Saskatoon Skies

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

Vol. 42, No. 12 December 2011

Venus and Moon Conjunction

November 25, 2011. St. Albert, AB. Shot with a Canon 40D using a 100-400 zoom lens.
Photo by Murray Paulson, Edmonton Centre

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

MEMBERSHIP? JOIN TODAY!

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 National Office at <national@RASC.ca>!

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
- 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.

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 – Kathleen Houston
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 e.b.a@sasktel.net as a .doc, no indents, no tabs, one line between paragraphs. Images: .jpg please, no larger than 1 – 1.5 MB, sent by e-mail as attached files.

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RASC CALENDAR OF EVENTS

Dec 10	**Lunar Eclipse, 6h30 – 9 ish, Dec. 10th.** Club Observing, Diefenbaker Hill, Breakfast at 9 a.m. at a restaurant.	Barb Wright	249-1990
Dec 13	**Genimid Meteor Shower –** peak in afternoon of 14th.		
Dec 17-26	**Ursid Meteor shower,** peak Dec. 22, 8 pm.		
Dec 17	**Observers Group –** Dusk, Sleaford Observatory	Larry Scott	934-5801
Dec 19	**RASC Christmas Potluck Social** - Room 175 Physics building, University of Saskatchewan - Begins 6:30 pm.	Jeff Swick	373-3902
Jan 3,4	**Quandrantid Meteor Shower,** peak 1 am. Jan. 4 (77% moon)		
Jan 12	**SSSP Committee meeting,** new committee members welcome!		
Jan 14	**Observers Group –** Dusk, Sleaford Observatory	Larry Scott	934-5801
Jan 16	**RASC Executive Meeting** –6:30 pm, 175 Physics, U of S	Jeff Swick	373-3902
Jan 16	**RASC General Meeting** – 7:30 pm, 175 Physics, U of S	Jeff Swick	373-3902
Jan 31	**Asteroid 433 Eros,** closest pass.		
Feb 11	**Observers Group –** Dusk, Sleaford Observatory	Larry Scott	934-5801
Feb 13	**RASC Executive Meeting** - 6:30 pm, 175 Physics, U of S -please note, one week early to avoid Family Day.	Jeff Swick	373-3902
Feb 13	**RASC General Meeting** - 7:30 pm, 175 Physics, U of S	Jeff Swick	373-3902

For a complete list of club events, please check out: http://homepage.usask.ca/~ges125/rasc/activities.html

RASC SASKATOON CENTRE
Pot Luck Supper!

MONDAY, DECEMBER 19, 6:30 PM

Room 175, Physics Bldg., U of S

Come and join us for our annual potluck supper!
Plates and cutlery provided.
*Bring your preferred dish, stories to share and love of the sky!
*Reading by Saskatoon author Bernice Friesen,
from her novel manuscript "Candle", no longer a work in progress,
but sitting on her agent's desk!

Curiosity Flies!

A United Launch Alliance Atlas V rocket lifts off from Space Launch Complex 41 at Cape Canaveral Air Force Station carrying NASA's Mars Science Lab (MSL) spacecraft. Liftoff came right on time on the first opportunity at 10:02 a.m. EST, Nov. 26, 2011.

Image credit: NASA/George Roberts
http://www.nasa.gov/mission_pages/msl/launch/index.html
November 28, 2011. *Printed with permission from NASA*

Mars Science Laboratory:
http://spaceflightnow.com/atlas/av028/status.html
http://www.youtube.com/watch?v=E37Ss9Tm36c
Spirit and Opportunity animation
http://www.youtube.com/watch?v=pDxjimmDgCc&feature=related

Minutes of the Executive Meeting November 20th, 2011 by Ron Waldron

1. Meeting began at 6:30 PM
2. Approval of Minutes of October 18th Executive Meeting – moved by Les Dickson, seconded by Rick Huziak
3. Treasurer's Report – nil report
4. Centre Rep Report – Rick Huziak
a. See summary in the October, 2011 Newsletter
b. New bylaws will be updated when National Council is done updating
5. Status on Renos / new building update
a. Rick Huziak reported that our 16" telescope is up and running better than before. A few more modifications are necessary but it is much improved
b. Daryl Chatfield gave an update of possible sites for the proposed structure (garage package?) to be built. Discussion followed
6. SSSP Report – Les Dickson
a. Meeting was held last Thursday and loose "financial" ends are being tidied up between Saskatoon and Regina.
b. More and new volunteers are being recruited at this time
c. Information about speakers will be forthcoming
7.Rick's Proposal – see October, 2011 newsletter for details
a. Motion by Jim Gorkoff – that the Light Abatement Committee be given authority to spend $140 wherever they see fit and the other $560 to compensate for expenses. Seconded by Norma Jensen. Discussion followed. Approved
8. Kathleen's Proposal to invite Alan Dyer to speak at our club on the topic of the upcoming Transit of Venus. (See October newsletter for details). Discussion followed. Jim Gorkoff moved that a budget of $1200 be setup to fund the event. Seconded by Barb Wright. Carried.
9. Meeting was adjourned at 7:30 PM

Minutes of the General Meeting November 20th, 2011 by Ron Waldron

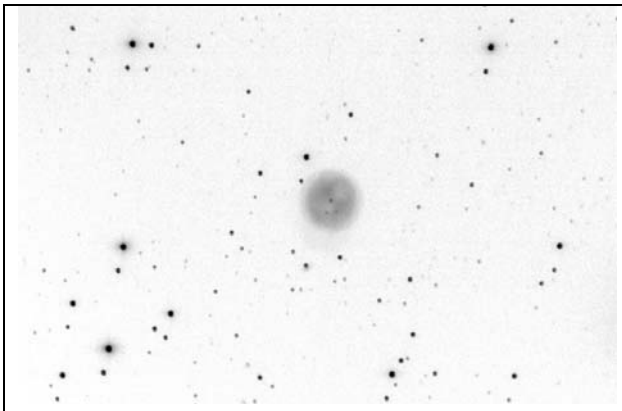
Monday, November 20th, 2011 at 7:45 PM
1. Meeting began at 7:30 PM
2. Approval of Minutes of October 18th Meeting – moved by Mike Clancy seconded by Ellen Dickson
3. Committee Reports
a. Membership – reported by Jeff Swick on behalf of Mark De Jong
- 4 Life Members
- 63 Regular members
- 1 Regular US member
- 5 Youth members
b. Activities – Jeff Swick
c. Newsletter – Kathleen Houston
- Jeff congratulated Kathleen on the success of her first issue of the newsletter
d. Sleaford Site Committee – see executive minutes
e. Questions from the membership
- Mike Clancy is giving Star Talks starting in May and going through September on a train from Ogema to Horizon. He will write an article in an upcoming newsletter to solicit interest and participation from other members.
4. Presentations:
a. "Deep Sky Imaging with a DSLR Camera" by Tenho Tuomi
b. "Universal Health Care": Magnetic Resonance Imaging for Astronauts Flying to the Space Station and Beyond" by Gordon Sarty
5. Meeting was adjourned at approximately 10:00 PM.

Youth in Astronomy

Space Club student comments who attended our fantastic open house.

"The star Gazing was really cool! Each telescope was a different size and the telescopes were pointing at different things. We got to see things like Jupiter, exploding stars, the Milky Way, dying stars and more. It was really fun and a great learning experience. "

"This was a really cool learning experience because I got to see a whole bunch of neat telescopes and a load of amazing things in the sky. I hope they have this event next year."



Boneheaded Moments in Astronomy

By Tenho Tuomi

The day I (almost) discovered a supernova!

In February 2010 I was looking at a picture that I had taken of M97, the Owl Nebula. I decided to compare it with one I had taken a couple years earlier, and noticed a star next to the Owl in the new picture that I was not in the old picture. I HAD DISCOVERED A SUPERNOVA. As I was thinking about sending a message to Rick announcing my discovery, I noticed that there was another new star. There couldn't be two supernovas! A close examination of the picture revealed that there was a new star a little below every star. Obviously the telescope drive had taken a jump during one of the pictures and I hadn't noticed it when I stacked the pictures.

I was so close to becoming famous!

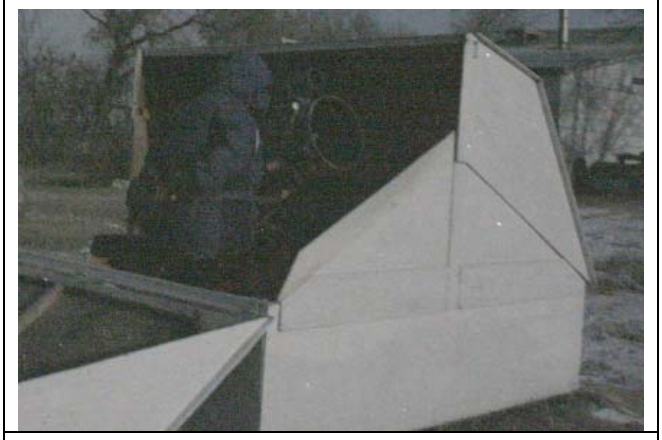
Deck Saskatchewan's Halls

By Christine Kulyk

(To be sung with original music score…)

Deck the halls with boughs of cypress
From the Cypress Hills near Maple Creek.
Sing a song that doesn't bore us —
Winter's getting longer as we speak.

While the snow falls crisp and frigid,
Book a flight — any flight — to La-La-Land.
Temperatures with minus digits —
F- F- Freezing in Saskatchewan!



A Trip to Tenho and Velma

By Norma Jensen Photo by Tenho Tuomi

After many open invitations to visit Tenho and Velma at their farm, I finally went Nov. 16th -18th. The moon would rise late and deep sky objects could be seen with the early darkness. There would be a west libration of the moon on the 16th, an opportunity to see several new objects. Tenho's observatory was perched on a south-facing hill, a chance to try for objects towards the south galactic pole.

A warm welcome into their cozy home and a hot mid-day meal greeted me. I settled in and planned the night's viewing. Tenho took me out to the observatory and I started learning how to move his 12" scope on its equatorial mount. That took some getting used to, but as the evening progressed, so did I.

At times, great bands of cloud swept through obscuring the sky. Clear, then cloud, then clear. I started to observe around 19:30. The viewing of the deep sky objects in Cetus and Sculptor were challenging with a new kind of scope and an 80 mm refractor as a finder scope. Skies were steady, -11degrees C., no wind - perfect!

Learning, learning, I moved from object to object. NGC 246 pn, 237 g, 253 g, and lastly 288 gc near the south galactic pole. Then we waited for the moon to clear the barn.

Moon viewing with a telescope that tracks, was a great experience. I was able to just stand and stare. It was now past midnight and the humidity began to frost things up. Weather conditions began to slowly deteriorate. However, the tracking allowed me to

watch steadily when seeing was good. The libration objects Markov, the Seleucus group and Ulugh Beigh could be clearly seen. Then a last walk along the terminator, stopping for awhile at Albategnius and Hipparchus. I turned from the scope to look southwards and saw fog rolling up the hill. Session ended at 2:30.

After a great night we woke to wind and snow. Spent the day and evening with books, snoozes, more great food and a few of Velma's and my fav TV programs. The following afternoon Tenho and Velma convoyed me out through the drifted roads, to Gary and Myrna Stone's by the Gardiner Dam. A short visit with tea, cake and a look at Gary's shop and I was on my way back to Saskatoon.

Tenho, Velma, thank you for the generosity of your time, the sharing of your home and all the new things I learned with you both. I'll be back!

Photographing the Aurora

By Colin Chatfield

With winter rapidly approaching, so does the likelihood of viewing the Aurora Borealis (Northern Lights). Some of you may even want to photograph them, but are not quite sure how to do that. Hopefully this article will help answer some questions, based on my techniques (which are by no means expert, nor are they an exhaustive list of ways to photograph Aurora).First off, the camera is a little bit irrelevant. I've photographed Aurora using a point and shoot (Canon Powershot A80); it's just a little more tricky. As examples for this article, I will use my current DSLR cameras, namely a Canon 7D and 40D. Most astro-photographer's prefer to use Canon cameras as they are typically the best for long exposure night photography. I had a Nikon D80 and D90 until recently, but have decided to shoot strictly Canon going forward.The first piece that's needed is a tripod. One can use the hood of a car, but is not recommended. The tripod needs to be sturdy enough to withstand any wind that may be present. If your camera/lens has vibration reduction or image stabilization, it's important to turn that off when mounted on the tripod as the motor can actually cause vibrations.

Photos by Colin Chatfield

The second piece I recommend, if it will work with the camera, is a remote shutter release cable. This allows for the shutter to be cycled using a cable, all the while allowing your hands to be off of the camera, thus preventing shake. Most remote shutter release cables will only work in the manual (M on the camera dial) or bulb (B) modes on the camera and some cables have a function whereby a timer can be set on them. Generally, times between 15 and 30 seconds are used, so that feature can be handy. Some cameras can also use a remote control, which works well too, although one needs to be in front of the camera to use it. If one is using the remote control feature, it's essential to turn off the illumination assist, if applicable. If the camera cannot use a cable release or remote, the timer can be used. Most cameras have two timer settings; 2 and 10 seconds. I recommend using the 10 second setting as it will allow enough time for the shutter button to be pressed and allow for your hands to be away from the camera.Although one may be able to get some pictures using the automatic mode, using manual camera settings will allow for greater control over the images and allow for experimentation to get the correct shots. Some point and shoot cameras have a manual setting (M); almost all DSLR's have it as well. Otherwise, they may have an aperture priority (A) setting or some other setting that will allow for certain settings to be changed.Lenses are one of the most important aspects to consider for the camera. A wide angle lens works very well for shooting Aurora. Size ranges from 8mm to a maximum of 50mm work best. I currently use a Tokina 10-17mm f/3.5 fisheye lens, which is an awesome lens for capturing Aurora. Tokina also makes an 11-16mm f/2.8 lens (not fisheye) which is a fantastic lens. Fast lenses are needed for proper long exposure shots over 10 seconds and are typically in the f/3.5 and below range (f/2.8, f/1.8, f/1.4, etc). Kit lenses typically range from f/3.5-5.6 or f/4.0-5.6, etc. These lenses can do the trick, but most often, star trails will be visible, as will excessive

noise. The faster the lens and the better the glass elements in the lens, the better; however, they are also more expensive. For example, a kit lens with a range of 18-55mm f/3.5-5.6 may cost $250, whereas a lens such as the Tokina 11-16 f/2.8 is about $800; but the pictures are vastly different in the lack of noise and longer exposure times possible with the Tokina.Depending on the brightness of the sky and Aurora, exposure times will general range between 10 and 40 seconds. Most DSLR's allow the exposure time to be set manually as do some point and shoot cameras. The longer the exposure, the greater potential for noise and star trails to be introduced into the images. Those can be compensated for somewhat with camera settings. For example, setting the ISO will determine how much light is hitting the sensor. An ISO of 400 will not allow as much light in as a setting of 1600. However, the higher the number, the better in lowlight, long exposure shooting it will be. Typically an Aurora shot will be somewhere around 1600-3200 ISO with an exposure time of 10-40 seconds using an f/3.5 lens. Using an f/2.8 lens will allow for longer exposure times, with less noise. One may be able to shoot as long as 60 seconds without significant noise/star trails with a lens such as that. One advantage is that the ISO can be set somewhere between 800-1600 to achieve the same results as the f/3.5 lens, but with less noise. I recommend turning any noise reduction off in the camera and using software to adjust noise levels afterward.Some cameras (such as Nikon DSLR's) have exposure delay mode. I recommend using it. It will take longer to process each picture, but vibrations from the mirror flipping up to take the picture will be eliminated. I also recommend getting outside of the city if possible to shoot the Aurora. Sometimes the city light pollution can create an interesting effect, but generally it's more of an annoyance that will dilute the colours visible. It's also fun to experiment with different shooting settings, such as including trees, reflections off lakes or the Milky Way, etc.If anyone is interested in shooting the Aurora, please let me know and I'd be happy to have you along when shooting next time there is Aurora activity. I can be reached at colcha@sasktel.net or 717-6682.

Photo: Ministry of Tourism, Parks SK.

Cypress Observatory
"Astronomer in Residence"
Program

Part of the evolution of the Cypress Observatory is to create an Astronomer in Residence program where a visiting astronomer can work with park interpreters to develop and provide varied forms of public outreach programming. In return, the park provides unrestricted use of the observatory and free camping. To this end, the Friends of Cypress Hills Park, who were responsible for the development of the observatory, are looking for an RV that can be used by the Astronomer in Residence. The trailer would be parked next to the Yurt where hook-ups are provided. A receipt for the trailer can be issued (either a rental donation for the year or for full value). The trailer should be 21 feet or larger, should have a separate bedroom area, shower, hot water and furnace and be in reasonably good shape. Anyone having such an RV that they don't use should call Gerald Gartner at 306-662-3739 or ggartner@xplornet.com. More on the program will be announced as it is developed**.**

Comet C2009 P1 Garradd and the Coathanger Cluster. September 2, 2011 F/5 80mm Refractor 8x2 minutes at ISO 1600. Photo by Tenho Tuomi

Experience ***The Evolving Universe*** exhibit at the National Museum of Natural History, Smithsonian Astrophysical Observatory.

October 21, 2011 – July 7, 2013

On-Line Gallery [News Release From Harvard Smithsonian Center for Astrophysics]
http://www.mnh.si.edu/exhibits/evolving-universe/

A new exhibition and website, developed jointly by the Smithsonian Astrophysical Observatory and the Smithsonian's National Museum of Natural History, reveal the dynamic and evolving universe through breathtaking photographs and informative captions. "The Evolving Universe" will be on view in the museum in Washington, D.C., through July 7, 2013. A worldwide audience also can experience the exhibition through its website: http://www.mnh.si.edu/exhibits/evolving-universe

All of the images featured in the museum gallery can be downloaded in high-resolution jpegs or PDFs formatted in poster size. "Anyone can select their favorite space photo, download it, and take it to their local copy shop to print it," said Smithsonian astrophysicist Jonathan McDowell, who played a lead role in developing the exhibition.

Visitors to the exhibition or website can choose one of two paths to explore the cosmos. They can begin close to home with our solar system and move outward to the farthest reaches of the universe. Or they can begin 13.7 billion years ago at the moment of the Big Bang and move forward in time to the present day.

Christmas Tree Cluster, NGC 2264 December 1, 2011 f/5 80mm Refractor 6x2 minutes at ISO 1600 Cropped to half size, south up.
Photo by Tenho Tuomi

M31 shot at f /4.5, 82 mm eq. fl, for 225 sec, ISO 1600. Taken Nov. 28, 2011.
Photo by Dick Kirk

The Planets This December, 2011

by Murray D. Paulson, RASC Edmonton Centre

Mercury starts off this month, on December 4th, in inferior conjunction with the sun. In an incredible burst of speed, Mercury will zoom out to the greatest western elongation on December 22nd, an amazing 18 days later. This is a favourable morning elongation of **Mercury** and you should get up early on the **22nd** to the view of a thin crescent moon sitting 7.3 degrees west , ready to occult 2.3 magnitude gamma Scorpius at 8:15 am (~9:22 am Saskatoon, just moments after sunrise). This will be a spectacular morning with the exception that it is a work day. I don't know about you, but I am phoning in sick! This is a very favorable morning apparition of Mercury with Mercury sitting farther than 18 degrees from the sun from the 14th of December till the 6th of January. Over this period it hovers just above 0th magnitude and should be relatively easy to find in the morning sky with binoculars in the twilight. How many days can you see it over that period?

Venus is now far enough from the sun so we can find her in the evening twilight in the far southwest just above the horizon. I caught a young moon and Venus near the end of November in a beautiful twilight conjunction. The 29th of November marked Venus's furthest south excursion on the ecliptic and a return to the northward motion. At the beginning of December Venus will present a 88% illuminated fat gibbous disc which is 11.6" in diameter and shines at magnitude -3.9. Over the month, Venus moves from Sagittarius to Capricornus, much higher in the evening sky. By the beginning of January, Venus will now be obviously gibbous and shines at magnitude -4.0. The 82% gibbous disc has a 13.0" diameter.

14 seconds is the number that **Mars** will eventually swell up to, so if you have a gander at Venus, you will get an idea of what is in store. At the beginning of December, Mars shines at magnitude 0.6 and shows a 7.3" gibbous disc. It is sitting just beneath Leo near M95, M 96 & M105. Over the month it moves toward the Virgo border, well above the ecliptic. In early January it will brighten to 0.1 magnitude and it now shows a 9.2" disc. In the eyepiece you will see the North pole is inclined at just over 23 degrees toward Earth. Mars now rises just before midnight and by early January it will rise at 10:30 pm.

Jupiter sits well placed for early evening viewing and really dominates the night sky. At the beginning of December Jupiter shines at magnitude -2.7 and shows a 47" disc in the eyepiece. He is still the king! Over the month we will advance around the sun and Jupiter will dim noticeably. By early January, Jupiter will shine at magnitude -2.5 and the disc will have shrunk to 43". On January 2nd, a slightly gibbous moon will pass just 4 degrees above Jupiter. Closest approach is before sunset.

Saturn starts off the month 5 degrees east of Spica in Virgo. It shines at magnitude 0.7 and will show you a 16" ringed disc in the eyepiece. It is a morning object, so most of us will get a chance to notice it in the morning sky on our way to work, but it is rising up and will be a constant morning presence for those of us who can take advantage of it. It will be a must see on the morning of December 22 while we enjoy Mercury and a stellar occultation. By early January, Saturn will brighten to magnitude 0.6 and the disc will swell slightly to 16.76". It now is 76 degrees from the sun.

Uranus is still worth the effort on a star night out at the observing site. Do it early on in the evening because it will set behind the trees if you wait too long. Set time is 1:50 am, but it will get low in the sky. In early December, Uranus shines at magnitude 5.8 and shows a 3.5" disc in the eyepiece. Over the month not much changes, but it sets earlier, just before midnight in early January.

On December 28, **Pluto** will be in conjunction with the Sun.

Observing Clubs and Certificates

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. Hydomako, T. Tuomi, L. Scott, G. Charpentier, B. Johnson, M. Clancy, L. Dickson, B. Burlingham

Kathleen Houston	Done!	110
Norma Jensen		109
Ron Waldron		105
Wade Selvig		75
Garry Stone		57
Bernice Friesen		45
Wayne Schlapkohl		43
Barb Wright		40
Ellen Dickson		34
Jeff Swick		24

Chatfield BINOCULAR CERTIFICATE

Certified at 35 to 40 Objects:

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

FINEST NGC CLUB

Certified at 110 Objects:

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

Larry Scott	Done!	110
Scott Alexander		97
Norma Jensen	Up!	43
Sandy Ferguson		23
Kathleen Houston	Up!	20
George Charpentier		13
Mike Clancy		7

EXPLORE the UNIVERSE

Certified at 55 to 110 Objects:

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

Wayne Schlapkohl	Done	55
Sharon Dice		31

Isabel Williamson Lunar Observing Certificate

Certified at 140 Objects:

T. Tuomi

Norma Jensen		133
Jeff Swick		29

HERSCHEL 400 CLUB

Certified at 400 Objects:

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

Gordon Sarty		251
Scott Alexander		117
Sandy Ferguson		18
Larry Scott	Up!	4

HERSCHEL 400-II CLUB

Darrell Chatfield	366
Rick Huziak	246

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.astroloeague.org/al/obsclubs/herschel/hers400.html
Binocular List is at: **http://homepage.usask.ca/%7Eges125/rasc/Chatfield_Binocular_List.pdf**
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**

Observers Group by Larry Scott

The Observers Group on November 19th was clear, cold (-24C) and attended by five members. The cold temperatures were bearable due to the lack of any wind. Transparency was average to poor, but the seeing was really good at times. We watched Io and its shadow transit Jupiter at 560X. Warmer temperatures the following Saturday, November 26, turned up seven members at Sleaford. Not good skies I would say, but we were lucky to see anything with Ron introducing his new scope that night.

Next Observers Group will be held Dec. 17th with moonless evenings from the 16th to the 29th. I won't be able to attend, but Norma has volunteered to stand in for me. Hopefully I'll see some of you out at Sleaford over the holidays. Season's Greetings Everyone!