

Saskatoon Skies

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

Vol. 42, No. 4

April 2011

Earth Hour at the Mall, March 26



Telescopes set up by Saskatoon RASC members in the Centre Mall attracted lots of folks, despite clouds outside. See more on page 8.

Photo by Christine Kulyk



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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: \$80.00 /year

Youth: \$41.00 /year

Associate: \$33 /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, Mark de Jong, or renew through the National Office and let Mark 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 norj@sasktel.net .

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 – Jeff Swick, 373-3902
Secretary – Ron Waldron, 382-9428
Vice-President – James Gorkoff, 644-1343
Treasurer – Norma Jensen, 244-7360

Bottle Drive & Canadian Tire \$

By Colin Chatfield

If you cannot make it to a meeting but would like to contribute your Canadian Tire money please call me at 934-7046.

Newsletter Editor – 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 ttuomi@yourlink.ca – any format, but 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 indicated), provided that proper source credit is given. DEADLINE for submissions for each month's issue is the 20th of the preceding month. Saskatoon Skies accepts Commercial advertising. Please call the editor 306-858-2453 for rates. Members can advertise non-commercial items free of charge.

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

RASC CALENDAR OF EVENTS

Apr 16	“Lake Diefenbaker: Yours to Discover”, book launch 11:00 - 17:00, Kook Centre, Outlook, SK	Mike Clancy	
Apr 18	RASC General Meeting - 7:00 pm, Frances Morrison Library	Jeff Swick	373-3902
Apr 18	Free Public Lecture, "High Energy Astronomy" by Professor Kinwah Wu of the Mullard Space Science Laboratory, 7:00 pm, Frances Morrison Library	Gordon Sarty	966-2321
Apr 30	Observers Group – Dusk, Sleaford Observatory	Larry Scott	934-5801
May 6	International Astronomy Day – Lakewood Civic Centre	Jeff Swick	373-3902
May 7	International Astronomy Day – Farmer’s Market, Beaver Creek	Jeff Swick	373-3902
May 16	RASC Executive Meeting - 6:30 pm, 175 Physics, U of S	Jeff Swick	373-3902
May 16	RASC General Meeting - 7:30 pm, 175 Physics, U of S	Jeff Swick	373-3902
May 27	Observers Group – Dusk, Sleaford Observatory	Larry Scott	934-5801
May 28	Grasslands National Park DSP - East Block Star Party	Rick Huziak	665-3392
June 20	RASC Executive Meeting - 6:30 pm, 175 Physics, U of S	Jeff Swick	373-3902
June 20	RASC General Meeting - 7:30 pm, 175 Physics, U of S	Jeff Swick	373-3902
Jul 1-4	RASC General Assembly – Winnipeg	http://winnipeg.rasc.ca/ga-2011-home	
July 30	Grasslands National Park DSP - West Block Star Party	Rick Huziak	665-3392
Aug 25	Saskatchewan Summer Star Party	Rick Huziak	665-3392

RASC SASKATOON CENTRE

MONDAY, April 18, 7:00 PM

*Frances Morrison Library
311 23rd St E*

“High Energy Astronomy”

**“Studying the X-ray Universe From Space:
From the Solar System to Stars and Galaxies”**

by Professor Kinwah Wu of the Mullard Space Science Laboratory

Note: There will be no Executive Meeting this month



“Got the camera out to Sleaford and took some pictures. Was a very good night overall, just cold”

Photo by Kris Ohnander

Minutes of the Executive Meeting, Mar 21, 2011

by Ron Waldron

1. Meeting began at 6:30 PM
2. Approval of Minutes of February Executive Meeting – Moved by Les Dickson, seconded by Darrell Chatfield
3. Committee Reports
 - a) Fund Raising Report – Colin Chatfield was not present.
 - Darrell Chatfield reported that two Display tables had been purchased and a third one will be purchased to be used for Astronomy Day and other special events
 - b) Events – Patricia Gakis was not present. Jeff Swick reported on her behalf.
 - Jeff Swick reported that Patricia would be stepping down after Earth Hour on Saturday, March 26th. We are planning to celebrate at Circle Park Mall again as we have in previous years. Lights will be put out between 8:30 and 9:30 PM. Discussion followed to locate brochures and display materials for Earth Hour. Barb Wright and Jeff Swick are site captains for this event.
 - Astronomy Day weekend activities (Friday, May 6th and Saturday, May 7th) are being planned at Lawson Civic Centre, the Farmer's Market and Beaver Creek again this year. More information will follow.
 - c) National Council Report – Rick Huziak
 - The \$3.00 fee increase that had been deferred last year is on the table again and will be voted upon this Saturday, March 26th. National Office is operating on a deficit. Members present did not express any objections so Rick will be voting for the increase on our behalf.
 - d) Newsletter – Tenho Tuomi was not present due to weather advisory in his area.
 - Deadline will be April 4th for the next newsletter.
 - e) SSSP Report – Rick Huziak
 - The speaker at this year's Star Party is Dr. Erin Price, assistant director of AAVSO and travel expenses will be funded by the AAVSO. SSSP
 - f) Observer's Report – Larry Scott. Jeff Swick reported that there will be a "dry run" for the Messier Marathon this Friday. If weather does not permit, then we will try again the next weekend.
4. Other Business
 - a) Jeff requested that copies of the minutes of each meeting be sent to executive members following each meeting. There appeared to be no interest in this so he will continue to receive the minutes following each meeting as our club president.
 - b) Jeff Swick requested that we reconsider the future of our 16" telescope as we have had it for three years now and it is still for the most part not completely functional as a GOTO telescope. Rick reported that the hand controller is still not functional but the up / down / right / left arrows do work. Rick is prepared to fix the controller but the after-market kit to fix the "slop" in the focuser still needs to be installed better than it was the first time. Rick explained that he is planning to repair the scope to better operational condition but it can only be done when he has available time.
 - c) Les Dickson has been investigating the purchase of a digital projector for the club. He is prepared to report his findings and request the purchase by the May Meeting.
 - d) Jeff reported that Kathleen Huziak is prepared to give a talk at Beaver Creek for Astronomy Day this year and Rick Huziak is prepared to give a talk at Lawson Civic Centre if a room is available at no charge to us.
 - e) Gord Sarty reported that our speaker for the April Meeting, Kinwah Wu has had some health issues so that our meeting in April may still be changed.
 - f) Lorin Briand (Councillor-at-Large) has moved out of town so no longer be active. It was decided not to replace his position.
5. Meeting was adjourned at 7:37 PM



The winner of the Galileoscope donated by Colin Chatfield for the Earth Hour display at the Centre Mall is Rafael Renderos.

Photo by Colin Chatfield

Minutes of the General Meeting, Mar 21, 2011

by Ron Waldron

1. Meeting began at
2. Approval of Minutes of February General Meeting – Moved by Bernice Friesen, seconded by Ellen Dickson
3. Committee Reports
 - a) Events – see minutes of Executive Meeting
 - b) National Council Report – see minutes of Executive Meeting. A vote was taken by the General Membership to accept the \$3.00 increase. It was passed.
 - c) Light Pollution Committee Report – Rick Huziak
 - i. On March 11th, 2011, Jasper National Park was proclaimed a Dark Sky Preserve
 - ii. The Dark Sky initiative with the City of Saskatoon has been moved out of committee status and into the Environmental Services Branch. This should give us more time (and perhaps clout) to get Dark Sky Policies in place.
- iii. There are initiatives to get Sask. Power on board with Dark Sky policies.
- (d) Newsletter – see minutes of Executive Meeting
4. Other Business
 - There will be no Executive Meeting in April due to the change in venue (Frances Morrison Library)
 - April's General Meeting will be held on Monday, April 18th at the Frances Morrison Public Library
5. Presentations
 - – Darrell Chatfield gave a presentation entitled "On the Inside of the Campo Meteorite"
 - – Dr. Gord Sarty gave a presentation entitled "An Update on my Observations with Space Telescopes" (a.k.a Will I Get Hubble Time?)
6. Meeting was adjourned at 9:45 PM

President's Message

by Jeff Swick

What a difference a couple of weeks make. Two weeks ago Kris and I were out at Sleaford watching Larry try to get the snow blower through about 3 feet of packed snow drifts (entertaining? Yes indeed!!) and now the water is running in the streets and I finally get my garage back for the observatory until next fall.

Coming up this month Gord Sarty's collaborator Dr. Kinwah Wu who is Professor of Theoretical Astrophysics and Head of Theory at UCL Mullard Space Science Laboratory will be visiting and speaking on High Energy Astronomy at the Francis Morrison Library on April 18th. Note that this presentation serves as our monthly meeting, there will be no Executive Meeting this month.

Coming up in early May is our annual Astronomy Day activities. May 06th we will be doing sidewalk astronomy at the Lakewood Civic Center, this night also coincides with the Aquarid meteor shower. Saturday morning the

7th will find us at the Saskatoon Farmers Market and in the evening we will be conducting a Public Star Night at the Beaver Creek Conservation Area. Many Thanks to Kathleen Houston who will be giving a talk in the auditorium at dusk. For our new members this is a great opportunity to come out with your family and friends and talk astronomy.

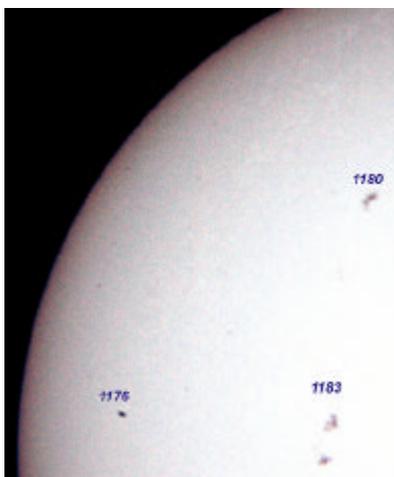
One note in closing and that is, it's good to see some of our newer members out at Sleaford. It's nice to see some of the photos being taken by Kris Ohnander and Dale Boan.

See you all out at Sleaford, newer members should keep an eye on the Yahoo Group for Larry's announcements and notification regarding observing and other Sleaford Activities.

Sunspots

"I just shot this out the back of my garage this afternoon"

Photo by Jeff Swick



Lake Diefenbaker: Yours to Discover

by Michael Clancy

As you read this our planet is warming, the snows are receding and Spring has Sprung at long last! At least, that's the hope – this is one winter that simply does not seem to want to let go! In any case, this is the time of year that folks begin to think about their summer vacations, all that camping and travel, and hopefully to places that involve at least a modicum of star-gazing. As some of you may know, Anna and I have been working on our latest book project, researching tourism opportunities around Lake Diefenbaker; that book is due to be released by the end of April, going by the name "Lake Diefenbaker: Yours to Discover" (CPRC, ©2011). In it you will find lots of information to help you make informed choices about your travel plans, including places to take your telescope this summer.

For instance, if you want minimalist camping (no firewood, showers, or electricity) but access to a place where there will be little to no light pollution, might I suggest Herbert Ferry Regional Park? It's located on the east side of Lake Diefenbaker and has several amenities on its side, most notably those dark skies – the only light you'll be able to see is from the Dakota Dunes Casino some 30 km to the north, and one street light at Prairie Lake Regional Park across the lake.

You don't lose much of the western horizon due to the hills, and the views to the south can be stunning. If you chose this park, try the camping loop to the left as you drive around the bay around which the park sits. You'll be close to the lake and will have minimal obstruction. Shelter will be a premium though, so you might prefer the camping loops to the right around the bay; you'll also be closer to the beach and camp kitchens as well as the trees, particularly at the first loop. You'll find sites are fairly loosely structured, a scattering of picnic tables with vault toilets and no running water so bring your own supply. The one thing you'll find (particularly mid-week) is solitude – few people come here even though the beach is excellent and the bay forms a particularly fine harbour.

Across the lake is Prairie Lake Regional Park with electrified sites, running water and hot showers. There is one camping loop, a series of 12 sites strung around a small peninsula; this is where the street light is located but if you ask they might turn it off for a few hours at least. The view to the south and west from the southern-most camp site is clear and breath-taking at night. Because you're on a small peninsula you'll generally have evening breezes to keep bugs at bay yet there are tall, mature cottonwoods for shelter and shade by day.



There are many other camping and travel options in the area, including one bed-and-breakfast that has 8-inch Dobs on the balcony in each lake-facing room, right in the village of Elbow. For more information on these and other options, come and see me about getting a signed copy for your own bookshelf! Otherwise, we'll see you around the lake sometime – I'll have my little travel scope out so drop by for a chat.

Prairie Lake Regional Park
Photo by Mike Clancy

From Kathleen's notebook

Report from Edmonton: Winterlight, Narnia and Planetariums

by Kathleen Houston

When I saw the giant poster about an exhibit on science of Narnia at the Telus world of science on March 4th in Edmonton, I knew right away I would take my daughter to this fine city for an adventure. I was in Edmonton for Winterlight, where Rick and I were presenters for the astronomy-featured event. I did my workshop for kids to make party hats for Neptune's birthday and postcards to the stars. Participants had a great time using black scratchboards to uncover the colours underneath and draw their favourite planet, constellation or legend. On the other side they could write a letter and make a stamp celebrating Neptune's birthday, or 1st sol since discovery in 1846. Rick's public presentation was about Citizen Sky, a mystery in the sky Epsilon Aurigae, the eclipsing variable star. He had a good crowd and is happy with involvement. There was a tipi outside and many activities indoors. The event was originally to be located at Elk Island National Park, but weather was not conducive and so was moved to the City Hall, a huge glassed-in pyramid. The clouds brought the RASC Edmonton telescopes indoors to be admired by the curious public.

From March 24 to 26th during a two-day school break, I took Marael to Edmonton to see the Telus world of science, and the take a plunge into the Wave Pool. We went to the science centre every day. One day was Narnia, the next was an Imax movie on horses, and on the last day I insisted on taking her to a planetarium show. But apparently no one knew what a planetarium was. They call it a Star Theatre, the Margaret Zeidler Star Theatre. The show we saw was called the Digital Universe, a live show. The traditional Zeiss projector that sits in the middle of the room was taken out three years ago, and now they use digital projection from various places around the room, coordinated by computer. The stars were soft,

not at all like the pure light of the projector I remember at the Planetarium in Montreal. As well the digital projectors overlapped and broke the fantasy of the perfect sky. I hope that not all planetariums are decommissioning their Zeiss technology.

The show was excellent. We saw the Telus world of science skyline and the planets. Soon the "sky" darkened and Marael wiggled in her swivel-reclining chair and checked out the view all around her, as the speaker showed us the constellation sights. Overlaid were traditional drawings of constellation legends. At one point we had an entire sky of variable stars, where the closer ones were larger circles and further ones with smaller circles. The sky was full! Then he showed us satellites buzzing across the sky, and how each satellite has an orbit. Pretty soon the sky was a wirey spool of lines, and as we lifted up and out of the atmosphere, the earth looked like a ball of yarn from all the satellite pathways. One child said he could

almost reach out and touch the lines. Oh the power of abstract thought! Then we moved out and saw the earth and moon, out passed Mars into the asteroid belt. Rock was flying all around us, as we moved further still passed Jupiter, Saturn, and all the way out to the Oort cloud. We didn't stop there, we kept going until we had an image of what our Milky Way might look like and further still until we saw thousands of galaxies. I was thinking Carl Sagan's movie adaptation of Contact. Our journey through time and space begins from the eye of the young Ellie Arroway, out above the earth, passed all the planets all the way into deep space using images and music. The music of the spheres inspired us still, and planetarium shows educate the mind to see beyond what we cannot see with our eyes.

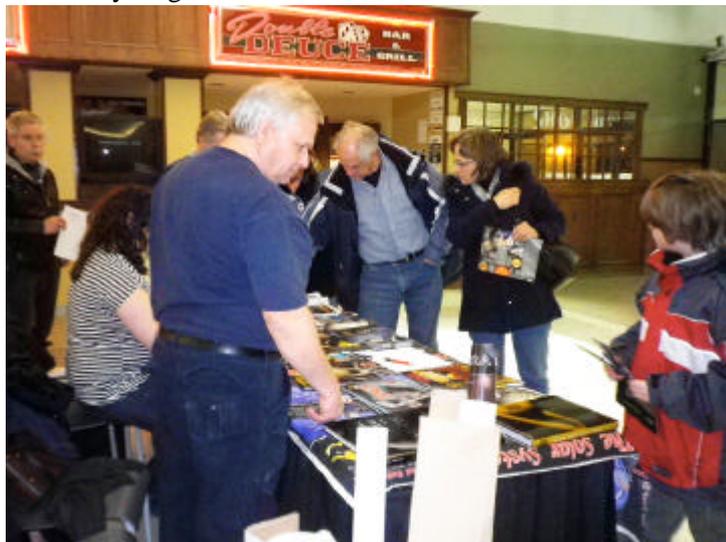


Photo by Kathleen Houston

Earth Hour at the Mall

by Christine Kulyk

This year's Earth Hour on Saturday, March 26, gave us another great opportunity to spread the word about responsible lighting. Saskatoon RASC set up a display with telescopes and information materials at one end of the Centre Mall. Business was brisk, as the Saturday-night moviegoing and restaurant crowds stopped by to view our display and be greeted by about a dozen RASC members who were on hand to answer their great questions about our club and astronomy in general.



I lost count, but I estimate about 100 people visited our display over the two hours from 8:00 pm to 10:00 pm, and many expressed their support for the concept of Earth Hour and responsible lighting. It was especially nice to see lots of kids with their parents, all very interested in learning more about the night sky. The RASC planispheres were particularly popular — everybody loves them.

Bob Johnson arranged to have the Mall's parking lot lights turned out for Earth Hour, and several people told us they came hoping for a peek through a telescope. The sky did not cooperate, unfortunately, as clouds kept us from being able to show them some stars as we would have liked to. We made up for this disappointment by handing out lots of free stuff, plus having a draw for a Galileoscope (donated by Colin Chatfield), all of which kept us very busy, with lots of happy faces in sight.

“Mall-goers showed much interest in our handout materials at the Centre shopping centre during Earth Hour”

Photo by Christine Kulyk

Observers Group

by Larry Scott



Success! The March 25th Observers Group meeting at Sleaford was attended by Kris, Jeff and myself. Skies were clear and the wind calmed right down after sunset. Although the humidity was high we were able to fight it off with the help of a blow dryer and had a good night of observing. For about 20 minutes the seeing calmed enough to give us some excellent views of M3 around 23:00. It was, as they say, like diamonds on black velvet.

A week later, on April 1st, we also had a successful Messier Marathon. Conditions were similar to the week before with high humidity, but about 10 degrees warmer. Eleven(?) members and guests made it out for

an evening that had a little bit of everything. Observing conditions were good for the most part unless you were trying to view M42 through a mouse nest. We spotted a number of fireballs and were treated to a very nice auroral display. I hope everyone enjoyed their evening.

Two days later five members made it back to Sleaford again for Saturn's opposition. This night was again plagued by high humidity, but the seeing was better and allowed some awesome high magnification views of Saturn. After three nights observing in nine days I'm starting to think spring may actually be here.

Next scheduled Observers Group will be April 30th with moonless evenings from about the 20th to May 5th.



The Planets This Month, April 2011

by Murray D. Paulson, RASC Edmonton Centre

Last month **Mercury** passed through a greatest eastern elongation (evening) and now the planet Mercury catches up with the Earth in its orbit and passes between us and the sun. This happens on April 9th where Mercury will sit just a little more than 2 degrees above the sun at inferior conjunction. From this point onward, Mercury will move into the morning sky and slide into yet another poor morning elongation on May 7th. Once again the spring time morning ecliptic foils our chances at catching the elusive planet in the morning twilight sky. There is a positive side to this! Mercury is accompanied by **Venus** which it passes in close conjunction also on May 7th. This one is worth hunting down in the daytime sky and you will see magnitude +0.5 Mercury with an 8 second “quarter moon” phase 1.4 degrees south and east of the brilliant planet Venus. Venus sits on the far side of the sun and is 89% illuminated, read fat gibbous, with a 11” disc and shines at magnitude -3.9. With a wide field eyepiece, Nagler or Ethos eyepiece, you should be able to get both planets in the same field of view at about 55 / 70 x. I love this kind of planetary alignments and feel it is worth the effort to get out and chase them down. This is a Saturday so we can hope for some good weather. Just 4 days later on May 11th, we get an instant repeat with Mercury and **Jupiter** passing 2 degrees apart. Note that Jupiter Venus and Mercury sit in a nice line up with Venus only 36’ south of Jupiter. Jupiter will shine at magnitude -2.0 at this time and Mercury will have brightened imperceptibly to +0.3. Jupiter will have the biggest disc at 34”. Great show, hope you get a chance to see it. Remember that the trio are 26 degrees west of the sun, so they transit the meridian about 12:00 noon MDT.

Last month I bemoaned the majority of the planets being lost to the morning twilight and Jupiter joins Mercury, Venus, Mars, Uranus and Neptune this month after it passes in conjunction with the sun on April 6th. With the exception of the spectacular conjunction in Early May, we will not really get

a good chance to see most of them until late on in the summer at the star parties.

This Is not the case with **Saturn!** April 3rd sees the opposition of Saturn and we are treated to its 19.5” disc and 42” set of rings. It will shine at magnitude +0.3. At the beginning of April Saturn rises at 7:30 pm MDT and transits the meridian at 1:20 am. By the beginning of May, this changes to rising at just after 7 pm MDT and transiting at just after 11 pm MDT. Of note, Iapetus passes 100 arc seconds directly north of Saturn on April 12th where it shines at magnitude 10.8. It then proceeds out to the East and comes to greatest eastern elongation on May 2nd when it lies 9.18 minutes of arc east of Saturn. At this time Iapetus will shine at only magnitude 12.3. Iapetus has a very dark leading hemisphere which is headed right at us when it is on the east side of Saturn. It is 2 magnitudes fainter when at eastern elongation than at western elongation. It will brighten after it heads back toward Saturn. If Iapetus is not enough challenge for you, then go after Hyperion. It shines at magnitude 14.2, a little fainter than Pluto, but it is not sitting down in the muck near the horizon. Use your favorite planetarium software to generate a chart for it on the night that you wish to hunt for it and make a drawing of the star field. If it moves against the star field, you got it! Avoid hunting for it if it is too near Saturn. It is best to keep this magnitude 0.3 beacon out of the field of view. I feel it should be visible in a 10” or larger scope. One more challenge for those who have not yet identified it is the “Crepe” ring or C ring. It is a gossamer thin sheet of the rings on the inside of the ansae of the rings. You know when you have seen it when you realize that it is slightly brighter than the blackness near the ball of the planet. It is very thin and looks the most part as a bit

of haze on your eyepiece. For this reason, a very clean eyepiece helps a lot to discern this ring. Good luck!



36 hour new moon, April 4
Photo by Tenho Tuomi

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 II, 140 Lunar, or 35 Binocular objects, or Explore the Universe 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. Hydromako, T. Tuomi, L. Scott, G. Charpentier, B. Johnson, M. Clancy, L. Dickson, B. Burlingham

Norma Jensen	108
Ron Waldron	105
Kathleen Houston	Up! 95
Wade Selvig	75
Garry Stone	57
Barb Wright	40
Wayne Schlapkohl	36
Ellen Dickson	34
Jeff Swick	24

FINEST NGC CLUB

Certified at 110 Objects:

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

Larry Scott	Done!	110
Scott Alexander		97
Sandy Ferguson		23
George Charpentier		13
Mike Clancy		7

Chatfield BINOCULAR CERTIFICATE

Certified at 35 to 40 Objects:

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

Isabel Williamson Lunar Observing Certificate / 140

Tenho Tuomi	Up!	139
Norma Jensen		108
Jeff Swick		25

EXPLORE the UNIVERSE

Certified at 55 to 110 Objects:

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

Wayne Schlapkohl	Done!	55
Sharon Dice		31

HERSCHEL 400 CLUB

Certified at 400 Objects:

D. Jeffrey, R. Huziak, D. Chatfield

Tenho Tuomi	Done!	400
Gordon Sarty		251
Scott Alexander		117
Sandy Ferguson		18

HERSCHEL 400-II CLUB

Darrell Chatfield	Up!	366
Rick Huziak	Up!	231



The Messier & Finest NGC lists can be found in the *Observer's Handbook*.

The Explore the Universe list is available on the National website.

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/al/obsclubs/herschel/hers400.html>

The Binocular List will be available at each general meeting or can be mailed out on request to distant members.

Copies of the Isabel Williamson Lunar Observing Program Guide can be purchased at meetings.

Program details can be found at: <http://www.rasc.ca/williamson/index.shtml>



“Scooby and Larry clean the yard at Sleaford”

Photo by Jeff Swick