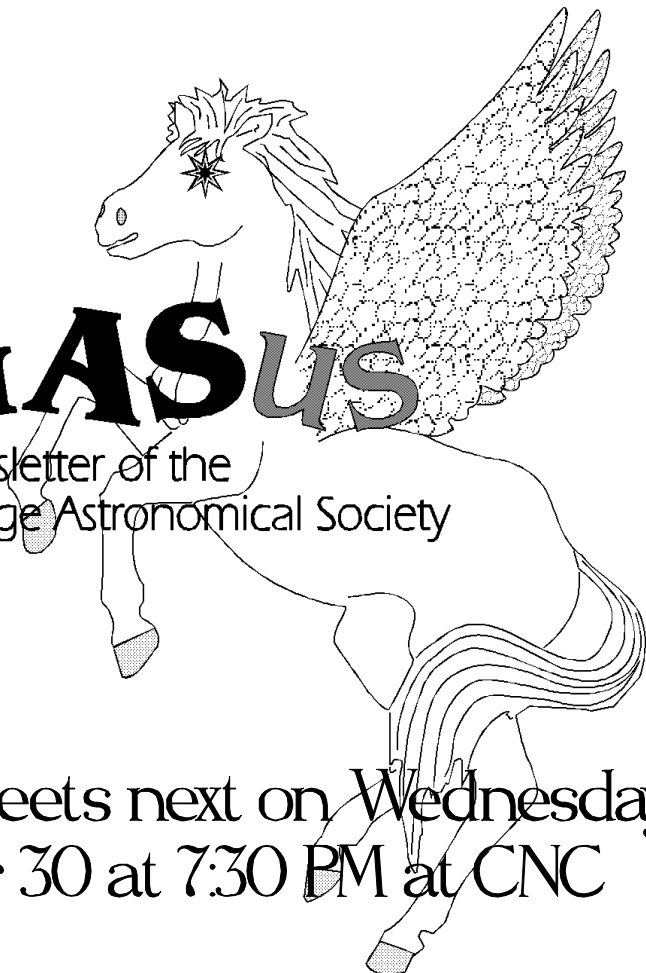


November 1994

Issue #52

the
PeGASus

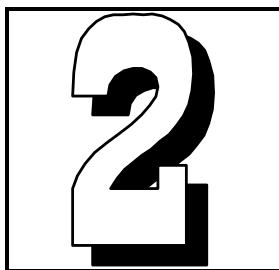
Newsletter of the
The Prince George Astronomical Society



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

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the
PeGASus
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newsletter are welcome.

***Deadline for the next
issue is January 13,
1995***

(No December issue)

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Eric Hansen 962-7477

Nominated Positions

Technical Director

Bob Nelson

*

Observing Director

Jon Bowen

*

Promotional Director

Orla Aaquist

*

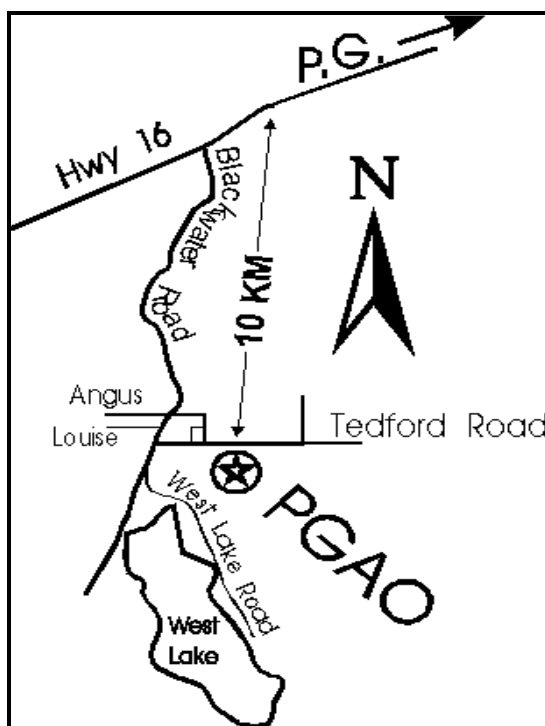
PeGASus Editor

Orla Aaquist

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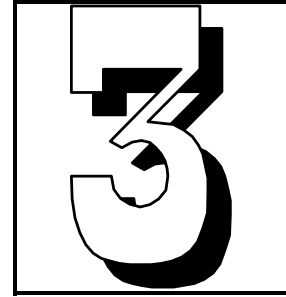
Librarian

Donovan Unruh



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
observatory.

Editorial

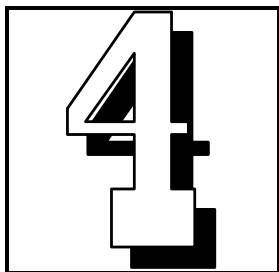


If you examine the second page of this newsletter you will find that the executive has changed since the last issue: Jon Bowen has moved from the secretary to president; Matthew Burke, previously member at large, has taken over Jon's old position as secretary; and Gil Self and Eric Hansen have joined the executive as *members at large*. We have a very capable executive this year, and as past president I have no doubts that they will serve the club well in the coming year.

I have just looked at our members/mailling list. To date 22 people have renewed their club membership for 1995; 20 people, listed as having paid their 1994 dues, have not yet renewed their membership; and 6 people are listed as possible members. We also send this newsletter to 17 individuals and organizations for promotional purposes, newsletter exchange, and as a friendship gesture (such as observatory neighbours). In the near future, I will be making a call to the 26 people who are on the list but have not yet paid their dues. I want to ascertain if you are still interested in the the PGAS. We really appreciate your interest in the club, and we would like your continued support. I had to remove the *Membership Application Form* from the last page to make room for Matthew's contribution; however, this doesn't mean that you have no way of paying your dues (\$20 single, \$30 family, \$10 student). Just mail a cheque to

The PGAS
3330 - 22nd Avenue
Prince George, B.C. V2N 1P8

If you hear any interesting astronomical news that you think should be included in the newsletter, let me know. I am always looking for something to fill in the little spaces. It seems to be getting harder and harder as time passes to ramble on and on (as I am doing now) in order to get to the bottom of the page. But I made it once again!



Monthly Meetings

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

The October meeting was the annual election of our executive. The new executive is listed on page 2 of this newsletter. Before the election of officers, the issuing of keys to the observatory was once again raised. The executive had decided to issue keys at no cost to any PGAS member desiring a key with the stipulation that the executive must approve the key at an executive meeting.

After the general business discussions and elections, Orla Aaquist gave a brief presentation on a visual photometry project run at the University of Manitoba with the second year astronomy students. Then, Dave Kubert demonstrated the latest version of the Colliding Galaxies program written by Ted Biech and himself. The program has a few more bells and whistles and looks pretty slick now. Finally, Bob Nelson said a few words about Internet access and passed out a list of Internet addresses where astronomy information can be found. Bob also demonstrated how to baffle any refractor using an ingenious method of his own making.

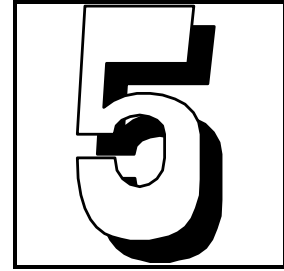
At the upcoming November meeting, the directors' jobs will be reviewed and discussed. In this issue of the newsletter, a proposed description written by Matthew Burke is included. If you have any comments or concerns about these positions, be sure to attend this important meeting. Matthew Burke will present the constellation of the month. Bob Nelson will demonstrate some interesting software which he has retrieved through the internet.

Over the winter our computer will be kept in a heated box. At the upcoming meeting, Bob will describe the nature of the box and how to access the computer during cold weather.

Next executive 6:30 on Nov. 30.

The Night Sky

by Alan Whitman



Saturn dominates the evening sky. At the end of November it is at quadrature which results in the planet's shadow on the rings being at its most prominent in a telescope, giving a three-dimensional appearance.

Orange Mars brightens to a prominent magnitude zero object by mid-December and lies within 5 degrees of the blue-white star Regulus, making a nice colour contrast. At conjunction on December 8th, the star and planet are only 2.3 degrees apart. By mid-December they rise by 10 PM.

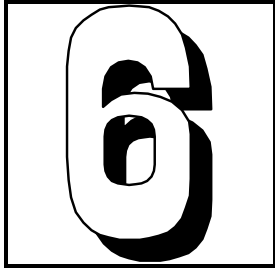
Venus dominates the morning sky as it moves rapidly away from the sun. On the morning of November 30th it is very close to the crescent moon during twilight -- a beautiful sight. In a telescope Venus shows a large crescent itself. Around December 9th Venus is magnitude -4.7, the brightest that it ever appears. It will be well up before twilight ever begins, so this is a chance to see Venus casting a shadow--the snow on the ground should make this a fairly easy observation. Obviously you will have to be away from streetlights and other artificial lights.

Jupiter reappears in the December dawn so the morning sky will be highlighted by three bright planets.

The Geminids, the second best meteor shower, peak on the night of December 13th to 14th. They usually produce about 60 meteors per hour in the pre-dawn sky but bright Geminids are rare. This fact, combined with December cold, keeps the Geminids from being better known. But they are well worth one or two fifteen minute observing sessions. Bright moonlight will reduce the number of meteors seen until after moonset at 4:35 AM.

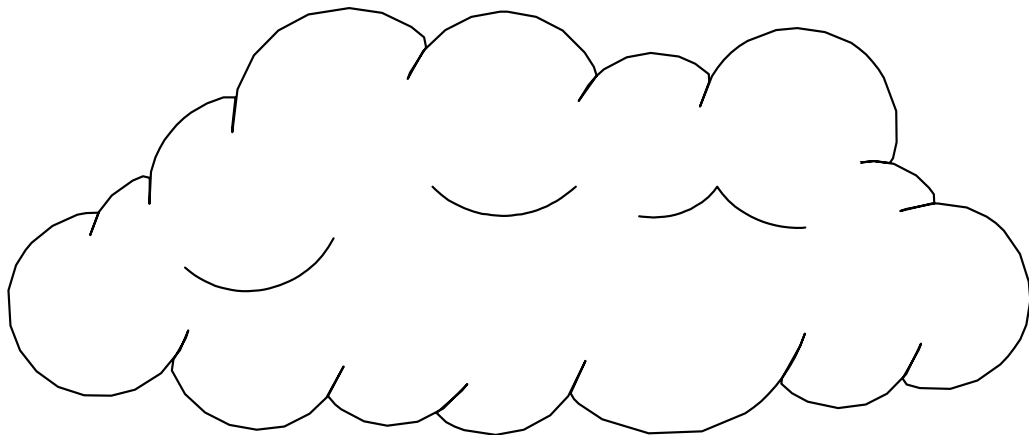
Comet Borrelly is expected to be an eighth magnitude object well-placed in the eastern sky by midnight as it moves through Cancer and Lynx. It should be visible in binoculars in a dark sky. The December Sky and Telescope has a finder chart.

Messier corner: The second best galaxy for northern hemisphere observers is M33 in Triangulum. At magnitude 5.7 it is bright enough to be seen with the unaided eye under perfect conditions. About half of the nights at Mt. Kobau are good enough to see M33 without optical aid but I have only seen it twice from the lower altitudes where we do most of our observing



from. The most recent occasion was at 4 AM on the morning of October 2nd this fall. The sky was superbly transparent behind a cold front and when I stepped out of my back deck on Chief Lake road, there was M33, high overhead. The observatory sky is as good as mine so it should be possible for experienced observers to glimpse M33 from there on those rare memorable nights with superb transparency (assuming you haven't been using those red lights inside the dome).

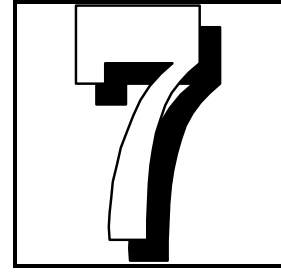
On such a night, an eight-inch telescope at low power will show the two inner spiral arms spanning half a degree, provided that your telescope's field of view is at least one degree to give enough contrast between this very large but low contrast galaxy and the sky. The bright nebula NGC 604 will look almost stellar at low power, making an apparent wide double with a real star at the tip of one spiral arm, on the NE edge of M33, 10' from the galaxy's centre. At higher powers, NGC 604 reveals its true nature -- it is a giant version of the Orion Nebula. On the best nights at Kobau, four other HII regions are visible in a 17.5". NGC 604 and the four fainter condensations make an almost straight line, all on the same side of M33's centre.



A Prince George H II region

Book Review

by Don Fernie



Looking up: A History of the Royal Astronomical Society of Canada, by R. Peter Broughton, pages xiv + 288; 22 x 29 cm. Dundurn Press, Toronto and Oxford, 1994. Price \$34.95. Order from the RASC, 136 Dupont Street, Toronto, Ont., M5R 1V2. Add \$5 for shipping and GST.

The motivation for writing this book, Peter Broughton explains, was the centenary of the Royal Astronomical Society of Canada in 1990. He continues that although a number of articles had been written on the subject over the years, "it was not until the year 1990 was almost upon us that a gnawing feeling began to emerge that many members ... had some interest in the development of the Society but did not have access to those older papers. So, in a moment of self-delusion, I offered to write a book about the RASC..." Many of us will be grateful that he did!

This book, more than most others, brings home that symbiosis unique to astronomy: the cooperation and mutual respect between amateur and professional. I am told that on a recent, well-known TV talk show discussion the impact of Comet Shoemaker-Levy 9 on Jupiter, David Levy was referred to by a professional astronomer as an amateur, bringing down on the speaker's head the wrath of the show's host, that so distinguished a contributor to the science should be called an amateur. The wrathful gentleman could learn much from a reading of Broughton's book; for here, laid out in detail, is the story of a marvelous intermingling and interaction of people whose common thread was and is deep interest in astronomy, whether their living be earned by it or not.

Anyone with an interest in how astronomy developed in Canada will find Broughton's book an important contribution. Its information content is remarkable, for the author's research has been meticulous in his quest for the full story, and although that could easily have resulted in an indigestible

...Continued on page 10



Announcements

Special Thanks

to the following members who came out and helped with our *Science and Technology Booth* at Pine centre on October 22 and 23.

Orla Aaquist

Ted Biech

Don Goldie

Eric Hansen

Jon Bowen

Rob Frith

Dave Kubert

Bob Nelson

Vince Hogan

Gil Self

Mike Lancelot

Alan Whitman

Bevan Ferriera

Matthew Burke

Messier Hunt

The Messier Hunt is on. Bob Nelson has made a Messier chart, located at the PGOA, for members to record their finds.

Collider 1.0

Ted Biech and Dave Kubert have completed version 1.0 of their colliding galaxies simulation program. They will be displaying their completed version of their software at the next meeting. See also their advertisement in the November issue of Astronomy Magazine.

Observer's Calendars

from the *Royal Astronomical Society of Canada* (Vancouver Centre) have arrived. Only 12 of these monthly calendars were ordered. Call Bob Nelson or come to the next meeting if you would like to purchase one.

The 1995 Weekly Calendars were not ordered. If you wish to purchase one, you will have to pre-pay. The cost depends upon how many we order. Call Orla Aaquist (964-9626) or come to the next meeting for details.

Astronomer Wanted

The Fraser-Fort George Regional Museum will be renting the inflatable starlab from the H.R. MacMillan Planetarium. They are looking for someone who is willing to help them operate it for a couple of weeks next July. You must be able to travel to Vancouver for a one day training session. Call Orla Aaquist (964-9626) for further information.

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Continued from page 7...

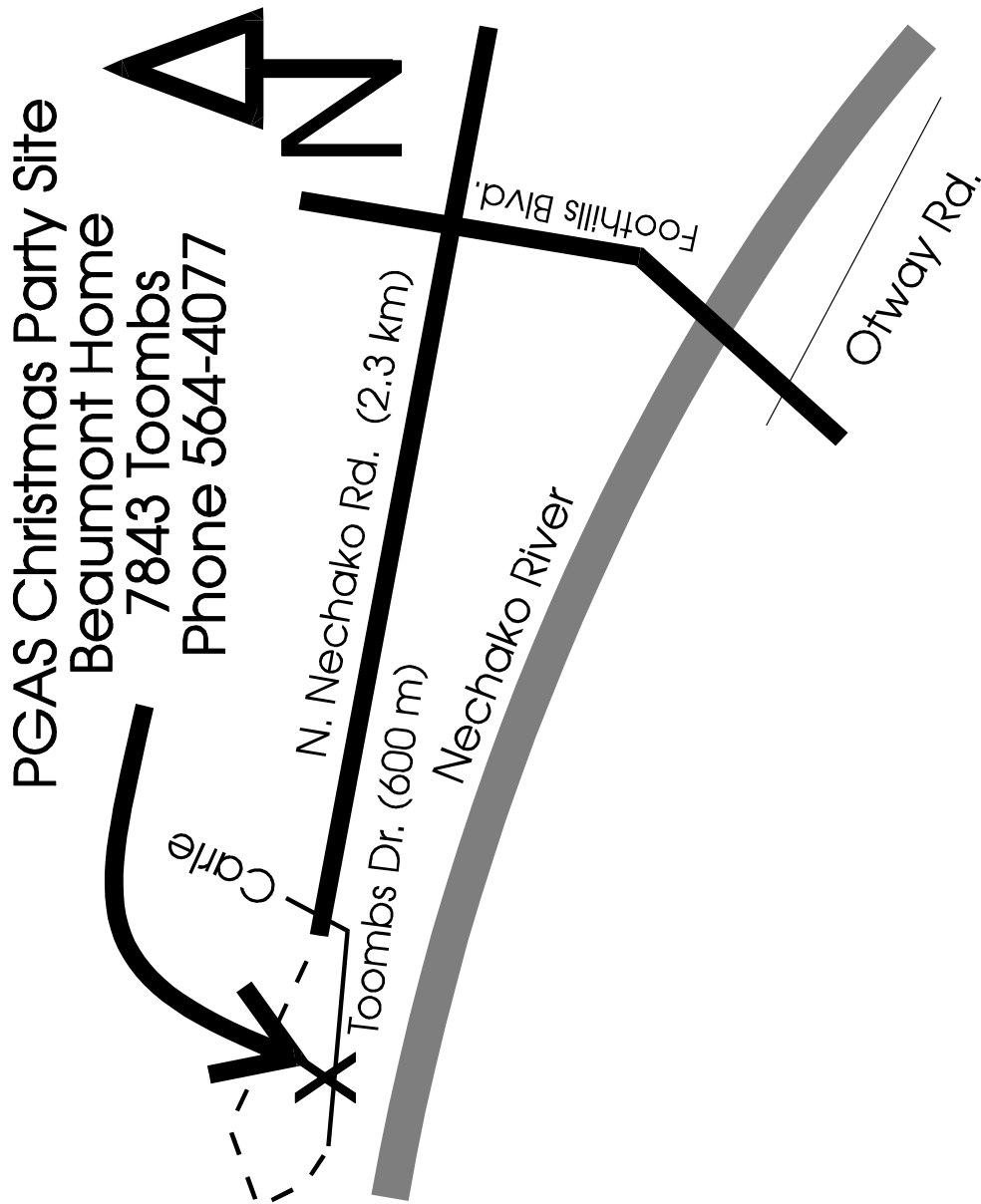
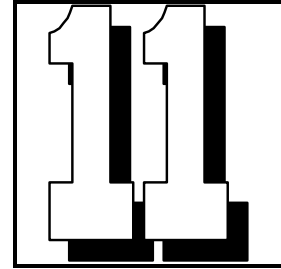
clutter of detail, the writing is in fact clear and straightforward. There are statistics and graphs and chapter by chapter recounting of the Society's activities, its officers, its finances, its centres, and virtually everything else connected with it. But for anyone who has been part of that story, or indeed the story of Canadian astronomy generally, the most appealing sections of the book will be the sidebars giving capsule biographies of the Society's presidents and many other (sometimes more consequential!) figures. Together with the numerous photographs that pack the book, these provide a pleasant stroll down memory lane among people remembered or forgotten, whose common thread was to have been influential in Canadian astronomy.

The book is beautifully produced in a glossy, mini-coffeetable kind of format, and has been very well proofread. The only error of fact I noticed was a reference on page 54 to the primary mirror of the never completed Queen Elizabeth II Telescope forming the basis of the CFHT.

If you count yourself a Canadian astronomer, this book is part of your heritage; you will be pleased to have it on your bookshelf.

This article was taken from the Canadian Astronomical Society's quarterly journal, CASSIOPEIA, Issue No. 84 - Autumnal Equinox 1994.

Christmas Party Dec. 10, 1994



This year's Christmas party will be held at the home of Art and Barb Beaumont. Last year we had a successful gathering at the Whitmans' home, and we hope for an equally successful event this year. The event is informal. PGAS members and family are welcome after 7 PM on Saturday December 10.

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BYOB and munchies. The Beaumonts are providing punch. For more information call Art Beaumont at 564-4077.

The map on the previous page should help you get there. Here is a written description for those who can only read star maps:

From city center travel NW to foothills Blvd. intersection with N. Nechako Rd. and take N. Nechako for 2.3 km to Toombs Dr. where center line ends. Turn left on Toombs and travel for 600 m to Beaumont home, left on riverside. See signs in driveway.



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.



MACHHOLZ'S BANNER YEAR: Comet hunter Donald Machholz of Colfax, California, has had a banner year. In July he co-discovered a 9.5-magnitude visitor in Camelopardalis. The following month he swept up a new, 10th-magnitude periodic comet, which happened to be fractured in six pieces. Then on October 8th he discovered yet another, a 12th-magnitude interloper in Ursa Major. This latest catch brings to nine Machholz's total number of visual discoveries. He thus replaces David H. Levy of Tucson, Arizona, as the most prolific living comet discoverer in the Western Hemisphere. Currently leading Machholz are Australian amateur William Bradfield with 16 visual discoveries and Czech astronomer Antonin Markos with 11.

NOVEMBER 3RD ECLIPSE: A total solar eclipse occurred on November 3rd that was visible from South America. The cosmic spectacle took place too far south for partial phases to be visible anywhere in the U.S. or Canada.

A LOW "H NAUGHT": Recently two new measurements of the Hubble parameter (the key to the extragalactic distance scale and the age of the universe) have been measured. The first effort involved a study of Cepheid variable stars in NGC4571, done with the Canada-France-Hawaii Telescope, not the Hubble Space Telescope. The second determination of "H naught" was announced by astronomer Wendy Freedman who led a team that used the Hubble Telescope to measure Cepheids in M100, the well-known Virgo Cluster galaxy. Freedman's team finds that M100 is 1 million light-years away, and the consequent value for the Hubble parameter is $80(\pm 17)$ km per second per megaparsec. By this reckoning, as with the similar value obtained with the CFHT, the universe appears to be considerably younger than its most ancient stars, which are about 16 billion years old. These new results should fuel cosmological debate for years to come.

LEONIDS: Early on the 18th of November was also the best time to watch the annual Leonid meteor shower, which unfortunately was washed out due to the full Moon. Keep an eye on this shower for the next few years, though, because we are only a little more than four years away from the return of the Leonid's parent comet, P/Temple-Tuttle, which happens every 33 years.



WIND LAUNCHED: After a two-year delay to correct design and testing problems, NASA launched a satellite called *Wind* on November 1st that will study the high-speed interplanetary flow of ions, electrons, and magnetic field from the Sun known as the solar wind. The spacecraft will take up residence in a halo

orbit situated outside Earth's magnetosphere on the sunward side. The \$173-million mission is expected to last three years.

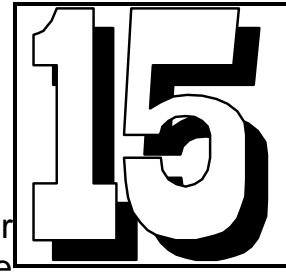
MISSING RED DWARFS : The big astronomy news this week concerns nothing less than the fate of the universe itself. On Tuesday, November the 15th, two groups of astronomers announced that they had failed in independent searches with the Hubble Space Telescope to detect large numbers of red-dwarf stars. Red dwarfs were thought to exist abundantly in the outer reaches of the Milky Way and other galaxies, and in the minds of many astronomers they were a key to the so-called "missing mass" problem. Simply put, the amount of mass in stars and other luminous objects we see represents no more than 10 percent of the matter needed to keep structures like spiral galaxies together. The other 90 percent, termed "dark matter," must exist as dim red dwarfs or as some exotic undiscovered form of particle. The dwarfs were considered too dim for ground-based telescopes but within the grasp of the HST. So where is the missing mass? Researcher John Bahcall, who led one of the teams, says the ongoing mystery is "the most fundamental problem we have in astronomy today, and certainly the most vexing problem that we have in particle physics." Among its other ramifications, if the dark matter simply does not exist -- if all the matter we see is really all there is -- then the universe will expand without end.

NO LUNAR ICE?: Last March the news and computer networks were abuzz with word that the Clementine spacecraft -- then in orbit around the Moon -- had discovered water ice on the floor of perpetually shadowed craters at the lunar poles. Recently, at a meeting in early November, scientists reported that the preliminary analysis of Clementine's radar search for water on the Moon is still inconclusive.

PENUMBRA OBSERVED!: A penumbral eclipse of the Moon occurred on the night of November 17th, with mid-eclipse at 10:44 PST on the 17th. David Levy says he and Peter Jedicke barely detected a dusky appearance of the Moon's northern limb, even though that area was deep in the penumbral shadow.

PGAS DIRECTORS

by Matthew Burke



At the last PGAS Executive meeting the Director positions were assigned, and their jobs for the 1994/95 year were discussed. The following is the results of that meeting:

Technical Director: Bob Nelson has been voted in as the PGAS Technical Director. The primary duties of the Technical Director are:

- Supervise Maintenance of all mechanical equipment and observing equipment for the Observatory.
- Formulate a long term plan for additions and improvements for the Observatory.
- Receive all Suggestions/Ideas for the Observatory from Club members. So if anyone has any neat ideas concerning equipment or additions for the Observatory please talk to Dr. Bob!

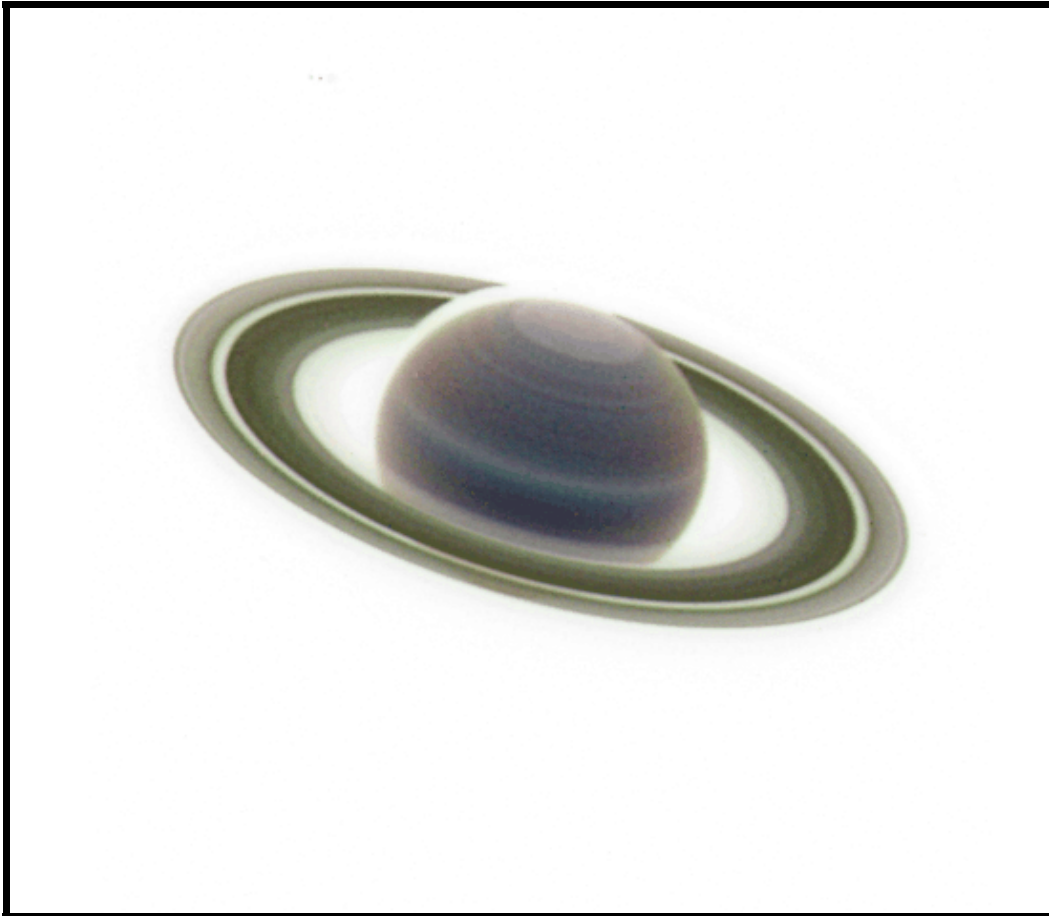
Observing Director: Jon Bowen has been voted in as the PGAS Observing Director. The primary duties of the Observing Director are :

- Maintain an inventory of all Club equipment and track location of all club equipment.
- Organize all public tours at the PGAS Observatory.
- Create a generic Public tour for club members to follow.
- Promote the PGAS at the Observatory.
- Be available to club members to answer questions on the location of club equipment. Assign club equipment to members. If you want to borrow any club equipment, please call Jon!

Promotional Director: Orla Aaquist has been voted in as the PGAS Promotional Director. The primary duties of the Promotional Director are:

- Promote the PGAS to the general public through public talks & demonstrations.
- Promote the PGAS to potential sponsors.
- Act as a contact person for club member's fund raising ideas. If you have an idea for how to raise \$\$\$\$\$, please call Orla (964-9626)

The Image Gallery



SATURN

Saturn dominates the evening sky. At the end of November it is at quadrature which results in the planet's shadow on the rings being at its most prominent in a telescope, giving a three-dimensional appearance.

In the above image, the rings show a large tilt towards the earth. At the moment, the apparent inclination of the rings is much lower and decreasing. Sometimes next year the rings will appear edge on and disappear from view for a few days as the earth crosses Saturn's ring plane. This happens every 13 to 15 years.