

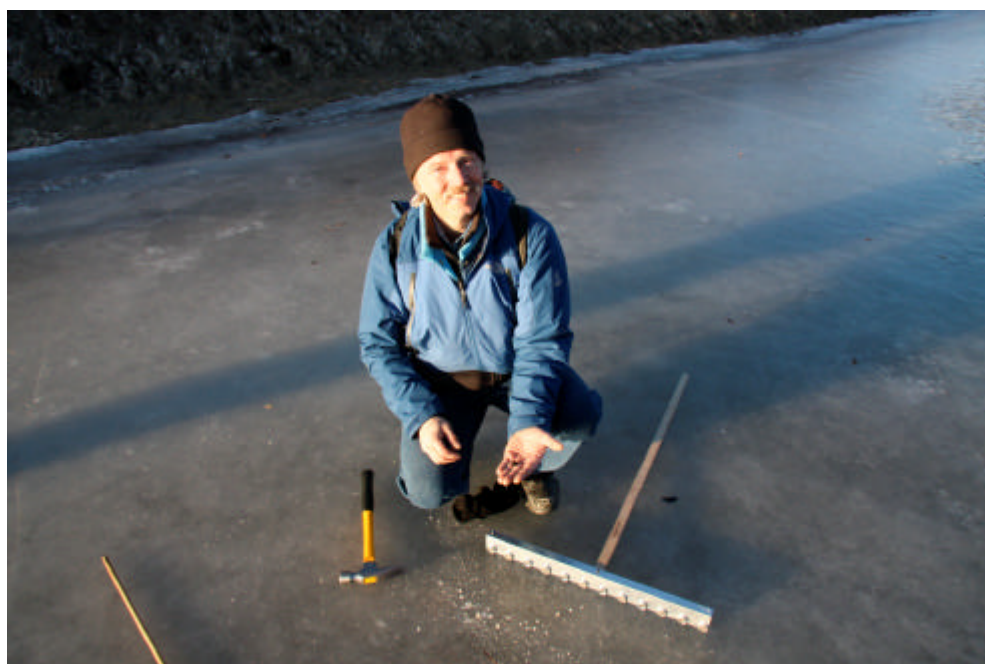
Saskatoon Skies

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

Vol. 39, No. 12

December 2008

There's Meteorites in These Here Parts!



The spectacular fireball that was widely seen on November 20 has left an area of Saskatchewan south of Lloydminster strewn with stony meteorite fragments. Murray Paulson proudly displays a 5-gram specimen he spotted on river ice: "This is my first recovered meteorite. It may be small, but I'm smiling!" (See page 6 for more about the fireball and meteorites.)

Photo courtesy of Murray Paulson



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To view *Saskatoon Skies* in colour, see our Website:
<http://homepage.usask.ca/~ges125/rasc/newsletters.html>

MEMBERSHIP? IT'S NEVER TOO LATE TO JOIN!

Regular: \$77.00 /year

Youth: \$41.00 /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
- The Journal of the RASC (electronic format)
- SkyNews Magazine (bimonthly)
- use of the Centre library
- rent the Centre's Telescopes
<http://homepage.usask.ca/ges125/rasc/telescopes.html>
- discounts to Sky & Telescope Magazine*
- free, no-cost, no-obligation, 3-month temporary membership if you don 't want to join right now!

*New subscription or renewal of Sky & Telescope? Send new info or renewal notice, plus credit card # to Norma Jensen, 128 – 4th Street East, Saskatoon, SK S7H 1H8, or email her at njensen@scs.sk.ca .

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

SASKATOON CENTRE'S MAIN OFFICERS:

President – Barb Wright, 249-1990
Secretary – Al Hartridge, 373-0034
Vice-President – Jeff Swick, 373-3902
Treasurer – Norma Jensen, 244-7360

**Bottle Drive &
Canadian Tire \$**
By Darrell Chatfield

If you cannot make it to a meeting but would like to contribute your Canadian Tire money please call me at 374-9278.

LIGHT POLLUTION
ABATEMENT
WEBSITE AT:
www.ras.sk.ca/lpc/lpc.htm

Newsletter Editors – Christine Kulyk , Tenho Tuomi
Copy & Collate – Les & Ellen Dickson
Labels & Temps – Mark de Jong
Web Posting – Gord Sarty

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 material. **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 to the editor at ckulyk@sasktel.net – preferred as plain unformatted ASCII text files without line breaks. Images sent by e-mail should be attached files.

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 306-858-2453 for rates. Members can advertise non-commercial items free of charge.

RASC CALENDAR OF EVENTS

Dec 15	Christmas Potluck Social – 6:30 pm, 175 Physics, U of S	Barb Wright	249-1990
Dec 20	Observers Group – 7:00 pm, Sleaford Observatory	Larry Scott	934-5801
Jan 17	Observers Group – 7:00 pm, Sleaford Observatory	Larry Scott	934-5801
Jan 19	RASC Executive Meeting – 6:30 pm, 175 Physics, U of S	Barb Wright	249-1990
Jan 19	RASC General Meeting – 7:30 pm, 175 Physics, U of S	Barb Wright	249-1990
Feb 20	Observers Group – 7:00 pm, Sleaford Observatory	Larry Scott	934-5801

Minutes of the Executive Meeting November 17, 2008

by Al Hartridge

1. Meeting called to order at 6:30 pm.
2. Approval of the minutes of the previous meeting: Moved by Tenho Tuomi, seconded by Norma Jensen, and carried.
3. Financial Report: Norma stated that the October statement showed \$12,881.89 in chequing. There are also four GICs totalling \$19,809.59.
4. Moved by Norma Jensen: that a review or audit for the 2007-08 year be waived. Seconded by Jim Young and carried.
5. Sleaford: A special meeting will be held in place of a presentation at the January 2009 meeting to talk about a new observatory at Sleaford.
6. Marianne Hydomako has initiated the Bill Hydomako Memorial Fund, asking that donations in Bill's memory be given to the Sleaford building fund.
7. National Council Report: Les Dickson stated that the latest Council meeting was held by teleconference. The National Office building will be sold. The National RASC library will be moved to the Canada Science & Technology Museum. The book *Looking Up* will be digitized and made available for free online access. The new fee structure has not caused a drop in membership. There is no benefit financially now to the Centres from life memberships. IYA materials will be ready and available to Centres by December.
8. IYA activities: Jeff Swick is interested in organizing "100 Hours of Astronomy." He also mentioned the great exposure given by *SkyNews* to the SSSP in the current issue.
9. Saskatchewan Eco Network: Moved by Rick Huziak: that the Saskatoon Centre pay \$35 to renew our membership for another year. Seconded by Norma Jensen and carried.
10. Meeting adjourned at 7:25 pm.

Minutes of the General Meeting November 17, 2008

by Al Hartridge

1. Meeting called to order at 7:28 pm.
2. Approval of the minutes of the previous meeting: Moved by Mike Clancy, seconded by Jim Young, and carried.
3. Election of National Council Rep: Jeff Swick nominated Les Dickson for the position. Seconded by Ellen Dickson and carried.
4. Events Committee: See executive minutes.
5. National Council Report: See details in executive minutes.
6. Membership: There are 63 active members in our Centre at present.
7. Light-Pollution Abatement: The challenge to the Environmental Protection Act is one day overdue. Rick Huziak moved that \$70 be made available to purchase several copies of the latest issue of *National Geographic*, which is carrying a superb article on light pollution. Motion seconded by Mike Clancy and carried.
8. Deadline for December newsletter submissions is November 24.
9. Sleaford: The January meeting will be an open discussion regarding a new observatory at Sleaford. Members will be asked to present any ideas they have regarding this.
10. Treasurer's Report: See details in executive minutes. Norma Jensen asked that the motion to waive an audit for 2007-08 made at the executive meeting be ratified by the membership. Moved by Mike Clancy, seconded by Gord Sarty, and carried.
11. Astronomy Art Display: Kathleen Huziak mentioned that this will take place next September 3-30. All work entered will have to be framed.
12. Presentations:
 - Memories of Bill Hydomako: Rick Huziak showed a number of slides depicting Bill's involvement with the Saskatoon Centre.
 - Aperture Fever Gives Way to Space Fever: Observing With the MOST Space Telescope, by Gordon Sarty.
13. Meeting adjourned at 9:30 pm.

MONDAY, December 15, 6:30 PM
Room 175, Physics Bldg., U of S

Christmas Potluck Dinner

Get into the holiday spirit with an evening of fun and friendship. Bring the family along; bring your favourite holiday dish to share with the gang. (Please bring appropriate serving utensils for your dish. We do have warming trays to keep dishes hot if needed.) Coffee and soft drinks will be provided, as well as paper plates and cutlery.



BOOKS FOR SALE

by Bruce Brandell, Sales Coordinator

All items will be available at our next meeting or call 249-1119, or email breeves@sasktel.net

<i>Title</i>	<i>Author</i>	<i>#</i>	<i>Price</i>				
Calendars				Deep Sky Observer's Guide	N. Bone	2	\$14.00
				Stars	Zim Baker & Chartrand	1	\$10.00
RASC 2009	RASC	7	\$14.00	Exploring the Night Sky	T. Dickinson	11	\$9.50
RASC 2007	RASC	2	\$5.00	Exploring the Sky by Day	T. Dickinson	10	\$9.50
Skywatcher's 2009	S. Shadick	6	\$18.00	Patterns in the Sky	K. Hewitt-White	3	\$16.00
Skywatcher's 2008	S. Shadick	1	\$10.00	Pocket Sky Atlas	R. Sinnott	8	\$24.50
Skywatcher's 07	S. Shadick	5	\$2.00	Binocular Highlights	G. Seronik	3	\$26.00
Skywatcher's 06	S. Shadick	1	\$2.00	Night Sky Star Wheel	Sky & Telescope	1	\$8.00
Books				S & T Star Wheel	Sky & Telescope	3	\$19.00
The Backyard Astronomer's Guide	Dickinson & Dyer	2	\$40.00	Field Sky Atlas 2000.0	Sky & Telescope	2	\$39.00
The Beginner's Observer's Guide	L. Enright	5	\$19.00	Messier Card (unlaminated)	Sky & Telescope	5	\$5.00
Observer's Handbook 2006	RASC	5	\$5.00	Deep Sky Wonders	W. Houston	2	\$24.00
Observer's Handbook 2005	RASC	1	\$2.00	The Messier Objects	S.J. O'Mearn	1	\$39.00
Practical Astronomy	S. Dunlop	3	\$14.00	Scientific American Book of the Cosmos	D.H. Levy	1	\$48.00
Summer Stargazing	T. Dickinson	4	\$18.00	Skyways-Astronomy Handbook for Teachers	M.L. Whitehome	4	\$16.00
Celestial Sampler	S. French	4	\$26.00	Saskatoon's Stone	W.K. Mysyk & C. Kulyk	9	\$3.00
Firefly Astronomy Dictionary	Firefly	3	\$14.00	On the Moon	P. Moore	2	\$27.00
Firefly Planisphere	Firefly	4	\$19.00	On Mars	P. Moore	1	\$23.00
Seeing in the Dark	T. Ferris	2	\$18.00	Miscellaneous			
Night Sky Atlas	R. Scagell	3	\$24.00	RASC Centennial Mug		2	\$5.00
Stargazing with a Telescope	R. Scagell	2	\$14.00	RASC Stickers, blue or white			\$1.00
Beautiful Universe	Sky & Telescope	2	\$12.00	SSSP 2001 Pin		4	\$2.00
There Once was a Sky Full of Stars	Crelin & Ziner	5	\$20.00	(Summer Triangle)			
Space 50 Years and Counting	Sky & Telescope	1	\$13.00	SSSP 2002 Pin		17	\$2.00
The Moon Observer's Guide	P. Grego	3	\$14.00	(Comet Petriew)			
Isabelle Williamson Lunar Observing Program	RASC	7	\$10.00	SSSP 2006 Pin		38	\$4.00
The Sun Observer's Guide	T. Spence	3	\$14.00	(10 th Anniversary)			
Moon Map (laminated)	Sky & Telescope	5	\$6.00	SSSP 2007 Pin		13	\$5.00
Field Map of the Moon	Sky & Telescope	3	\$12.50	(DSP = Deep Sky Preserve)			
Lunar 100 Card	Sky & Telescope	2	\$5.00	SSSP 2008 Pin (Cypress Hills DSP)		39	\$5.00
Mars Observer's Guide	N. Bone	2	\$14.00				

President's Message

by Barb Wright

I am very excited about the coming year. It will be very busy for all of us, with International Year of Astronomy, the General Assembly combined with Saskatchewan Summer Star Party, and developing Sleaford, as well as developing our Centre and seeing it grow. There will certainly be

plenty of opportunity for everyone to contribute and participate in any and all of these. Please consider what things you would like to be part of during the next year; your ideas will be welcomed.

Editor's Corner

by Christine Kulyk

Elsewhere in this issue, you'll find an account of the recent exciting developments from the great Saskatchewan fireball and meteorite shower of November 20, 2008. I've been busy since then following the news reports, as well as helping to organize a meteorite search team.

On November 30, I went out to search myself, along with Norma Jensen and Mary Loewen. We were only able to spend three hours in the field that day, and unfortunately, we didn't find any meteorites, just a few meteorite-maybes that turned out to be "meteor-wrongs." (Also a moose, a buck, a red fox, and several bison...) However, since then, we have seen a true meteorite from the

fall closeup, thanks to meteorite expert Mel Stauffer at the University of Saskatchewan, who spent several days in the field searching and was more fortunate than us!

I will be going out again, and hoping for better luck. Meanwhile, Rick and Kathleen Huziak report that they found a 38.6-gram fragment, with dimensions 5cm x 3cm x 1.5 cm. Our "Planets" columnist Murray Paulson of Edmonton is shown on the cover of this issue with his 5-gram find.

If anyone else finds a piece before the snow falls, e-mail me at: clkulyk@sasktel.net!

Comet Cardinal Discovered in Calgary

Rob Cardinal of the University of Calgary discovered a new comet on October 1, using the Baker-Nunn asteroid-search telescope at the Rothney Astrophysical Observatory. Officially designated as C/2008 T2 Cardinal, the comet was spotted during a search of the area around the celestial North Pole.

First detected at magnitude 13, Comet Cardinal passed close by the North Star (Polaris) on December 4. It is expected to remain visible in the northern sky until early May 2009, by which time it may have brightened to magnitude 9. Afterwards, it may brighten further as it heads towards the southern hemisphere, reaching perihelion on June 9. Cardinal continues to track his comet closely to determine its orbit.

A stunning collection of astrophotos by our own Bob Johnson is currently on display at the Centre Mall (at Circle & 8th). Located in the concourse near the cinemas, the exhibit will continue until after Christmas.

Moon Jupiter Venus
Conjunction 2008-12-01

Taken from the
Dundonald Area of
Saskatoon using
automatic settings on my
digital camera which was
mounted on a tripod.

Photo by Ron Waldron



Fireball Fever and Meteorite Madness

by Christine Kulyk

By now, no doubt everyone has heard about the brilliant bolide that blazed across the Saskatchewan sky at 6:26 pm on November 20, startling many onlookers. In fact, it was the most widely reported fireball ever recorded by the Canadian Fireball Reporting Centre, which is based at the University of Calgary. Hundreds of people phoned in or e-mailed reports of what they saw, and several images were captured on every type of camera and video, from hand-held cellphones to convenience-store security videos to all-sky fireball-network cameras.

By analyzing the copious data from the images and eyewitness reports, researchers determined that the fireball first flashed into view in the atmosphere about 80 kilometres up, at a point just east of Lloydminster, then travelled SSE towards the Battle River, coming down at a steep angle of about 60 degrees and lasting about five seconds in total. It was so bright that people were able to see it from hundreds of kilometres away, at least as far south as Vauxhall, Alberta, and as far north as Athabasca.

Many who saw the fireball (or bright flashes of light, if they were indoors or had their backs turned to it), thought there was an explosion or fire nearby, and numerous 911 calls came in to the RCMP's emergency dispatch centre in Regina. Indeed, the fireball terminated with a

bright explosion high up in midair, and people who were located within a few kilometres of the endpoint heard explosive booms from the incoming meteoroid's breakup.

Thus far, I've only heard of one Saskatoon Centre member who actually saw the fireball: Al Hartridge was in his car when a bright flash lit up the whole sky, and he caught the tail end of the meteor in his rearview mirror. Several other members have reported seeing a bright flash, even through windows from indoors, then looking up after it had already passed by. Like many people, I was indoors having supper at 6:26 pm, so I missed it myself, darn it!

But one of my nephews here in Saskatoon was out with some of his fellow engineering students, and they were fortunate enough to see the enormous fireball pass overhead, then "hit" the horizon, at which point it flared into what looked like the flash of an explosion. My nephew reports being stunned into silence by the sight and wondering whether a catastrophic shockwave was about to engulf them, until one of his friends broke the silence by saying, "Make a wish."

The fireball was also seen by one of my Saskatoon friends, who was just getting out of her car in her driveway at home, and her husband, who was inside the house and rushed to the

window in time to catch part of it. They described it as looking as though someone had set off a flare nearby.

Tenho Tuomi was focused on taking a picture of Jupiter and Venus when he saw two flashes light up the ground, but didn't look up quick enough to catch the fireball. Jeff Swick was indoors when he saw a bright flash light up the sky through his windows.

Cam McLelland was in his grainery when he saw a bright flash behind him like headlights from an approaching truck, but no truck. Dean Sproull of Lloydminster saw two bright flashes a few seconds apart, and then saw the meteor's dust trail, which persisted for at least 10 minutes. He grabbed his SkyScout to plot its coordinates and report them to the Meteorites & Impacts Advisory Committee (MIAC) of the Canadian Space Agency. (See page 260 in the 2009 *Observer's Handbook* for details on how to report fireball sightings to the MIAC Website at <http://miac.ugac.ca/MIAC/fireball.htm>)

What is most noteworthy about this particular fireball is that lots and lots of people witnessed its terminal explosion in midair, when the incoming meteoroid broke up spectacularly into what was described by eyewitnesses as a rain of glowing embers falling towards the ground. This meant there was a high likelihood that there would be many meteorites to be found in the area below!

Bright fireballs like this, ending in a terminal explosion, are known as bolides. Researchers rushed to gather eyewitness reports and camera images, then plot the bolide's trajectory and breakup point, to determine where the meteorites

fell. (An event in which an incoming meteoroid produces multiple meteorites is known as a meteorite shower.) Saskatoon Centre members Rick Huziak and Gordon Sarty were involved in gathering data from the fireball-watch camera located atop the Chemistry building on the University of Saskatchewan campus.

Eventually, the cumulative data pointed to an area south of Lloydminster, on the Saskatchewan side of the border, somewhere between Lone Rock and Marsden. Over the next few days, a search team led by Alan Hildebrand from the University of Calgary began hunting for meteorites in the area, and on November 27, they had their first success!

On the afternoon of November 27, search team member Ellen Milley spotted two meteorites on the surface of a frozen pond on ranchland near Buzzard

Coulee as she and Alan Hildebrand were driving by on a nearby road. After obtaining the landowner's permission to search on his property, they were delighted to discover several more fragments nearby.

Once they announced their find to the media, the story was widely reported on national and international news in Canada and the U.S., and since then, dozens of people have descended on the area to search for what are estimated to be thousands of meteorite fragments of various sizes. According to Hildebrand, the incoming object was a 10-tonne chunk of space rock that originated in the asteroid belt between Jupiter and Mars. Examination of the fragments shows them to be of the type known as ordinary chondrites, or stony meteorites.



Closeup view of a 5-gram meteorite found on river ice by Murray Paulson of Edmonton.
Photo by Murray Paulson

Although this is the most commonly found type of meteorite, what is significant in this case is that fragments have been recovered quickly, making them more useful for scientific research since they will not be too contaminated by the earthly environment. In addition, the wealth of captured images and video recording the fireball should make it possible to plot its path backward to identify precisely where it came from in the solar system, something that has only been done for a handful of meteorite falls in the past. That will give the scientists a valuable leg-up in understanding how the composition of meteorites relates to the solar-system bodies from which they come.

This latest discovery brings the total number of distinct meteorites found in Saskatchewan to date to 16 (counting each incoming meteoroid as just

one, regardless of the total number of pieces it drops). In Canada as a whole, there have only been 75 separate meteorite discoveries to date. So it's still a pretty special thing to find one, as any finder will tell you!

The onset of snowy weather will soon bring Saskatchewan meteorite hunting to a halt for now. But no doubt the search will commence again come spring! If you would be interested in being part of a search party, give me a call at 306-374-0811, or e-mail me at: clkulyk@sasktel.net.

If you have already been out searching on your own and believe you have found a meteorite, meteorite expert Mel Stauffer at the University of Saskatchewan would love to see it. You can call him at 306-966-5708.

Rick's Meteorite Find

by Rick Huziak



Photos by Rick Huziak

The pictures show a fragment of the Nov 20 fireball meteorite I found on Sunday (Nov 30) - my first ever find. It is 5cm x 3cm x 1.5cm, 36.8g. It is tentatively classified as an H5 or H6 chondrite. (13% - 14% metal content). Magnets react to the meteorite weakly. The crust is about 0.1mm thick. The inside is a medium grey



cement colour. Judging by the numbers found, this fall likely produced thousands of recoverable fragments. My piece was found on top of a small snow drift in the ditch, about 300m N of the swamp where the press conference was held, on the bank of Buzzard Coulee.



The Planets This Month, December 2008

by Murray D. Paulson, RASC Edmonton Centre

<murray-paulson@gmail.com>

Mercury has come out of its late-November superior conjunction with the Sun and is now heading into the evening sky. It is still the same crummy fall ecliptic that hangs so close to the horizon; but to make matters worse, Mercury's inclination places it 2 degrees below the ecliptic. This would be a really tough apparition if it were not for the conjunction of Mercury and Jupiter at the end of the month. From December 29 to January 1, Mercury and Jupiter will be closer than 2.1 degrees apart, with the closest approach (1.2 degrees) on the 31st. With Jupiter close by, you should be able to sweep up the two planets in twilight. (Jupiter shines at magnitude -1.9 and Mercury shines at magnitude -0.7.) Mercury sets 1.5 hours after the Sun, so get out there in the twilight with your binoculars/camera, and see if you can spot the pair. Mercury will be 2.1 degrees directly below Jupiter on December 29, and it will move up and to the south of Jupiter over the next few days until it is directly south of it on the evening of January 1. A few days later, Mercury is at greatest eastern elongation on January 4. This is one of the shorter elongations, with the separation between Mercury and the Sun being only 19.4 degrees. Mercury will subtend 7" at the time and show a 57 percent-illuminated disk. Compare this to Jupiter's 32.6" disk. The two planets will be low, so binoculars and telephoto lenses will be the favoured optics.

Venus and Jupiter have finished their dance, and Venus now continues up the sky heading for greatest eastern elongation on January 14. This apparition lies low in the southwest through the month of December, but as we leave Jupiter and Sagittarius behind, the ecliptic will carry Venus up into the sky. During the month, Venus brightens from magnitude -4.1 to magnitude -4.3 by the first week of January. Over this period, Venus expands from a fat gibbous disk of 17" diameter to a 25", 50 percent-illuminated disk in mid-

SKY BUYS & MIRROR CELLS

The Saskatoon Centre's Swap and Sale Page

FOR SALE: Orion 12" Intelliscope. Comes with 20mm eyepiece, a regular and Telrad finder; all for \$700. Phone: 241-5818.

January. Can you see it cast a shadow in the crisp winter evening?

Mars is behind the Sun on December 5 and will be lost in the glare of the Sun over the next few months. The conjunction marks the beginning of the long return to our night skies, a little more than a year hence to the next opposition.

Jupiter starts off the month in close conjunction with Venus, and it has spent the fall hanging low in the southwest. I hope you have been watching Venus and Jupiter over the latter part of November as they came together. We get a replay of this with Mercury at the end of December as our year-end bonus.

December affords **Saturn** observers the opportunity to see the rings almost edge-on. This opportunity comes with strings attached though. Saturn rises just after midnight, so it is an early-morning object, transiting the meridian at 6:45 am on Christmas day, which happens to be near the minimum angle of the rings' tilt towards us (0.8 degrees). The New Year will see the rings tilt back up, and the ring crossing happens at a most unfavourable time, in September, when Saturn is in superior conjunction with the Sun. If you would like to see the inner moons Mimas and Enceladus, the next few months will present the most favourable opportunity for the next 15 years to see them, with a minimum of the deleterious effects of the rings' glare. The rings will tilt up quickly to 4 degrees over the winter months as we lead up to Saturn's opposition in March. Later in the year, in summertime, the rings will tilt back down, but we will have the summer twilight running interference on us.

Uranus is up below the circlet of Pisces and will see Venus late next month. Uranus shines at magnitude 5.9 and shows a 3.5" blue-green disk in the eyepiece.

The outer planets **Neptune** and Uranus are down in the evening twilight glare, but Venus does pay them a visit on its way up the ecliptic. Venus passes 1.4 degrees below Neptune on the evening of December 27. Neptune will shine at magnitude 7.9 at the time, so it will take some effort to find it among the stars of Capricorn.

The Messier, H-400 & H-400-II, FNGC, Binoc & EtU Club

Join the Club! Observe all 110 Messier, 110 Finest NGC, 400 Herschel I or 400 Herschel II, Explore the Universe, or 35 Binocular objects and earn great OBSERVING CERTIFICATES!

MESSIER CLUB

Certified at 110 Objects:

R. Huziak, G. Sarty, S. Alexander, S. Ferguson, D. Jeffrey, D. Chatfield, B. Christie, K. Noesgaard, M. Stephens, B. Hydomako, T. Tuomi, L. Scott, G. Charpentier, B. Johnson, M. Clancy, L. Dickson, B. Burlingham

Ken Maher		109
Norma Jensen	Up!	108
Ron Waldron		105
Brent Gratias		96
Mike Oosterlaken		93
Kathleen Houston		85
Margo Miller		77
Wade Selvig		75
Garry Stone		57
Ellen Dickson		32
Jeff Swick		24
Barb Wright		23
Bruce Brandell		5
Katelyn Metanczuk		4

FINEST NGC CLUB

Certified at 110 Objects:

R. Huziak, D. Jeffrey, G. Sarty, D. Chatfield, T. Tuomi

Larry Scott	Done!	110
Scott Alexander		97
Bill Hydomako		55
Sandy Ferguson		23
Mike Oosterlaken		20
Donna-Lee May		14
George Charpentier		13
Ken Maher		10
Mike Clancy		7

Chatfield BINOCULAR CERTIFICATE

Certified at 35 Objects:

M. Stephens, T. Tuomi, M. Clancy, R. Huziak, K. Maher

Brent Gratias	Done!	36
Mike Oosterlaken		32
Anna Clancy		24

EXPLORE the UNIVERSE

Certified for Certificate:

M. Clancy, T. Tuomi, K. Maher, B. Gratias

Katelyn Metanczuk		15
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HERSCHEL 400 CLUB

Certified at 400 Objects:

D. Jeffrey, R. Huziak, D. Chatfield

Tenho Tuomi	Up!	380
Gord Sarty		251
Scott Alexander		117
Mike Oosterlaken		68
Sandy Ferguson		18

HERSCHEL 400-II CLUB

Certified at 400 Objects:

Darrell Chatfield		315
Rick Huziak		211



The Messier & Finest NGC lists can be found in the *Observer's Handbook*.
The Explore the Universe list is available on the National website.
The Binocular List will be available at each general meeting or can be mailed out on request to distant members.
On-line Messier and Finest NGC lists, charts and logbooks – check out:

<http://www.rasc.ca/observing>

On-line Herschel 400 List – check out the official site at:

<http://www.astroloague.org/a1/obsclubs/herschel/hers400.html>

Observer's Group Notes

by Larry Scott



Gibbous moon photographed in mid-November, using an 8-inch scope at prime focus, with a Nikon D70

Sometimes the hardest thing to do is to start. I've been trying to write this month's Notes with an eye on remembering Bill Hydomako. I'd like to thank him for all the things he's done for us as a club and as individuals. For all his work at Sleaford, for his fine sense of humour, and for bringing water. I am going to miss you, Bill, but I'm richer for having known you. I'll look for you at night, when the skies are clear.

Observers Group for November 21 was postponed due to weather conditions. Next scheduled date is December 20, with dark skies from the 17th until January 1.

See you at Sleaford.

Photo by Jeff Swick