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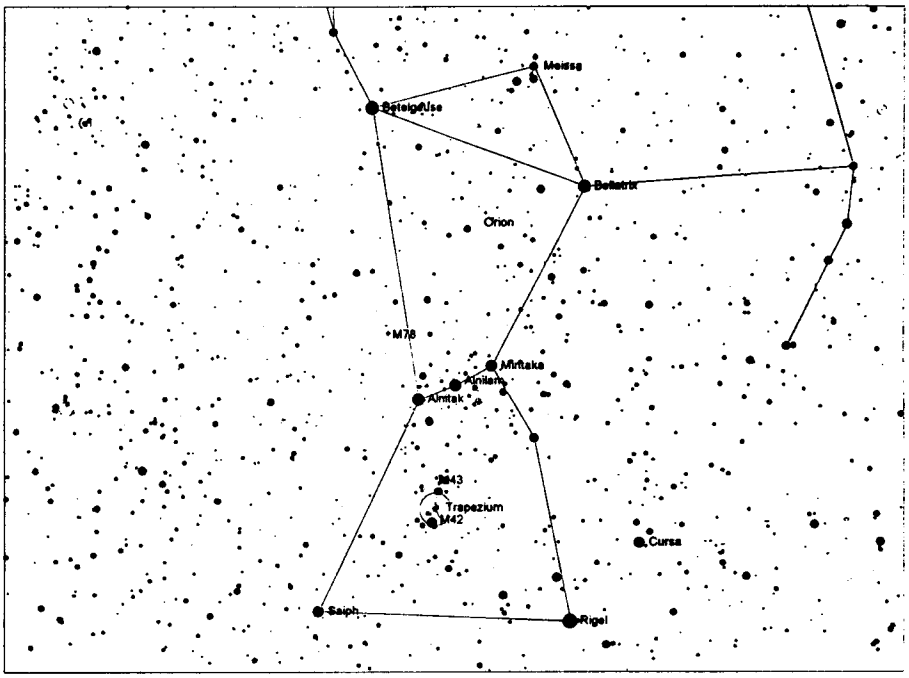
SASKATOON SKIES



Orion...Hunter of the Stars

"Begirt with many a blazing star,
Stood the great giant Algebar,
Orion, hunter of the beast!
His sword hung gleaming by his side,
And on his arm, the lion's hide,
Scattered across the midnight air
The golden radiance of its hair..."

Longfellow's "Occultation of Orion"

Saskatoon Skies is a publication of The Saskatoon Centre of the Royal Astronomical Society of Canada.

Minutes of the February Executive Meeting **7:00 PM, Feb. 22, 1995 Room B-10, Health Sciences Building, U of S Campus**

Present: Ed Kennedy, Richard Huziak, Scott Alexander, Sandy Ferguson, Al Hartridge, David Cornish, Merlyn Melby, Bill Hydomako

1. Meeting called to order 7:08 PM.
2. Mike Williams and Garry Brett send their regrets for non-attendance.
3. Jim and Rick to approach Nelson Rystrom about the future of the Observatory.
4. Observer's Group report. Jan. 28 was clear with good attendance and several new people.
5. New Observatory Committee. A potential property was visited by R. Huziak, B. Hydomako and G. Brett. Too close to road, but good try.
6. Annual reports and financial statement sent to National on time! Jim Young to prepare an obituary for G. Patterson for National publications.
7. National President, Doug Hube speaks tonight.
8. Binocular Beginners class. Report.
   - 9 people showed up for the first class. We had one class so far.
9. Temporary members report.
   - We have a total of 15 temporary members. We are planning to have a gala O.G. meeting on April 1. We need to have more executive and experienced members out.
10. The National Publications Committee have passed on a copy of the proposed "Astronomy Canada" for review. Comments?
11. Rick Huziak still to send Terence Dickinson a congratulatory note from the Centre.
12. New business.
   - David Cornish would like to take on a task of raising money for a large trailer mounted telescope to use for star nights.
13. Meeting adjourned 7:52 PM.

Minutes of the February General Meeting **8:00 PM, Feb. 22, 1995 Room A-226, Health Sciences Building, U of S Campus**

1. Meeting called to order 8:04 PM. Members, guests and National President Doug Hube welcomed.
2. Observer's Group report. Jan. 28 was well attended. Remember the `rain dates' if the next OG is clouded out.
3. There is a lecture and starnight at Brightwater Camp on Friday at 7:30PM. Volunteers are welcome to bring scopes.
4. Binocular Beginners class. Report.
5. Report from the New Observatory Committee and Telescope Committee
6. New Business
   - Discussion on David Cornish's fundraising proposals.
7. Speaker for tonight 8. Dr. Doug Hube - The Edmonton Centre's Grazing Occultation Expedition to Ft. Nelson BC.
   - Introduction by Ed Kennedy.
9. National Business to discuss with Doug Hube
   a. National Council Meeting (Feb. 18)
   b. Messier Certificate rule changes
   c. Astronomy Canada and the future of the Journal
10. Last call for new business
11. Meeting adjourned 10.05 PM.

What Happened in History in March....Editor

1 USSR Venera 3 in 1966 was the first probe to land on Venus.

2 In 1968, the USSR attempted to send Zond 4 on what probably was a flight around the Moon. It reached only parking orbit near Earth and fell back into the atmosphere March 3, 1968.

3 James A. McDivitt, David R. Scott and Russell L. Schweickart, in 1969, flew the lunar module for the first time on Apollo-Saturn 9.

3 In 1972, the interplanetary probe Pioneer 10 left the U.S. on a 620 million mile flight through the Asteroid Belt to Jupiter, passing the giant planet December 3, 1973. The craft is leaving the Solar System.

5 USA Voyager 1 flew near Jupiter in 1979.

6 USSR Vega 1 in 1986 sailed near the comet Halley.
7 Astronomer John Herschel was born in 1792
8 Japan's Suisei flies past Comet Halley in 1986 photographing its atmosphere with ultraviolet camera, watching the nucleus rotate.
9 USSR Vega 2 in 1986 flies near comet Halley.
10 Rings around the planet Uranus were found in 1977.
10 In 1986, Japan's Sakigake flies past comet Halley, studying solar wind and magnetic fields, detected plasma waves.
11 In 1960, the interplanetary probe Pioneer 5 left the U.S., orbiting the Sun between Earth and Venus, setting a record by sending radio signals 20 million miles.
13 Uranus is discovered in 1781 by William Herschel.
13 Astronomer Percival Lowell was born in 1855.
13 In 1986, European Space Agency's Giotto flew closest of several probes from Earth to Comet Halley, probed atmosphere, magnetic fields, sent back best pictures of the comet's nucleus.
14 Albert Einstein was born in 1879.
16 Robert Goddard in 1926 launched his first liquid-fueled rocket.
16 In 1966, Neil A. Armstrong and David R. Scott, Gemini-Titan 8, first docking of one space vehicle with another. The flight ended when controls broke down.
18 First spacewalk, by USSR cosmonaut Aleksei A. Leonov in 1965, lasted 10 minutes. He was with Pavel I. Belyayev in Voskhod 2.
21 In 1965, U.S. Ranger 9 flew to the Moon, took 5,814 photos and crashed at Crater Alphonsus.
22 Sally K. Ride in 1983 becomes the first U.S. woman in space, riding shuttle Challenger.
23 The first photograph of the Moon was made in 1840.
23 Virgil I. Grissom and John W. Young in 1965 flew Gemini-Titan 3, the first manned spacecraft to change path in orbit.
24 Astronomer Walter Baade was born in 1893.
25 Saturn's moon Titan discovered in 1655 by Christiaan Huygens.
27 The asteroid Pallas was discovered in 1802 by Heinrich Olbers.
27 Yuri A. Gagarin, the first man in space, died in an airplane crash in the USSR in 1968.
27 In 1969, the interplanetary probe Mariner 7 left the U.S. for Mars, coming within 2,000 miles of the Red Planet August 5, 1969. The probe sent back data and TV pictures.
27 USSR launched Venera 8 to Venus where it landed July 22, 1972, sending atmosphere and surface data 50 minutes. Surface pressure and heat crushed and burned the instrument capsule.
27 USSR Mars probe Phobos 2 stopped transmitting to Earth, 1989. 28 The asteroid Pallas was discovered in 1802 by Heinrich Olbers.
28 The asteroid Vesta was discovered in 1807 by Heinrich Olbers.
29 First planet Mercury flyby, by U.S. Mariner 10 in 1974.
31 In 1966, USSR Luna 10 flew to the Moon, going into orbit around that natural satellite of Earth April 2, 1966.

Saskatoon In Space!....by Rick Huziak

We should be proud of the achievements of a man from Saskatoon who has made the final cut into the NASA Astronaut Candidate program. Below is a part of a NASA news bulletin extracted from Internet and edited for length.

NASA WELCOMES NEW ASTRONAUT CLASS OF 1995

Twenty-one astronaut candidates will arrive at the Johnson Space Center (JSC) March 6 to begin a year of familiarization training. The ten pilot and nine mission specialist candidates selected by NASA in December 1994 will be joined by two international mission specialists.

Badged news media are invited to meet the group at 4 p.m. EST, March 6, in the mockup facility Building 9) at JSC. This will be the only availability of the candidates until the year-long training program is completed.

The following is background information on the astronaut candidates [severely edited].

Pilots:

Scott D. Altman, Lt. Cdr., USN, 35, Jeffrey S. Ashby, Commander, USN, 40, Michael J. Bloomfield, Major, USAF, 35, Joe F. Edwards, Jr., Lt. Cdr., USN, 37, Dominic L. Gorie, Commander, USN, 37,
Rick D. Husband, Major, USAF, 34, Steven W. Lindsey, Major, USAF, 34, Pamela A. Melroy, Major, USAF, 33, Susan L. Still, Lieutenant, USN, 33, Frederick W. Sturckow, Captain, USMC, 33.

Mission Specialists:

Michael P. Anderson, Major, USAF, 35, Kalpana Chawla, Ph.D., 33, Robert L. Curbeam, Jr., Lt. Cdr., USN, 33, Kathryn P. Hire, 35, Janet L. Kavandi, Ph.D., 35, Edward T. Lu, Ph.D., 31, Carlos I. Noriega, Major, USMC, 35, James F. Reilly, 40, Stephen K. Robinson, Ph.D.

Canadian Space Agency (CSA)

David R. Williams, M.D., 40, was born in Saskatoon, Saskatchewan. He earned a doctorate of medicine and a master of surgery from McGill University in 1983.

National Space Development Agency of Japan (NASDA)

Takao Doi, Ph.D., 40.

Letter from the Editor

Have you ever noticed how many excuses a person can come up with when they have to, to fit a certain situation. Well over this past weekend I realized that the only reason I have not been looking through the old scope is partly the weather and mostly me.

I was surprised when I realized that I had not looked through my scope since sometimes way back in November/94!!! Granted most of December and part of January was always under cloud but what about those nights when it was clear out? I always had something going but if I would have made the effort I could have made it out to the dark site once or twice. What's the point to this?....If you kinda feel like observing make the effort and don't be like me. Some of the best sights are out there during the winter and it would be a shame to miss them.

I got a short letter from **Stephen Light** out in Lloydminster the other day and he related the following: "A few months back when Venus was making it's prominent morning appearance it managed to hit the six o'clock news here in Lloyd. A lady in the Vermillion area awoke to a bright object shining on the eastern horizon. She whipped out here video camera and proceeded to tape it for quite some time. This UFO was shown on the news. It seems to have risen quite slowly and exhibited rainbow color shifts. Needless to say she was quite excited."

I am always looking for interesting things for the newsletter so please send in anything you find interesting. I would also like to start a section called **"Member's Scopes"** but to do this I will need your help. Alot of members never get a chance to see other members scopes up close and in the light so I am asking **EVERYONE** to send in a picture of your scope(s) to me and perhaps tell me a little about them. Each month a couple of pictures will be put in the newsletter giving the other members a chance to see some great scopes. I hope you will all send in those photo's. You can mail them to me at the address below.

When ever you send in something for publishing in the newsletter please send it on either a **3.50 DD or a 5.25 floppy.** To be put in the newsletter it **MUST BE RECEIVED by the 1st of the month.** If it is hand written please have it to me seven days before the 1st to give me time to type it out. **Anything received after the 1st of the month will be held until the next newsletter.** One note is that any time hand written copy is received there is always a chance that errors will occur when I type it out. I was informed that I left out a paragraph from the article Dr. Kennedy wrote last issue so I will put the entire article, including the missing paragraph into one of the next newsletters.....Thanks

Garry A. Brett
522 Devonshire Cres.
Saskatoon, Sask.
S7L 5W1
Ph: (306) 384-1807

For Sale...Swap...Give-a-way...Buy...Wanted

For Sale...One Meade 90mm f/11 Refractor. Comes with a 9mm and a 25mm eyepieces, right angle star diagonal, tripod with equitorial mount. This scope is like new. Price is $600.00 Call 1-882-3811 and ask for Henry Friesen.

Wanted.....965" or 1.25" eyepieces, good barlow lense. Must be quality eyepieces. Please phone Shafarz Iqbal at 374-8099 with details.

Observer's Group Meeting & the Rystron Observatory

Put these dates on your calendar and plan to attend, **April 1, April 29, June 24.**

Members are welcome to use the observatory at any time but please phone ahead. Call Nelson or Gloria Rystrom at 955-2370 before 9:00 p.m. if you intend on going out. This lets them know that someone will be roaming around their yard. If they do not answer the phone go anyway. Drive through the yard slowly, and dim your lights as a courtesy to others who may observing.

Betcha Didn't Know....Editor

The national shortage of the solid rocket fuel ammonium perchlorate (AP) has threatened to delay U.S. shuttles. NASA had been forced by the shortage to rethink its schedule, fearing some flights might have to be postponed for lack of fuel.

At the end of 1988, NASA and rocket builder Morton Thiokol had enough fueled boosters for four shuttle flights to space. The space agency was considering moving some payloads to expendable singleuse liquid-fuel rockets. In 1989, NASA said it probably had enough AP to go ahead with the full launch schedule, as planned, through 1991.

The shortage of solid rocket fuel developed when a Pacific Engineering Production Co. plant exploded May 4, 1988, in Nevada. Solid fuel will be in short supply for both civilian and military rockets for at least two years while a new manufacturing point is constructed.

Solid fuel is used in intercontinental ballistic missiles (ICBM) as well as space rockets an[] shuttle booster rockets. A solid-fuel booster caused the shuttle Challenger to explode on liftoff from Cape Canaveral, Florida, January 28, 1986, killing seven astronauts.

Public Observing at the U of S Observatory

The U of S Observatory will be open to the public Saturday evenings from 7:30 - 9:30 p.m. from October through February. Observatory assistants will be present to answer questions about astronomy and to assist in the viewing through the six inch telescope. For further information call Stan Shadick at 966-6434.

Junk Tips for Astronomers....by Don Friesen (Past Pres.)

I'd like to point out to the Saskatoon Skies readers and the R.A.S.C members to look in the local pawn shops for broken binoculars that can be purchased for next to nothing. If you take out the eyepieces and adapt them to your telescope they become an affordable way to increase your eyepiece collection and provide very crisp images of stars, planets, moon etc.

A beautiful 15.6 mm eyepiece I salvaged from and old pair of binoculars gives me excellent images bordering on superb in my Jason 60 mm refractor and 5" (13mm) R.F.T. Actually, the 60mm seemed like a new scope when I first tried it. Some of, if not all of, the eyepieces that came with my refractor were quite poor. (maybe because of the .965 dia.) After focussing the bino eyepiece to the end of the focusser I was really impressed to say the least.

Another Junk Tip is that alot of discarded (ready for the dump) photocopiers have a colour corrected enlarger lense that has an adequate focal length to make an excellent finder scope. I have also experimented with overhead projector lenses and they work fine for land views, but due to the fact they are not colour corrected give poor star images. Although you will have to experiment on your own, finding the focal length, eyepiece power etc. is fun so keep these "Junk Tips" in mind for future use.

Computer Corner....Editor

A request came in recently from Stephen Light for a copy of a good observing program for his computer. I am happy to say that I mailed him a copy of a good program the other day and he should have it by the time he reads this newsletter. Alot of our members have computers or access to one so I would like to start up a astronomy software library that could be shared with any member who might require a certain program.

Obviously a library like this would need some one to look after it and as the request for copies of software requests could be forwarded to me I would volunteer to look after it as part of my duties of being editor. I would appreciate it if **ALL OF OUR MEMBERS** who have computers would dust off there word processors and jot down all the different programs they would be willing to contribute. Please mail this list to me at my address above and once I get enough of

a list built up I will publish what is available. You can also send me a copy of the programs too. With alittle effort on all of our parts we can build up a software library that would have just about everything from A to Z in it. Thanks in advance for your response.

Deep Sky Objects for March...by Scott Alexander

This month you can try to see the open cluster M 34 in Perseus at RA 02 hours 42.0 minutes and DEC +42 degrees 47 minutes. The cluster is rich in stars with a slight central concentration towards the centre. The magnitude is 5.2 it is easy to see in binoculars just look between the stars GAMMA ANDROMEDA and BETA PERSEUS (ALGOL) to find it. The next object to look for will take a 4 to 8 inch telescope to see, these are the galaxies NGC-4485 and 4490 in CANES VENATICI.

These 2 galaxies are almost on top of each other, the galaxies almost look like they are only 1 galaxy but there are 2 of them. The magnitude for NGC-4485 is 11.9 and the magnitude for NGC-4490 is 9.8 these galaxies should be seen with a 6 to 8 inch telescope but I have seen them in a 4 inch telescope. The galaxies NGC4485, 4490 are edge-on galaxies (to me that is) (what do you think)?

The next objects to look at are the Open Clusters BE 18 and K 22.

K 22's RA is 05 hours 22.9 minutes and Declination of +45 degrees 28 minutes and BE 18 RA is 05 hours 22.2 minutes and Dec of +45 degrees 24 minutes they are nice little clusters which are right next to each other also they are close to a bright star called "CAPELLA" the main star in the constellation of "AURIGA". Good luck and clear skys.

Observing Delta Cephei for Fun and Profit

Mike Wesolowski

Those new to amateur astronomy may have heard about variable stars, may even know a little bit about them, but have little idea about how to start observing them. The intent of this article is suggest an observing project centered around Delta (δ) Cephei, a bright variable of the Cepheid class which is visible all year round from Saskatoon.

Delta Cephei is the prototype star for an important class of pulsating variable stars called Cepheids (why Cepheids are important is left as an exercise for the reader). It is bright enough to be seen with the naked eye, at least in theory - I've had difficulty finding it from inside Calgary city limits, which is where I live now (binoculars help a great deal). The range in magnitude (3.5 - 4.4) is great enough and the period (5.366 days) short enough that its behavior is obvious after a fairly short period of time, thus (in my opinion) making it quite suitable for a beginning variable star observer.

Delta Cephei can be found (with or without binoculars!) using the finder chart published in the *Observer's Handbook 1995* (page 202), or just about any other star chart that you may have. It forms a triangle with Zeta (ζ) Cephei and Epsilon (ε) Cephei, with Delta at the top of the triangle. Zeta and Epsilon can be used as comparison stars, since at magnitudes 3.6 and 4.2 respectively, they represent approximately how bright Delta Cephei is at the extremes of its range.

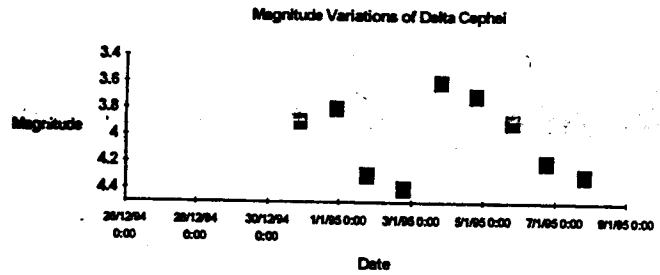
To make an estimate, compare Delta Cephei to its neighbors Zeta and Epsilon Cephei. If Delta is equal to one or the other, record its magnitude as the magnitude of the comparison star. If its magnitude lies between the two stars, estimate and record where in the magnitude range you think Delta's magnitude is. At the same time, record the date and time (including time zone) and any other factors that you think might affect the accuracy of the observation.

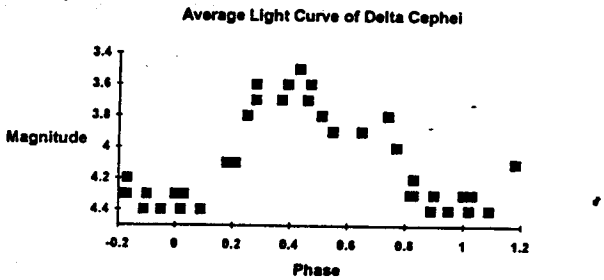
The following are some hints for making an estimate (these apply to any variable star you may be observing):

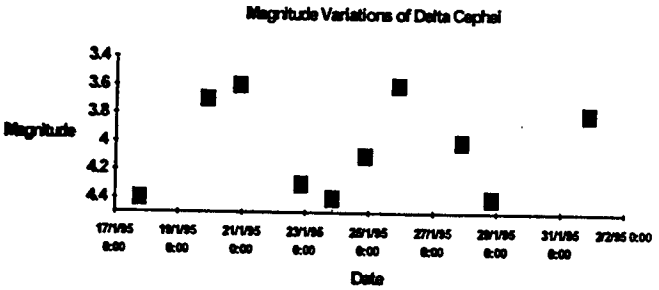
- Don't spend a lot of time with the estimate. I find that I will make an approximate judgment as to what the magnitude is within a second or two of looking at the star and then refine it a bit. If I spend too much time looking at it, however, I start to second guess myself.
- If you are using binoculars (or a telescope for that matter, for fainter variables). it sometimes helps to defocus the stars and spread the light out into disks. This is especially useful when there is a color difference between the variable and comparison star(s). It turns out the human eye can see red stars as being brighter than blue stars of the same magnitude. Spreading the light out makes the color less intense.
- Try not to let your knowledge of what the variable did before influence what you are seeing. This is especially difficult when observing eclipsing binaries (What are they? Another exercise for the reader!) when you making consecutive observations separated by 10-15 minutes.

After you've accumulated some data on Delta Cephei, what then? The obvious answer (at least to me) is to plot the date, as shown in the following figures. They show the end result of about 2 month's worth of observations by myself of Delta Cephei, from mid-December, 1994, to early February this year. The first two figures show selected data points (for periods when I was able to get more-or-less daily coverage) and illustrate that Delta Cephei can be seen to vary on a daily basis. The last figure shows a phase diagram for Delta Cephei. This reduces all of my observations to a single diagram and allows one to see what the average light curve looks like. The zero phase point on this diagram corresponds to the date and time of the first observation made.

If, after this exercise, you think you would like to continue variable star observing, you should get in touch with the American Association of Variable Star Observers (AAVSO), whose address is given in the *Observer's Handbook 1995* (page 202). They can provide information and charts for more variable stars than you could possibly ever observe. The AAVSO also collects variable star observations from amateurs all over the world and make these available to professional astronomers. In this way, amateur astronomers can make a very real contribution to the body of astronomical knowledge.







When Jim and Rick Meet Nelson and Gloria

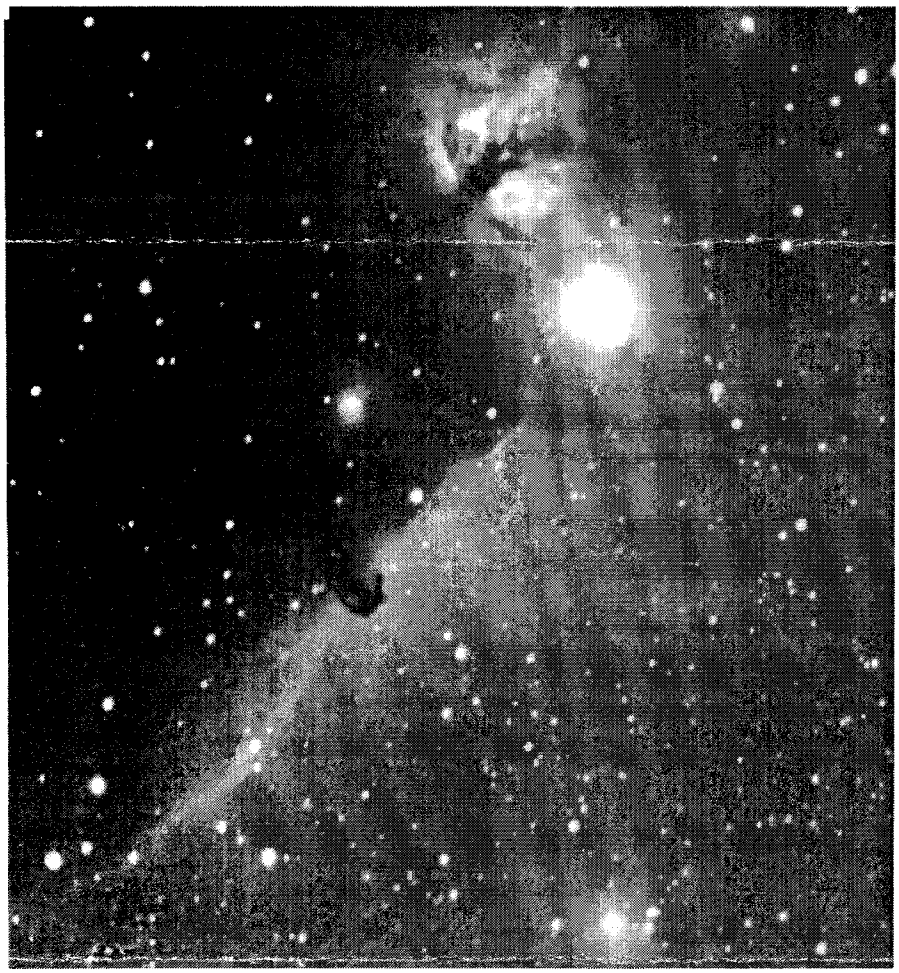
On March 6 Jim Young and I met with Nelson and Gloria Rystrom to reaffirm our agreement to continue the use of the Rystrom Observatory. Because Ed Rystrom (Nelson's dad) had recently passed away, our Centre was in the precarious position of not having a valid agreement in place. What came of our discussion was a bit of a relief. Nelson and Gloria stated that they did mind having our observatory on their farm, and that they were willing to renew the agreement for at least the next few years. The level of activity at the observatory was also no particular concern. They hear us come and go, but it is generally not a bother no matter how late, especially if they know ahead of time that someone will be out there. Also, our scheduled observer's group meetings are not a problem either, despite a great many cars showing up. The biggest complaint was that they still wish to be telephoned prior to anyone coming out. Sometimes they aren't. Members should always do this before going to the observatory. If no one answers the phone, go out anyway; this is OK. Also, if you turn off the yard light, remember to turn it on again when you leave!. At Nelson's request, we will be installing a small, directional red light on the warm-up shelter that is to be turned on when a member is out there. This is to distinguish between members using the site, and unauthorized people in the farm yard.

All in all, our meeting went very well, and we are delighted to be able to continue the use of the Rystrom Observatory, even after our new site is developed. Please remember that we are guests on the land, so treat our landlords with the respect you would expect. Thank you, Nelson and Gloria. **Rick Huziak**

ASTROPHOTO CORNER

Mar. 1995 Saskatoon Center RASC

PHOTO OF THE MONTH



THE HORSEHEAD NEBULA
B33 ORION

The best known example of a dark nebula located about a half degree south of Zeta Orionis in the long stretch of nebulosity IC 434. The Horsehead is about 1200 to 1600 light years away and about one light year across.

This object is almost impossible to see with a telescope. However they say it can be seen in telescopes as small as 6" with the use of a H-Beta filter. I've tried with the C14 +filter but could not find it.We have one member who claims to have seen it with a 4" telescope !!! ??? must have lots of Rhodopsin in those retinas.

TECHNIQUE: The above photograph is a coned down blow up taken from an original done with the Schmidt Camera 8" f1.5,Wratten # 92 filter, 30 min. exposure, on hypered 2415. The blow up was made with a computer and a digital scanner using Aldus Photostyler software to do some photoediting.The original photograph covered 6 by 4 1/2 degrees of sky and included the Orion nebula .

ASTROPHOTO TIP: To determine exposure time,in seconds, for stars at the celestial equator use the simple formula 700/f or if you are a tad more meticulous 500/f where f = focal length of the lens you are using on a STATIONARY camera.

Clear Skies and Good Guiding ———————— Al Hartridge