

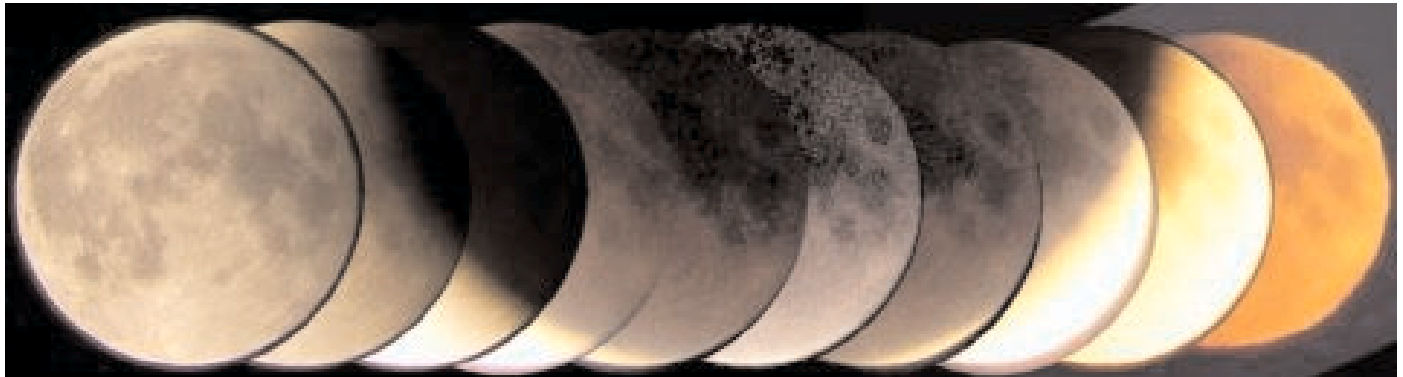
Saskatoon Skies

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

Vol. 34, No. 12

Merry Christmas, Everyone!

December 2003



The big event of November was the total Lunar Eclipse on the 8th. Not that eclipses of the moon are that rare, but this time the weather, skies and timing cooperated to make this a spectacular event for the public. In this picture, ten digital pictures of the eclipse taken every 25 minutes are put together to show the path of the moon through the earth's shadow. This shows the shape and size of the earth's shadow at the moon. Even though the earth is almost 4 times the size of the moon, the umbra, or the darkest part of its shadow, was only 2.6 times the diameter of the moon for this eclipse according to the *Observer's Handbook 2003*. See more eclipse stories and pictures later in this issue. — PHOTO BY TENHO TUOMI

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Membership?

It's never too late to join!

Regular: \$52.00/year

Youth: \$27.50/year

The Saskatoon Centre operates on a one-year revolving membership. You will be a member for the next 12 months no matter when in the year you join. If you do not want to join at this time, ask to get onto our FREE 3-month Temporary Membership list. You will receive regular mailings of our *Saskatoon Skies* newsletter and will be invited to participate in Centre activities. Members are encouraged to renew early to avoid disruption in publications. Renew through the membership coordinator, Mike Clancy, or renew through the National Office and let Mike know that you did!

Benefits of Membership in the Saskatoon Centre

- knowledgeable & friendly amateur astronomers
- use of the Sleaford Observatory
- use of the U of S Observatory (after training)
- *Saskatoon Skies* Newsletter
- **Observer's Handbook 2004**
- **The Journal of the RASC** (bimonthly)
- **SkyNews Magazine** (bimonthly)
- use of the Centre library
- discounts to **Sky & Telescope Magazine**
- discounts of Sky Publishing merchandise
- free, no-cost, no-obligation, 3-month temporary membership if you don't want to join right now!

U OF S OBSERVATORY

The U of S Observatory is open to the general public every Saturday of the year. Admission is free. The observatory is located on campus, one block north of the Wiggins Avenue and College Drive entrance. On clear nights, visitors may look through the vintage 6-inch and tour several displays. Current events are recorded on the Astronomy Information Line at 966-6429.

Observatory Hours:

January-February	7:30-9:30 pm
March	8:30-10:30 pm
April	9:30-11:30 pm
May-July	10:00-11:30 pm
August	9:30-11:30 pm
September	8:30-10:30 pm
October-December	7:30-9:30 pm

About this Newsletter...

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Saskatoon Skies is published monthly by the Saskatoon Centre of the RASC. Distribution is approximately 100 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. Submitted materials can be returned upon request. 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 .EPSs, .TIFs or .JPGs (.GIFs also accepted). Send e-mail submissions to the editor at <tuomi@sasktel.net>. Please send articles in "generic" formats with simple formatting – one tab at the beginning of paragraphs, one space after commas and periods. A separate by-mail subscription to *Saskatoon Skies* is available for **\$15.00** per year. *Saskatoon Skies* is also posted on our Saskatoon Centre homepage as a .pdf file and can be downloaded free-of-charge. Members may choose to receive the newsletter by regular mail or via the Internet. Articles may be reprinted from *Saskatoon Skies* without expressed permission (unless 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.



Bottle Drive & Canadian Tire \$

by Darrell Chatfield

Please remember our on-going bottle and now Canadian Tire money drive to fundraise for the Centre. Bring them to General meetings. I will collect them after the meeting concludes. If you cannot make it to the meeting but would like to contribute, please call me at 374-9278.

RASC Calendar of Events

DATE	EVENT	CONTACT	TELEPHONE
2003			
Dec. 13/14	Geminid Meteor Shower peak	Brent Burlingham	244-9872
Dec. 15	Executive Meeting – Rm 8313, City Hospital, 6:30 p.m.	Rick Huziak	665-3392
Dec. 15	General Meeting – Discovering Earth-like Planets (L. Dickson); Discovering New Variables (R. Huziak); Astronomy 212 Projects (S. Shadick) – Rm 8313, City Hospital, 7:30 p.m.	Rick Huziak	665-3392
2004			
Jan. 19	General Meeting – How to Observe! (Darrel Chatfield) – Rm 8313, City Hospital, 7:30 p.m.	Rick Huziak	665-3392
Feb. 16	General Meeting – program tbd – Rm 8313, City Hospital, 7:30 p.m.	Rick Huziak	665-3392
Mar. 14-27	Messier Marathon dark period	Brent Burlingham	244-9872
Mar. 15	General Meeting – program tbd – Rm 8313, City Hospital, 7:30 p.m.	Rick Huziak	665-3392
Apr. 19	General Meeting – program tbd – Rm 8313, City Hospital, 7:30 p.m.	Rick Huziak	665-3392
Apr. 24	International Astronomy Day	Brent Burlingham	244-9872
May 17	General Meeting – program tbd – Rm 8313, City Hospital, 7:30 p.m.	Rick Huziak	665-3392
June 21	General Meeting – program tbd – Rm 8313, City Hospital, 7:30 p.m.	Rick Huziak	665-3392
Aug. 12-15	SSSP '04	Les Dickson	249-1091



Monday, Dec. 15, 2003, 7:30 pm – Room 8313, City Hospital

Presenting:

Detecting Earth-like Planets Around Other Stars

by Les Dickson

To date, only Jupiter-sized planets have been “observed” around other stars, but the technology to detect earth-like planets is not far away!

Honest-to-Goodness New Variable Stars Discoveries

by Richard Huziak

New amateur CCD camera surveys are allowing us to do on-line data-mining to discover dozens of new variable stars from clues left by amateur observers. (This talk was postponed from last month.)

A Short Poster Presentation of Astronomy 212 Projects at the U of S

by Stan Shadick

Each year, Astro 212 students are required to do a poster presentation at the end of their lab. Stan will summarize their achievements.

REMEMBER... YOU CAN SIGN UP TO GET THIS NEWSLETTER ON THE INTERNET instead of waiting for snail-mail. Current electronic subscribers *save us over \$320/year* in mailing costs.

Observing Group Report *by Brent Burlingham <brent.burlingham@usask.ca>*

Through some still mysterious and incomprehensible process, I am your new Observing Group Coordinator.

I'm a relative newcomer to the R.A.S.C., and pretty much a rank amateur. Since I have no idea what I'm doing, I intend to rely on the membership to tell me what they would like to see happening in the Observing Group. Feel free to mail (brent.burlingham@usask.ca) or phone (306-244-9872) me with any thoughts you have on how we can make the Observer's Group meet your needs.

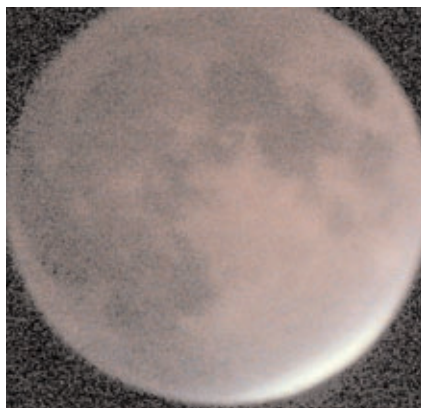
I have found the Observer's Group to be an invaluable learning resource – there is a great deal of experience and knowledge floating around, and all you have to do is ask. Please contact me if you'd like to be added to the mailing list for the Observer's Group and come out and participate.

One of the initial ideas suggested for the Observing Group is some specific observing challenge nights – i.e., a Chatfield Binocular List Challenge. Let me know if you have any ideas for observing event challenges, and I'll start promoting them over the next few months.

The Lunar eclipse on November 8th provided an opportunity to do some sidewalk astronomy, watch a beautiful total lunar eclipse, and give the public a chance to find out about R.A.S.C. Saskatoon. About ten members gathered north of the Bessborough Hotel to observe the eclipse already in progress as the Moon rose over the University of Saskatchewan.

We had about twenty visitors take advantage of the view through our scopes and ask questions. Everyone left with a centre brochure and a bit of a taste of astronomy. Another successful sneaky implant of the urge to look up and wonder in the general public.

Lunar Eclipse at the Stone Observatory *by Tenho Tuomi <tuomi@sasktel.net>*



MOON PHOTOS BY GARRY STONE

Garry Stone and I often get together for observing sessions at either of our observatories South of Saskatoon. (You are welcome to join us at any time.) We joined forces to observe the Total Lunar Eclipse on November 8 at Garry's observatory for it had a better view to the Northeast where the moon was rising. For once the skies were clear and the weather was perfect. I took a digital picture of the moon every 5 minutes through my 80 mm refractor mounted on an equatorial mount. Garry took digital pictures through his 80 mm

refractor and his C8. Garry's 4.5-inch refractor was used for visual viewing. We took 35-mm pictures as well but they are still in the cameras.

Take a look at <http://www.lex.sk.ca/eclipse.html> where you will see the cover photo made from these pictures, and a movie of the eclipse.

During the totality of the eclipse Garry and I looked for comet 2P/Encke but failed to find it. However I did find the comet a few days later.

Rick's Ramblings... by Rick Huziak, President <Huziak@SEDSystems.ca>

Man! The November General Meeting was the roughest one I've ever chaired! Sometimes technology failure just does that to you, and you are left in the cold. On a whim, I threw in the business part of the meeting at the beginning (had a premonition that something would go wrong) and that kept us busy until most of the technical issues were mostly resolved. On the positive side, our speaker/past member Kouji Meada left me a CD-ROM of his Leonid meteor trails (burned in haste as we switched laptops to try to resolve the projector incompatibility), and I will show it one day when we have the video projector back. The Leonid trails video was awesome even on his small laptop screen.

Speaking of a video projector, Les Dickson and I had a long talk in the parking lot after the meeting where we thought of good reasons why the Centre might invest a few thousand dollars in the purchase of our own video projector. The basic reasons are that we always seem to be able to borrow a projector, generally through the courtesy of Dan Neves, and it mostly works out, but this means booking it every few months, and having to pick it up and deliver it back, and then worrying if it will work first time with our speaker's equipment. Renting from another sources costs \$150 or more a day, so that is very expensive. I don't remember when we've been completely trouble or hassle-free with a projector we've borrowed or rented. On the other hand, owning a projector ties you into fairly expensive (and soon inflexible) technology

for at least 2 or 3 years – the total cost of which is more than renting for the that period. But owning means convenience. All member presenters could then plan to make Powerpoint presentations, if they choose, knowing they will have a projector to use. We could tell other speakers in advance what we would have so they can configure their equipment in advance. We could use it for public presentations. We even thought that we might be able to recover cost by renting the projector out to other organizations if our members are their members. We'd also have the projector available without worry for the entire SSSP. We will certainly be discussing more the buying of a projector.

We are still looking for someone who'd like to be the General Meeting Coordinator. We've discussed this position on and off for a few years. The duties of the GMC, which are certainly negotiable, would be to:

- make sure the meeting room is booked for each meeting (we cannot book more than a month or two in advance),
- maintain the coffee supplies, and get the coffee, Centre brochures and general handouts to the meeting each month,
- book or borrow whatever audio-visual supplies we need for the meeting speakers.

Your opinions are valuable – please call, email or talk to me at the December meeting!

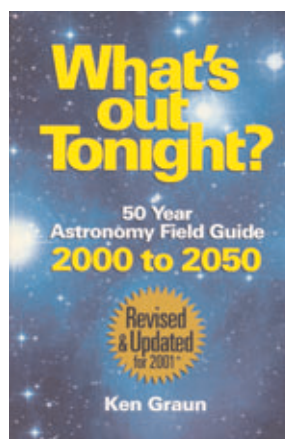
BOOK REVIEW: What's Out Tonight by Les Dickson <dicksonl@sasktel.net>

What's Out Tonight: 50 Year Astronomy Field Guide 2000 to 2050 by Ken Graun, Ken Press: Tuscon, AZ, 2001.

At the November meeting I briefly introduced this book which I had recently purchased from the Discovery Channel Book Club. I thought that those of you who were not at the meeting might be interested in reading about this new publication.

This is an excellent practical field guide for any observer, beginning or advanced. The most useful feature of the book, which compelled me to order it, is the collection of tables presenting 50 years of observing data. Some of the tables include:

- Phases of the Moon
- Lunar and solar eclipses visible from North America
- Greatest elongations of inferior planets
- Oppositions of superior planets
- Conjunctions of the Moon and planets
- Positions of planets at sunset and sunset
- Sunset and sunrise tables for 213 North American cities (including Saskatoon!)



The tables are supplemented with background information presented at a beginning observer's level. Included is information on the Sun, Moon, planets and other bodies of the Solar System, stars and constellations (including monthly star charts), observing hints for Solar System and deep sky objects, and a basic introduction to binoculars and telescopes.

It is easy to use, with tabbed pages, explanatory illustrations, photographs of solar system and deep sky objects, a glossary of terms and a good index.

This book will not supplant the RASC's "Observers Guide", but it is useful at a basic level, and will give you enough information to make observing plans and hopefully not miss some important astronomical events in the future. If nothing else, you will know on what dates the New Moon will fall for the next 50 years!

This soft cover book is listed at CAN\$ 41.95, a good deal at about \$1 per year.

Editor's Corner by Tenho Tuomi <tuomi@sasktel.net>

Hello! I am the new editor of Saskatoon Skies. May I introduce myself?

I farm near Lucky Lake, about 150 km South of Saskatoon. I have enjoyed being part of the Saskatoon Club for the last two years but taking an active part in it has been difficult at times from this distance. Being the editor of the newsletter seemed to be the one job that I could do for the Club from my remote location.

My interest in astronomy started in 1964 with the purchase of a 30 mm telescope and a copy of the *Observer's Handbook*. It never progressed much beyond binocular observing but I always kept in touch with astronomy through subscriptions to *Sky and Telescope*, and then to *SkyNews* when it began. The jump to serious observing came in November 2001 when I was asked to teach astronomy to some local children. As luck would have it our first observing project was the now famous Leonid meteor storm of November 18, 2001. I was hooked. I bought my first big telescope in January and joined the Saskatoon RASC club in February.

I don't anticipate any major changes to Saskatoon Skies. Rick Huziak and Linda Janzen have done a great job in setting everything up. Linda will still continue to do the final layout and production, and a volunteer crew from Saskatoon will continue to do the collating and mailing. I like the format, especially the articles by local observers, and I would like to encourage even more of those.

Send Messier and other totals, observations, and pictures of interest to the Observing Group coordinator Brent Burlingham <brent.burlingham@usask.ca> who will prepare observing reports for Saskatoon Skies. Send articles and letters to the editor to me at <tuomi@sasktel.net>. When sending pictures please keep in mind that I don't have high speed Internet and my e-mail box limit is 5 Meg. The deadline for submissions is the 26th day of the month.

This winter the earliest sunset is around December 13 at about 4:52 p.m. and the latest sunrise is around December 29 at about 9:17 a.m. I wish you clear skies to take advantage of those long nights, and wish you a Merry Christmas.

A Tale of Two Meteor Showers by Rick Huziak <Huziak@SEDSystems.ca>

The last two major meteor showers of the year occur in December. The best known of the two, the Geminids (IMO = GEM), peaks overnight on Dec. 13th - 14th. Despite coinciding with a moon that is barely past full, this shower is always interesting, since it can produce nice 0 or -1 magnitude yellow fireballs that trail blue smoke. However, doing formal counts may be difficult with the moon so bright. These meteors are detectable from Dec. 7-17 and can produce up to 120 per hour in dark skies. Maybe 1/5th will be detectable with the moon out coming from a point near Castor (alpha Gem), the upper twin.

Also worth looking for are the Ursids (IMO = URS). This little-known shower radiates from the bowl of the Little Dipper near beta UMi between Dec. 17th and Dec. 26th, peaking at 9 pm CST on Dec. 22nd. Although the shower

produces only 10 meteors per hour, the shower occurs without a moon present, and it has been known to produce outbursts in 1945 and 1986 (>100 per hour), and enhanced activity in 1988, 1994 and 2000 (>30 per hour). The meteors are slow and faint. Counts are badly needed to study this shower.

Counting is easy. You count how many meteors YOU ALONE see (even if you are in a group). Counts are preferred in 1-hour 'bins' (record your start and stop times). Record the magnitude of the faintest star you can see easily by eye. That's it! You do not have to, but if you like, for additionally useful information, you can estimate the magnitude of each meteor. Then report your observations to the International Meteor Organization (IMO) at <visual@imo.net>. You can also get the awesome Meteor Calendar for 2004 at <www.imo.net>.

The Planets this Month, December 2003

by Murray D. Paulson, Edmonton Centre

Dear Santa,
Yes, I have been good this year, and
I really would like a set of those
Takahashi Orthos for Christmas...

Mercury has slipped out from behind the sun and on December 12 it sits at dichotomy, or half phase. It will be 22 degrees from the sun in the evening twilight shining at magnitude -0. If you point a scope at it, you will see its 7.5" half disk in the shimmering twilight. I am not sure of this apparition's visibility but give it a try. Mercury sets at 5:30 p.m. in the SW. I recommend using binoculars to search for it. Please drop me a line if you are successful. A mere two weeks later on December 26, Mercury passes between us and the sun in inferior conjunction. By early January, Mercury will have swung back into the morning sky and by January 11th, it will sit at greatest western elongation, 23 degrees from the sun. One month from successive observing windows, can you see it through both?



Nov. 15, 01:30

Venus at the start of December is 11.6" in diameter and shines at magnitude of -3.9. It sets about 2 hours after the sun and shines brightly in the evening twilight. By early January, the evening ecliptic has tipped up and Venus sits high in the early night sky. It shines at magnitude -4.0 and shows a disk of 13.1". Over the last week of December, you can watch Venus as it approaches and then passes Neptune. Closest approach is on the night of the 30th when the two will sit 1.75 degrees apart. The glare of Venus will make this a bit of a challenge, so dig out your Neptune chart and see if you can catch both of this disparate pair. Both planets wreathed in cloud but one hot enough to melt lead and the other 200 degrees below zero C! No, Don't bother trying to find Triton!

On December 1 the 8.6 day gibbous moon will pass 4.5 degrees under Mars in the twilight and then the pair will spread apart as the evening progresses. By the 10th of December Mars will have dimmed to -0.2 magnitude and will finally drop below 10.0" as it culminates 35 degrees above the horizon. This apparition has been received with great fanfare and general excitement. It certainly will be one of the best I have seen. The apparition in 2005 will rival it only due to Mars sitting at a more northerly latitude. I have played enough hide and seek with Mars and the trees in my back yard to look forward to the next apparition. The next

opposition will more congenial. Some of the amateur highlights this apparition were the imaging of the great volcanoes on Mars and the big one is the imaging of craters with an amateur based 10" scope. Pretty amazing! What will they do for an encore in the fall of 2005?

Mars passes the point of the Vernal Equinox on the ecliptic on Dec. 17 and thus moves into the Northern Hemisphere. By early January the eyepiece will show a small gibbous planet merely 8" in diameter glowing at magnitude 0.3. By now it will have climbed the ecliptic to sit 41 degrees above our southern horizon as it transits the meridian just after 6 p.m.

Saturn has returned to our evening sky with the great fanfare of an occultation of a star. The event had the benefit of somewhat clear skies and more than a few glimpsed the star in some of its poses with the rings and Saturn. I have included an image of Saturn at half time in the event. We enjoyed watching the halo of moons marching around the planet like hands on a watch as the night progressed. An event like this helps keep you pinned down so you can notice the motion of those moons. Saturn is at opposition on the 31st of December, so watch over the month to see the play of the shadow of the planet on the backdrop of the rings. Near the beginning of the month Saturn shines at magnitude 0.2 and shows a disk of 20.3" in diameter.

Iapetus is a very interesting moon because its brightness changes so much as it orbits Saturn. It is tidally locked with Saturn and its leading side is brighter than its following side by almost 2 magnitudes. On the 11th of December, Iapetus sits above and little farther out from Saturn than Titan, in line with Titan. It will be about magnitude 11 at the time. If you keep track of it as the month progresses, you will note how much brighter it gets as it swings out to the western elongation, 10 arc minutes from Saturn, coincidentally on December 31st. It will dim over the next month as it swings to the eastern side. It will be at eastern elongation in early February.

Jupiter is finally returning to our skies, and Larry Wood gave it a good report on the night of the Saturn occultation. He isn't the only one eager for the lord of the planets return. By early January, Jupiter rises just after 10:30 p.m. and shines at magnitude -2.2. In the eyepiece, it shows a 40" disk but sorry, no more mutual events. Next month, more on Jupiter satellite events.



Ask AstroNut

The **Ask AstroNut** column is an anonymous question and answer advice column, where you can ask any question you want, boneheaded or brilliant, and the editor will find someone who will give you a somewhat educated answer.

Dear AstroNut: I keep wanting to ask you about your trip to Arizona. I was especially struck by the image of the Barringer Meteor Crater. It just blew me away! Can you tell me what it was like to be there? Can the public go out and walk on it? What did you think about?

AstroNut answers: It was awesome. You can also see it from 50 miles away in all directions, since the rim is uplifted probably 200 feet from the otherwise flat desert. It looks just like you see craters projected on the edge of the moon! To think that a hole that size could be caused by a meteorite about 100 feet across! What struck me was the depth of the hole. It is fully 1/2 as deep as it is wide – this doesn't show in the photos, but that's what really strikes you – how far down this is! (And it is about half-full of sediment from wall collapse and blown sand!)

There is a path along part of the top of the rim, and a set of steps that takes you maybe 100 feet downward. From there you kind of 'hang on the wall' and get a really good impression of being right within this super-large hole. You can also take a paid tour and go down to the floor. Unfortunately, the wind was blowing at 100 km per hour the day we were there (I'm not exaggerating). It was so windy they had to close off the rim walk and floor walk since you could easily get blown down the crater wall. I had some trouble even holding my camera steady for clear shots. You can't go meteorite hunting in the vicinity, but some clowns tie magnets to their shoes and pick up very small meteorites!

I once read an article in *Sky and Tel* about a new set of multiple craters found in South America about 6 or 7 years ago. Evidence was that these craters occurred in barely prehistoric times – likely within the last 10,000 years, so it is possible that the first settlers of the Americas actually may have witnessed this impact. I thought of being them. The meteor that made the South American crater field was bit bigger than the one that made Barringer, but the effects to nearby ground-dwellers cannot be pleasant! A meteor this size produces a phenomenon that we cannot begin to imagine. First, a ball of fire is noticed traveling high in the sky, but it soon becomes much larger than the sun and many times brighter. It is silent – no sound – no indication of what is to come, since it is moving 50 times the speed of sound

as it hits the atmosphere, so it out-races even its own horrendous din. It would certainly attract your immediate attention, and cast strong shadows – you'd turn to see what was happening even if you didn't see it directly first – alerted by dancing shadows more distinct than those from the sun. And to a rock this big, it doesn't care that there is an atmosphere there at all. It doesn't even slow down! It just pushes the air away in the shock wave.

Then major crap happens. The first sensation you would feel would be hurricane-force winds blowing you off your feet as the shock wave reached you at likely 500, maybe a 1000, km per hour; from dead silent to deafening roar. If you survived the blast, the heat would be incredible for a few seconds – thousands of degrees – hotter than the surface of the sun! Everything along the shock wave path that was blown over would spontaneously begin burning – vaporizing – much like an A-bomb blast. Nothing would survive. But if you could somehow survive then you'd notice that the blast has gone by you and now there is NOTHING where you stand. All the air is gone, trees are gone – dirt is scoured to the bare rock beneath – pushed away by the shock wave, and you are standing on the surface of the earth with your head in real space – in the vacuum of space – no air – you'd see all the stars since there would be no glare from sunlit air. The downside of this experience is that you'd immediately explode from inside, since the pressure in your lungs couldn't handle the sudden change for normal air pressure, then the pressure wave from the blast at millions of p.s.i., then the pure vacuum of space that has been now brought down to touch the earth for maybe a minute or more. It would be peaceful and silent once again (as your body parts fly off in all directions). If you could survive this phase, then the air rushing back at the same force to fill the void might even propel you right into space, since there is no air resistance to keep you on terra firma! I suppose the falling, molten rocks and plasma jets from the impact wouldn't help either! And you wouldn't likely be the first to have experienced this in the history of the earth. Witnesses would be rare! I thought of brontosaurus in orbit when the rock hit 65 million years ago!

This what I thought about as I stood at the bottom of the steps in the crater wall. I thought that witnessing the power of the rock that made Barringer would have been really cool, until I realized I was vaporizing! I'd have to say that standing in the crater made my emotional state a little bit more elevated."

Minutes of the EXECUTIVE MEETING

Nov. 17, 2003, 6:30pm – Room 8313, City Hospital

Recorded by Al Hartridge, Secretary

1. Changes to and adoption of the agenda. Moved by Jim Young and seconded by Les Dickson and carried.
2. Adoption of the minutes of the October executive meeting. Moved by Darrell Chatfield and seconded by Jim Young and carried.
3. Election of remaining executive:
Vice President (Darrell Chatfield and Ron Waldron nominated).
Newsletter Editor (Tenho Tuomi nominated)
Councilors (Scott Alexander, Gord Sarty, Brian Friesen, Gary Stone, Graham Hartridge & Jim Young nominated).
4. Treasure's Report: finances from 2003 SSSP. A total gross of \$9587.00 and expenses of \$7202.76.
5. Insurance is payable. The premium is \$429.00 standard liability and theft.
6. SSSP committee report: Les Dickson suggests we begin looking for the main speaker for 2004.
7. Payment to Alan Dyer for his September talk. There was some misunderstanding regarding Al Dyers fees. It was moved by Bill Hydomako and seconded by Les Dickson that we give Al \$130.00 plus \$70.00. Motion carried.
8. Annual Report to be submitted in December or January.
9. Dual signature: Barb Young requests that we go to a system of dual signatures for our centre's cheques. Moved by Jim Young and seconded by Ellen Dickson that a dual signature account be set up with two of a group of three people able to sign. Motion carried.
10. Meeting adjourned at 7:25pm.

BOOKS FOR SALE

by Bruce Brandell, Sales Coordinator

We have a number of books, calendars and pins left over from SSSP Sales.

Title	Author	No. Avail.	Price CDN\$
RASC 2004 Calendar	Rajiv Gupta, Editor	25	\$10.00
Skywatcher's Calendar	Stan Shadick	3	\$10.00
Messier Marathon	Howard Tennington	1	\$42.00
Nightwatch	Terrance Dickenson	1	\$28.00
Astrophotography	G.N. Patterson	oodles	\$ 5.00
SSSP 2003 Lapel Pin		5	\$ 5.00
SSSP 2002 Lapel Pin		34	\$ 4.00
SSSP 2001 Lapel Pin		24	\$ 4.00
RASC Centenary Mugs		14	\$ 9.00

Prices slashed for Christmas!
Calendars make great stocking stuffers.

Minutes of the GENERAL MEETING

Nov. 17, 2003, 7:30pm – Room 8313, City Hospital

Recorded by Al Hartridge, Secretary

1. Changes to and adoption of the agenda. Moved as published by Ellen Dickson and seconded by Jim Young and carried.
2. Adoption of the minutes of general meeting of October 2003 with editor's additions and corrections. Moved by Les Dickson and seconded by Mike Clancy and carried.
3. SSSP committee report: Les Dickson suggests we begin searching for a main speaker for 2004.
4. Sales coordinator report: Bruce Brandell suggests that if no Christmas orders placed within the next week this will be cancelled for this year.
5. Fate of the Youth Group: there appears to be very little interest. A phone survey will be carried out by Mike Clancy.
6. Telescope making group: Bill Hydomako is interested in starting a program in this regard in the Spring. He needs to know who's interested.
7. Election of remaining executive:
Vice President – Darrell Chatfield and Ron Waldron nominated. Ron Waldron was elected.
Councilors – Scott Alexander, Gord Sarty, Brian Friesen, Garry Stone, Graham Hartridge, Jim Young and Chris Martin appointed.
Newsletter Editor – Tenho Tuomi nominated and elected to this position.
8. Presentations:
Dr.Kouji Meada – the 2001 Leonid Meteor Shower caught on tape and other astronomical photos.
9. New Book: Les Dickson showed and described the attributes of a new reference book in astronomy *What's Out Tonight*. He feels this would be a useful companion.
10. Meeting adjourned at 9:30pm.

SKY BUYS & MIRROR CELLS

The Saskatoon Centre's Swap and Sale Page!

For Sale: Astronomy 2002, by Robert Burnham – colour sky charts, planet information, etc. – \$15.00.
35mm Bausch & Lomb Plossl eyepiece, fully coated. Excellent shape, in original box with dust caps – \$80.00. Call Darrell at 374-9278.

For Sale: RASC Royal Centenary coffee mugs. Pick yours up at the next General Meeting – \$9 each

For Sale: Millennium Star Atlas, 3-volume set – \$200;
REALSKY CD's – \$200. Call Dale Jeffrey at (306) 223-4447 or dalejeffrey@sk.sympatico.ca

Saskatoon Skies – Index to Volume 34 (2003)

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Bonehead Moments in Observing

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Club activities and announcements

RASC Saskatoon Centre Executive 2002-2003	8 Feb
RASC Saskatoon Centre Financial Report	9 Feb
Saskatoon's Telescope Rental Program	4 Mar
Subscribing to Sky & Telescope	4 Apr
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The Centre Inventory... Please Help	9 Jun
Member Renewal News	3 Sep
Free 8" Telescope – Serious inquiries only	6 Sep
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Member Renewal News – A Slight Correction	5 Oct
A Visit with Alan Dyer	8 Oct
The October Elections	8 Oct
The View From the New President	6 Nov
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Members

1st Light – Finally – for a New Scope!	5 Feb
Astronomy – A Personal Journey	7 May
Tenho Tuomi's Little Barn Observatory	7 Jun
Editor's Corner	6 Dec

Miscellaneous

Astro Accessories from Murray Paulson	4 Jan
Weather Photo Contest Under Way	9 Feb
Interesting Websites	9 Aug
The National Deep Sky Observers Society (NDSOS)	10 Oct

News

Supernova Hunter – Tom Boles of Coddham, UK	4 Mar
The 92nd AAVSO Spring Meeting in Tucson	10 May
Skywatcher's Calendar 2003 Wins Two Awards	4 Jun
Asteroid 14698 Scottyoung	9 Aug
Hermes is Found!	8 Nov

Observing Certificates

Exploring the Universe Certificate	5 Jan
Darrell Chatfield's Binocular Object List I	10 Jan
More on Binocular Certificate Objects	9 Mar
The Urban Observing Certification	5 Jun

Observing Notes

Messier Marathon, Variable Star Clinic & Lunar Eclipse	5 Mar
Amazing XZ Cygni	5 Apr
Variable Stars Any Night!	7 Apr
Notes from the Messier Marathon	10 Apr
Garry, Tenho and Mike's Excellent Adventure	9 May
Mars for Visual Observers	5 Aug
A Summer of Good Observing	8 Aug
DF Cyg – An Amazing RV Taurid Star is Rising	8 Aug
Spotting an ISS Solar Transit	10 Aug
How to Report Observations to the AAVSO	6 Sep
Sketching Jupiter – The GC Observing Challenge	9 Sep
The Bull of Poniatkowski: an Interesting Asterism	6 Oct
Observing NGC 4319 & Markarian 205	10 Nov
Lunar Eclipse at the Stone Observatory	4 Dec
A Tale of Two Meteor Showers	6 Dec

Product Reviews

Starry Night – The Backyard Edition	4 Feb
Celestron's EQ 114 SHORTY	7 Mar
A Short Note on the ETX60 Go-To Scope	9 Apr
Book Review: What's Out Tonight	5 Dec

Public Star Parties

Garry's and Tenho's Great Hanley Adventure	4 Jan
About Astronomy Day – Mostly for New Members	4 Apr
Last Call for Astronomy Day!	4 May
Quick Notes on Recent Events	4 Jun
Some Recent Star Parties, The November 8th Lunar Eclipse	8 Oct
Travelling to Talk About Astronomy?	4 Nov

Royal Astronomical Society of Canada

Wayne Barkhouse, Journal Editor, Moves to Harvard	3 Feb
Now We Are 27!	3 Aug

Saskatoon Skies

More on Newsletter Browser Problems	8 Apr
Submitting Photos or Images with Articles	4 May

Saskatchewan Summer Star Party

An Invitation to the Saskatchewan Summer Star Party 2003	5 May
Last Call for SSSP'03	4 Aug
SSSP 2003	4 Sep
The Future of the SSSP	5 Sep

Sleaford Observatory

The Sleaford Observatory	8 Jan
The Sleaford Page	5 Nov

Telescope Notes

Robotic Scopes & Cold Temp Grease	5 Feb
Telescope Construction Group	4 Nov

Tours

Attend a Club Tour to Tenho's & Garry's Astronomy Havens	8 Jun
The Great Adventure – How I Spent the Summer Solstice	6 Aug