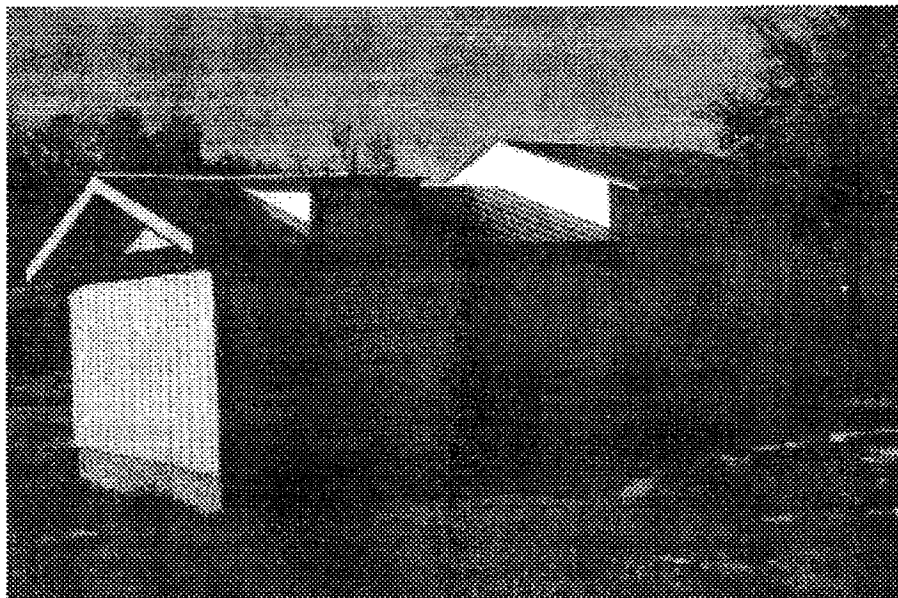


Saskatoon Skies

The Newsletter of the Saskatoon Centre
of the Royal Astronomical Society of Canada

Volume 30, Number 12

December 1999



Dale Jeffrey has been busy this summer constructing his own roll-off observatory! This structure features an 8'x12' observatory with an adjoining warm room. The observatory houses a Meade LX-200 telescope. An article about Dale's new toys will appear in the Jan. or Feb. issue!

**REMEMBER THE MEETING IS ON DECEMBER 13TH
ROOM 8313, CITY HOSPITAL**

RASC Calendar Happenings

Date (99-00)	Event	Contact	Telephone
Dec 10	Jr. Astronomers UofS Observatory Tour	Sandy Ferguson	931-3184
Dec 13	General Meeting - NOTE EARLY DATE	Les Dickson	249-1091
Dec 13/14	Geminid Meteor Peak (ZHR=60)	Rick Huziak	665-3392
Jan 3/4	Quadrantid Meteor Peak (ZHR=120)	Rick Huziak	665-3392
Jan 7 or 8	Observers Group at Sleaford Observatory	Andrew Krochko	955-1543
Jan 14	Jr. Astronomers Meeting	Sandy Ferguson	931-3184
Jan 17	General Meeting	Les Dickson	249-1091

Sky Buys and Mirror Sells

The Saskatoon Centre's Swap and Sale Page!

For Sale: Great astronomy books: *Burnham's Celestial Handbook* (hardcover, 3 vol.) \$50.00. , Other titles available, including a great book on Jupiter.. Call Darrell Chatfield, tel. 374-9278.

For Sale: 1-1/4" eyepiece & filters - Kellner 9mm eyepiece \$40.00, Antares 10mm Plossl eyepiece \$100.00, Orion OIII Filter \$85.00. Call Darrell Chatfield for pricing and trials. tel. 374-9278.

For Sale: 2" Lumicon Deep Sky (Light Pollution) Filter. \$200.00 obo. Call Andrew Krochko at 955-1543.

Astro Goods for Sale - check out past-member Doug Miller's <mildg@sk.sympatico.ca> Web Site at <<http://www.minerals.sk.ca/astronomy/astronomy.html>> for great astro goods.

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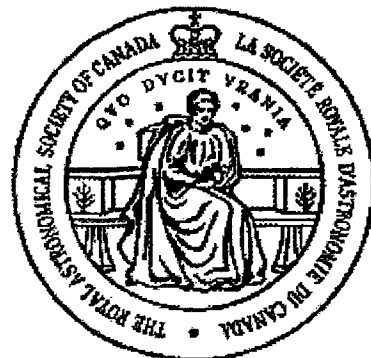
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Saskatoon Skies is published monthly by the Saskatoon Centre of the RASC. Distribution is approximately 150 copies per issue. *Saskatoon Skies* welcomes unsolicited articles, sketches, photographs, cartoons, and other astronomy or space science articles. Articles can be sent by mail in any format to the Centre's mailbox. Submissions may also be sent by e-mail - preferred as **plain unformatted ASCII text files without line breaks**. Images sent by e-mail should be attached .GIFs, .JPGs or similar. Send e-mail submissions to the editor at <huziak@SEDSsystems.ca>. Submitted materials can be returned upon request. Please send articles in "generic" formats, with standard grammatical formatting appreciated - 5 spaces at the beginning of paragraphs, two spaces after periods, one space after commas. A separate subscription to *Saskatoon Skies* is available for \$12.50 per year. Articles may be reprinted from *Saskatoon Skies* without expressed permission (except where otherwise stated), but source credit is requested. **DEADLINE for submissions is the 26th of each month.** *Saskatoon Skies* accepts commercial advertising. Please call the editor for rates. Members can advertise non-commercial items free of charge.

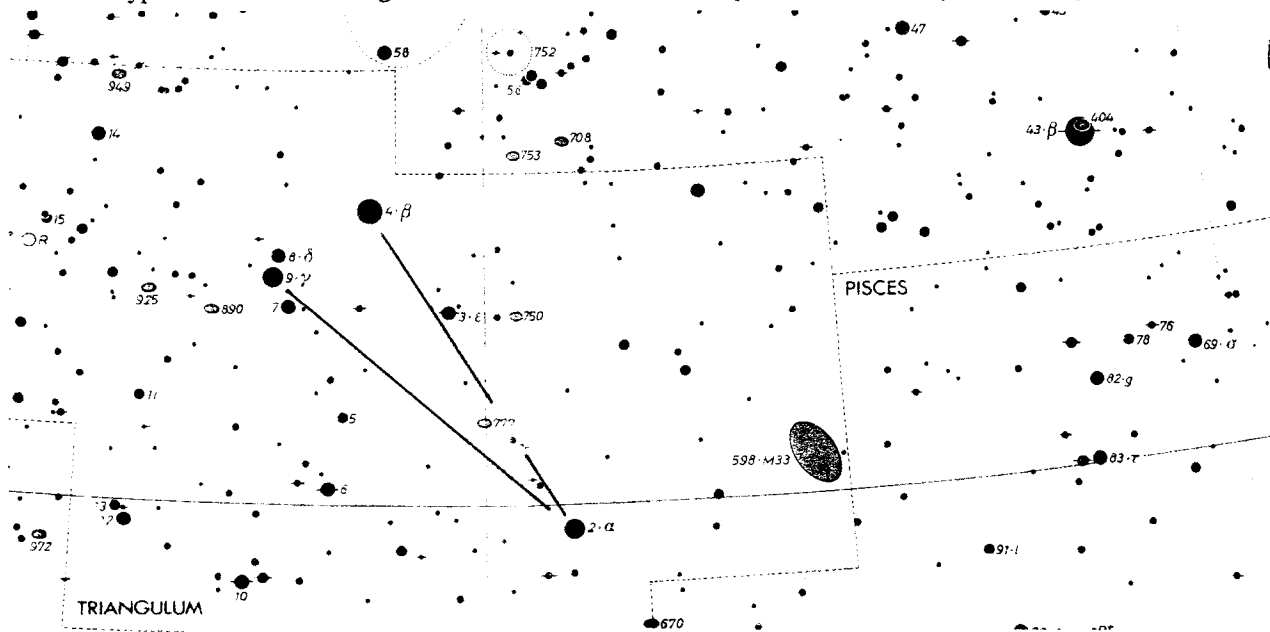
Pushing Your Limits With M33

by Andrew Krochko

The Pinwheel Galaxy, M33, in Triangulum is the fourth brightest external galaxy in our night sky. Only the Large and Small Magellanic Clouds and the Great Andromeda Galaxy (M31) are brighter. Long exposure photographs show M33 as a beautiful face-on galaxy with blue spiral arms and red HII regions. M33 is a notoriously difficult object to see visually. Although it has a magnitude of 5.7, it is larger than the full moon and has a very low surface brightness. Despite this I observe it regularly from my Saskatoon backyard using only 8x36 binoculars.

To be successful, first find a place where there are no lights shining directly into your eyes and give yourself at least a few minutes to dark adapt. The easiest way to locate its position in the sky using binoculars is to scan slowly back and forth between alpha Trianguli and beta Andromedae. M33 lies about 1/3 of the way from alpha Trianguli. Alternatively, use the accompanying chart from *Sky Atlas 2000.0* to find the exact position. Once you have located its position there are a couple ways to coax it out of the darkness. The first way is to use averted vision. Your eyes are most sensitive to faint light about 20 degrees away from the center of your vision. Concentrate on the plotted position while forcing yourself to look away from it. It takes a bit of practice but this is an incredibly powerful technique. Another way is to use the natural sensitivity of your eyes to movement. Shifting your binoculars around slowly makes the galaxy much easier to see. Just remember that M33 will appear only as a suspicious brightening in the skyglow and eye noise when you finally do detect it. The visibility of M33 is very sensitive to sky conditions so if you can't find it try again another night. Everyone's eyes are different so vary your technique to see what works best for you. Seeing faint objects like this becomes much easier with a bit of practice.

A typical search for M33 goes like this: I find the charted position and usually see nothing there right



This chart is from *Sky Atlas 2000 Field Edition*, copyright Wil Tirion & Sky Publishing Corp.

away. After a bit of observing I can see a slight brightening in the sky background where it should be. I like to observe it for at least a few minutes. As I continue to observe, it seems to become brighter and its shape becomes much more defined.

Through a medium-sized telescope M33 appears as a subtly detailed grey glow. I was quite surprised when Rick Huziak showed it to me through Eetook, our club's 12.5 inch reflector, this past July. At first the I could see only the bright core of the galaxy but after a bit of coaching from Rick I saw both spiral arms, the giant emission nebula NGC 604 and many of the star clouds. Under very dark skies the spiral arms have been detected in telescopes as small as 4 inches.

Last month I wrote about the variable star Algol (Beta Persei). The eclipses visible from Saskatoon this month are: December 6, 6:19 p.m.; December 21, 2:24 am; December 23, 11:13 pm; December 26, 8:02 pm. If you missed last month's article, this star looks the same brightness as gamma Andromedae except during its eclipses when it looks significantly fainter. It takes several hours to fade and re-brighten and is at minimum light for about 2 hours.

The Mercury Transit

by Andrew Krochko

On November 15th Mercury made a rare transit of the Sun. These events happen about twice every 15 years. During this transit Mercury was 9.9 arc-seconds across, and at maximum transit was separated by only 6 arc-seconds from the Sun's north-northeastern limb. (As a comparison the Sun is 1800 arc-seconds wide). RASC members gathered at Cosmopolitan Park in Saskatoon to get a good view. People who brought instruments were Bob Christie with his C5 and solar filter, Rick Huziak brought his solar scope, Brent Gratias had his giant binoculars and two welding filters, and Gord Sarty brought his 60 mm refractor. Gord's scope projected the Sun's image onto a screen and produced surprisingly good images which several people could view at once. Other people in attendance were Alister Ling from Edmonton, Mike Stephens, Sandy Ferguson, Ken Noesgaard, Brent Gratias' parents, and myself. Our initial observation was that many sunspots, including several large groups, were visible. These may explain the frequent aurora that were occurring around that time. One of the sunspot groups could even be seen naked eye using only a welding filter for eye protection.

As the time of the transit approached some clouds started to move in and we were afraid that we might not be able to see the transit. At a few minutes after 3 p.m. Rick called out "*We have a bite!*", indicating he could just see the edge of Mercury in front of the Sun. Unfortunately for us, the Sun was soon obscured by clouds and over the next 20 minutes we could not follow the transit. However, when it cleared we could easily see the small black dot of Mercury, even with Gord Sarty's projection setup. As the transit progressed Bob Christie took pictures while Rick Huziak showed some passersby the transit. The people he showed it to seemed quite impressed.

This transit was the first I had ever seen. It was impressive to see how much darker Mercury was than the sunspots and how quickly the planet moved across the Sun's disk. As the planet approached the edge of the Sun it appeared to become elongated due to the "black drop" effect. The transit lasted about an hour and gave all of us an opportunity to witness a rare event.

*It's Past the Time
to Renew!*

for 1999-2000

Membership from Oct. 1 to Sep. 30

Send payment to the Centre mailbox.

Regular - \$40.00

Youth - \$22.50

Life - \$720.00

limited space due to the membership list. Anyway - here are Darrell's new and impressive numbers!

Finest NGC - 101 Herschel - 225

Shadick's "Odd" Date

by Stan Shadick <shadick@sask.usask.ca>

You may be interested to note that if you write out Friday November 19th using numbers only you need to use only odd digits (19/11/1999). This may not seem too unusual to you because there have been 3 dates during that week that contained only odd digits (15/11/1999 & 13/11/1999). After Nov. 19, 1999, the next date with odd digits only will not occur until January 1st, 3111 (1/1/3111). Have an odd day!

The New RASC Membership List

by Bob Christie <

<christie@sk.sympatico.ca>

I have finished compiling the new membership list from information supplied by the Youngs. A copy of this list appears as the centerfold of this issue. I filled in missing information from previous lists, phone book, and members input from the last general meeting. If members have any changes or comments, please call me at 931-2115 or e-mail me at the above address.

**Messier, Finest NGC & Herschel
Page Still on Vacation**

Since Darrell is the only one who has sent in updates, this page is taking a rest. (I also have

U of S Observatory Hours

The U of S Observatory is open to the general public every Saturday evening. Admission is free. The observatory is located on campus, one block north of the Wiggins Avenue and College Drive entrance. On clear evenings visitors may look through the 6-inch refractor to view Jupiter, Saturn, the moon, star clusters and other exciting astronomical objects. For further information, phone the recorded Astronomy Information Line at 966-6429.

**Hours: December - February
7:30 p.m. - 9:30 p.m.**

JR. ASTRONOMERS/YOUTH REPORT

by Sandy Ferguson <ferguson15@hotmail.com>

The Centre's youth group is now back in full swing. This year we lost a number of our older members, as they entered high school this September and are now much busier. However, we gained some new, younger people and our membership now stands at 22 children. This includes actual RASC youth members, his or her siblings, who are also part of the group, and children of adult Saskatoon Centre members. We meet at Nutana Collegiate one Friday a month.

We have had a couple of busy nights recently. On Friday, October 22nd the Warman Cub Pack visited us, as they had requested help in working toward their astronomy badges. About 20 Cubs turned up, all in uniform, eager to do some skygazing. The sky was very good that night, although the moon was a nuisance, and after some briefing indoors we all traipsed outside to the east side of the Collegiate to start work. Youth group members Olaf Lokken, Adam Klemischewski, Joey Eremondi and Lorne Jensen each led a group of Cubs and helped them with their star charts. The kids were required to locate the Big Dipper, planets, and some constellations, as well as explain star movement and moon phases. Rick Huziak was kind enough to bring along his 10" Newtonian and everyone, members, cubs and parents were treated to views of Jupiter and Saturn (*THANKS, RICK--MUCH APPRECIATED*). After the observing session we all went back indoors for treats, provided by Louella Jensen (Lorne's Mom) and Akelah Doug Fahlgren (*FOR WHICH, MANY THANKS!!*)

At the November 19th meeting we had two young visitors. Andrew Coulter, a friend of Graham Hartridge and one of the J. S. Wood Library astronomy program members, and Rusty Semler, a Grade 6 student from Bishop Klein School (where I had given a talk two days earlier) turned up to check us out. (I THINK they enjoyed themselves!) The night was clouded out, so we were unable to observe outdoors, but we covered the astronomical events of that week, being the transit of Mercury and the washed out Leonids. An award was presented to Lorne Jensen, the first of our group to complete the 25 object naked-eye observing list. *CONGRATULATIONS LORNE!!*

Our next get-together will be December 10th, when the group will be touring the U of S Observatory (our traditional December meeting location). Fingers crossed, please, for a clear night. All youth group members and their families are welcome. Following the tour the usual hot chocolate will be served downstairs.

Notice of the General Meeting of the Saskatoon Centre

Monday, December 13, 1999 at 7:30 p.m.

Room 8313, New City Hospital, Queen Street

Presenting:

SETI@HOME - Les Dickson

The Mercury Transit - Bob Christie, Al Hartridge, Sandy Ferguson

The Leonid Meteor Shower - A Storm and Lunar Impacts! - Rick Huziak

NOTE THE EARLY DATE OF THE MEETING TO AVOID XMAS!

The CENTRE LIBRARY Cleans Up It's Act

by Ellen Dickson & Sandy Ferguson

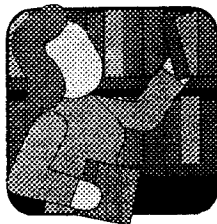
The ongoing process of re-organizing our Centre's library got back on track recently, after a break of a few months, when everyone was busy with SSSP, etc. On Sunday November 21st, Ellen and Les Dickson, Andrew Krochko, Darrell and Bev Chatfield and I got into the library, situated in the basement of the U of S Observatory, to tackle yet another set of shelves. This time we concentrated on the decades of periodicals resident there. There were over fifty years (YES, FIFTY YEARS!!) of various magazines--*Sky & Telescope*, *Astronomy*, *Science*, *Scientific American*, and many others going back to the '30s and '40s, such as *Wireless Magazine* and other obscure publications that weren't as familiar. It was necessary to be ruthless in our clean out of the magazines as our self space is quite limited.

Some time ago, after discussion with the late Prof. Ed Kennedy and meetings with Cheryl Avery of the U of S Archives, it was decided that our Centre would keep in our library only those periodicals dealing with astronomy, such as *Sky & Telescope* and *Astronomy*. We advised the Archives that before we disposed of other magazines, we would go through our copies of *Scientific American* and *Science* to determine whether we could provide the Archive's collections with any missing copies of either periodical. Andrew Krochko ran over to the university's main library to check out missing issues of both titles and found that there was nothing missing of either, so all copies of those magazines were purged from our own collection. Anyone who wishes to acquire a copy of either of these periodicals can now access them at the University's Main Library.

We have now sorted and recorded about 1/4 the inventory in our library's collection. This includes all the books available and the periodicals, which also include newsletters from all Centres (we only keep the 6 most recent copies from other Centres at one time). We still have to insert borrower cards into those publications that do not have them. The remainder of the library's inventory to be completed includes photographs and slides, historical items and publications, lecture and presentation notes, published articles of various members, National Office information, various brochures and other publications from other sources and lots more. We also have several boxes of material donated by Prof. Kennedy that must eventually be recorded.

Ellen and I expect to have a preliminary listing of books and mags available for borrowing by members at the January meeting. At long last we should be in a position to start using again one of our Centre's best resources.

Thanks Bev, Darrell, Les and Andrew. It's amazing how much you can plough through



The Leonid Storm - and Now the Geminids and Quadrantids!

by Rick Huziak

We have had a rash of excellent meteor showers this year. The Leonids delivered with a smaller storm this year (over Europe) with up to 5000 or 6000 visible per hour (ZHR = ~10,000). There is also news of 5 videotaped impacts on the lunar surface! However, the much heralded Linearids a week before fizzled - no definite meteors were seen. Keep your chin up (and eyes up, too!) since we have 2 excellent showers about to occur over OUR area! The Geminids run from Dec 7 - 17 and peak on the 13/14, often producing 100 or more yellow meteors with blue smoke. The Quadrantids (Draconids) are visible from January 1 - 5 and peak on Jan 3/4. This shower produces 60 - 200 meteors per hour. Both showers are above our horizon all night long and are not affected by the moon! Keep watching!

Ellen Dickson has been bugging me to publish the below news article for months - and here it is! Congratulations on getting quoted, Ellen. It's great when our members become media astronomy 'experts'! The article is copyright Dave Down, the *Prairie Post* newspaper (Swift Current).

12 - PRAIRIE POST - Monday, August 23, 1999

Perseids put on show

By Dave Down
Prairie Post

Cypress Hills

With necks craned to a night sky opened wide by the new moon, thousands of prairie star gazers marvelled at the luminescent streaks left by the Perseid meteor shower.

Ellen Dickson, registrar for a Cypress Hills area gathering of the Royal Astronomical Society of Canada, says a shroud of clouds alternately blanketed and opened the sky throughout the three-day celestial event, making viewing the meteors a hit-and-miss game.

The Perseid meteors are chunks of space debris in a band that the Earth orbits through once a year. They are named the Perseids because they appear to radiate from the Perseus star formation.

"Wednesday night was all clouded out, but we counted a number of them within one hour on the Thursday night," says Dickson.

The first two nights of the star party, which began August 11, were closed to the public so members of the society could make observations with a minimum of light nearby.

"When it was opened to the public we had quite a collection, about 200 people," says Dickson. "They came from all across western Canada."

Gatherings of amateur astronomers happened across the prairies, with observations being made at the Sunridge Observatory near Seven Persons, Alta. and in Medicine Hat parks as well as in other communities.

Some people had to fight their way past the spectre of lousy weather during the days leading up to the Perseid shower, but the intrepid star gazers who stuck it out witnessed some spectacular meteors.

"We saw some very good ones," says Dickson.

If you were scared off by the weather, you'll have another shot at viewing the Perseids in a year's time. The star party will happen again in the Cypress Hills and will be open to the public.

"A lot of people seemed to be interested in coming out again. We will be a little later next year, August 25 in fact," says Dickson. "We go by the new moon, because that tends to give us better skies to look at."

Bob Deptuk, a naturalist with the Cypress Hills park, says the park was alive with people during the public portion of the viewing and people were treated to a couple of interesting evenings.

"The astronomers that were out on the Friday night counted about 300 meteors, and there was intermittent cloud so they didn't see all of them," says Deptuk.

The dome of the Sunridge Observatory near Seven Persons is lit up by the faint light of the stars during the Perseid meteor shower, which happened August 11 through August 14.

The Deep Sky Observer

Mostly NGC 7331

by Scott Alexander

Hi folks! How was your summer? Mine was great! OK - on to the astronomy. The first object that I wanted to look at is a galaxy called NGC 7331. It has a magnitude of 9.5 and its size is 10.7 x 4.0 minutes of arc, which makes it a fairly big galaxy to look at. Also, this galaxy is visible in 10x50 binoculars from a dark sky sight. Start from eta Andromeda (which is the top right star in the square of Pegasus). Go four degrees straight up and 1 degree over to find the galaxy. What you will see is a spiral galaxy with a bright center and fainter arms in a circular shape around it. The center is the most obvious thing that you'll see in NGC 7331. On one side you may see a dust lane close to the center of the galaxy. Also, there are a number of star-forming regions around the spiral arms - have a look for them. Use high power. The right ascension of NGC 7331 is 22 hours 37.1 minutes and the declination is +34 degrees and 25 minutes.

All around this galaxy is a collection of more galaxies forming a small cluster. There are four of them right next to NGC 7331. This is a nice cluster to look for in a 8-inch or 12-inch scope. These galaxies range in magnitude from 13.3 to 15.8, which is visible with the scopes that I mentioned. Two of them are face on spirals. One has fairly wide arms and is a bit farther out from the main galaxy. The closer one to NGC 7331 has very short arms which are very tight to the central mass of the galaxy.

These galaxies are all within 9.0 arc minutes of NGC 7331. And, no, you don't have to know what an *arc minute* is. Just think of it as a distance scale from one object to another, like I would say that I live 20 miles away from (in my case) the town of Elrose, so on a map you would be able to look and know the location of my farm. *Minutes of arc* is the same thing as distances from one location to another on a map of Saskatchewan. These galaxies are all fairly close within a few eyepiece widths of NGC 7331.

For those of you that want to know the distance in arc minutes of these objects. Here they are:

1	NGC 7335	3.7 arc minutes
2	NGC 7336	5.4 arc minutes
3	NGC 7337	5.3 arc minutes
4	NGC 7340	8.3 arc minutes

So these galaxies are all easy if you use 7331 as a starting point.

Now on the next object called TX Piscium, a variable star in the constellation of Pisces. This variable varies from magnitude 5 to just 6th magnitude - not a great amount granted, but why I mention it is because this star is a very red star. This is because of all of the carbon in it's atmosphere. but it happens to look orange in binoculars or small telescopes, which is odd (to me anyway). To find this variable go to the *circlet* star pattern, which is right below the square of Pegasus, then go to the farthest right star in that pattern and look for a very slightly orange star. That will be TX Piscium.

Hope you have fun looking for these objects. Till next month, Gooday, eh? And clear skies as always.

Minutes of the General Meeting

Monday, November 15, 1999

held in Room 8313, City Hospital, Saskatoon, 7:30 p.m.

recorded by Darrell Chatfield, Vice-president

1. Meeting called to order by Les Dickson.
 2. Last month's minutes adopted, moved by Scott A., Jim Young seconded.
- Opening remarks by new President, Les D.: he thanked all executive members for staying on, and recognized new O. G. organizer, Andrew Krochko. Les also thanked Darrell C. Rick H., and Terry N. for handling the request for funding at IMC Kalium Mine, near Colonsay.
3. Bob C. talked about the upcoming supper to celebrate the club's 30th. year anniversary. He made a sign up sheet. People were to sign tonight, because the order had to go in tomorrow.
 4. Les reported that there are 21 temporary members, and Jim reported that there are 50 paid up members in the club. Les made a strong reminder to members to get there dues paid, and suggested a phoning tree.
 5. Andrew K. reported on the Mercury transit. There were 6 other members present near the Broadway Bridge. They also saw a lot of sunspots.
 6. Sandy reported on the junior group. She lost 6 kids to High School; she gained 4 new ones, for a total of 20 youth. Both youth groups meet on the same night.
 7. Bill reported on the progress at Sleaford. Aluminum flashing finished by Rick H.; Bill and Darrell opened up wall to new part and did some wiring; Bill knows an electrical contractor who take out a permit on the site wiring. Dale Jeffrey can donate some new aluminum siding to Sleaford.
 8. Jim Y. gave financial report: \$7962.00 in General Account; \$3710.00 in Sleaford account, and \$2652.00 in Telescope fund.
 9. Darrell reported on donation of \$2000 from IMC Kalium Mine: Rick said funds are available from a local car company, who are willing to donate a sum of money to the club in exchange for a donation of a 60 mm. refractor.
 10. Dec 13, 1999 is date of next general meeting. Les is looking for speakers, and presentations, slide shows, etc.
 11. Jean D. reminded everyone to get their RASC and Skywatch calendars.
 12. Meeting adjourned at 9:35 p.m.

Alister Ling Visits the 'Toon

by Rick Huziak

He appeared out of nowhere at the Mercury Transit, so we figured we had to feed him beer at Lydia's and supper at the Great Buffet of China. For this he gave talk at the General Meeting (*Light and Colour - excellent!*). More coffee at Tim's and an early breakfast at Grainfield's. *Only the best for our guests!*



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Omcon	- 80mm F7 - Great Starter Scopes	- \$360 - \$600
Vista	- 80mm F5/F11.4	- \$300 - \$580
Vista	- 90mm F11.4	- \$510 - \$580
Vista	- 102mm F9.8 equitorial, K10&25 6x30 finder	- \$700
Omcon	- 105mm F9.5 eqitorial, K10&25 6x30 finder	- \$1060
Antares	- 105mm F9.5 equitorial, PI10&25 6x30 finder	- \$1290
Sky Watcher	- 120mm F8.3 "The BIG One"-2" focuser&Diag	-\$1000
Antares	- 120mm F8.3 - Vixen Premium Optics	-\$1760
Sky Watcher	- 150mm F8 "New for November"	-\$1530

REFLECTORS -by Omcon, Vista, Sky Watcher, Antares

3" F9.3, - Tripod, K25, &1.25 focuser	-\$150-\$160
4.5" F8, - Tripod, eyepieces, 1.25 format, AZ mount	- \$200
4.5" F8, - Tripod, equitorial mount, eyepieces and more	- \$240-\$380
5" F8, - Tripod, equitorial mount, optical window	- \$490
130mm - F6.9, neat small scope, equitorial mount, etc.	- \$390
150mm - F6.7, an affordable/portable 6" scope	- \$730
150mm - F5, parabolic mirror, EQ.mount, 6x30 finder	- \$780-\$800
200mm - F5, (8") parabolic mirror, EQ.mount 9x50finder	- \$1180
200mm - F5 (8") Top of the Line, 10x50finder, 2" focuser	-\$1250
6" Dob. - F8, spherical mirror, 1.25 focuser	-\$490
8" Dob. - F6, 1.25 focuser, PI 26+2xbarlow -Great Scope	-\$650



STOCKING STUFFER IDEAS
Eyepieces, Filters, Telerads

