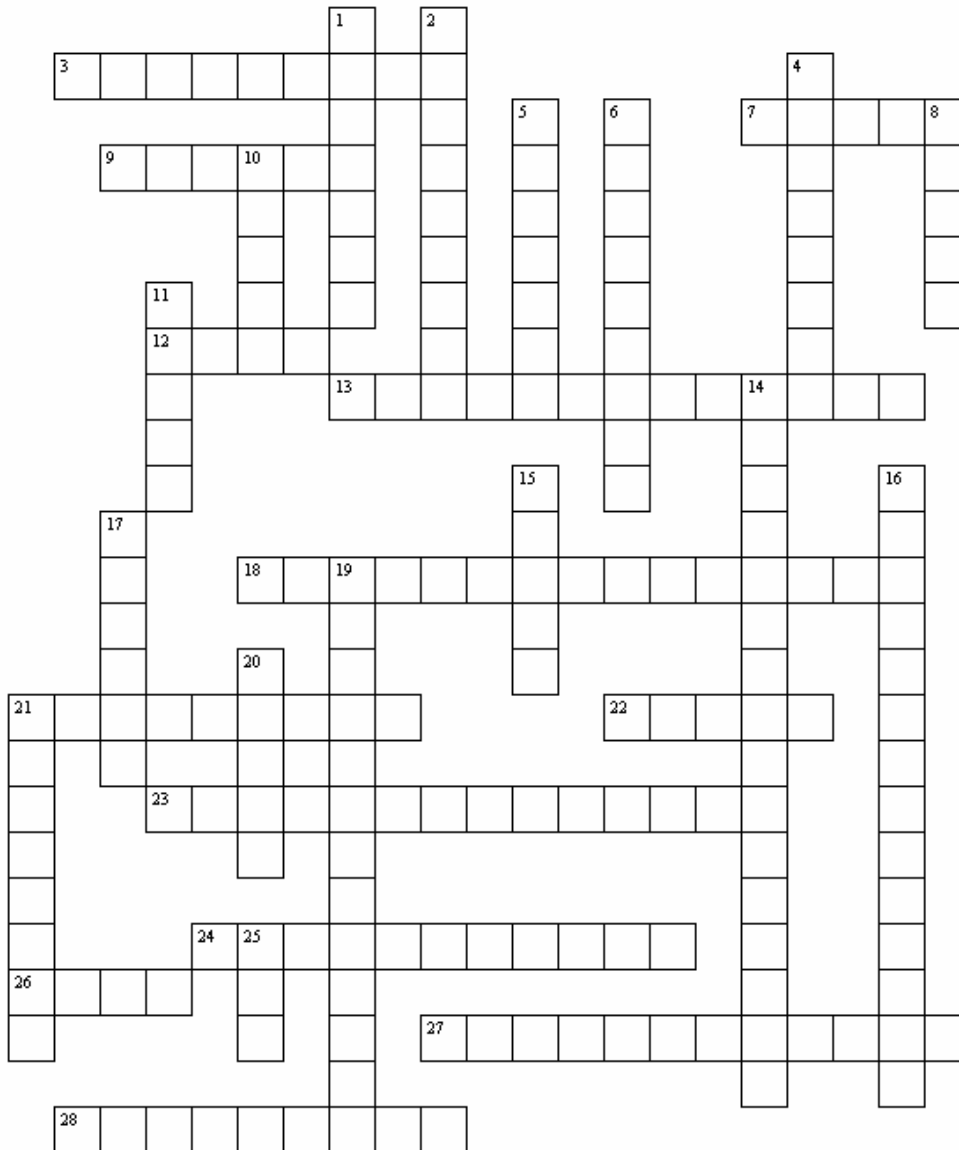
The annual fees are:

Family:	<b>\$35.00</b>
Adult:	<b>\$25.00</b>
Student:	<b>\$15.00</b>
Senior:	<b>\$10.00</b>

Thank you.

# The TAS Crossword—Number 1

by Sion Heaney



**ACROSS**

- 3  $9.4607 \times 10^{12}$  km
- 7 Two faced moon of Saturn
- 9 The stock market's favorite constellation
- 12 Carl's Contact constellation
- 13 US woman astronomer and daughter of William
- 18 Old term for open cluster
- 21 Object that survives fall to Earth from space
- 22 Opposite of 17 down
- 23 TAS's first president
- 24 Largest shield volcano in solar system
- 26 Cloud surrounding solar system
- 27 Royal astronomer and Flamsteed's assistant
- 28 Cast this constellation to catch the stars

**DOWN**

- 1 Well known catalog and marathon
- 2 The stock market's least favorite constellation
- 4 Largest of Galilean moons
- 5 One of the seven sisters
- 6 Sidewalk telescope
- 8 13h 25m, -11° 11'
- 10 Danish astronomer first approximated c
- 11 Demoted planet
- 14 Another name for R Leporis
- 15 Our arm of the galaxy
- 16 Your favorite newsletter
- 17 Directly overhead
- 19 NGC 650 and NGC 651
- 20 Primary star in Lepus
- 21 Variant of Schmidt telescope
- 25 Chertan belongs to this constellation

I was stuck for something to add into the newsletter so “Why not something recreational for a change” I thought to myself, and here’s a crossword for you all.

To challenge you I’ve made a couple of the clues harder than one

would typically find in a club newsletter. We’re a smart bunch anyway, right?. To give you an incentive we will make a drawing from the correct solutions and I will present a \$10 Starbucks gift card to the winner at the April 3rd General meeting. Please send your so-

lutions to the TAS mailbox by the end of March.

I hope you enjoy this puzzle and, if you let me know you like it, I may make it a regular feature.

Good luck.

## TAS Equipment Checkout for 2007

by Bill Briggs

TAS is pleased to announce an equipment check out program for 2007. After a long period of time we have collected most of the equipment that the club owned and have put together an inventory. We also have developed a sign out form and procedure which will very shortly be posted on the web site.

As equipment manager I am very excited about the growing list of really nice equipment that is now available to TAS members. In the past year we have received a couple of nice donations and have made some recent purchases. Below I will list and describe the various equipment that is now available.

### 16" Dobsonian Telescope

This project got started last year when we discovered that we had a 16" mirror that was donated by Jerry Coty sitting in a box gathering dust. It was in need of a new coating and had a slight amount of damage to the mirror due to a secondary mirror falling on it. Fortunately it fell straight down and the damage is under the shadow of the secondary. Chuck Jacobson put the mirror on a

testing stand and had a good look at it. He also spent some time refiguring it and greatly improved the figure. We ultimately had it coated. The rest of the structure was completed by Nate Andrews during the unfortunate time when Boeing was on strike. He did a fantastic job on the scope and it really looks nice. This scope actually performs very well and the images are quite good. This scope would be an excellent resource for members who would like to see what a large aperture scope can do. We also have eyepieces and barlows available for this scope.

### Celestron C-5

We received this as a donation last year. It actually works quite well and comes equipped with a tripod, wedge and working tracking motor. There are a small amount of smudges in the inside face of the corrector plate but as far as I can tell they do not effect the image. Someday I will get up the courage to remove the corrector plate and try to clean it. I did find a nice article from Company 7 on how to do this properly. This 5" aperture scope is very portable and would be a

great alternative to the 16". It also had a number of eyepieces that came with it. I also made a Baader solar filter for it.

### Coronado PST Hydrogen Alpha Telescope

This little jewel is one of the most exciting things we have. We bought it at the end of last year based on the popularity of it with some of our other members who own them. This scope has been a great thing for us to bring on our outreach events that happen during the day and the sun is stunning in it.

### Lumicon Hydrogen Alpha Filter

This filter is made for other refractor telescopes and has been in the custody of the club for a long time. I have not used it yet but I think it is very similar to the PST in the way it functions except that it is made to go on the end of a regular telescope.

### Fujinon 10 x 70 binoculars

The club has had these for a long time and they produce extremely sharp images. Binocular astronomy has been a neglected aspect in the club. There is a wealth of objects that can be seen with binocu-

lars and the nice wide field allows you to see much more of the sky.

Please contact Bill Briggs for information about checking out any of the equipment.

## 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.

## March Schedule of Events

- **March 1st:**  
**Outreach event** at Hilltop Elementary School, Edgewood. Star Party and Science Fair  
6:30 — 8:00 PM
- **March 6th:**  
**General Meeting.** Please note we are meeting at Wyatt Hall, Room 109 at UPS until further notice.  
7:30 PM.
- **March 9th:**  
**Outreach event** at Emerald Ridge High School, Puyallup. Star Party.  
6:30 — 9:00 PM
- **March 10th:**  
**Public Night** at Pierce College, Sunrise Building. Program will be 'Reasons for the Seasons' presented by Ken Slavens.  
7:30 PM.
- **March 14th:**  
**Outreach event** at Fruitland Elementary, Puyallup. Science Fair and Star Party.  
5:30 — 8:00 PM
- **March 20th:**  
**Board of Trustees Meeting**  
7:30 PM
- **Outreach event** at Pierce College, Steilacoom. Cub Scout Pack 444 Star Party and Planispheres.  
6:15 — 8:00 PM
- **March 22nd:**  
**Outreach event** at Shining Mountain Elementary, Spanaway. Stomp rockets.  
9:00 AM—3:30 PM
- **March 22nd:**  
**Members only star party** at Bill Briggs residence, Graham.  
8:00 PM
- **March 24th:**  
**Public Night** at Pierce College, Sunrise Building.
- **March 30th:**  
**Outreach event** at Nelson Crane Christian School, Puyallup. Star Party.  
7:30 PM—11:00 PM

# March 2007

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

## April Schedule of Events

- **April 3rd: General Meeting.**  
Please note we are meeting at Wyatt Hall, Room 109 at UPS until further notice.  
7:30 PM.

• **April 12th: Outreach event at**
- McAlder Elementary School Science Club, Puyallup. Comet presentation.  
2:30—4:00 PM

• **April 14th: Public Night at Pierce College, Sunrise Building.** Program will be 'Scale of the Universe'
- presented by Sion Heaney.  
9:00 PM.

• **April 17th: Board of Trustees Meeting**  
7:30 PM
- **April 20th: Members only star party** at Bill Briggs residence, Graham.  
9:00 PM

• **April 28th: Public Night at Pierce College, Sunrise Building.** Program will be 'Exo-Solar Planets' presented by Alice Few and Joe Witherspoon.  
9:00 PM.

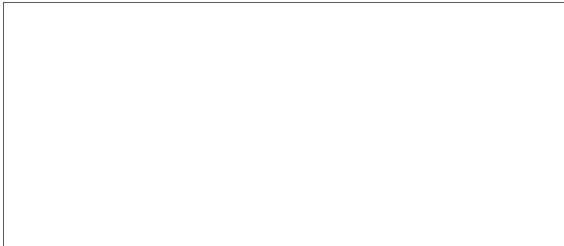
# April 2007

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

**Special Notices:**

- Please note that membership renewals are due by March 15th, 2007.
- Note the later start time for Public Nights in April is 9:00 PM
- Also, note the new change into Daylight Savings Time is effective March 11th.

## 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: Member Only Star Parties

by Ken Board

Fellow Stargazers!

The Tacoma Astronomical Society will commence hosting a series of Members Only Star Parties. These events will begin next month and are offered to all members in good standing.

They will be held each month at Bill Briggs residence located in the significantly less light polluted area of Graham. Any member of the Tacoma Astronomical Society wishing to attend is very welcome to participate. We are currently deciding whether these will be adult only

events, with children invited only occasionally. More information on that to come. It is also being discussed as to including a barbeque or picnic for these events as well.

The intention is to provide a star party in which more advanced techniques of observation and more proactive sharing of knowledge between members can be facilitated.

The star parties are currently scheduled for, March 23rd, April 20th, May 18th, June 16th, August 10th and October 12th. The

months of July and September were intentionally skipped due to the Table Mountain Star Party and the Puyallup Fair respectively.

Each of the dates are Friday evenings. I will try to remember to send a reminder out each month. The dates will also be posted on the event calendar on the TAS website.

Please take the opportunity to thank Bill personally for opening his doors to these member only star parties and encouraging the shared learning from each other.