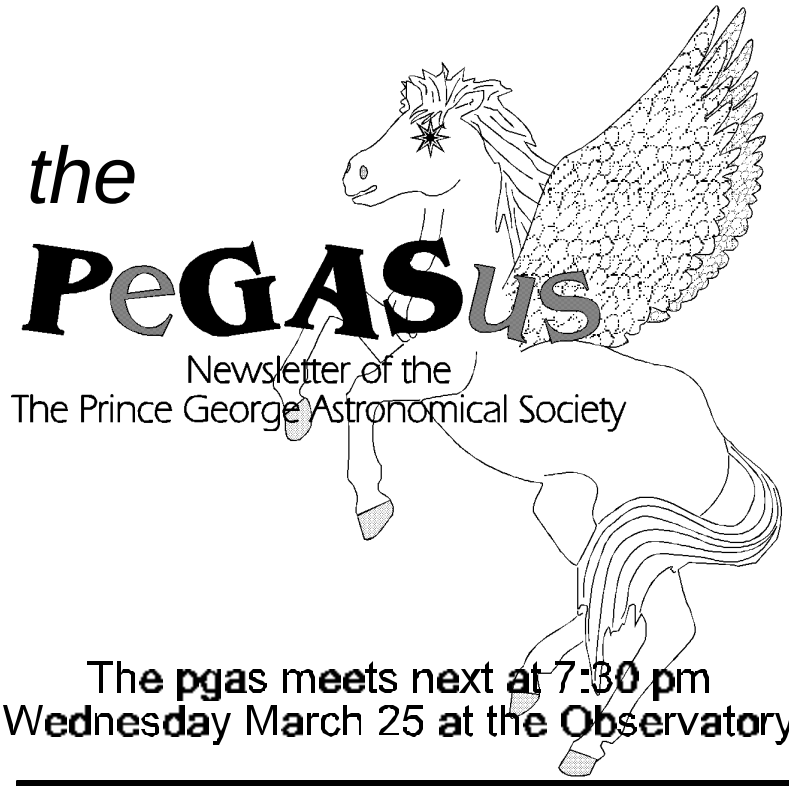
1998 MARCH ISSUE #83



the

PeGASus

Newsletter of the
The Prince George Astronomical Society

The pgas meets next at 7:30 pm
Wednesday March 25 at the Observatory

INSIDE :

the PeGASus is published monthly by the *Prince George Astronomical Society*.

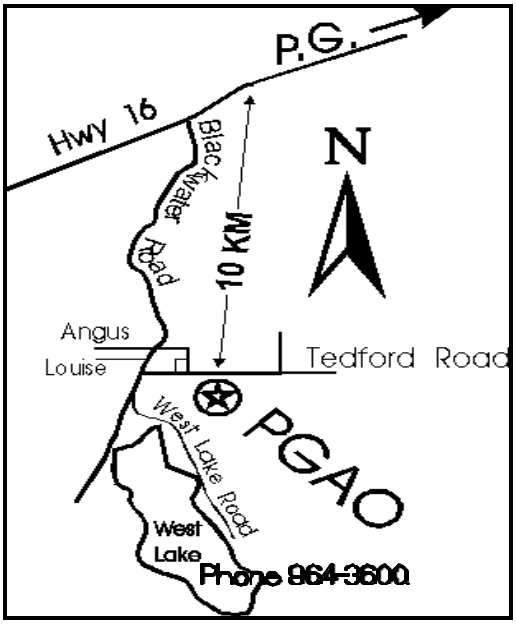
Our pursuits are out of this world.
Our activities are astronomical.
Our aim is the sky.

Contributions to the newsletter are welcome.

Deadline for the next issue is

April 17

Send correspondence to
The PGAS
3330 - 22nd Avenue
Prince George, BC, V2N 1P8
or



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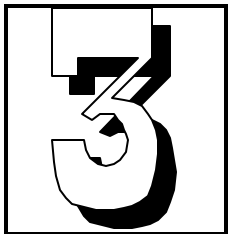
EDITORIAL

by Gil Self



Well I'm back, you see I had this half written (and I thought it was good) and my computer choked and all that well written prose was gone. So now I'm out of time so nothing fancy, here it is in point form.

1. I have a lot to tell you and very little room to tell you in.
    1a. I even had to leave Rob F's article for next month (sorry Rob)
    1b. but don't think I don't need article's for next month

2.1998 General Assembly of the RASC to be held in Victoria June 18-22
  at Lester B. Pearson College of the Pacific
  (ask Bob N or visit HTTP://Victoria.tc.ca./~rasc/ga98)
2a highlights include speakers Dr David Crampton, Jack Newton, David Balam from U.of Vic speaking on Killer Rocks (how timely) and a tour of DAO.

3. Bob is contemplating a weekend visit to Wayne Karlin's observatory
  April 24-26 , bring your R.V. or tent etc —- I think Bob will probably go with or without you (Wayne has an LX200, rumour has it Bob may be counting up his mad money, maybe by this fall a new instrument will be seeing first light at the PGAO.)

4. We are going to paint the observatory this spring, any volunteers?

5. Several fund raising projects are in the works, if you would like to help just speak to any member of the executive.

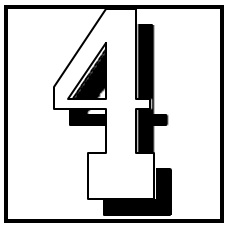
6. The Supernova search is in the works some supplies and equipment need to be purchased.

7. Brian Potts is starting a research project on asteroids.

8. Deep sky photography is now something you might want to try, the drive has been refurbished, the st4 is working and all the camera adapters are in the lockup.

9. The beta version of our multi projector slide presentations should be ready for next month

Any errors in spelling or grammar are my fault and due to the late hour and rush-



Coming Events

If you are involved with any astronomical or otherwise scientific activity on behalf of the PGAS, please list the activity here.

March 25 —-General meeting at the Observatory
April 29 —-General meeting at the Observatory

The Night Sky for April '98

by Bob Nelson, PhD
Howdy, folks! This is not a good time for planets, so perhaps we should concentrate on deep sky objects this month. With the 24" drive working (here's hoping) and the ST4 autoguider ready to go, maybe we can get those deep sky photographs we've always wanted. The Moon is full on the 11th (and therefore there will be dark skies from mid-month on), and there should be some nice clear breaks sometime this month, so let's go!!!!!!!!

(Unless otherwise noted, all events are for the 15th of the month.)

MERCURY is at inferior conjunction [at the same longitude as the Sun and roughly directly between the Earth and the Sun] on April 6th. After that, it's a morning object but is hard or impossible for northern observers (you should have looked for it last month!).

VENUS, a morning object in April, rises about an hour before sunrise. It's a 20.0" disk (crescent) of magnitude -4.2. Any takers?

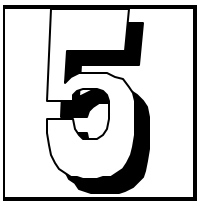
MARS, in Pisces (until the 11th when it passes into Aries), is lost in the glare of the Sun.

JUPITER, in Aquarius, is lost in the glare of the Sun until the last half of the month when it's a morning object close to the Sun. According to the 1998 Observer's Handbook, there are a total of ten double shadow transits of Jupiter this month. Lots of luck -- let us know how you do!

SATURN, in Pisces, is lost in the glare of the Sun. It reaches conjunction on the 12th.

URANUS, in Capricornus, rises around 3 A.M. (PST) and is low in the southeast at sunrise. It's a 3.5" disk of magnitude 5.8.

NEPTUNE, in Capricornus, rises at about 2:45 AM and sets at about 11 AM. As usual, it's a 2.3" disk at about magnitude 7.9.



PLUTO, in Ophiuchus, rises at about 10 PM and sets after sunrise. As usual, it's a 0.1" disk at magnitude 13.8. Maybe we should look for it soon. Deep sky photographs separated by a day or so should reveal movement (in April, it will be moving west -- retrograding -- by about 2.5 arc minutes / day).

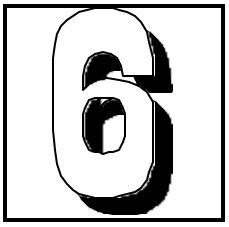
CONSTELLATIONS to look for in April (at 10 PM, PDT) are Sextans (with four NGC objects), Central Hydra (with globular cluster M68, and a handful of NGC objects), Crater (with only three NGC objects), Leo (with M65, 66, 95, 96 and 105 and a handful of NGC objects) and Leo Minor (with numerous NGC objects).

M65 and 66 (together with NGC 3628) in Leo form a beautiful triple of Sb spiral galaxies lying between the stars Theta and Iota Leonis (under the loin of the beast). They're visible in a 30' field (and therefore in any of the small telescopes plus the 24" scope). According to Burnham's Celestial Handbook, M65 and 66 were discovered by P. Mechain in 1780; apparently Messier's comet of 1773 passed right through the field but he missed them -- maybe the comet was too bright! Both galaxies are thought to be part of the Virgo cluster of galaxies, but on the outskirts on the near side -- about 30 million light years distant.

M95 and 96, in Leo, are also a fine pair of spiral galaxies, about 42' apart (under the chest of the beast). They were also discovered by P. Mechain, in 1781. They're also about 30 million light years away. Nearby is M105 = NGC 3379 (distance and other data not available).

M68 is a globular cluster in Hydra, as I mentioned. This one was actually discovered by Messier, in 1780. It's not quite as spectacular as M5 or M13, but nice all the same. To find it, use the two left-hand stars in Corvus (Delta and Beta Corvi) as an arrow and continue south in that line for about half as far as their separation, then move east (left) for about a degree and the globular should be obvious. Although Messier could not resolve any stars, our telescopes should (there are probably about 100,000 altogether). The cluster diameter is about 9' and corresponds to about 100 light years since the distance is about 46,000 light years. [That puts it on the other side of our galaxy but we can see it since it's at galactic latitude 36 degrees and therefore well out of the plane of our galaxy -- seen as the Milky Way. It's also at galactic longitude 299 degrees which is roughly in the opposite direction to which the Sun (and most of the stars in the solar neighbourhood) are travelling in their race at 250 km/s around the centre of the galaxy.]
The March equinox occurs at 2:55 p.m. Eastern Standard Time. This is when the Sun crosses the equator moving north, marking the start of spring in the Northern Hemisphere and autumn in the Southern Hemisphere.

'Tis the season for galaxies. Next month (or this month if you stay up later), the immense Coma and Virgo Clusters will be visible. Look for an account in next



SOLAR ECLIPSE -- February 26, 1998

by Marg Orlando (special correspondent, PGAS)

My daughter, Julie, and I were on a cruise with the Royal Caribbean Cruise Lines Monarch of the Sea. On Thursday, February 26 we were to be in port in Antigua and we had learned via the Internet that the best place to be situated would be at Shirley Heights. However, on our first night on board we were told that instead of being in port, we would switch our "at sea" day and we would-be out in the Caribbean Sea.

There were many, many people who were on board for the event of the eclipse and for no other reason. Some had come from as far away as England. There was also a group of 100 or more called "The Hole in the Sky" group who were people from all over North America who gathered wherever an eclipse was happening. A very large portion of the ship's population, however, had no idea what was to come.

The day before, Wednesday, was a very cloudy day and I'm sure the "eclipse" people were getting a little nervous. Thursday morning dawned clear and hot with only a few clouds on the horizon. At 9:30 a.m. Julie and I went up to the Pool Deck (Deck 11) to claim a lounge chair and get ourselves set up and I think we got the last two chairs available. There are two more decks (balconies) above 11 and every available observation point was taken. There were tripods and cameras everywhere.

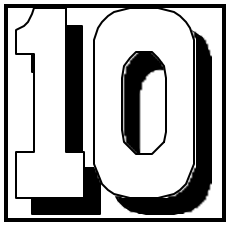
We were positioned between the islands of Monserrat and Guadaloupe, direct path, and were there along with 4 other cruise ships and about 2 dozen sailboats. At noon the ship's staff began handing out special viewing glasses. They were very good about making sure everyone had eyewear and making sure everyone used it. Close to 1:00 p.m. the staff began the play-by-play, letting us know when to look, what to look for, etc. and giving us 15 minute updates. When the moon was about 1/4 of the way over the sun, a large band of cloud crossed the sun. We could hear everyone mumbling about it. But the beauty of being on the ship was that the Captain simply moved the ship to a clear spot and kept us in the clear for the duration. At 5 min. to totality they began a count-down, much like on New Year's. Everyone was getting excited and you could feel it in the air. They told us that as soon as we could no longer see anything through our glasses, it was safe to take them off. The sliver of light was getting thin through our glasses, it was safe to take them off. The sliver of light was getting thinner and thinner and the excitement was mounting. They counted down the last 30 seconds and when everyone removed their eyewear there was such a gasp of awe and excitement.

There were whoops and cheering and applause and the constant whirr and click of cameras. It was truly a spectacular sight! The corona was brilliant and we could see Baily's Beads. Mercury and Jupiter were also plainly seen. The darkness that descended was quite eerie. We thought it would gradually get dark, but it was only for those few minutes, and it was total with no shadows -- very strange. Then the staff warned us to be ready to put the glasses back on, and

From there the moon slowly receded and the day returned to normal. But what an event!! I really didn't expect it to be quite so spectacular.

And while all this was going on, the volcano on Monserrat, right off our starboard bow, was spewing a fresh, new plume of volcanic ash! Just like Mt. St. Helens. Two amazing phenomenons for the price of one. Can't beat that!!

It truly was a remarkable sight. Marg Orlando



ONE-MILE-WIDE ASTEROID TO PASS CLOSER THAN THE MOON IN 2028

Net mail exchange 12/ March /98

I am sure we are going to see lots more on this in the near future, meanwhile I would like to book the observatory for 26 /October /2028.....Gil

From: Leigh Palmer <leigh@sfu.ca> (Subject: asteroidal appulse in 2028)

I thought that you all might like to have something better than what you read in the newspapers and see on TV regarding the appulse of 1997 XF11 with Earth in 2028. Here is a version from the horse's mouth, so to speak. Media reporters often seem to to be coming from the opposite end.

Brian Marsden is Director of the Minor Planet Center and the Central Bureau for Astronomical Telegrams of the International Astronomical Union.
Leigh

ONE-MILE-WIDE ASTEROID TO PASS CLOSER THAN THE MOON IN 2028
From: Brian Marsden <brian%cfaps1.span@vms.noao.edu>

Recent orbit computations on an asteroid discovered last December indicate it virtually certain that it will pass within the moon's distance of the earth a little more than 30 years from now. The chance of an actual collision is small, but one is not entirely out of the question.

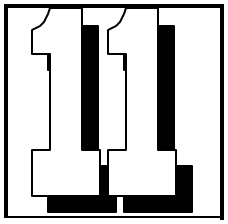
The asteroid, known as 1997 XF11, was discovered by Jim Scotti in the course of the Spacewatch program at the University of Arizona. This program utilizes modern electronic technology on a 36-inch telescope at Kitt Peak that was built 77 years ago.

After the discovery observations on December 6, observations made by two Japanese amateur astronomers during the following two weeks showed that the minimum distance between the orbits of 1997 XF11 and the earth was very small. Given also that the object was quite large as earth-approaching asteroids go, perhaps one mile across, it was added to the list of "potentially hazardous objects" (PHAs) that need to be monitored, lest they are destined to come dangerously close to the earth over the course of the next several centuries. There are currently 108 PHAs.

As astronomers continued to gather data on 1997 XF11, it slowly began to become apparent that there would be a particularly close approach to the earth in October 2028. A computation from observations spanning 60 days suggested that the miss distance would be 500 thousand miles. This distance may seem large in human terms, but it was less than had previously been predicted in advance for any other known asteroid during the foreseeable future.

Observations made on March 3 and 4 by Peter Shelus with a 30-inch telescope at the McDonald Observatory in western Texas extended the observed arc of 1997 XF11 to 88 days. This time, the orbit computation indicated a miss distance of only 30 thousand miles from the center of the earth; the earth's radius is about 4 thousand miles. The time of encounter would be around 1:30 p.m. Eastern Daylight Time on Thursday, October 26, 2028. That evening the object should be vis-

ible with the naked eye. In Europe, where it would be dark by that time, the object should be
a splendid sight as it moves from northwest to southeast across the sky over a couple of hours.



There is still some uncertainty to the computation. On the one hand, it is possible that 1997 XF11 will come scarcely closer than the moon. On the other hand, the object could come significantly closer than 30 thousand miles. Further observations are necessary in order to refine the figures. It is also possible that prediscovery observations
of 1997 XF11 can be located on archival photographs. Particularly favorable opportunities for recording the object would have occurred in 1990, 1983, 1976, 1971 and 1957. Ephemerides for these times are available.

It is hoped that continuing observations will be made during the next few months. The object is starting to move into the dusk and to fade week by week. Nevertheless, it should be quite accessible for a while with large telescopes, which in addition to helping establish whether a collision in 2028 is possible, could usefully provide more definite information about the object's size.

Further observations of 1997 XF11 should be possible with moderate-sized telescopes equipped with electronic sensors early in the year 2000. A better opportunity will occur in late 2002, when the object should be detectable with quite modest telescopes. On that occasion the closest approach will be on Halloween, but the miss distance will be a safe 6 million miles.

Brian G. Marsden
1998 March 11

Thu, 12 Mar 1998 16:12:48 -0800 (PST)

According to CNN:

1997 XF11 has been found on a prediscovery plate made at the Mount Palomar Observatory in California in 1990. Donald Yeomans and Paul Chodas of JPL, a NASA facility in Pasadena, California, have made a new orbit calculation based upon this new datum and the 88 days of postdiscovery data. They now find that the asteroid will miss Earth by 600,000 miles, and the uncertainty does not include the possibility of a collision with Earth. Marsden's original calculation made finding the prediscovery plate possible.

Leigh

The Ecstasy and Agony of Research

by Orla Aaquist

For some of us, a postdoctoral position is not an option after acquiring a Ph.D. Still, many graduates, like myself, who opt out of the postdoctoral route, envision carrying on some form of research regardless of the job they acquire after graduation. However, statistics show that the contrary is true: the desire for research usually departs after four years of teaching at a community college or high school, working for an oil company or driving a taxi cab.

Last year, having a brief lull in my busy schedule of working on the family room on weekends, preparing lessons, marking labs and assignments and attending faculty meetings, I had the absurd notion that I had time for a little research on the side. I can only attribute this to the seven year itch (I graduated in 1991 and it is now 1998). I have been accused by some, including my wife and children, of being somewhat peculiar at times, and it is not at all unlikely that I have managed to apply the seven year itch to the wrong affair.

In any case, in the fall of last year I submitted an observing proposal to the Very Large Array (VLA) to measure the expansion rates of a few compact planetary nebulae. I put the proposal out of my mind until January 1998 when it suddenly dawned on me that if my proposal was accepted, I might be scheduled to observe during the school term. If I was working at a university, this would not be a problem because university professors are expected to disappear at inappropriate times during the term in the pursuit of research. I strongly suspect that this is written into their contract:

> "To encourage those students who cannot think for themselves to drop your course, I, the undersigned, hereby agree to carry on research away from the institution at least twice during each semester."

This clause does not appear in my contract, so I was somewhat concerned about the possibility of taking a week's leave-of-absence to set up the experiment. Moreover, I do not have a research grant to help fund my travel and living expenses away from home. It is my understanding that in order to obtain one of these, you have to be actively doing research -- there is a Catch 22, here for anyone who would care to pursue it while I move on to the next issue.

On January 18, my fear became real when an envelope arrived from NRAO with the referees' evaluations of my proposal. I carried it to my office while thoughts raced through my mind. I was preparing myself for one of two possible outcomes: (1) my proposal was rejected, (2) my proposal was accepted.

When the evaluation arrived, my workload was the one from Hell. To an outsider, teaching 20 hours a week seems like a cushy job, but if you take teaching to heart, you know that at least twice that amount of time is spent outside the classroom preparing lessons, helping students, and marking. So, rejection meant relief from an added burden. Preparing the experiment from Keyano seemed

unlikely. I had to, at the very least, go to *The University of Calgary* to set up the observing file. I needed my old data, which was stored in a storage drawer in a closet in the back of room 314. How could I possibly get away during the term to observe? However, the disappointments of rejection far outweighed any added burdens of acceptance. Rejection probably meant an end to my research efforts in astronomy, and endings are always sad. On the up-side of that, I could get on with other aspects of my life: I could finally find time to write a column for the JRASC on my failed research attempts, and find the time to make that semi-professional recording of my astronomy songs and sell the recording to gullible astronomers (serves them right for rejecting my proposal).

I opened the envelope and read,

"Enclosed you will find information about the status of all current proposals on which your name appears. These include ... blah, blah .. Unless stated otherwise .. blah ..any time allocated is for only the proposal given, ... blah, blah, blah ... INTERPRETING YOUR PROPOSAL SUMMARY: The first line contains the ... blah ... The second line informs you if we have scheduled time for the proposal ..."

What proposal summary? I couldn't find the 'Proposal Summary'. There is a second sheet, but it is not titled "PROPOSAL SUMMARY". It read:

AAQUIST, O. Keyano College
AA225 Expansion of compact planetary nebulae
Time scheduled this config; will not be considered further.

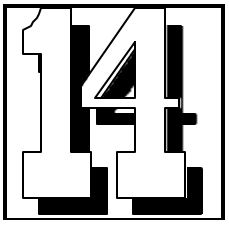
My heart sank. Well, that was that. But what a strange way of rejecting a proposal. I was expecting something along the lines of, "*We appreciate your interest in observing at the VLA, but due the submission of so many first rate proposals, many excellent proposals were rejected in the evaluation process.*" Perhaps I was getting the rejection confused with one of my past job applications.

I forced my eyes back on the paper to read the specific referees' reports. I skipped over a couple of lines and read:

Referee A Rating = 7 Time rec= 50% Ref mean 3.4

A seven didn't seem like a bad rating. When I give my students a 7 (out of 9), they are pretty happy. But what was that stuff after the rating? I paused to think about it for a moment, but I was too hyper to concentrate much on the details. I read the referee's comments:

I am sceptical that the first epoch images have high enough S/N to reliably detect expansion motions of even 30 mas. It appears to me that only 4 or 5, at best, are bright enough



Oh, that hurt just a little, but not as much as my student evaluations. Actually, I get excellent student evaluations, but I still cringe when it is time to read them. But why give me such a high mark and such a mediocre comment?

I returned to the section entitled "Interpreting Your Proposal Summary", wherein I read,

"The reports from the referees ... contain a numerical rating ... the lower the rating the better the proposal."

Oh darn. Just like my golf score. Apparently, Time rec= 50% Ref mean 3.4 meant that Referee A recommended that only 50% of my proposed observing time be scheduled and that his ratings of previous proposals had a mean value of 3.4. So my proposal, with a rating of 7, did not rank among his top ten. Bummer.

But wait. If Referee A, who gave me the worst mark of the four reports, recommended that I be granted 50% of my proposed observing time, then how come my proposal was rejected? I smelled a lawsuit cooking, but then remembered that I was Canadian. Then, again, since I was observing in the US, perhaps .... I better read the fine print more carefully. I returned to the top, and read:

```
AA225  Expansion of compact planetary nebulae
Time scheduled this config; will not be considered further.
SCHEDULING COMMITTEE (97DEC05) - We suspect that not all of
the old observations are good enough for this.  Do some of
your best cases.
O. Aaquist
S. Kwok

CURRENT TIME ALLOCATION:
 1 times 8.0 hours in A config at LST near 19.0

Time requested:
 3 times 8 hrs in A config centered at 19.0
```

Wow. They gave me 8 hours! I think. I read it again. Yes! They granted me 8 hours.

I read the reports from the other three referees. I smiled stupidly, the same stupid smile I don when I know that I'm about to get sex. I tucked the pages back in the envelope and stuck them in my briefcase. I felt pretty good.

Good luck Orla from all of us at PGAS——Maybe you should catch that movie Contact before you go so you can find out all those other neat things they can do with that telescope Gil

PGAS CONTRIBUTORS

The PGAS would like to thank the following individuals, corporations and government agencies who, since 1991, have donated money, goods or services to the construction and operation of the Prince George Astronomical Observatory.

Ministry of Adv. Ed. Training and Tech.	$25,000
BC Science Council	16,000
BC Lotteries	3,900
Helmar Kotsch (Acme Mas.)	1,932
Northwood Pulp and Timber	1,665
Electrical Services Ltd.	1,583
Royal Bank of Canada	1,500
Regional District of Fraser-Fort George	1,000
Prince George Rotary Club	1,000
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Rustad Broth & Co Ltd	750
Canfor Polar Division	744
A.V. Jay Roofing	600
Xerox Canada	500
Russelsteel	465
Lakeland Mills Ltd	460
Canfor Clear Lake	270
Lutz Klaar	200
Canfor Netherlands	200
Art Beaumont	150

The greatest contributors to the construction and operation of the observatory are from PGAS members who have generously contributed their time to this project. The value of their contribution surpasses all external contributions.

The PGAS is a non-profit organization dedicated to the advancement of astronomy and science in general in Prince George and the neighboring northern communities. Donations of money or materials to the society are greatly appreciated and tax deductible.

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