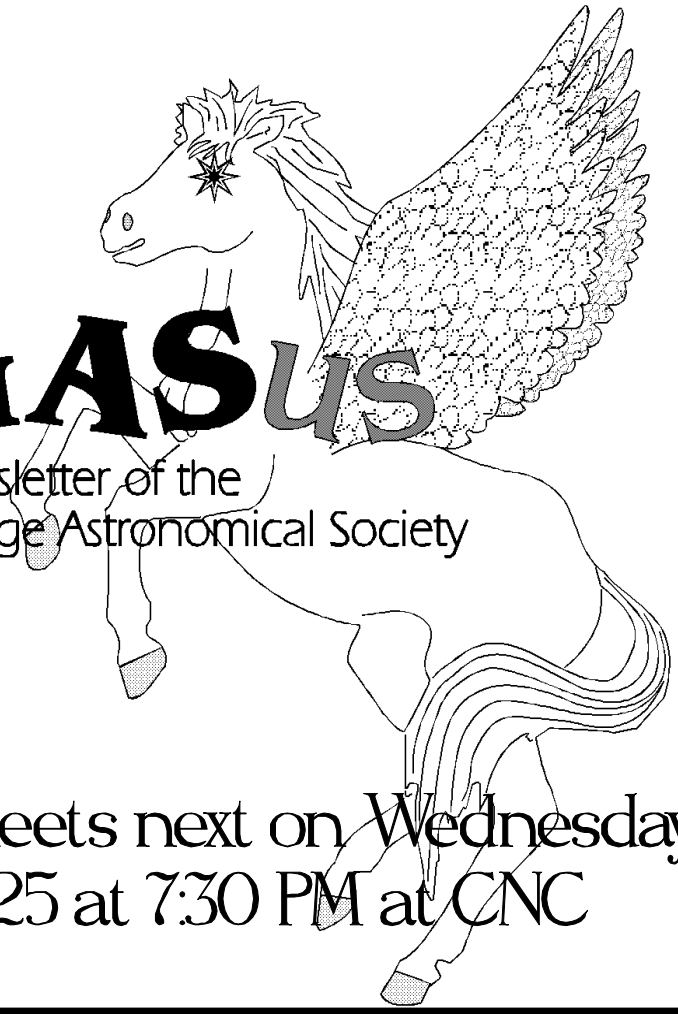
1995 January Issue #53



the PeGASus

Newsletter of the
The Prince George Astronomical Society

The PGAS meets next on Wednesday
January 25 at 7:30 PM at CNC

INSIDE :

the PeGASus is published monthly by the *Prince George Astronomical Society*. Contributions to the newsletter are welcome.

Deadline for the next issue is February 10, 1995

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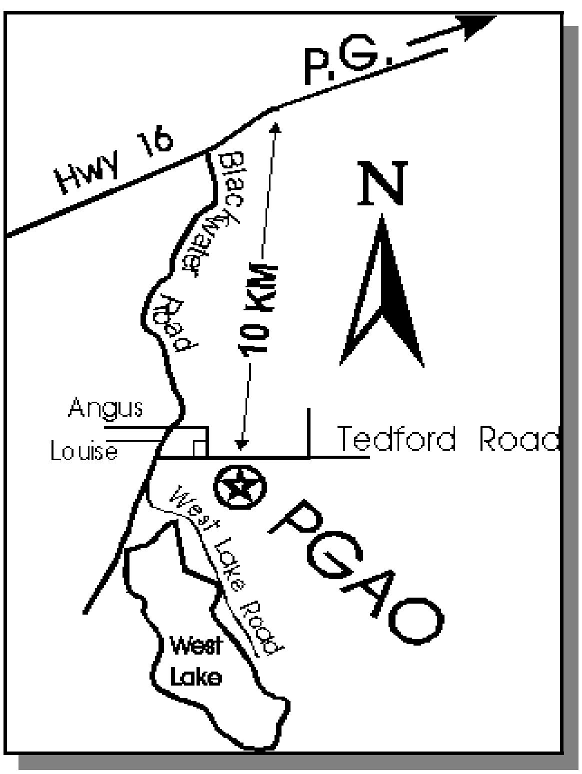

Prince George Astronomical Society Executive, 1994/5

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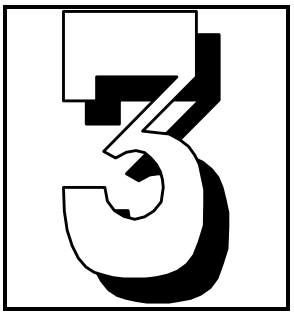
*

PeGASus Editor
Orla Aaquist
*

The observatory phone number is 964-3600. This is a party line, so if it rings busy, it does not imply that someone is at the

Editorial

by Orla Aaquist

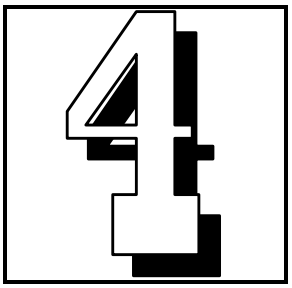


Its another year, and with this first editorial of 1995 I have decided to say something profound. The only problem is that I haven't thought of it yet. Don't worry, it will come to me as I am typing these very words.

Alan Whitman reports in *The Night Sky* column this month that he hoped some of us *saw the beautiful scene December 29th when the crescent moon lay between Jupiter and brilliant Venus in morning twilight. The three spanned only about 12 degrees and the scene attracted public attention on CBC Radio.* This takes me back to the morning of November 30th of last year when Marcus from CBC called me at 6:30 in the morning to ask me about the conjunction of the crescent moon and Venus. At that hour of the morning I am not very coherent, but I did manage to point his attention to Alan's article in the November PeGASus describing the conjunction, which Marcus then read over the air. I got out of bed to see what the excitement was all about. As I hung out of our bedroom window, in my PJs, with Shannon hanging on to my feet, straining to see the eastern sky, I did see a most beautiful sight. Shannon roused the kids. Amazingly, they sat on the back porch, huddled in their blankets, staring at these two brilliant searchlights for about 15 minutes. This is a long time for Nintendo kids who require instant gratification every two minutes. It's amazing what two bright lights in the sky can do.

In any case, Marcus did not call me on December 29th, and sadly I missed the conjunction of Jupiter, Venus and the crescent moon. If two bright lights can keep two Nintendo kids transfixed for 15 minutes, think what three bright lights can do.

My conclusions are that astronomy is good for kids, astronomy is worth getting out of bed for, and its a good thing that conjunctions of bright lights in the sky don't occur too often because otherwise they would probably not be so spectacular.



Monthly Meetings

The next meeting of the PGAS will be held at the **CNC** on Wednesday, January 25th at 7:30 PM.

The December meeting, our annual Christmas party, was held at Art and Barb Beaumont's home. The evening was spent enjoying a variety of snacks (vegetable trays, chips and dip, and cheeses), Art's (or was it Barb's) punch, and informal conversation (of course it was astronomical) that lasted until about 11 PM. For those who missed this seasonal gathering, we hope to have another next December.

I have not yet heard anything from the executive regarding plans for the January meeting.

The Night Sky

by Alan Whitman

Saturn is low in the south-west at dusk. By mid-February it sets before twilight ends. When it reappears in late spring it will look much different than you are accustomed to as the rings will be edgewise to Earth on May 22.

Mars has now become the dominant planet in the evening sky, orange and bright at magnitude -1 in the Sickle of Leo. It will be at opposition February 11th and is well placed for viewing with a declination of +17. However, you will be lucky to see much other than the north polar cap (or hood clouds) and the most prominent dark markings such as Syrtis Major. Mars only becomes a tiny 13" in diameter at this opposition. This is because Mars is at aphelion, its greatest distance from the Sun, shortly after this opposition while Earth is only a month past perihelion. Consequently, Earth and Mars are unusually far apart at this opposition (the next one in 1977 is only slightly better).

I hope some of you saw the beautiful scene December 29th when the crescent moon lay between Jupiter and brilliant Venus in morning twilight. The three spanned only about 12 degrees and the scene attracted public attention on CBC Radio. Jupiter passed within 3 degrees of Venus January 15th and is now pulling away from both it and the sun. The crescent moon will make attractive pairing with both bright planets in morning twilight again in late January, passing Jupiter on the 26th and Venus on the 27th. February 26th there will be another conjunction of Venus and the crescent moon. However, none will be quite as spectacular as the December 29th show.

By late February, Jupiter transits before sunrise, but it lies low in the south at declination -21, near Antares. This is the first of four consecutive poor years for telescopic viewing of Jupiter.

Only four 1st-magnitude stars are ever occulted by the moon, Antares, Aldebaran, Regulus and Spica, and most years none are. In 1995 we are favoured with three occultations of Spica, on January 23rd, April 15th and June

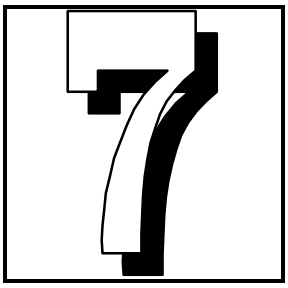
8th. All three will be visible from Prince George. Disappearance January 23rd occurs about 2:06 AM at the moon's bright limb; reappearance near the centre of the dark limb at about 3:05 AM should be easily visible with rigidly-held binoculars. Let me quote from SKY & TELESCOPE: "*Yes, it may be earlier than the earliest bird opens an eye. And it's Monday. Never mind, we're astronomers. On January 23rd anyone with a telescope and a clear sky will be missing the boat if they're not out watching the waning gibbous moon. That morning the Moon will pass over the 1st-magnitude star Spica, providing the best stellar occultation we've had in several years."*

Messier Corner: More bright open star clusters (OC) are visible in winter than at any other time of the year. The five we look at this month are all easy binocular objects and two of them, M34 in Perseus and M35 in Gemini, can be glimpsed with the unaided eye in any decent sky. M34 and M35 are both large clusters with bright stars. Both include several doubles while M35 also has star chains and multiple stars plus a little "arrowhead" OC adjacent to it, NGC 2158. An 8" will easily resolve NGC 2158.

Auriga holds the three binocular objects: M36, M37 and M38. Very attractive M38 is usually described as resembling the Greek letter "Pi". To me it has always seemed like a miniature replica of the constellation Perseus with rich, compressed OC NGC 1907 prominent in the same field of view. M36 is nondescript but does have a double star in its centre. M37 is the best of the three--dense for an OC with an orange star in the centre.

Many of us find it difficult to work up to mid-winter observing. This is the season when twenty frosty minutes with binoculars, a small portable telescope, or even the naked eye can still be productive if you scan the winter Milky Way for its myriad bright and easily found open clusters.

I Saw the Eclipse



by Jeremy Tatum

If a total solar eclipse is the most spectacular and impressive of all astronomical phenomena, then surely the laurels for the least spectacular and impressive must go to a partial penumbral lunar eclipse. Yet for doubtless completely irrational reasons, many of us make great efforts to see the most unspectacular astronomical sights we can manage, and I am sure that many members were trying their hardest to see the partial penumbral lunar eclipse of 1994 November 18.

Not me. Indeed, I went to a great deal of trouble and took elaborate precautions to prevent myself from seeing it. I had, sad to say, forgotten that the eclipse was going to take place, but that is not all. That evening I was trying to observe a total eclipse of the ninth-magnitude star SAO 129245 by the faint asteroid (442) Eichsfeldia, which was not very far from the full "Hunter's Moon". I therefore took great care to cover my head and the eyepiece end of the telescope with a thick black cloth to ensure that I couldn't possibly see the eclipsed Moon. (I wonder if any dedicated astronomer has ever done the same thing during a total eclipse of the Sun.) As it happened, the asteroid occultation didn't happen, as seems to be usual, so I went home without having seen the occultation and without a glance at the partially eclipsed Moon overhead.

Shortly after I got home, a non-astronomer friend telephoned me to ask whether I had seen the eclipse. Dash it all, I had forgotten! Bit it was too late, she said, the eclipse had "happened", according to the radio, at twenty-five past nine, and she had gone outside to see it then, but she must have just missed it, though she thought she had been looking at the exact time when it happened. Anyway, I didn't have my *Handbook* at home with me (shame on me!), so I had no idea what the duration really was, or what part of the Moon was shaded. I went outside at about half past ten, just in case, and indeed I thought I could discern that the upper half of the Moon was just detectably slightly darker than the lower half.

continued on page 10

Announcements

Eclipse 1995

We have received a couple of brochures from *TRAVELBUG International* for tours to Asia for the October 1995 eclipse of of the sun. Members wishing to view these, contact Orla (964-9626). They will be available for viewing at the next meeting.

RASC Observer's Handbooks

Does anyone want to buy a 1995 RASC Observer's Handbook? Perhaps we could order some for interested members. Call your executive if you are interested. Isn't this a job for our secretary?

The Last Editorial

Ken Hewitt-White, editor of the *OK Skies* (Newsletter of the Okanagan Astronomical Society), announced in his December editorial that he was leaving the Okanagan and returning to the coast. The PGAS has enjoyed a newsletter exchange with the OAS for the last year and hope that it can continue when they find a new editor. On behalf of the PGAS, I wish all the best to Ken and the OAS.

Observer's Calendars

from the *Royal Astronomical Society of Canada* (Vancouver Centre) arrived last year. There are still 3 left. Call Orla Aaquist (964-9626) or come to the next meeting if you would like to purchase one.

Visiting Astronomer

On Tuesday March 14, Dr. Lloyd Higgs, past director of the Dominion Radio Astronomical Observatory (DRAO) will be visiting CNC. As part of his visit, he will be giving a public lecture Tuesday evening at CNC, Room 1-306. Mark that date on your calendars. The time, title and abstract of his talk will be published in the next issue.

It is not often that a professional astronomer visits us, and we hope that you will support this visit be attending Lloyd's lecture.

The lecture is free, but bring a friend.

Any Announcements?

But it was probably my imagination, and the eclipse was doubtless long over.

The next morning, when I got to my office, I consulted my *Handbook* and discovered to my delight that at about half past ten the eclipse was close to its maximum phase, and indeed it was the upper part that was in shadow. So, in spite of my best efforts to ensure that I didn't see the eclipse, I had in fact seen it. Twenty-five past nine was the time of first contact of the penumbral shadow, so it was no surprise that my friend had missed it.

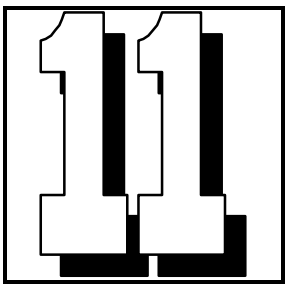
While discussing this little adventure with a colleague, we speculated on the possibility of a total penumbral eclipse of the Moon (a subject that was covered by Jan Meeus of Erps Kwerps in the *Journal 74, 291, (1980).* I expressed the opinion that a total penumbral eclipse was more likely at apogee than at perigee for two separate reasons. One, the Moon at apogee appears appreciably smaller than it does at perigee. Two, the width of the annular penumbral shadow is appreciably larger at the apogee distance than at the perigee distance. My conclusion was correct, but I am going to leave it to the Editor of *Skynews* to add a little footnote to explain to readers in what respect my reasoning was wrong.

The Editor's footnote has been omitted so that the readers of ***the PeGASus*** *can have a chance for a little debate on this puzzle posed by Dr. Tatum in this SkyNews article.*

This article was copied from the December 1994 issue of SKYNEWS, published by the RASC, Victoria centre. The editor of the PeGASus apologizes for any errors introduced while retyping this article.

Astronomical Poetry

by Orla Aaquist



Its 11:30 PM on Monday night.

I have two empty pages and no words in sight.

Could they be left empty?

"Yes!", I say with delight.

continued on page 12

This poem is like the universe.

Mostly empty.

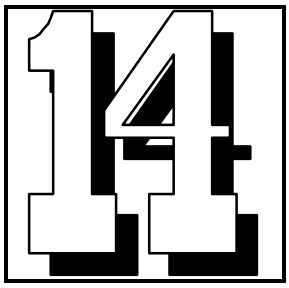
AstroSurfing

Astronomy news gathered from surfing through the Internet and other sources. Much of the contents presented here are severely edited for presentation in this Newsletter. For more details, contact the PeGASus editor.

LUNAR ASTEROIDS? According to a study by astronomer William Bottke at the University of Arizona, some fraction of the tiny asteroids discovered whizzing past Earth in recent years may have been blasted into space from the Moon. Many of these asteroids have orbits very similar to Earth's, and Bottke's computer simulations show that some of objects flying off the Moon after a major impact within the last 10 or 20 million years would have gone into heliocentric orbits quite like those of the Earth and Moon. Also, such objects only survive for about that long before colliding with us or being flung from the solar system.

RETURN OF THE GREENWICH CLOCK: After an absence of 275 years, the clock used in establishing Greenwich Mean Time is being returned to its original home. Made by Thomas Tompion, known as the father of English clock making, the clock will be restored to its original setting in the Octagon Room of the Royal Greenwich Observatory near London. In the late 17th century it was used to determine that the earth rotated at an even rate. Those findings formed the basis of all measurements of time and space more than 2 1/2 centuries. The clock was sold in 1719 and wound up in the ancestral home of the Earl of Leicester before its return to the observatory.

CLOSE-CALL ASTEROID: On December 9th, shortly after 19:00 Universal Time, a barn-sized asteroid (6-13 metres) hurtled through the Earth-Moon system and missed our planet by a scant 100,000 km. The first warning of its existence had come just 14 hours earlier when James V. Scotti, using the Spacewatch telescope in Arizona, picked up a 17th-magnitude speck of light streaking northwestward through Cetus and Aries. At the time of its closest approach this object, now designed 1994 XM1, was moving incredibly fast, crossing 1 deg of sky every 3 minutes.



JUPITER'S NEW BELT: Thanks to last summer's comet impacts, Jupiter sports a new dark belt in its southern hemisphere, the second-most obvious one on the planet after the South Equatorial Belt. Astronomers using the 3.5-meter reflector on Calar Alto report that a continuous **bright** band can be seen in that latitude range at the infrared wavelength of 1.7 microns. This means that debris ejected upward remains suspended high in the atmosphere. Now a team of European astronomers report that the band is significantly dimmer -- and thus cooler -- than its surroundings in the thermal infrared at 7.8 and 7.9 microns. These wavelengths are sensitive to the presence of methane in Jupiter's middle stratosphere. The team suggests either that the stratosphere now contains gases like water, ammonia, and hydrogen cyanide which efficiently radiate energy to space, or that a high-altitude haze above the impact zone is reflecting enough sunlight to keep the gases below relatively cool.

By mid-January Jupiter's elongation will exceed 45 degrees, making it once again observable by the Hubble Space Telescope.

HUBBLE SPIES SATURN: Speaking of HST, this week the Space Telescope Science Institute released a new composite image of Saturn taken by the telescope on December 1st by Reta Beebe and Amy Simon. The image shows a huge bright storm raging north of the planet's equator. This storm is less turbulent than the big one in 1990, but it was reasonably obvious when picked up late last year by amateur observers.

TAILS OF COMET P/BORRELLY: S&T Contributing Editor John Bortle urges you to track down Periodic Comet Borrelly, which he says is an unusual and impressive object. The comet is about magnitude 8.5, making it easy to spot with modest telescopes or even good binoculars. But through a larger telescope P/Borrelly displays <u>two</u> faint tails, pointing toward and away from the Sun at position angles of 265 and 115 degrees. "It looks a bit like a skewed, edge-on galaxy," Bortle says, and he adds that P/Borrelly hasn't sported an anti-tail since its apparition in 1918. The comet reached

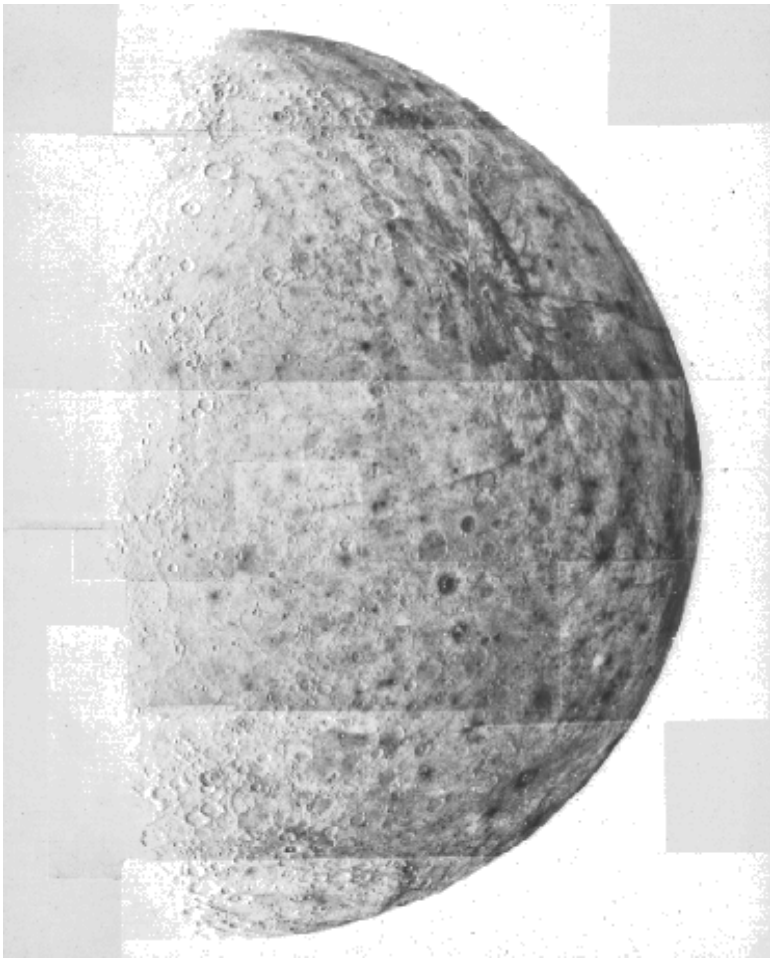
perihelion on November 1st and is now drifting slowly across the western stars of Ursa Major. As 1995 begins you'll find it just barely west of the 3.8-magnitude star Nu Ursae Majoris. Here are upcoming positions for 0 hours Universal Time:

		R.A. (2000)		Dec.
Jan	1	9h	50m	+59.2 deg
	3	9	51	+60.3
	5	9	52	+61.3
	15	9	51	+65.5
	17	9	50	+66.1
	19	9	49	+66.7

For updated coordinates as they come available, call Orla Aaquist (964-9626).

MOST DISTANT GALAXY: Astronomers at the University of California, Berkeley, have used the 10-meter Keck Telescope on Mauna Kea to record the most distant galaxy yet. Designated 8C 1435+63, this system has a measured redshift, z, of 4.25. Large values of z correspond to fast motion away from Earth and thus great distances, and this galaxy is an estimated 15 billion light-years away. The previous record holder had a redshift of 3.8, though some quasars have redshifts as high as 4.9. Led by Hyron Spinrad, the team finds the new galaxy to be about 150,000 to 200,000 light-years across -- some five times the size of nearby M31, the Andromeda Galaxy. They observed it during March and July last year.

The Image Gallery



Mercury is the planet closest to the Sun, named for the god of thieves and darkness. It's a small planet, not much larger than our Moon, and because of this and because it never gets far from the Sun's glare, it takes some patience (or high tech) to find it. At the moment, Mercury is 17 degrees from the Sun, and its angular size is only 6 seconds of arc.

Mercury takes 88 days to orbit the Sun. It takes 2/3 of this time, or 59 days, to rotate on its axis, leading to a very long, hot day... and a very long, cold night.

Because it is so close to the Sun, daytime temperatures run up to about 375 Celsius. The planet has been examined by one satellite, Mariner 10, back in 1974 and 1975, the above image being one of many obtained during the visit. It shows a surface not too unlike the Moon, heavy with craters.

Presently, Mercury rises at about 1 PM and sets at about 8:30 PM, so you should be able to spot it in the south-west just after sunset.

From Project Pluto Version 2.0