

June 1994

Issue #49

the  
**PeGASus**

Newsletter of the  
The Prince George Astronomical Society



The PGAS meets next on Saturday  
June 25 at 5 PM at the  
OBSERVATORY for a BBQ.  
(see Monthly Meetings for details)

**INSIDE :**

|                           |    |
|---------------------------|----|
| Editorial Comments        | 3  |
| Monthly Meetings          | 4  |
| Summer Astronomy          | 5  |
| 1993-94 PGAS Activity     | 6  |
| 1994 Mt. Kobau Star Party | 7  |
| Electronic News           | 12 |
| In the Sky                | 15 |



### ***The PeGASus***

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

***Deadline for the  
September issue is  
Friday, September  
16***

Send correspondence to  
The PGAS  
3330 - 22nd Avenue  
Prince George, B.C. V2N 1P8  
or  
**[Aaquist@cnc.bc.ca](mailto:Aaquist@cnc.bc.ca)**

## Prince George Astronomical Society Executive, 1993/4

President

Orla Aaquist 562-2131/964-9626

Vice President

Bob Nelson 562-2131/563-6928

Secretary

Jon Bowen 563-9869

Treasurer

David Sundberg 562-5774/6655

Members at Large

Ted Biech 562-2131/564-2838

Matthew Burke 563-2162

### **Nominated Positions**

*Technical Director*

Bob Nelson

*Observing Director*

Jon Bowen

*Promotional Director*

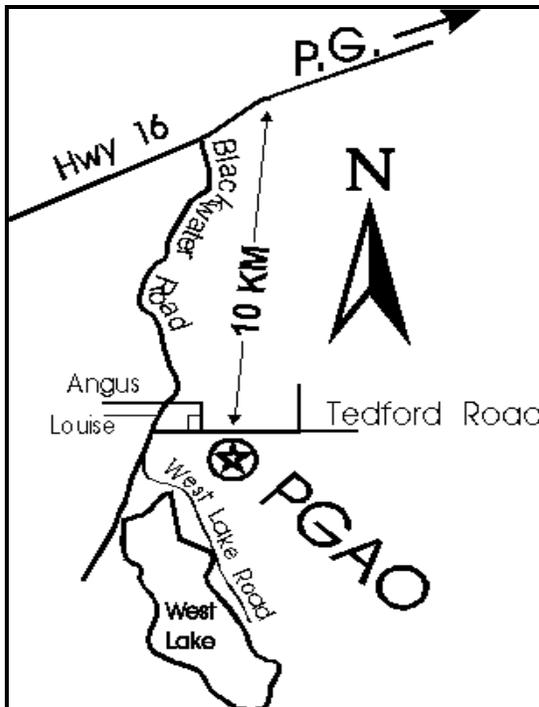
Orla Aaquist

*PeGASus Editor*

Shannon Austman

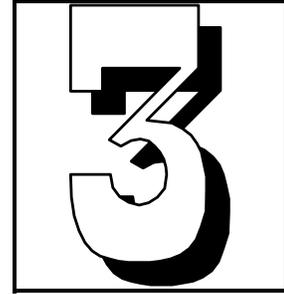
*Librarian*

We need one!



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 Comments



Summer is here and so is our last issue of *the PeGASus* for the season. You will see the next issue in September.

This month's meeting is special, so please pay attention.

**It is being held on SATURDAY, June 25 (rather than on Wednesday, June 29); it will be held AT THE OBSERVATORY (rather than in the Physics Lab at CNC); it starts at 5 PM (rather than 7:30 PM); it is a pot luck BBQ.**

There are a few more details in the Monthly Meetings section of the newsletter.

Also, there will be no regular meetings during the months of July and August this year. However, this doesn't mean that astronomy is over for the summer, but you do have to stay up longer to enjoy it. I was out at the observatory last night until 11:30, and I could still see the evening glow of the sun on the north-western horizon when I left. The article on '*Summer Astronomy*' in this issue provides some options.

Remember, the people who keep the observatory open are you, the PGAS members. So if you want some astronomical activity at your site during July and August, just get a hold of a *key* member. In the last issue, I included a 'PGAS Mailing List' on page 5. Members with keys are indicated on this list by a number in the last column. If you do not have a key but would like to have one, come to the last meeting and make arrangements; supposedly, there are a few available keys.

I hope you noticed our new non-white title page of the newsletter. Should I rotate colours on a random basis, or pick a colour for the year, or assign a colour to each month of the year? Gosh, it's not easy being an editor with such important decisions to make.



# Monthly Meetings

The next meeting of the PGAS will be held at the **observatory** on **Saturday**, June 25th starting 5 PM.

Yes, that's right, **5** PM, not 7:30. Why?

## **Because we are having a Barbecue.**

This is a pot-luck event. The executive will make sure that there are several grills available for you to cook your favorite steak or hamburger. Bring family and friends. Remember that the only amenity at the observatory is an outhouse. If it is clear, the meeting will extend into the late hours of the night to give everyone a chance to do some observing. Make this a successful meeting by joining your fellow PGAS members and friends at the observatory.

There will be no regular meetings during July and August; however, this does not mean that the observatory has to sit idle. It is likely, though that several key holders will be going on vacation, so you should make your contacts soon if you do not have a key but would like to observe during July and August. Why not come to the next meeting and discuss this with the other members.

Last month, **Alan Whitman** talked about the *Mount Kobau Star Party* with the hope of getting some local members to attend the event this year. If you want to know more, contact Al or read the article in this issue of the newsletter. Also, last month Art Beaumont (a soon-to-be-new-member) described his sundial, and made a presentation to the PGAS of a home-made working sundial and information sheet. The sundial will be kept at the Observatory. Thanks Art for your contribution.

# Summer Astronomy

by Orla Aaquist



First of all, I want to remind you that the PGAS has an excellent H-alpha filter, and members are encouraged to take advantage of it during the '*warm and sunny*' summer months. Get out and count some sunspots. Ted Biech and I are planning to take the filter and our GPC8 to Mount Kobau on August 10 to 14. If this will interfere with your observing plans, please let us know.

The June meeting will be a barbecue at the observatory (details inside). We are trying to make this a social event, so come out and mingle with other members and friends of the club.

On July 5, the PGAS, the Fraser-Fort George Museum and the MacMillan Planetarium are hosting a public star party at the museum in Fort George Park. The MacMillan Planetarium's travelling (25 inch) telescope will be there along with their StarLab, which is an inflatable planetarium. Tell your friends and neighbours to bring their kids to this event.

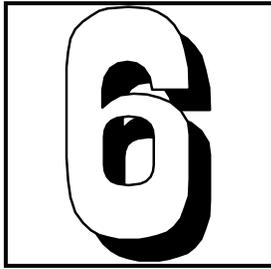
Between July 16 and 22, comet SL-9 will crash into Jupiter. Matthew Burke has much of the information on this event, so give him a call if you want to observe this event at the observatory.

The Mount Kobau Star Party (I got the spelling right this time) runs from August 10 to 14. Al Whitman gave an informative description of this event at our last meeting, and you can give him a call if you want to know more details. I have a few brochures from last year's event and I have a registration form and information brochure from the Mt. Kobau Astronomical Society. The contents of this brochure is given in the article on page 7 of this issue. If you would like to have a look at the original (it does have a map), come to the next monthly meeting **at the observatory on June 25**. Ted Biech, Shannon and I are planning to attend. It would be great to have some company.

Last year, we held a Perseid meteor shower watch at the observatory. Even though it was cloudy, about 100 visitors showed up. If there are any members who would like to run this event again this year, please feel free to do so. The chief organizers of last year's event seem to be doing other things in August. Two of us are going to Mount Kobau.

Remember that the PGO is available to members all year. Activity at and access to the observatory depends upon you, not the executive or the few members who use the facility and our equipment on a regular basis. So,

**Have an astronomical summer!**



# 1993-94 PGAS Activity

by Orla Aaquist

The PGAS has been active for the last year. Just how active? Because of our grants from the *Science Council of BC* and the former *Ministry of Advanced Education, Training and Technology*, we have been keeping track of our activity. For future funding of the club, we should continue to do this. We have two activity logbooks:

1) The *PeGASus Project Logbook*, which was started on February 16, 1993, records all of the club's activities external to the observatory. These activities include such things as visits to schools, camps, cub/brownie meetings and special events functions such as CNC's open house, astronomy day at the museum and solar eclipse viewing at the Civic Centre.

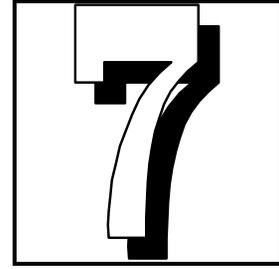
2) The *Observatory Users' Log*, which was started on August 6, 1993 when the observatory was first opened to the public, records all observatory activity. These activities include such things as construction, members' observing sessions and public viewing hours.

If you use the observatory for any reason, please fill out the *Observatory Users' Log* and indicate your activity and the duration. This book is a looseleaf binder kept on the tables in the classroom. If you make any presentation on behalf of the PGAS that is not at the observatory, make sure that the activity is recorded in the *PeGASus Project Logbook*. At the moment, I am the keeper of this book because I have been doing most of the community presentations; however, Jon Bowen and Matthew Burke are also quite active.

A summary of the statistics from these two sources over the last year is listed below. The DAYS column lists the number of days over which the activities were held, the HRS column tallies the total number of hours spent on the activity, the MHRS column is the total man-hours spent on the activity, and the PLE column is the total number of people which 'attended' the activity.

| <u>ACTIVITY</u>           | <u>DAYS</u> | <u>HRS</u> | <u>MHRS</u> | <u>PLE</u> |
|---------------------------|-------------|------------|-------------|------------|
| School/Cub/Brownie visits | 24          | 50         | 50          | 600        |
| Public Events             | 14          | 70         | 220         | 2500       |
| Public at Observatory     | 40          | 170        | 400         | 600        |
| Members using Observatory | 52          | 180        | 540         | N/A        |
| Construction              | 41          | 180        | 620         | N/A        |

# The 1994 Mount Kobau Star Party



*from the 1994 Mt. Kobau Astronomical Society's  
Information Brochure.*

***The Mt. Kobau Astronomical Society is dedicated to the preservation of Mount Kobau as an astronomical sanctuary. Its main purpose is to organize the annual Mount Kobau Star Party. Registration fees go entirely towards maintenance of the MKSP.***

Held every August near the dark-of-the-moon, the Mt. Kobau Star Party (MKSP) is entering its eleventh year of mile-high observing. The summit of Mt. Kobau is nearly 2000 m (about 6500 ft.) above sea level; summer days are often warm but the coal-black nights are usually cool, sometimes very cold.

The mountain top is virtually a wilderness area with a "pack-it-in, pack-it-out" camping policy. But the reward for such severity is access to the clearest, steadiest sky in the desert-like South Okanagan. Each year, over 150 dedicated deep sky enthusiasts trek to Mt. Kobau, dotting it with tents, trucks and telescopes.

The MKSP is geared to those who are prepared to 'rough it' in the pursuit of smog-free star watching. On Mt. Kobau, civilian conveniences are exchanged for the necessary Spartan rigours familiar to serious observers: dim red lights at night, restricted noise during the morning sleep, limited amenities, and mountain-top isolation.

However, the star party will again operate the

***. . . . Continued on page 10***

# Announcements

**The Natural Heritage Shop** (2805 27th Street, Vernon, BC, V1T 4W3) and **Sirius Science & Nature** ( Orchard Park Centre, Kelowna, BC) have become full dealers for Meade and Tele Vue in addition to their regular dealerships for Celestron, Bausch & Lomb, Omcon, Vixen and Zeiss. Call Nancy or Gordon at 542-4367.

## FOR SALE

**The following item is listed for sale in SkyNews, May Issue**

16" Equatorial Newtonian, F/5 (80" F.L.), Byers Setting Circles. Full-thickness mirror of zero order (zero expansion) glass from Schott, Germany. Hand ground, polished and figured to 1/8 wave. Low profile focuser. \$1250 firm.

H.H. Langstaff  
Site 4, Comp 4  
R.R. 2, Chase B.C., V0E 1M0  
(604) 679-3887

## Mount Kobau Star Party

Registration forms will be available at the June meeting (Saturday, June 25 at the observatory). Information about accommodations, activities, and a map is also available. See article in this issue for more information.

## FOR SALE

**The following items are listed for sale in the OK Skies, June Issue**

**Bausch and Lomb** 20 X 80 binoculars, F.O.V. 2.7 degrees. Three years old, good shape, includes case and tripod adaptor. Greg Mustard, 497-5588.

**Model 2080 Meade SCT** with electric drive (no computer) with sturdy Bausch and Lomb tripod, equatorial wedge, 6 X 30 mm finder, diagonal prism, 7mm Televue, 13mm & 32 mm Plossl eyepieces. T-Pentax adaptor ring. New hard-bound Tirion and Uranometria 2000 atlases. Write to Fred Hackney, RR 1, Site 16, Comp. 17, Chase BC. V0E 1M0.

**Ideal traveller's telescope**, the Edmund Astroscan 2001. Like new with many accessories, including 3 RKe eyepieces, 2.5X Barlow, image erector & camera adaptor. If new, these items would total over \$1,000. Yours for just \$600. Jim Failes, 763-6962.

## Welcome to the Club!

Donovan Unrue and family  
&  
Dr. Ahmed Hussein



Red Light Grill to help make life on Mt. Kobau a little easier. The canteen is staffed by members of the Okanagan Astronomical Society.

The 1994 MKSP will also feature the usual speakers, contests and other daytime events. The best feature of all is the registration fee, which has not changed in eight years.

When checking in, participants receive a registration sticker for their vehicle, a souvenir button for their shirt, and the annual MKSP program booklet. Then it's off to your favourite Kobau observing spot.

The stars await you.

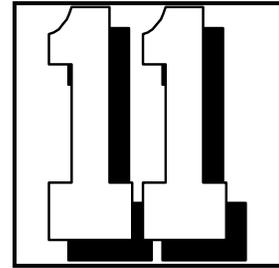
The MKSP 1994 includes afternoon speakers featuring respected amateur astronomers of the continent's pacific northwest region, astrophotography contests of prints taken since last MKSP, astro-swap of astro-stuff you no longer need, community astronomy with the MacMillan Planetarium's 25" reflector, door prizes made up of astro-gadgets, books and accessories, light meals at noon and 6 PM served by the Red Light Grill, telescope-making contests, and the Perseid meteor shower which happens to coincide with the 1994 MKSP.

While most MKSP regulars prefer "roughing it" and camp on the mountain, some will choose to stay in the nearby resort town of Osoyoos. The area is a popular vacation spot, and early reservations are advisable. We can recommend the Mt. Kobau Motel (604-495-7322) which is on the extreme west edge of town. It's the closest motel to the Mt. Kobau observing site, and the friendly staff puts up with astronomers sleeping in!

There are many other motels close to the always active Osoyoos Lake, and most have excellent facilities. Further information can be found in the 1994 BC Accommodations Guide, available from tourist bureaus

and travel agents.

Mt. Kobau is located in south-central BC, an easy day's drive from Vancouver or Spokane. The Kobau access point is about 400 km (250 miles) east of Vancouver, on Highway 3. The gate is always open and is marked by a sign labelled "Kobau Lookout Forest Service Road". The sign is posted on a crest of the highway, about 11 km (7 miles) west of Osoyoos, an Okanagan resort town near the BC-US border (at Oroville, Washington). The drive to Mt. Kobau from Highway 3 is a little like the long journey of starlight to the Earth. It's smooth sailing until the last small fraction of the distance! The bumpy, dusty ride to the summit lasts only 20 km (12 miles), and any kind of family car can make it, but you are advised to go slow. Flying stones can puncture tires and mufflers. Expect 30-45 minutes for the ascent.



The registration fees are as follows

- \$10 for 1 person, 1 night
- \$20 for 1 person, 2 or more nights
- \$35 for 1 couple, 2 or more nights
- \$40 for 1 family, 2 or more nights

Make your cheque payable to  
**Mt. Kobau Astronomical Society**

To pre-register, send your name, address and a  
cheque to

**Peter Kuzel, Registration, MKSP,  
4100 25th Avenue,  
Vernon, B.C., Canada  
V1T 1P4**



# Electronic News

Here is some astro-news which has reached us through ever-increasing active electronic networks. Most items have been severely edited for printing in this newsletter. For details, contact the PeGASus editor.

**HUBBLE'S SUPERNOVAE:** New observations of supernovae made with the refurbished Hubble Space Telescope have left astronomers baffled. Images of the region around Supernova 1987A, which exploded in the Large Magellanic Cloud seven years ago, show two bright, intersecting rings unlike any seen before in **any** celestial object. The oval rings -- each a couple of light-years in diameter -- are mirror images of one another, but the axis of symmetry does not pass through the supernova. At a NASA press conference on May 19th, supernova researchers could not agree on what formed the unique structures.

**THE CLEMENTINE SPACECRAFT** has produced the best map of the moon yet. This map is global, including the little-studied polar regions. It is multi-spectral: shot at 11 different wavelengths, the pictures provide information about the mineral compositions and the ages of moon rocks. And it has good spatial resolution: the vertical topography of the moon, for example, was measured to within 100 m, an improvement by a factor of 10 over previous maps. This accuracy permitted an extensive study of the South Pole-Aitken basin, the deepest (12 km) and largest (2500 km across) impact basin in the solar system.

**CLEMENTINE'S FATE:** On May 7th, during a dress rehearsal for a flyby of minor planet 1620 Geographos, the Clementine spacecraft had a serious malfunction that left it spinning 80 times per minute, with no attitude-control gas and seemingly no way to slow it down. But, with a little help from Earth's magnetosphere, controllers will gradually despin the spacecraft. Clementine will then continue to fulfil its primary objective of electronics testing. Except for its steering gas, the spacecraft is otherwise healthy.

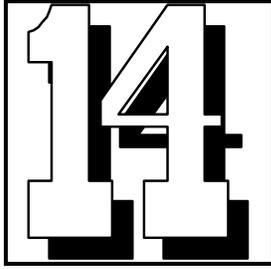
**HUBBLE CONFIRMS EXISTENCE OF MASSIVE BLACK HOLE AT HEART OF ACTIVE GALAXY:** Astronomers using NASA's



Hubble Space Telescope have found seemingly conclusive evidence for a massive black hole in the centre of the giant elliptical galaxy M87, located 50 million light years away in the constellation Virgo. The discovery is based on velocity measurements of a whirlpool of hot gas that is orbiting around the black hole in the form of a disk. The presence of the disk, discovered in recent Hubble images, allows for an unprecedented, precise measurement of the mass of the object at the hub of the disk. It weighs as much as three billion suns, but is concentrated into a space no larger than our solar system. "If it isn't a black hole, then I don't know what it is," says Dr. Holland Ford of the Space Telescope Science Institute and The Johns Hopkins University in Baltimore, Maryland.

WHEN THE FRAGMENTS OF COMET SHOEMAKER-LEVY strike Jupiter one after the other in mid-July, what will we see? A panel of scientists, addressing this subject at the Spring Meeting of the American Geophysical Society in Baltimore this week, agreed that a lot depended on the size of the bang. Hubble Space Telescope scientist Harold Weaver said that his best estimate of the size of the larger comet chunks was 1-2 km. Mordecai-Mark Mac Low of the University of Chicago has performed computer simulations which show that the fireball of hot gas (not unlike that of a nuclear bomb) resulting from the breakup of comet fragments in Jupiter's atmosphere will rise above the cloud tops. A 1-km fragment may well trigger an explosion equivalent to a million nuclear bombs; the fireball for such an event, Mac Low believes, might be visible above the limb of Jupiter even though the actual impact site will not yet have rotated into view. Drake Deming of NASA Goddard discussed the sound waves (accounting for as much as 30% of the impact energy) that will move through Jupiter's atmosphere following each impact. Such waves would eventually refract upwards into Jupiter's stratosphere where they might be imaged by infrared detectors on Earth.

TRANS-NEPTUNIANS REACH 12: This month four more tiny objects have been discovered beyond Neptune in Pluto-like orbits, raising the total to 12. Two of the finds were by Jane Luu and David Jewitt, who made the first such discovery in 1992. Until recently they had worked only with a 2.2-meter telescope in Hawaii; but they made their latest discoveries with a 1.5-meter reflector at Cerro Tololo, Chile. Another team of astronomers picked up the other two, using the 2.5-meter Isaac Newton telescope at La Palma in the Canary Islands. Travelling at the very edge of the known solar system, all 12 objects take from 180 to



310 years to travel around the Sun, compared to Pluto's 248. All are extremely faint, with visual magnitudes between 22 and 25, so they must be much tinier than Pluto itself. They appear to be following nearly circular orbits, inclined from 1 to 18 degrees to the ecliptic. Earlier this month, Brian Marsden of the Minor Planet Centre in Cambridge, Mass., suggested that at least four may be locked in a 2:3 resonance with Neptune (just like Pluto itself), assuring their orbital stability for millions of years.

NOVA OPHIUCHI 1994: A 7th-magnitude nova has been discovered in Ophiuchus by a number of Japanese observers. It was first seen on photographs taken by Akihiko Tago on June 1.6 and 2.7. Since then it has apparently dimmed to near 8th magnitude. The nova's position, in equinox 2000 coordinates, is right ascension 17h 35m 45s, declination -19d 19.6'.

BIG STAR LOSES BIG IN LMC: At a recent meeting of the American Astronomical Society, NASA astronomer Sally Heap showed the spectrum of a 60-solar-mass star in the Large Magellanic Cloud. Before Hubble was fixed, the star couldn't be studied in detail because it lies in a dense clump of stars that all blurred together. But the refurbished telescope was able to single it out. Heap's remarkable spectrum bears the telltale signature of a stellar wind so powerful that the star will likely dwindle to just a few times the mass of the Sun before it eventually explodes in a supernova. The end result will surely be a neutron star, not the black hole that astronomers had assumed would form from such a massive progenitor.

BLACK HOLE IN M31?: Hubble seems to have bagged a big one in M31, the Andromeda Galaxy. Yichuan Pei of the Johns Hopkins University presented spectra of the double nucleus revealed in earlier Hubble images of the Milky Way's sister spiral. They show that stars are whipping around the fainter nucleus, which appears to be a point source, at several hundred kilometres per second, implying a mass of 3 million Suns packed into a volume no bigger than our solar system. But M31's black hole is no match for the one Hubble found a couple of weeks ago in another galaxy, M87 in Virgo. That one is 3 **billion** solar masses.

WATER IN MARKARIAN 1: Astronomer James A. Braatz announced that he and two colleagues have detected the presence of water in the galaxy Markarian 1, located some 200 million light-years away in the constellation Pisces. Ordinarily, the telltale emission would be too weak to observe over so great a distance, but Markarian 1 contains a dense cloud thought to surround a black hole at its core. Markarian 1 ranks as the most distant water maser yet discovered.

# In the Sky

*by Alan Whitman*



The big event this summer is, of course, the collisions of the fragments of Comet Shoemaker-Levy 9 with Jupiter between July 16th and 22nd. However, since this has been covered in great detail in all of the astronomical magazines and newsletters (including this one), I will refer you to those sources. I rather doubt that we will actually see much visually but watch anyway as nobody really knows whether it will be spectacular or not.

The first quarter moon passes Jupiter on July 16th and August 12th.

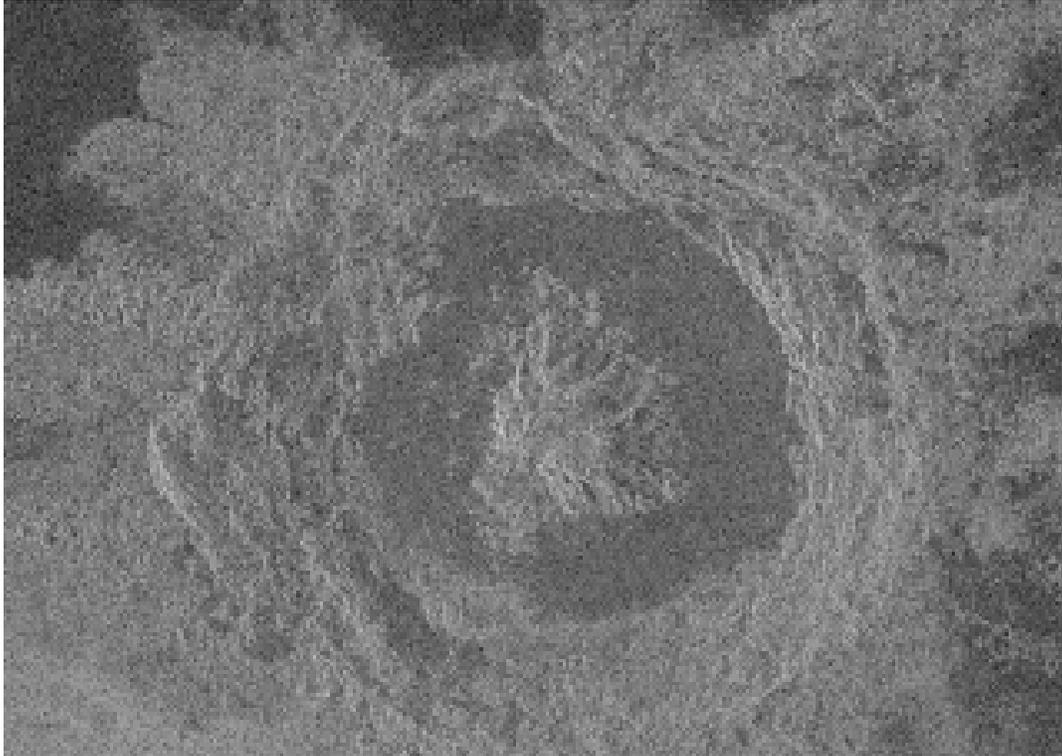
Venus continues to dominate the western sky during evening twilight. It passes only one degree above Regulus on July 10th and will still be nearby when the crescent moon joins the scene on the next two evenings, affording a photo opportunity. On August 10th, the crescent moon passes 3 degrees south of Venus. Venus passes 0.7 degrees south of Spica on August 31.

A spectacular occultation of magnitude 3.8 Mu Sgr occurs on August 16th at about 11:01 PM PDT, near the lunar south pole. Mu has a magnitude 7 companion at only 0.01" which might be revealed by the occultation. The moon is gibbous, four days before full moon.

The Perseid meteor shower peaks on the night of August 12th to 13th. The shower should be of above average strength as its parent comet passed Earth only a couple of years ago. While the number of meteors was above average last August, the predicted meteor storm failed to appear. At least one astronomer then announced that the orbital calculations had been in error and the meteor storm would be in August, 1994. It's worth watching for, you never know. Personally, I think our chances of seeing a memorable Perseid shower are better than our chances of seeing much visually from the cometary impact on Jupiter!

Canada's premier amateur gathering, the Mount Kobau Star Party above Osoyoos, runs August 10 to 14. It thus offers a chance to observe the Perseids at a superb dark site amidst fields of telescopes.

# The Image Gallery



I was out observing at the PGO and I just happen to look at Venus right after sunset. What a sight! The clouds (on Venus) cleared momentarily. I attached the CCD camera. Using eyepiece projection, I cranked up the magnification, switched on our adaptive optics system, and took this magnificent picture.

**N O T !**