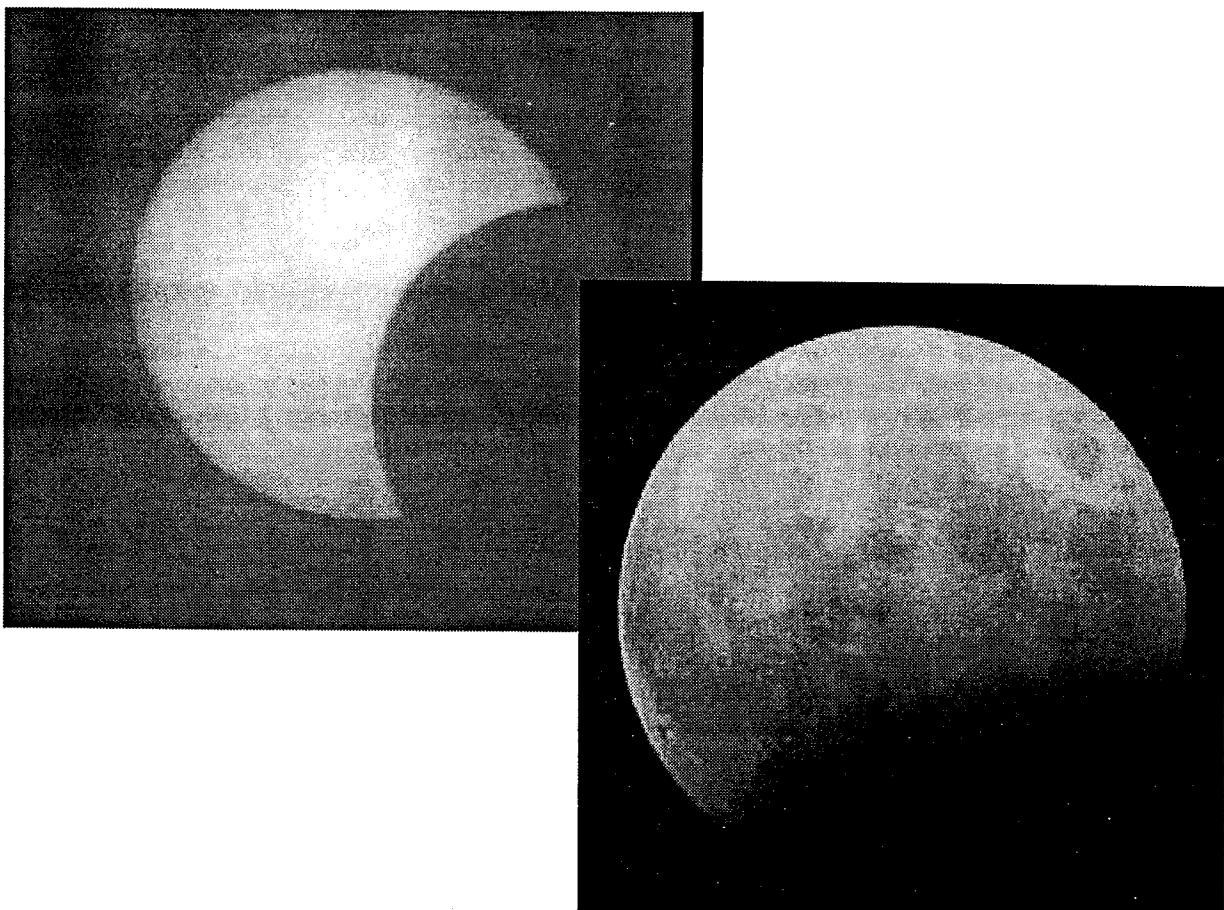


SASKATOON SKIES

Volume 24, Number 6

June, 1994



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MAY GENERAL MEETING

The May General Meeting will be held on Monday, June 20, 1994, in Room A-226, Health Sciences Building, U of S Campus, at 8:00 p.m. The presentations will include *25th Anniversary of the Moon Landing - A Look Back Through Scrapbooks* by Richard Huziak and a look at some slides of the May 24th lunar eclipse.

EXECUTIVE MEMBERS

There will be a regular meeting of the executive at 7:00 p.m. in Room B-10 on June 20.

June Observers' Group Meeting

The next Observers' Group observing session will be held on June 11 at Rystrom Observatory, with a "rain date" of June 18. Time: After 9:30 p.m. To find the observatory, drive south on hiway #11 to the Grasswood Esso station and drive-in, turn left past the KOA campground and head down the road approximately 1.5 miles to the last mailbox on the right before the railway tracks. The mailbox is the Rystrom's. Go down the driveway past two homes and around the large equipment building to the right. Be sure to dim your lights.

In addition to the Observers' Group meeting, members are welcome to visit the Rystrom site at any time provided you phone ahead. The number to call is 955-2370, ask for Nelson or Gloria. If you do not have a key, find a member who does and talk them into a trip to the dome. After you have been checked out on the equipment there you are entitled to a key of your own.

NEW EDITOR OF SASKATOON SKIES NEEDED FOR THIS FALL

As my term as newsletter editor ends with the September issue, and I do not intend on continuing for another year, we will need a new editor for next fall. Please call myself (Gord Sarty) at 374-8803 or Richard Huziak at 665-3392 if you are interested in the job. All you need is a typewriter or wordprocessor and perhaps access to a photocopy machine. Plus some enthusiasm of course!

FOR SALE: Bausch & Lomb "Criterion 8000" Schmidt-Cassegrain telescope with 5 eyepieces, a clock-drive with tripod, a 40mm finder and the book *Nightwatch* by Dickinson. \$1800. Phone Ray McCrea at 384-6279.

Cover Photo - May's Eclipses

This months front cover shows views of the partial eclipses we had in May. The solar eclipse picture was taken in Indiana (from enif.astro.indiana.edu) while the lunar eclipse picture is from cuniff@fc.hp.com (in Ohio?). The solar eclipse from Saskatoon was very similar in appearance to the view displayed on the cover. However the amount of lunar eclipse visible from Saskatoon was a little less than what is shown on the cover. We only saw the last bit of the lunar eclipse at moonrise here in Saskatoon.

Saskatoon Skies Information

Commercial vendors wishing to advertise in the "Saskatoon Skies" may do so at the following rates: \$50.00 per page, \$25.00 per half page and \$12.50 for business card ads. Individual RASC members and other parties (at our discretion) may advertise items and events for free.

Summer issue deadline is Friday, July 22, 1994. Please have any submissions in to me by then in order to be included in the next issue. Submissions may be in typewritten form or on a floppy diskette (3.5 or 5 inch size and formatted for MSDOS) preferably as ASCII files. Electronic submissions are preferred as it saves me some typing. Mail or bring your submissions to:

Gordon Sarty 422 Edmund Park, Saskatoon, Sask. S7H 0Z4 phone: 374-8803	OR	Saskatoon Centre RASC Box 317, RPO University Saskatoon, Sask. S7N 4J8
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E-mail submissions to sarty@math.usask will also be accepted. Saskatoon Skies is a monthly publication of the Saskatoon Centre of the Royal Astronomical Society of Canada.

1994 RASC Publications for Sale

ASTEROID FINDER CHARTS

for the year

1994



A publication of the
Saskatoon Centre
of the
Royal Astronomical Society of Canada
©1994

The Beginner's Observing Guide

An Introduction to the Night Sky
for the Novice Observer



Leo Enright
The Royal Astronomical Society of Canada

The new 1994 *Asteroid Finder Charts* are now available for \$5.00 each. These charts, prepared by our our Saskatoon member, Gord Sarty, make asteroid hunting very easy. They are designed to be easy to use at the telescope, being Cerlox bound with a stiff, clear cover. The charts are similar to the Comet Takamizawa-Levy finder chart printed on the last page of last months newsletter.

For deep sky hunters, Rick Huziak has prepared a booklet of observing forms called *My Messier Album*. It is useful for collecting your observations of Messier objects together and is being sold for \$1.00.

Finally, the *Beginning Observer's Guides*, 1994 edition (45 copies available) are being sold for \$9.50 each. These excellent guides are for the rank beginner or for those who instruct rank beginners. They are packed with loads of information on how to get started and what to see. They are excellent for beginning adults, school-age kids, Cubs, Guides, Brownies, and make excellent presents for up and coming amateurs. Written by a Canadian amateur, Leo Enright, for the Canadian audience. An excellent buy.

You can pick any of these up at the next General Meeting or, if you'd like any of these mailed out to you, please add \$2.00 for postage, or I'll deliver them for free anywhere in town, if you give me a call: Rick Huziak, 665-3392. All proceeds go to the Saskatoon Centre.

University Observatory Hours

The U of S Observatory will be open to the public on Saturday evenings from 10:00 to 11:30 p.m. during June and July. Visitors will be able to view Jupiter, the Ring Nebula, the Hercules Globular Cluster and other celestial objects. Observatory assistants will be present to answer questions about astronomy and to assist the public in viewing through the telescope. The observatory is located on campus, one block north of the corner of Wiggins Ave. and College Drive. For more information, call Stan Shadick at 966-6434.

Safely Viewing the Sun
An editorial

Many RASC members have been complaining in recent years about the amount of politics that has found its way into our organization. And there has been a tendency to blame the National level. From the decisions made by your executive recently on the issue of safely looking at the solar eclipse, I would have to say that the political problem might have its source at a more grass-roots level.

Specifically, the national organization was to send us some aluminized mylar glasses for handing out to the public at the time of the Solar eclipse last May 10. However, your paranoid executive voted against handing them out because they were afraid of lawsuits!

Galileo must have rolled over in his grave at that decision. It seems to me that one of the purposes of a scientific society, such as the RASC, is to dispell scientific ignorance among the human race in whatever little way we can. With widespread ignorance, there is fear and a regression to a state of society that existed in the Dark Ages. Galileo took huge risks to dispell ignorance in his time. The risks we would have taken by helping the public to view the Sun safely are trivial in comparison. But fear reigned.

I think it is the responsibility of the RASC to dispell ignorance, in this case, even if there is a little risk in doing so. If we don't take that responsibility, who will?

No one apparently. Several people across Canada were permanently blinded on May 10 by trying to look at the Sun. Could we have prevented it? Maybe, maybe not. But we should have at least tried.

If you are as outraged by this as I am, I invite you to let your president, Richard Huziak, know by phone or letter.

Gordon Sarty

Partial Solar Eclipse - May 10, 1994

Saskatoon skies dawned sludge-gray on the morning of May 10, the day of a partial solar eclipse. Eastern Canada and the maritimes were in the path of an annular eclipse, but being too far west of the centre line, we saw only the partial phases.

When I arrived just after 9:00 a.m., Gord Sarty and Joe O'Shea had already set up Rick's solar scope, Gord's 2 in. refractor with projecting apparatus and a pair of Joe's binoculars housed in a projection box, on a little plaza outside the Scotia Centre on 2nd Avenue. We thought this would be an ideal site from which to observe and we expected to get a lot of interest from everyone walking along one of the city's busiest streets. As luck (or the lack of it) would have it, we caught a very brief glimpse of the sun through our equipment at 9:15 a.m., just prior to the start of the eclipse around 9:30 a.m. Immediately thereafter, a large cloud bank came sailing in from the west! This kept anyone from observing the eclipse until around 10:20, when cloud dissipated somewhat, and enabled us to view for the first time a very hazy sun with a substantial chunk missing.

Everyone who stopped to take a look at the phenomenon was impressed. We answered a lot of questions and I noticed many people came back more than once to watch the progress of the eclipse over the few hours we were there. The cloud completely disappeared around 11:00 a.m. (maximum coverage was at about 10:45 a.m.) and from then on the views of the moon's progression over the face of the sun were quite dramatic. We had to retire Joe's binoculars, finally, as the wind became quite brisk and the box set-up was shaking badly. However, there were line-ups and small crowds on occasion for a chance to look through the solar scope and observe the sun's image on the refractor's projection plate.

Representatives from the local media turned up with their cameras to record the event. Both Gord and Joe were interviewed for the evening news by CFQC and STV, respectively, and there was also a brief glimpse of our set-up on CBC that evening as well. Of course, our Centre's favorite CFQC rep, Carol Blenkin, also turned up to check everything out and lend her support. Kerry O'Shea and Al Hartridge dropped by too, to help us out with questions and answers.

The eclipse was over by 12:15 p.m. None of us took the time to count the number of people who stopped by, but there was a good crowd and the event gave us a chance to advise of the upcoming partial lunar eclipse on the evening of May 24/25.

Sandy Ferguson

Novice's Corner - The Summer Triangle

Now that summer is almost upon us and the nights are so short (actually, here in Saskatoon there is no real darkness from around the end of May to the second week of July) you might think it would be hard to observe anything other than the moon and planets. That's not entirely so. There are a number of brighter stars and their constellations that are easy to find, even in summer twilight and even in the city. This month we introduce the Summer Triangle, and a group of three summer constellations that are easy to identify and are visible in the sky until the snow falls, giving you lots of opportunity to get to know them and the objects available within them for naked eye, binocular and telescope viewing.

The three constellations (in order of rising in the northeast/east) are Lyra (the Lyre), Cygnus (the Swan or Northern Cross) and Aquila (the Eagle). By mid-June they are all well up by 11:00 p.m. and in the sky for most of the night well into the fall. Figure 1 shows how we can again use the Big Dipper to locate the area of sky in which to find the Triangle. You will note that the brightest star in each constellation forms the corners of the Triangle, hence the name. These stars are Vega (in Lyra), Deneb (in Cygnus) and Altair (in Aquila). Figure 1 also shows a number of other summer constellations that you can try and locate. Since the Milky Way runs across the sky from the south in Sagittarius right up through the Summer Triangle, you might find it easier to locate any constellation from an area where only the brightest stars are visible (such as the city). Under really dark skies the constellations within the Milky Way tend to become lost in the myriad of stars that make up the Milky Way.

Figure 2 shows the Triangle in more detail. It is orientated as it appears at its highest point in the sky (on the meridian), which is about 1:00 a.m. and the end of June; midnight around the middle of July; 11:00 p.m. the end of July or; 10:00 p.m. the middle of August. Below are listed some features and objects to look for when observing naked eye, with binoculars or with a small telescope.

Naked Eye:

Make note of the way the constellations move across the sky. As mentioned earlier, Lyra rises first. Cygnus, next to rise, rises on its "side". Then comes Aquila. As they move across the sky throughout the night and the season, they right themselves and Cygnus appears like a true cross. Finally, when they set in the west, Aquila disappears first, then Lyra and finally Cygnus disappears on its "feet" or "neck" depending on whether you see it as a cross or a swan! If you are away from city lights you will notice the beautiful band of the Milky Way as it stretches across the summer sky. This, of course, is one of the arms of our own galaxy as we observe it from our place within the galaxy. The Milky Way is visible all year around but it is most spectacular in the summertime. This is because we are facing the center of the galaxy (toward Sagittarius) at this time of year, where the concentration of stars is greatest. Look for Sagitta (the Arrow) within the Triangle. It is a tiny constellation, but easy to find. Another small constellation adjacent to the triangle is Delphinus (the Dolphin).

To the left of Vega in Lyra is a double star, Epsilon Lyrae, made up of two components Epsilon 1 and Epsilon 2, both clearly visible to the naked eye. Interesting enough, you say, but when you turn a small telescope on them they become doubles in their own right. They are, therefore, known as the double-double! Under really dark mountain skies the North America Nebula is visible to the naked eye as a large dark patch in the Milky Way background. You can also try to locate M-39, a large open star cluster north of Deneb in Cygnus. Technically it is visible to the naked eye, but due to the problem mentioned earlier, it can be hard to locate because of its place within the stars of the Milky Way. Try anyway!

Binoculars:

In binoculars, the Milky Way becomes even more spectacular, as that hazy band of sky becomes hundreds of stars, many of different colors. M-39 becomes easier to locate in binoculars. Beta Lyrae is a variable star, an eclipsing binary, fluctuating in brightness by about one magnitude over a period of almost 13 days as each star eclipses the other. Watch this star each clear night and compare its brightness to the other stars in the parallelogram of Lyra. To its left is Gamma Lyrae, comparable to Beta at its brightest and directly above Beta, Zeta Lyrae, comparable to Beta at its dimmest. Over nearly two weeks you will see its light rise and fall.

Another variable star that you might like to try and locate is the long period variable, Chi Cygni, which peaked at its maximum brightness of 5th magnitude around the middle of May. Maximum is the time to locate it, if you plan to make it a project. You will need a variable star chart to help you find the exact location. Please ask Rick Huziak or Gord Sarty or myself for a copy of a chart.

Finally, turn your binoculars toward two star clusters. Firstly, M-11, is a wonderful open star cluster (also known as the Wild Duck Cluster), which is outside the Triangle in the constellation Scutum. Just sweep the area where it is located with binoculars and you should have no trouble picking up a small but bright fuzzy patch. You should also have no trouble finding the "Coathanger" a neat grouping of stars that looks like its name – an upside down coathanger!

Small Telescope:

Except for the Milky Way, the North America Nebula, or Beta Lyrae, which look better naked eye or in binoculars, a small telescope will show a lot more detail in all the above objects. The Double-Double breaks into separate components, as mentioned earlier. M-39 now becomes a large group of bright stars; Beta Cygni (known as Alberio) the star at the foot of the Cross or head of the Swan, becomes a beautiful double star with gold and blue components. Chi Cygni's variability can be followed down to minimum brightness of about 13th mag over its 407 day cycle.

M-11 becomes a large, bright open cluster which is unmistakable, as it has a bright star dead center. Between Beta Lyrae and Gamma Lyrae is the planetary nebula M-57. This is the Ring Nebula and appears as a bright "donut" in any small scope. Farther into the Triangle is another bright planetary, M-27. The narrow nebulosity in the middle with flared ends resemble the Dumbbell that gives it its name! In Sagitta, turn your scope to M-71, a neat little globular cluster. Finally, if you want a bit of a challenge object, try for NGC 6781 in Aquila, another planetary nebula at magnitude 11.8. You will need dark sky for this one.

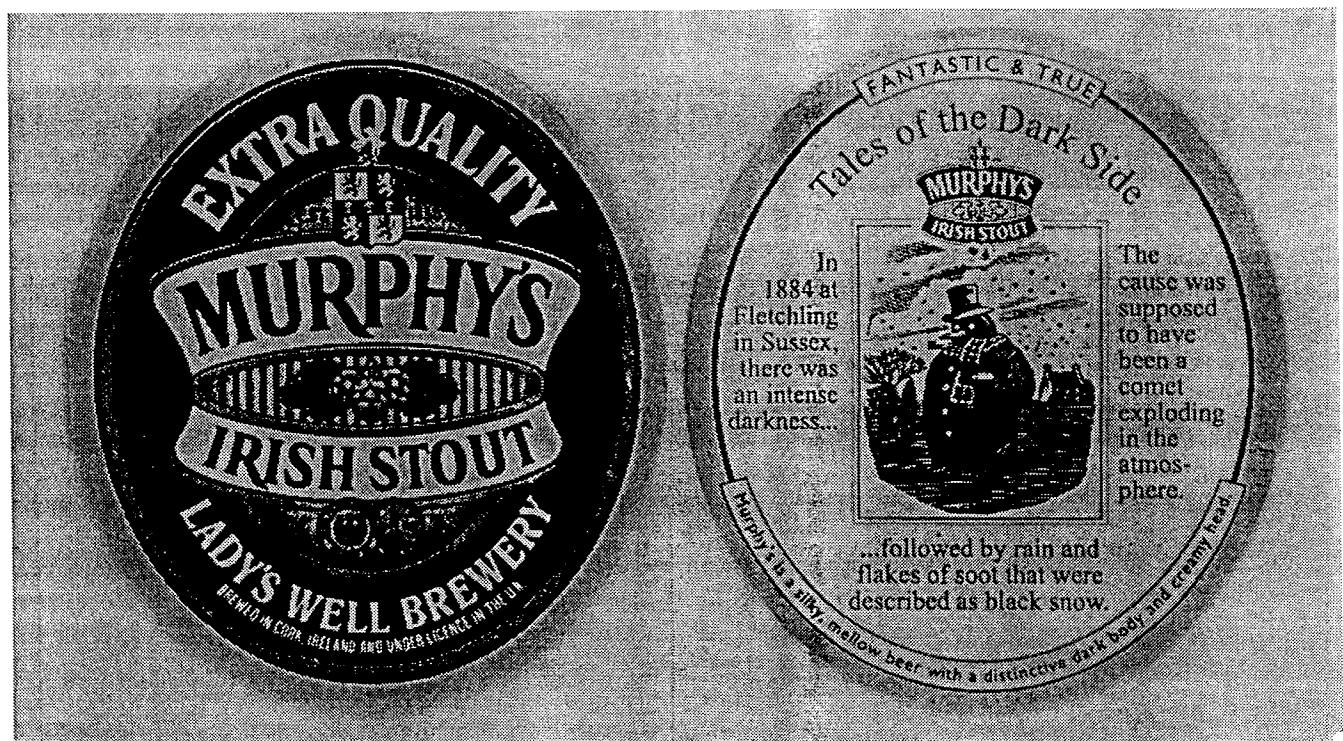
If you require any further information, or if you want to try your hand at some variable star observing, please give me a call at 931-3184. Happy summer observing! See you in the Fall!

Sandy Ferguson

Having Astrobeers in England

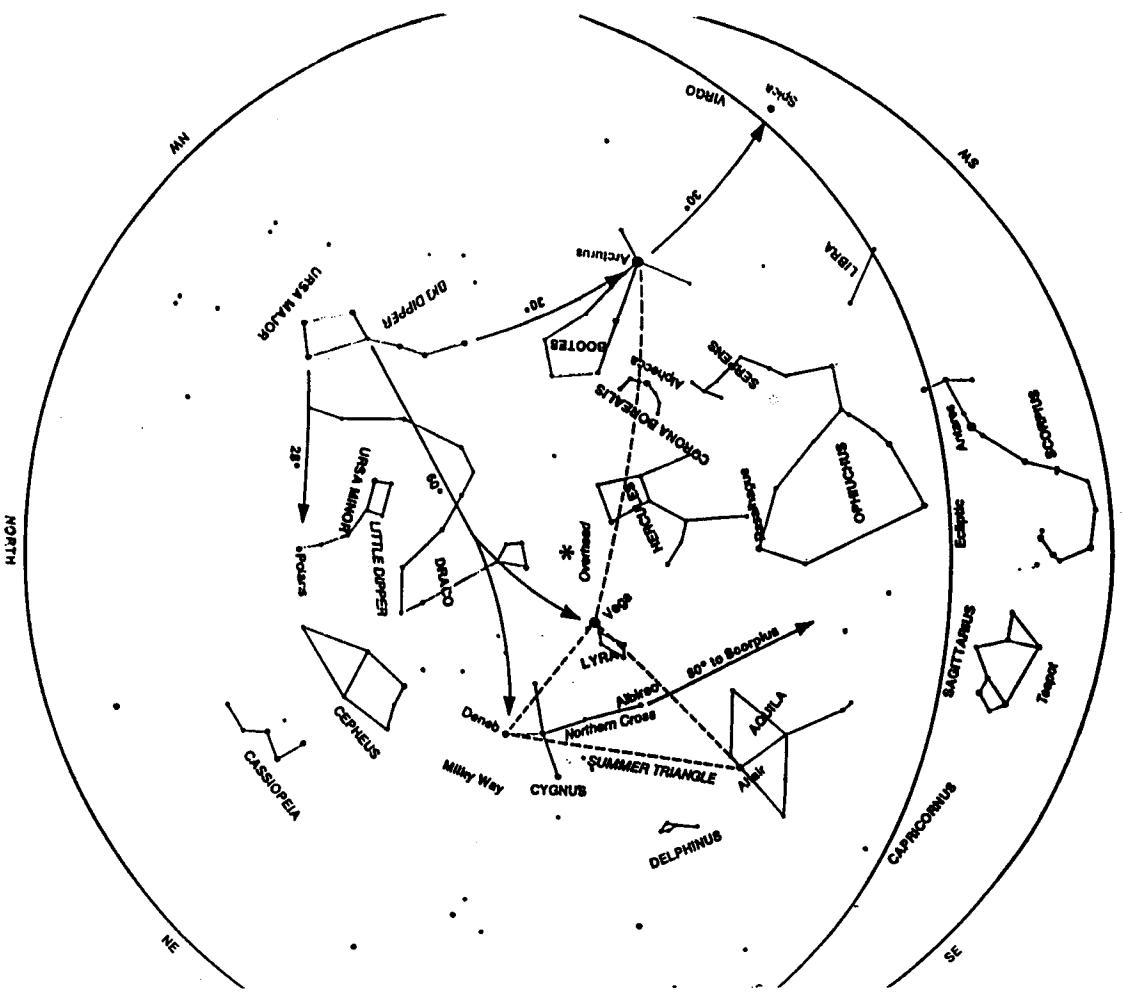
During my recent trip to England, I partook in the fine art of "ale-quaffing" on several occasions. The reason for this is the poorness of the sky for other endeavors, such as stargazing. The few clear nights were marred by haze. Tradition has it in England that "what you can't observe, you drink; what you can't drinkhum, there's nothing you can't drink!". Not wanting to break any local tradition, I thus decided to produce my own haze in the local pub; there being not much else to life in England besides beers and such. To my surprise, after several pints, I realized that try as I might, I could not escape the reality of life; that astronomy is all around us ... as close as the bottom of your glass! On the back side of my coaster, what should appear, but a description of a possible comet strike in 1884. As I read the coaster in utter amazement, the barkeep came over and tried to snatch away my coaster and refill my pint. A scuffle ensued whereas wrestled the coaster away from him after I pinned him on the floor. In the end I did allow the man to refill my pint, provided I could keep the coaster as a souvenir. A man has to do what a man has to do! I have never heard of this particular cometary event. If anyone has any further description of it, I would appreciate seeing it.

Rick Huziak



The tale reads: In 1884 at Fletching in Sussex, there was an intense darkness... followed by rain and flakes of soot that were described as black snow. The cause was supposed to have been a comet exploding in the atmosphere.

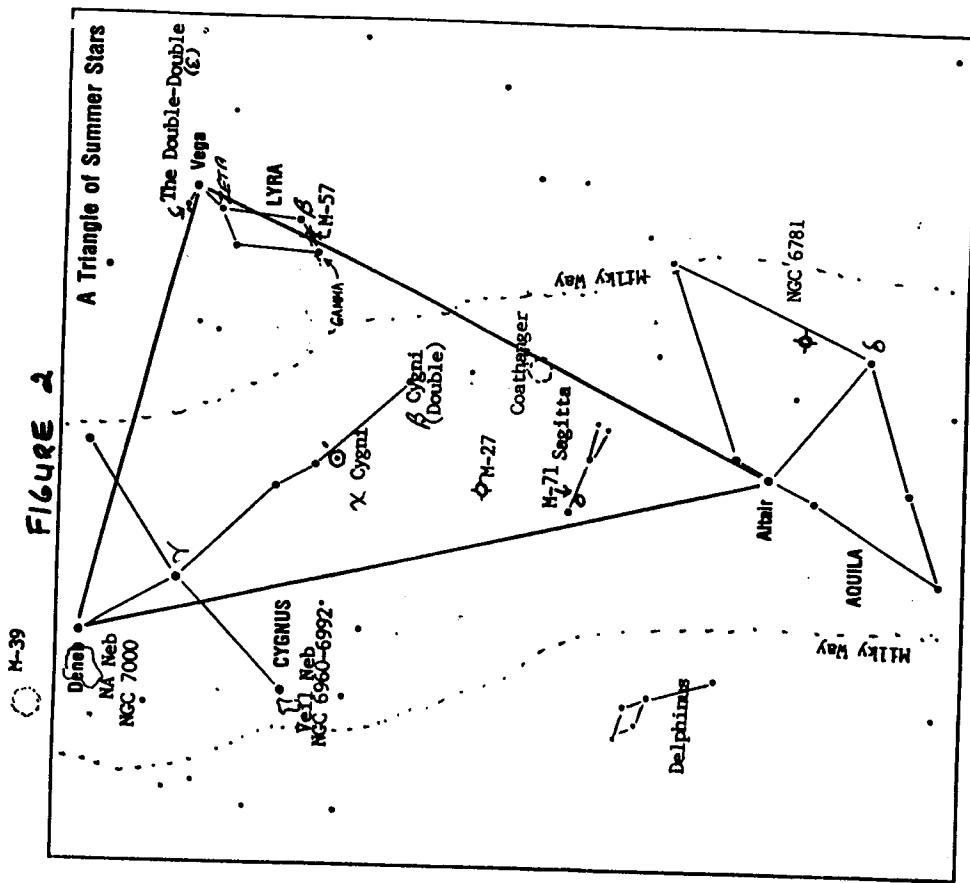
FIGURE 1



Open Cluster
 Globular Cluster
 Planetary Nebula
 Nebula

H-11

FIGURE 2



A Triangle of Summer Stars

H-39

H-27
 H-71
 Altair
 Aquila
 Milky Way
 Milky Way
 Delphinus

NGC 6781

Milky Way

H-27
 Coatshanger
 H-71 Sagitta

Cygni

(Double)

Gamma
 Eta

The Double-Double
 (E)

Vega

Eta

LYRA

Beta

H-57

Gamma
 Eta
 Zeta

Cygni

Chi
 Kappa

Ophiuchi

Phi
 Psi

Ophiuchi

Sigma
 Upsilon

Cygnus

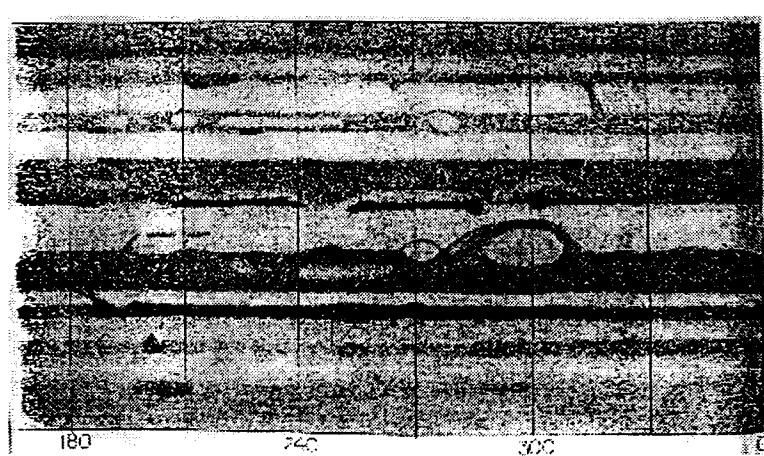
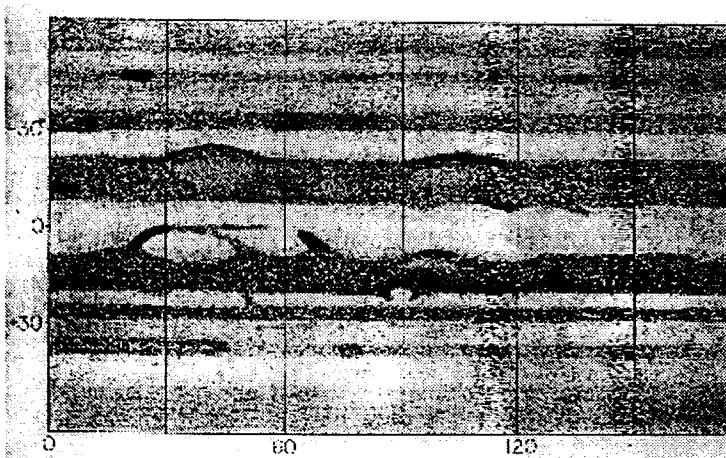
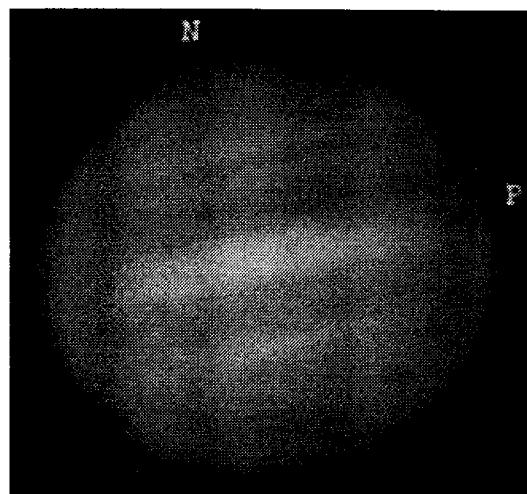
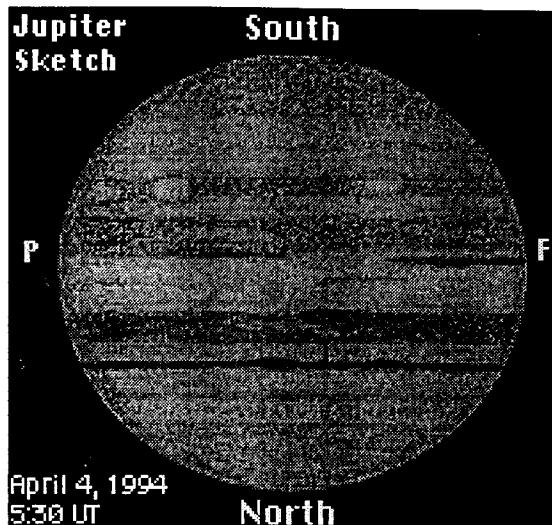
Upsilon
 Nu

A Map of Jupiter

Below is a map of Jupiter. For those of you who are planning to keep a close watch on that planet in the next couple of months, in the hope of seeing any changes caused by the collision of Comet Shoemaker-Levy with Jupiter. These maps were posted to a computer (tamsun.tamu.edu) at the Texas A & M University. These maps were probably made by Richard Schmude, who made the drawing of Jupiter shown right. Note that most of the festoons branching off the main equatorial belts are probably temporary.

The drawing of April 4, 1994 shows three white spots that you may try to identify. These spots are known as spots BC, DE and FA and for those of you who are really into Jovian geography, these spots had system II longitudes of 191.9, 208.2 and 280.4 degrees on April 4. Relative to the system II coordinates, these spots longitudes are decreasing at about 0.52 degrees per day. That translates to a rotational rate of 9h 55m 19s for these spots. The three spots are located at a latitude of about -29 degrees. The Great Red Spot has a latitude of about -29 degrees and the comet is predicted to impact around -43 degrees.

A more recent photo of Jupiter (also on the right), taken by Don Carona of Texas A & M University on May 12, 1994 at 6:40 UT, shows two more small white spots south of the BC and DE spots. They are very subtle and actually neither them nor the spots BC and DE are visible in this reproduction of the photo. However the reproduction may closely approximate what you can see on Jupiter at any given moment through a telescope. In order to see more you have to patiently keep looking through the telescope until a fleeting moment of good seeing happens.



FOR SALE: Ten inch aperture Dobsonian telescope with Coulter optics. It breaks down nicely for transporting in a small car and can easily be set up and used by young children. Asking \$800. This instrument is guaranteed to resolve comet impact sites on Jupiter or your money back. Call Allen Walker at 1-378-2731.

SED's New Radarsat Antenna

If you have driven down Preston Avenue North this winter, you may have noticed a 3-story square building being constructed next to SED Systems. By the time this article appears, Saskatoon's newest landmark will crown this building. On March 28th, a crew from TIW Systems in California arrived to start assembling a 10-meter full motion S-band (2 GHz) tracking antenna to support the upcoming Canadian Radarsat mission. SED Systems will operate the Mission Control Facility and Telemetry and Tracking and Command Stations (located in St. Hubert, Quebec and Saskatoon for the Radarsat spacecraft under contract to the Canadian Space Agency.

Here's some facts about the system:

1. The antenna is part of the Canadian Space Agency's Radarsat Co-Prime Telemetry, Tracking and Command Station (TTCS) which is part of the Radarsat Mission Control System based in St. Hubert (Montreal) Quebec.
2. The antenna will be used to send commands to and receive telemetry data from the Radarsat space-craft.
3. The antenna reflector is 10 meters (approx. 33 feet) in diameter.
4. The antenna can track at 10 degrees per second (move from North to South in less than 20 seconds).
5. The antenna weighs approx. 16,000 kg (37,000 lbs).
6. The moving part of the antenna weighs approx. 8000 kg (17,000 lbs).
7. The building is approx. 12 m (approx. 40 feet) tall - the top of the antenna will be another 12 m above that - the reason it is so high is so that it can see to the horizon over all the buildings in the local area.
8. Radarsat will be launched by NASA from Vandenberg Air Force Base in California in early 1995.
9. SED has the contract to operate the Radarsat Mission Control System including the Mission Control Facility and Prime Telemetry Tracking and Command Station in St. Hubert and the Co-Prime TTCS here in Saskatoon.

This information has been graciously provided by Micheal C. Maguire, P. Eng., of SED Systems. Mike is the Radarsat TTCS Lead Systems Engineer at SED and will be working as Spacecraft Engineer at the St. Hubert Mission Control Facility.

Rick Huziak

Comet Ephemerides

There are presently three comets in Saskatoon skies easily visible (from our Rystrom site) in small telescopes. Here are their coordinates (date is for 0h UT, which is 6 p.m. of the preceding day in CST):

McNaught-Russell(1993v)			
Date	RA	DEC	Vmag
June 8	14:02.2	67:55	10.1
June 9	14:05.8	67:27	10.2
June 10	14:09.2	66:59	10.2
June 11	14:12.5	66:32	10.3
June 12	14:15.7	66:04	10.3
June 13	14:18.8	65:36	10.4
June 14	14:21.7	65:08	10.5
June 15	14:24.6	64:40	10.5
June 16	14:27.3	64:12	10.6
June 17	14:30.0	63:44	10.6
June 18	14:32.6	63:16	10.7
June 19	14:35.1	62:48	10.7
June 20	14:37.5	62:20	10.8

Takamizawa-Levy(1994f)			
Date	RA	DEC	Vmag
June 8	14:29.5	68:39	8.5
June 9	14:12.5	67:56	8.5
June 10	13:57.1	67:07	8.6
June 11	13:43.3	66:15	8.6
June 12	13:30.9	65:20	8.7
June 13	13:19.9	64:24	8.7
June 14	13:10.1	63:26	8.8
June 15	13:01.3	62:28	8.8
June 16	12:53.4	61:31	8.9
June 17	12:46.3	60:33	8.9
June 18	12:39.9	59:36	9.0
June 19	12:34.1	58:40	9.0
June 20	12:28.9	57:46	9.1

Takamizawa(1994i)			
Date	RA	DEC	Vmag
June 8	13:38.7	-11:38	9.8
June 9	13:33.5	-11:45	9.8
June 10	13:28.6	-11:52	9.8
June 11	13:23.8	-11:58	9.8
June 12	13:19.3	-12:04	9.9
June 13	13:14.8	-12:10	9.9
June 14	13:10.6	-12:16	9.9
June 15	13:06.5	-12:21	10.0
June 16	13:02.6	-12:27	10.0
June 17	12:58.9	-12:32	10.0
June 18	12:55.3	-12:37	10.1
June 19	12:51.8	-12:42	10.1
June 20	12:48.5	-12:47	10.1

FOR SALE: Complete Meade 2120 LX-5 10 inch SCT package plus piggyback brackets, declination motor and moto-focus. Optics upgraded at factory to SMC specifications. Like new condition. \$3000. Phone Dan at 477-0230.

The Solar Eclipse from Sacramento Peak

