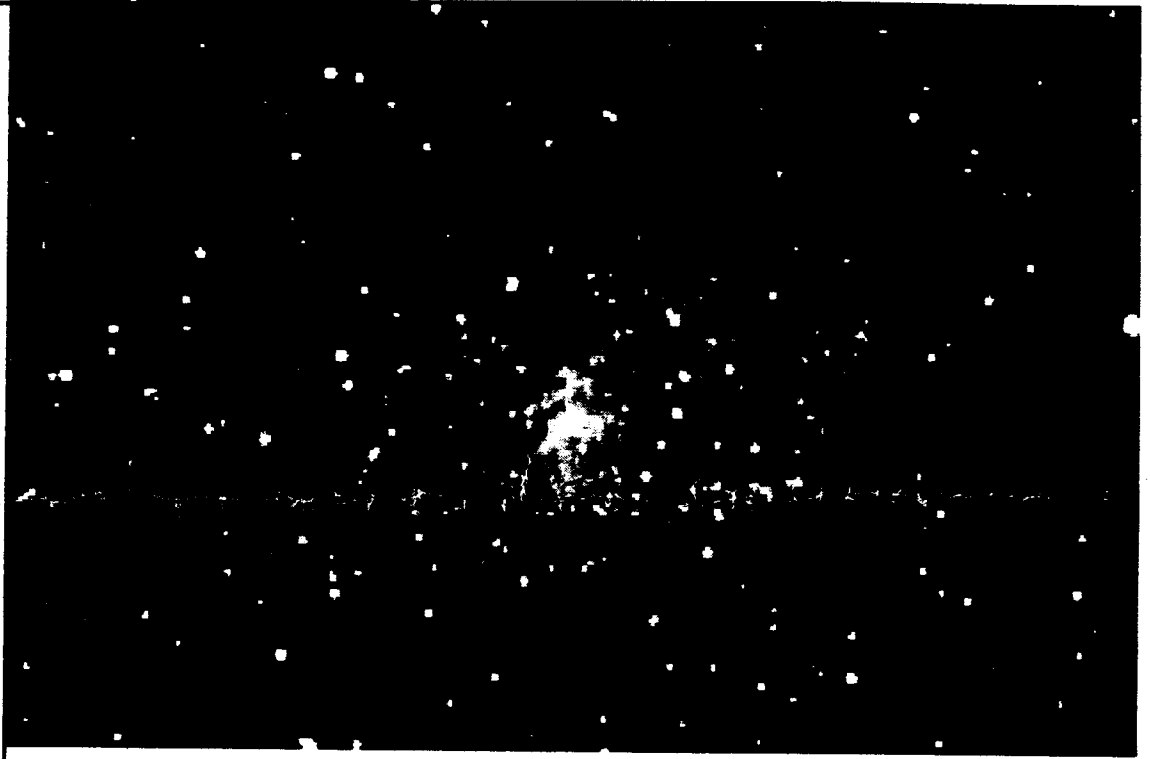


Volume 26 Issue 1  
January, 1995

# SASKATOON SKIES



## Pinwheel Galaxy (M33)



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

### *Inside This Issue*

**LOTS OF GOOD STUFF !!**

### **Minutes of the December Executive Meeting**

7:00 p.m. Dec 19, 1994, Room B-10 Health  
Sciences building, U of S. Campus

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Present: Ed Kennedy, Rick Huziak, Scott Alexander, Sandy Ferguson, Garry Brett, Merlyn Melby, Mike Williams.

- 1) Meeting Called to order at 7:00 p.m....Rick Huziak
  - 2) Observers group report. It was very cold. There was no attendance...Rick Huziak
  - 3) New Observatory Committee. Set a date for meeting after Xmas.
  - 4) The loan for the motorized telescope mount has been approved by CSA. The contract is in the mail and will be signed shortly...Rick Huziak
  - 5) Thank you notes have been sent to R. Brummond and Eric Keser for their recent contributions....Rick Huziak
  - 6) Margaret Patterson and Extencicare have acknowledged our letters and donation. The centre made a \$125.00 donation....Rick Huziak
  - 7) Annual reports are due to National in January. Mike Williams and Bill Hydromako to prepare these. Jim Young to prepare an obituary for G. Patterson for National publication....Mike Williams
  - 8) Keys for the Rystrom have been granted to E. Keser, B. Friesen, C. Riechert as part of the Binocular Astronomy course....Rick Huziak
  - 9) Sky & Telescope has been informed of our concerns regarding paying duty/brokerage for brochures. They are investigating....Rick Huziak
  - 10) National president, Doug Hube, is planning a visit here Feb.22/95. We will have the meeting on Wed. to accommodate him. Plans are still tentative. Bookings need to change....Rick Huziak
  - 11) There is a new pamphlet available to detail how to get a subscription discount to Sky & Telescope....Rick Huziak
  - 12) Binocular Beginners class report...Sandy Ferguson
  - 13) New Business: Dr. Ed Kennedy has two articles coming out in the "Ask a Scientist" column in the Star Phoenix....Dr. Kennedy
  - 14) Motion for adjournment-Mike Williams...Second by Scott Alexander
  - 15) Meeting adjourned at 7:40 p.m.
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### **Minutes for the General Meeting**

8:00p.m., Dec 19, 1994, Room a-226  
Health Sciences Building, U of S Campus

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- 1) Meeting called to order at 8:04 p.m. Members & guests welcomed....Rick
- 2) Promotional items for sale. There is a list posted with prices....Rick
- 3) Dues are past due-please pay up, or join if you are on the temporary member list....Rick Huziak
- 4) General meeting minute # 10 should read a donation to "Extencicare" not the Disabilities Council. Motion to adopt the November minutes as published in the newsletter with the above correction...Motion - Jim Young...Second - Scott Alexander
- 5) Observer's Group meeting dates have been published in the newsletter....Rick Huziak
- 6) The loan of a telescope mount from CSA has been granted to the Saskatoon Centre. The contract is in the final signing....Rick Huziak
- 7) National president, Doug Hube, is planning a visit here Feb.22/95. We will have the meeting on Wed. to accommodate him. Plans are still tentative. Bookings need to change....Rick Huziak
- 8) There is a new pamphlet available to detail how to get a subscription discount to Sky & Telescope....Rick Huziak
- 9) Binocular Beginners class report...Sandy Ferguson
- 10) Speakers have been arranged for Jan.(Koji Meada-Intensified Meteor Video Taping, Don McKinnon-The South American Total Solar Eclipse), and Feb.(National President-Mr Doug Hube-Measuring the moons with Stellar Occulations)...Rick Huziak
- 11) New Business: Gordon Sarty-Corrected article mistake in :Betcha Didn't Know. Sculptor is not an imaginary constellation as was written...Gordon Sarty
- 12) Tonight's presentations: Sandy Ferguson - Beginning astronomy with binoculars..Ed Kennedy - Recognition of Canadian Professional Astronomers..Stan Shadick - Why won't Blue Stragglers grow up?
- 13) Motion for adjournment - Eric Keser...Second - Rick Huziak
- 14) Meeting adjourned at 9:40 p.m.

## Notice of the January General Meeting of the Saskatoon Centre, RASC

The January general meeting of the Saskatoon Centre will feature three presentations with international flavour.

**Sandy Ferguson** - Beginning Astronomy - Learning the Constellations - This is an excellent refresher course on what can be seen in winter constellation Gemini for the beginner or advanced amateur.

**Koji Meada** - Videotaping Meteors with an Image Intensified Camera - Koji is a member of the Saskatoon Centre this year, but normally lives and observes from Japan. He is a member of the Nippon Meteor Society and enjoys observing meteor showers with the naked eye, a Schmidt camera or his image-intensified camera system. Koji will show actual videotape of a meteor shower.

**Don MacKinnon** - The November 3, 1994 South American Total Eclipse Expedition - Don is hooked on total eclipses and is a true eclipse chaser, finding time to take in almost all-total and annular eclipses in the last 3 years. Don has recently returned from South America where he successfully observed the November eclipse. Don will have slides of the eclipse and associated activities.

There is no admission to the general meeting. Members and the general public are invited to attend. For more information, call Rick at 665-3392.

Monday, January 16, 1995 Room A-226  
Health Sciences Building, U of S Campus  
8:00 p.m.

## Notice of the February General Meeting of the Saskatoon Centre

Please note that the February general meeting will feature National President, Dr. Doug Hube. Dr. Hube will be visiting the Saskatoon Centre on his return from the National council meeting. Dr. Hube's presentation will be on the Edmonton Centre's Lunar Grazing Occultation Expedition of 1994. To accommodate Dr. Hube's visit, the meeting will be held tentatively on Wednesday, February 22, 1995 at 7:30 p.m. in Room A-226, Health Sciences Building, U of S campus. Please note that the date, time and meeting place are all subject to change depending on confirmation of Dr. Hube's travel plans and room availability. If the meeting is held on February 22, there will NOT be a regular general meeting on Monday, February 20. Sandy Ferguson will also give a beginner's presentation on the constellation Orion. Watch the February newsletter for details.

### BOOK REVIEW.....by Garry Brett

The book I chose to review is called the Audubon Society Field Guide to the Night Sky written by Mark R. Chartrand, who is Senior Vice President of the National Space Society. The book is available at local book stores for anywhere from \$18.00 to \$24.00, depending on where you pick it up.

To start off with this is a very good book to have in your library. The book is laid out very well, is easy to use and has a great deal of information in it, all in a pocket sized book. What is especially good about the book is that the information it contains is written in easy to understand text so that the beginner or the expert will enjoy reading it.

The book is laid out in sections with the first section including such topics as The Milky Way, the Universe and many other short topics that would be of interest to anyone. The next section includes photos of the different phases of the moon along with a map highlighting some of the more prominent features you can see in that particular picture.

The next section contains sky maps of all the constellations in an easy to read and use format. What is really nice is that the next section contains colour pictures of the previous sections maps so that a person can see what the sky really looks like. This is a good idea for the person who is just new to astronomy as it helps them to see first the map and then a picture of the same area to see just what to look for.

The next section is a collection of beautiful colour plates of most of the Messier objects along with photos of some of the planets and their moons. This part of the book gets alot of use from me as I use it to show people just how beautiful the Universe is.

The last section of the book contains information on each of the constellations and is easy to read. All in all this book was well thought out and is a book I would definitely recommend to anyone but I especially recommend it for all newcomers to Astronomy.

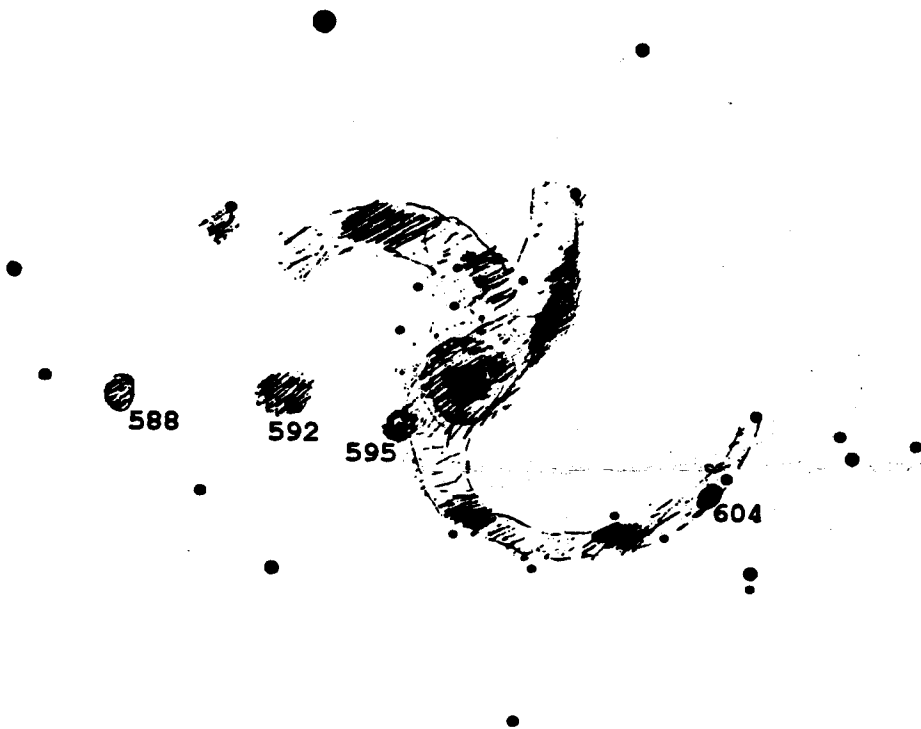
## The Amazing Pinwheel Galaxy M33.....by Rick Huziak

M33 (NGC 598) is one of the most interesting galaxies for the amateur astronomer. In a very dark sky, M33 can be seen with the naked eye as a moon-sized splotch in Triangulum. This is a face-on Sc-type spiral galaxy and the third largest member of the Local Group. Despite its apparent brightness, it is often difficult to find in a telescope if the sky is poor. This is because the galaxy has a low surface brightness and without a low power, high-contrast field, it tends to blend right into the background sky glow. On a good night, though, and with a reasonably large telescope, amazing detail can be seen. On Sept. 6 and Oct. 7, 1994, I took the time to observe the finest details of the galaxy with Eetook, the 12.5 inch telescope, as illustrated in the accompanying drawing.

The nucleus is the easiest part to observe, brightening to the center, but never becoming star-like. Take several minutes to stare at the field. Suddenly, the spiral arms appear, breaking off to the north and south. With a bit of concentration, some mottled patches are seen within the arms as they curve out in a grand "S"-shape. Off the south arm, a spur can be seen, mimicking a third arm.

Near the end of the north arm is M33's brightest diffuse nebula, NGC 604. It is amazing how easy this glowing ball is to see. I've even picked it up in my 4-1/4 inch on occasion. NGC 604 is similar to the Orion Nebula, though much larger. Three other diffuse nebulae are visible with more difficulty. These all require a dark sky to see well, and high power can be used to improve field contrast while tracking these down. These are all positioned in a rough line north, preceding the nucleus. NGC 588 and NGC 592 are the two easiest, with NGC 595 being the most elusive.

Compare the drawing to a photograph of M33. It is amazing how close the details are. The drawing has north at the bottom, as in most telescope views and is about 1 degree across.



## PHOTOGRAPHERS CORNER....by Garry Brett

As this is the first time for this part of the newsletter it will be fairly short. First of all I was informed by Al Hartridge that he had some grade 12 students were out to his place a short while back. They were doing a school project and they had to take a picture of Saturn. They were very excited just to be able to see the planet and even though the pictures were a little blurry they went back to school very pleased. Al was also very happy to be able to help them out and has said he would like to do more of that, so if you know of someone who would like some expert help an astrophotography have them contact Al.

Speaking of Al Hartridge he has agreed to supply some articles for this column in the future. For the new members, if you have not seen some of Allan's astro pictures make an effort to do so. It is the opinion of most of the Saskatoon R.A.S.C. that he is on his way to becoming one of Canada's foremost astrophotographers. He is always glad to share his knowledge with anyone who needs help with regards to astro photos so catch him at one of our meetings and start taking those pictures you have always wanted to take but were afraid to.

### Observer's Group Meeting & the Rystrom Observatory

Put these dates on your calendar and plan to attend. Jan 7, Jan 28, Feb 25, March 4, 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 be observing.

### 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.

### Betcha Didn't Know.... by Garry Brett

Telescope 1.....Golf course 0. A Delaware, Ohio, radio telescope has a ten year reprieve from a fate of becoming a golf course.

The radio telescope, actually a meadow filled with antennas pointed toward the stars, was built by Ohio State and Ohio Wesleyan universities, but Ohio Wesleyan sold the land to owners of a golf course.

Now four schools have formed the North American Astrophysical Observatory to operate the telescope. They now have a ten year lease on the land.

\*Note\* This information was from the Space Almanac written by Anthony Curtis.

### What's happened in history in January....by Garry Brett

Day	Event
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- 01) The asteroid Ceres was discovered by Giuseppe Piazzi in 1801.
- 02) USSR Luna 1 became the first spacecraft to leave the Earth's gravity in 1959. It missed the moon by nearly 4000 miles.
- 05) In 1969, the USSR launched Venera 5 to Venus where it landed May 16, 1969, sending back information about the atmosphere.
- 06) In 1968 U.S. Surveyor 7 was launched for the moon. It landed near Tycho crater Jan. 10/68. Took soil analysis and 3,343 photos.
- 07) Galileo discovered Jupiter's moons Io, Europa and Callisto in 1610.
- 08) In 1973 the USSR sent Luna 21 to softland on the moon Jan. 16/73. The Lunokhod 2 self propelled roving moon car scooped up soil samples and returned to Earth Jan. 27.
- 10) U.S. Army Corps bounced radar beam off the moon, 1946...In 1969 USSR sent Venera 6 to Venus; it landed May 17, 1969 and sent back information about the atmosphere....The USSR Soyuz 27 was launched in 1978 on an A-2 rocket with two cosmonauts. They spent six days in space and the capsule spent 65 days. They switched their individually contoured seats from Soyuz 27 to Soyuz 26 for the flight home and left Soyuz 27 behind.
- 11) Titania and Oberon, moons of Uranus, were discovered in 1787 by William Herschel....USSR Soyuz 17 was launched in 1975 on an A-2 rocket for a 30 day stay at space station Salyut 4.
- 12) U.S. Shuttle Columbia launched in 1986 on flight STS-61C with astronauts Robert L. Gibson, Charles F. Bolden Jr, Steven A. Hawley, U.S. Rep Bill Nelson, George D. Nelson, Franklin R. Chang-Diaz, and commercial passenger Robert J. Cenker.

- 13) Galileo, in 1610, discovered Ganymede, a moon of Jupiter.
- 14) USSR Soyuz 4 was launched in 1969 on a A-2 rocket from Baikonur Cosmodome for a rendezvous in space with Soyuz 5. Vladimir Shatalov was launched in Soyuz 4. Boris V. Volynov, Alexei S. Yeliseyev, Yevgeny V. Khrunov were launched in Soyuz 5 on an A-2 rocket Jan. 15. Soyuz 4 was the first USSR manned launch in winter. The first crew transfer between spacecraft was completed in orbit. The crew of Soyuz 5, in spacesuits, pulled themselves along handrails and into the Soyuz 4 airlock. The spacewalk took one hour. The two capsules remained docked for about 4.5 hours. Soyuz 4 completed 45 orbits. Soyuz 5 completed 46 orbits.
- 24) U.S. shuttle Discovery launched in 1985 on STS-51C flight. The first secret shuttle mission to carry a military spy satellite.
- 27) A launchpad fire in 1967 killed the three man crew of Apollo 1. The fire spread as the astronauts sat in the capsule on the launchpad during preflight ground tests.
- 28) Astronomer Johannes Hevelius was born in 1611....Space shuttle Challenger exploded during lift-off on flight STS51L in 1986 from Cape Canaveral, Florida killing the seven astronauts on board. The flight last just over one minute and did not make it to orbit. Challenger exploded when a solid fuel booster leak ignited the fuel tank.
- 29) USSR probe Phobos 2 arrives in orbit around Mars in 1989.
- 31) America's first satellite, Explorer 1, launched to orbit in 1958. The 31 lb. satellite used a geiger counter in its 8 lb. payload to confirm existence of the Van Allen radiation belt surrounding Earth....In 1966, USSR Luna 9 flew to the moon, dropped a 220 lb. capsule to a soft landing Feb. 3/66 and sent back 30 pictures....In 1971, a Saturn V rocket lifted Alan B. Sheppard Jr., Stuart A. Roosa and Edgar D. Mitchell in Apollo 14 to the moon. The flight lasted 216 hours 01 minutes 57 seconds and included 34 orbits of the moon by the Command Service Module. Sheppard and Mitchell made man's third Moon landing, collecting 96 lbs. of rock, soil samples in 33 hours 31 minutes on the surface. First 6 iron golf shot on the Moon. Roosa stayed in the Module.

**That's what happened in History for the month of January.**

#### **Hints & Tips....by Garry Brett**

With the cold weather here for a few months the person planning a viewing session has many different problems they will encounter. As mentioned last issue dressing properly is the MOST IMPORTANT thing that you can do. If you are transporting your scope to the dark site let it sit outside for at least an hour to adjust to the outside temperature. An optic that is not climatized will not perform very well and you will soon get discouraged by the views you get.

Once you start viewing the worst problem I have is that the steam from my breath fogs up the eyepiece and filters and freezes to them. I wish I could hold my breath for a long time but that is not comfortable for me. If you have a scarf put it over your mouth and nose. Breathe slowly and through your nose and the problem usually goes away.

Lastly, if you have a tarp put it on the ground and set your scope up on it. Many a time I am half way through putting my scope together and I drop a screw or something. The tarp will make finding the dropped part alot easier and also keep you from kneeling in the snow for those nearly on the horizon views.

#### **The Frequency of Aurora in Saskatoon during 1993-1994...By Rick Huziak**

Many visitors to Saskatoon are amazed at our auroral displays. Saskatoon is in the "aurora belt" and is, with Edmonton, one of the best cities in the world from which to see auroral displays. Calgary, Winnipeg and Toronto are already too far south to get much aurora. (In fact, when I joined the BAA Auroral Patrol several years ago, I contributed about 65% of all world sightings to their database!) Good auroral displays are fine for visitors, but for amateur astronomers it can be quite a nuisance. A major aurora can flood out observing for the entire night, shutting down both visual and photographic astronomy. Even a minor aurora increases sky glow, making deep sky observing difficult. Just how many displays DO we get per year? Well, that varies with the sunspot cycle, but here's some indication. As a part of my regular recording of my observations, I record the activity of the aurora. Here's the statistics:

Recording period: Aug. 1, 1993 to Oct. 3, 1994 (429 nights)

Number of nights I observed: 127 nights (other nights were cloudy, or I was busy or tired)

Nights with recorded auroras: 53 nights

**Wow!** 53 out of 127 days, or 41.7% of the nights had an auroral display of some kind. It must be realized that this number can only be understated as well. I only recorded the display if I was observing at the time. Displays do not always occur during the entire observing period, and a lot will begin after midnight, when I'm usually asleep. (In fact, many people at work come up to me and state that they saw an aurora in the morning on the way to work). With this in mind, I can safely estimate that some form of aurora will be visible from Saskatoon on at least 50% of nights, or at least 180 nights of the year! And we're supposed to be at a sunspot minimum. Now there's an alarming statistic that you can quote at the next star party!

### **The Galaxy Cluster NGC 833, 835, 838, 839 and 848 ...By Rick Huziak**

Those with large apertures and a dark sky might want to check out this cool galaxy cluster in Cetus. On Nov. 23, 1994 I used a 12.5 inch Newtonian to observe a tight cluster of 5 galaxies of 13.0 to 14.0 mag. in 7/10 skies. This is such a cool field. (Hey Al, how about photographing it!) Here's the stats on the galaxies:

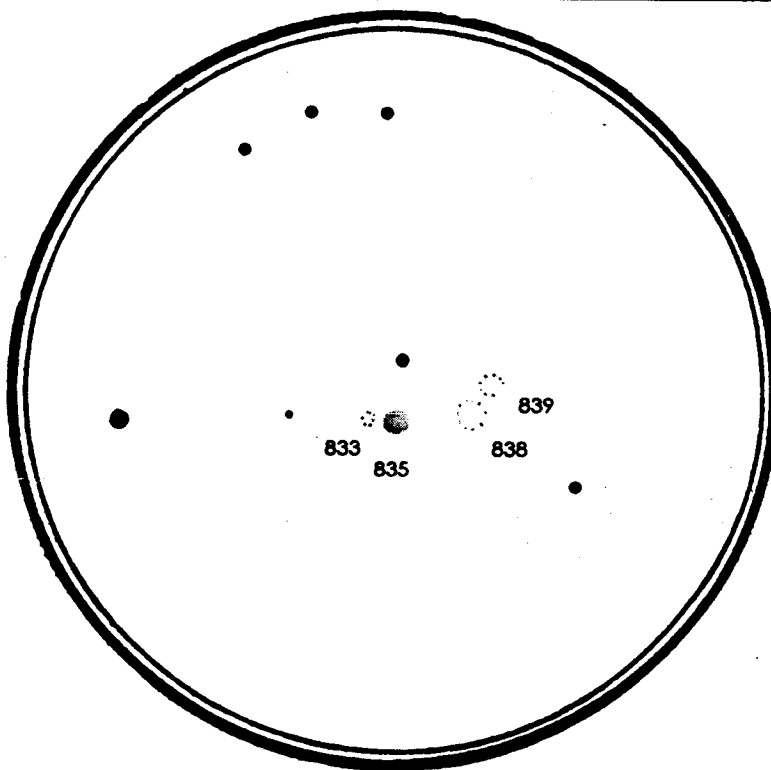
NGC 835 - brightest and easiest at mag. 13.0, 1' dia., round

NGC 833 - very faint, ghostly at mag. 14.0, 1' dia., round

NGC 838 - faint, but easy at mag. 13.5, 1' dia., round

NGC 839 - very faint, ghostly at mag. 14.0, 1' dia., round

Unfortunately the moon rose during the observation and nearby NGC 848 could not be located in the brightening sky. Want a challenge? Here it is. The drawing has north at the bottom and is 15'in diameter. The two brightest stars are 9th mag. and are guideposts in Uranometria 2000.



### **Possible November Telescopic Meteor Shower....By Rick Huziak**

Mark November 28th on your calendar, because when it rolls around again, I'm going to be asking you for help. On the evening of November 28/29, 1994, while doing routine observing, the most amazing thing happened. In 51 minutes of actually looking through the eyepiece, I saw 3 telescopic meteors all headed in the same direction, all the same brightness, all the same speed and all the same color.

Here's the poop:

Date	Time	Brightness	Field
Nov 29	02:47 UT	10 mag	NGC 7469 Peg
Nov 29	03:23 UT	10 mag	2326 +0320 Psc
Nov 29	04:33 UT	9 mag	NGC 936/941 Cet

All were blue, traveling approximately N to S, speed was "medium" and no train remained after the passage. I was using a 12.5 inch Newtonian with a 1/2 degree field. Limiting visual magnitude was 14.0. (Those who are really interested can figure out my Zenith Hourly Rate (ZHR) from this data). With a bit of extrapolation, the radiant could have been in northern Pegasus, or Cassiopeia, though there is not an active shower listed at this time by the International Meteor Organization (IMO).

Although 3 meteors may not seem significant, they are for me, as my usual rate is far less than this, and the meteors had such similar characteristics. I reported the possible shower to the IMO (Peter Brown in Ontario) by e-mail and within a few hours, I got a response from the British branch of the IMO (a Malcolm C) who oversees the IMO Telescopic Commission. The power of Internet! He looked over the data and quickly estimated that this was about 10 times the normal rate for an observer, so found the report significant. However, many more confirming observations have to be done before the reality of this shower and the radiant can be determined. What is required is a dark sky, a wide or rich field and dedicate observations for many days around the date. The observations also have to be plotted so a radiant can be determined. Unfortunately, the meteors are probably too faint to photograph, unless someone like Koji Meada attempts this with an intensified video system. Malcolm also stated that there are many telescopic showers yet to be discovered. I've suspected some in past years. Now I think I'll try to confirm one! You can e-mail the IMO on the Internet at "peter@canlon.physics.uwo.ca" or the IMO Telescopic Commission in England at "mjc@astrol.bnsc.rl.ac.uk".

#### Letter from the Editor

I wanted to take a minute and ask a favor from all of you. As I have told you in the last newsletter I want to include many different sections in this newsletter so that it will have something for everyone. However I need the help of anyone who wants to help. What I need from everyone is some hints and tips that I can put in the newsletter. I also want someone who has recently bought some new astronomy software to give me a call and let me know what you thought of it. This would be written up under computer corner. Anyone who wants to help can call me at home at 384-1807. The section called Swapem was not available this issue due to a bad sector in my disk. It wiped out a couple of files and I did not have time to retrieve them. It will be back next issue. I am happy to say that Scott Alexander has agreed to write some articles for the newsletter and sent me a package that just arrived. This will appear in the next newsletter. Remember, anyone is welcome to submit an article to the newsletter. Please put it on either a 5.25 floppy or a DD 3.25 disc and get it to me by the deadline which is the first of each month. Any article received after the first will be used in the next newsletter. Thanks.....Garry Brett





The Royal Astronomical Society of Canada  
Saskatoon Centre Incorporated  
Balance Sheets  
September 30, 1994 and 1993

Assets :	1994	1993
Current Assets:		
Cash	1,077	600
Savings (Telescope Fund)(note 1)	4,337	4,364
Total Current Assets	5,414	4,961
Fixed Assets @ cost:		
Rystron Observatory	5,474	5,335
Warmup Shelter	4,773	4,773
Underground Wiring	3,015	3,015
Storage Shed	652	652
	13,915	13,776
less accumulated amortization	9,019	8,386
	4,896	5,390
Library	1	1
Equipment	5,351	5,351
Total Fixed Assets & Equipment	10,248	10,742
	15,662	15,703
	=====	=====
Liabilities and Equity :		
Current Liabilities:		
Prepaid Membership	305	395
Promotional Items Payable	112	-
Total Current Liabilities	424	395
Equity:		
(per accompanying statement)	15,238	15,308
	15,662	15,703
	=====	=====

On behalf of the Executive :

*Richard M. S. ...* President

*...* Treasurer

*...* Auditor

See accompanying notes to financial statements.

The Royal Astronomical Society of Canada  
Saskatoon Centre Incorporated  
Income Statement  
Years Ended September 30, 1994 and 1993

Income :	1994	1993
Membership Fees	\$ 1,572	1,121
Life Member Grants	72	51
Donations	665	533
Member Surcharge (newsletter sub)	172	122
Member Special Surcharge (Key)	35	40
Observers Handbook	-	-
Observing Guide (net)	14	-
National Calendars (net)	16	12
Interest	50	154
Miscellaneous -	61	-
	2,657	2,033
	=====	=====
Expenses :		
Educational Activities	\$ 56	57
Fees to National Office	967	684
Library	-	91
Office Administration	120	116
Newsletter & Postage	677	495
Insurance	274	273
Miscellaneous	-	1
	2,024	1,717
Surplus before amortization	563	316
Amortization - Buildings 20 years	(633)	(598)
Net Income (loss) for year	(70)	(282)
	=====	=====
Equity beginning of year	15,308	15,590
Equity end of year	15,238	15,308
	=====	=====

Notes to Financial Statements  
September 30, 1994

Significant Accounting Policies

- (a) Observatory and buildings are recorded at cost and are amortized using the straight-line method over 20 years.
- (b) Equipment is recorded at cost and is not amortized.
- (c) Library items are carried in the accounts at a nominal value of \$1, new additions are expensed during the current period.

1. Savings (Telescope Fund)

Opening balance		\$ 4,361
additions:		
Donation	200	248
Interest	48	4,609
withdrawals:		
dome repair	272	272
Closing balance		\$ 4,337
		=====

Map 3  
Equatorial 4 Hours

Epoch 2000



- Symbols
- Open Cluster ○
  - Globular Cluster ⊙
  - Planetary Nebula ⊕
  - Diffuse Nebula ☁
  - Galaxy □

