

# Saskatoon Skies

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

Vol. 43, No. 9

September 2012

## SSSP 2012 – A Huge Success!



*At SSSP this year, Dick Kirk is seen marvelling at Tenho Tuomi's towing ball and hitch counterweight system with Jim Goodridge looking on. Photo by Tenho Tuomi*



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### In This Issue:

Membership Information / Bottle Drive / Officers of the Centre	2
U of S Observatory Hours / Light Pollution Abatement Website	2
Calendar of Events / Notice of Meeting	3
A Tribute to Neil Armstrong and Lunar Observing	4
Volunteers Needed for University Observatory/President's Message	5
My Experiences at the 2012 SSSP	5-9
Observer's Group Notes – Larry Scott	9
Observing Clubs and Certificates	10

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](mailto: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.

LIGHT POLLUTION  
ABATEMENT  
WEBSITE AT:  
[www.ras.sk.ca/lpc/lpc.htm](http://www.ras.sk.ca/lpc/lpc.htm)

**Newsletter Editor** – Ron Waldron  
**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 [rmwaldron@shaw.ca](mailto:rmwaldron@shaw.ca) 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.

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 1st of the month. Saskatoon Skies accepts commercial advertising. Please call the editor 306-665-3392 for rates. Members can advertise non-commercial items free of charge.

# RASC CALENDAR OF EVENTS

Sept 11-16	Northern Prairie Star Party – Black Nugget Lake, AB	<a href="http://edmontonrasc.com/public/npsdirections.html">http://edmontonrasc.com/public/npsdirections.html</a>	
Sept 14-16	Alberta Star Party – Starland Recreation Area, AB	<a href="http://calgary.rasc.ca/asp.htm">http://calgary.rasc.ca/asp.htm</a>	
Sept. 15	Observers Group – Dusk, Sleaford Observatory	Larry Scott	
Sept. 17	RASC Executive Meeting – 6:30 PM, 175 Physics, U of S	Jeff Swick	373-3902
Sept . 17	RASC General Meeting – 7:30 PM, 175 Physics, U of S	Jeff Swick	373-3902
Sept. 22	Sleaford Open House – 4:00 Bbq / Dusk - 11:00 PM	Jeff Swick	373-3902
Sept. 22	International Observe the Moon Night		
Oct. 13	Observers Group – Dusk, Sleaford Observatory	Larry Scott	934-5801

For a complete list of club events, please check out: <http://www.usask.ca/rasc/activities.html>

## RASC SASKATOON CENTRE GENERAL MEETING

MONDAY, September 19th, 7:30 PM

*Room 175, Physics Bldg., U of S*

### Program

In memory of Neil Armstrong and the Apollo 11 Moon Landing,  
Ron Waldron introduces

***Magnificent Desolation – Walking on the Moon***

(An IMAX film by Tom Hanks)

*NOTE: There will be an executive meeting at 6:30 PM*

# A Tribute to Neil Armstrong and Lunar Observing

by Ron Waldron

Most of us are old enough to remember July 20, 1969, the date that Neil Armstrong and Buzz Aldrin landed on the moon. And most of you know that Neil Armstrong passed away on August 25<sup>th</sup> of last month. In this short article, I plan to outline my remembrances of the events leading up to Neil Armstrong and the other two astronauts moon landing as well as give some personal remembrances of key correlations with my own life.



The sixties were wonderful years in terms of Space Exploration. It began with the one man Mercury Program, followed with the two man Gemini program and culminated with the three man Apollo Program, the capsule that eventually took men to the moon. During that decade, I was in elementary school and consumed with interest any coverage that was offered. I can still remember on February 20<sup>th</sup>, 1962, the principal of Haultain School (I was in grade 4) coming over the intercom and announcing that John Glenn had successfully orbited the earth, thereby becoming the first American astronaut to do so.

I also remember the Gemini flights with their two man capsule and the various docking maneuvers that helped pave the way for Apollo. Then on January 27<sup>th</sup>, 1967 we were all shocked as Apollo 1 erupted into flames during a testing sequence on the launch pad killing astronauts Gus Grissom, Ed White, and Roger Chaffee. It was during that tragic time that I first met RASC member Darrel Chatfield. I had setup a memorial display of the three men in my dad's stationery store on the corner of 8<sup>th</sup> St. and

Clarence Ave in Saskatoon. Darrell's dad came into the store, saw the display and returned with Darrell in tow to meet me.

July, 1969 found me in High School and fully committed to following anything astronomical or space-related. I distinctly remember the week of the Apollo 11 launch and moon landing. During the landing sequence I was playing my trombone in a concert in the band shell. I had a small radio with an earphone tucked in one ear to listen to the successful landing between numbers. Later, the world watched in awe as man placed his lasting footprint on the surface of another world. Who can ever forget the words "That's one small step for man - one giant leap for mankind!" Television coverage was over 24 hours in length for the first time in media history 1 out of every 6 people alive in the world watched the broadcast on a television set.

With the death of Neil Armstrong and the cancellation of the Space Shuttle Program, space travel now prepares for the next generation manned space vehicle, the Orion which is designed to explore beyond low earth orbit and into deep space. The desire to return to the moon is still there and the feasibility of such a venture is not completely out of the question if you check with NASA engineers. The political will that is needed to undertake this enterprise however is another question.

As amateur astronomers we spend a great deal of time looking at the moon and beyond. Under ideal seeing conditions and much persistence we are able to see the three craters named after the astronauts of Apollo 11. They can be found along a line from Sabine to Maskelyne not far from the landing site in the Sea of Tranquility. If you are looking for a challenging lunar project, why not try to find them. Other successful amateurs suggest a magnification of 200 plus. Failing that, each one of us can simply do what was suggested by Neil Armstrong's surviving family members. I quote "Honor his example of service, accomplishment and modesty, and the next time you walk outside on a clear night and see the moon smiling down at you, think of Neil Armstrong and give him a wink."

## Volunteers Needed for the University Observatory

*By Jim Goodridge*



The University Observatory has hit a funding shortfall and because of that they will have to adjust their staffing on Saturday nights. Saskatoon Centre has been asked to provide volunteers to the University Observatory on Saturday nights in order to assist a paid student employee. The volunteer is a very important component to this as it is unthinkable from a safety perspective to let one person be alone

at the University Observatory. Training will be provided.

The request for our Centre to supply volunteers at the Observatory is an incredible opportunity for public education and outreach. During a recent Saturday night Dick Kirk was at the observatory and there were 40 people in attendance. What a chance for us to talk to and recruit people who are interested in astronomy! Tim Ceaser has worked a couple of nights so far and he has been very impressed with the number of people attending.

The Observatory is a tremendous asset to amateur astronomy in Saskatoon as an observatory dome is like a permanent billboard promoting astronomy. The general public links the dome to astronomy and every time someone sees the dome, they think of the stars, moon, or planets, whether they want to, or not. Our city does not have a science centre or science museum and thus the Observatory is the most visible link to science that our city has. The observatory needs our support so please add your name to our group of volunteers. To assist with this most worthy outreach opportunity, please contact Stan Shadick.

## President's Message

*by Jeff Swick*

Well the days are getting shorter but the weather is still great. This is probably my favorite observing season as the summer constellations are still high and southern Milky Way is still within grasp.

The weather also cooperated with this year's star party. Thanks go out to our SSSP committee chair Les Dixon and our registrar Rick Huziak for giving so much of their time. Darrel did a pretty bang up job as "Santa" again this year.

Thanks also to all those of volunteered of their time to make this years event so successful.

It was interesting to see Calgary Members Sue, Dan, Ed and Kevin who where camped at the star party boundary set up an impromptu solar viewing station. They took it upon themselves to personally welcome non-star party attendants to the meadows and made it their mission that anyone coming up must have a

look at the sun. It sure built a lot of good will so thanks to them for the initiative and creativity.



*Calgary members act as goodwill ambassadors for SSSP – Photo by Jeff Swick*

As we move in to the new fall season we hit the ground running. Our annual Open House out at Sleaford that is usually in October has been moved up to Sept 22<sup>nd</sup>. Look for further announcements from our Activities Co-coordinator Barb Wright.

This is always a big deal for us as we process roughly 300 to 400 hundred guests.  
Don't forget the potluck earlier in the day.

## My Experiences at the 2012 Saskatchewan Summer Star Party

*By Jim Goodridge*

I made the trek to the 2012 Saskatchewan Summer Star Party on August 16 arriving about 1600 hours. This was not my first trip to the SSSP but I consider it my first serious trip. I believe that it was the second SSSP that I attended with my wife and another couple. We made that trip from Winnipeg but unfortunately the people we were with didn't realize that you had to stay up after dark. We did have binoculars with us and were able to attend a very good star walk but that was the extent of the experience on that trip. I drifted away from RASC after that but joined again several years ago, this time with the Saskatoon Centre.

The first item on my agenda was to check into the lodge and I was very happy with the condition of my room and the lodge in general. The lodge is very nice and is good value for the money. For us softies who would need half a bottle of aspirin to be able to stand up after sleeping for a night on the ground, the lodge is a great blessing. I have already booked my room for next year and I would encourage people to make sure they book early and let the reservation clerks know that you are with the SSSP. Booking a reservation involves a \$75 fee but it is refundable if you cancel 30 days before your arrival date, less a \$10 dollar administration fee. One thing to note about the lodge; you have to pay the full amount of your stay even if you depart early unless you change your departure date at least 2 weeks before arrival. It makes sense as the lodge could lose a lot of money if it rains.

The second item was to go to the main campground and find a place for my telescope. I arrived at the campground after a short drive and went to the registration tent where Jeff Swick and Rick Huziak were handling things. All of the registration material was in an envelope and everything was in order. The process was very efficient and went ultra fast. I asked at the tent where I could set up my telescope and was told to find a spot. I must say that

I had difficulty with this as being a newcomer I really didn't have any idea about where you could set up your scope. Most of the area was campsite and it didn't feel right to plunk a scope down where someone was going to be camping. I left my Telescope in the car and went to the welcome BBQ. The BBQ was fun and I got to see some of the people from Saskatoon so I felt at home. I left the BBQ to go back to the Main Campground to try to find a place to put my scope. I ended up putting my scope in the "Valley of the Dobs" beside Jeff Swick's trailer. Being the current President of RASC Saskatoon, Jeff has to be nice to everybody so it was easier to take advantage of him than someone else.

Next on the agenda was a volunteer session taping up cars before they came into the campground. I was scared that the only clear viewing time was going to be from 9:00 PM to 11:00 Pm on Thursday night which happened to coincide with my taping duty, but my fears proved to be unfounded. Covering car headlights, backup lights and dome lights with red plastic, doesn't sound like such a big deal but it does take a little time. I was with three other people and most of the attendees understood the process and were patient with it. We only had one rude camper so all in all it was not an unpleasant task. During the taping the International Space Station made an appearance, so that was pretty neat because we were able to show it to a non-star party family who were quite impressed.

I had left the BBQ early to set up my scope and didn't attend the "Under Living Skies" lecture by Mike Clancy. I really wanted to stay to see it but I was worried that I wouldn't find a place to put my scope and I also didn't want to be late for taping duty. Anyways, this nice fellow drives up and while we were taping and asked "did any of you see the lecture"? Unfortunately none of us had and I asked the person if he had gone to the lecture and if so how

was it. His response was that he gave it. It was Mike Clancy and he gave us a rendition of “The Cremation of Sam McGee” by Robert W. Service as we taped his truck. Taping duty done I headed back to the Valley of the Dobs to start “scoping” things out.



*SSSP attendees line up for hot dogs at the Thursday night Bbq – Photo by Jeff Swick*

I was not prepared for the sky at Cypress Hills. I have never seen stars like that I it quite took my breath away. I was told that Rick Huziak said the sky on Wednesday night rated 13 out of 10 and I can’t believe that Thursday was that far behind. I ended up just looking at the sky for a while and had a hard time figuring out where things were. I overheard Susan, whose trailer was close by, saying that the brightest stars are still the brightest stars. This turned out to be a very wise statement that I took to heart. I took off my glasses and all of a sudden the brightest stars showed up and I was able to navigate again. I ended up paying the price for not getting the session planned and didn’t get anything properly drawn and entered into my logbook Thursday night.

The Starlight Café was an important part of my observing evenings. They sold really good burgers and had lots of coffee available. The prices were very reasonable and there was no reason to be trying to make coffee, one cup at a time, back in my hotel room to fill a thermos for the night. Also my midnight burgers tasted mighty good. Here is a money saving tip for lodge residents. My room had a small fridge and microwave as well as a coffee maker. I also brought a single cup coffee maker from home as well as groceries. Between the Starlight Café, BBQ and Banquet, along with the addition of a jar of peanut butter and a loaf of bread,

you really never have to buy a restaurant meal. Also the bar in the lodge offers off sale at similar prices to Saskatoon, so there is a local place to re-stock if important supplies are running low.

Friday morning I was up relatively early and went for a walk on the trail system by the lodge. It is actually a short walk (under 1 Km) to the Amphitheatre so next year I know not to take the car. The main trail is paved and there are secondary trails off of it. I saw some woodpeckers and some small wildlife. There is also a beach and small lake on the trail and the beach appeared to have a playground. I was able to go for a walk/hike every morning and that really helps to keep the blood flowing.

Friday afternoon I was able to get my observing sessions planned for the rest of the stay, visit the Science Shop and All Star Telescope tables to see their goodies for sale, and still get in a nap before the evening presentations. The short presentations on Friday evening were great and included talks on Sasktel initiatives on smart street lighting, webcam imaging and the annular eclipse in May.

Friday nights observing went much better since it was planned in advance. I started off by attending the sketching workshop put on by Jack Milliken from the Calgary Centre. One of my longer-term goals is to get better at sketching as I am currently still drawing “stick men” stars. I learned that I needed to back up more and frame what I was drawing so that the object I was drawing was framed better. The good thing was that I was able to figure out that I was at least approaching sketching properly. After sketching class I observed M31, Collinder 399, M11 and M8. I did proper sketches of the coat hanger, M11 and M8 for “The Explore the Universe” list and did a sketch of M8 for the Astro Photo and Sketch Contest.

Saturday, after my morning walk/hike I spent more time at the vendor tables and looked very carefully at the swap tables. I didn’t see anything that tickled my fancy at the swap tables but on Friday I did buy an OIII filter at one dealer and a LPR filter at the other. Bring money with you, as this is a really good time to add to your filter and eyepiece collection. I asked about an astrometric eyepiece, as I want to get into measuring position angles and separation of double stars and was told, “no one has ever asked for that before”. Fortunately Ken from All Star had one

left and phoned me on Monday and I was able to order it.



*The Wapiti Room is jammed for Saturday afternoon talks and draws – Photo by Jeff Swick*

The Saturday afternoon talks were very well attended and were really interesting. First up was a talk on “Observing the Solar Systems Minor Moons”, which was really informative. It was something that I thought would be really neat to try but on sober second thought I think I will stick with the major moons. The speaker Terry Trees had a handout that he gave out that will hopefully be put on the website. His advice would work, not just for minor moons but also for Asteroids and double stars that are very close together. The main speaker was Vance Petriew, who gave the Father Lucien Kemble Memorial Lecture, who gave an innovative and very interesting account of his discovery of a comet at the 2002 SSSP. I will give the lessons I learned from this speech a little later on.

10th anniversary awards, and the Astro Photo and Sketch awards followed the talks. I entered a photo and a sketch and encourage everyone to make an entry. If the only people who enter are those who have a chance of winning then there just isn't that much to look at. I overheard one person saying they thought my photo was “neat” which was a huge affirmation for me. I figured if someone said my stuff was horrid I could just turn my nametag around so I couldn't be identified. I would like the biggest difficulty facing the contest judges to be “where do we find the wall space to put all the photos and sketches”. The door prize draws followed and there were many prizes given out. I received a “star blanket” which didn't seem to go with my manly persona but Donna claimed it as soon as I unpacked it so I got brownie points for it.

At the Banquet that followed I was lucky to end up sitting beside Alan Dyer so I am hoping that some of his knowledge rubbed off. (I don't think that Alan Dyer thought he was so lucky to be sitting beside me, but hey, them's the breaks). The organizers of the SSSP have made a great decision by making the banquet speech free. The food was good, as was the table conversation, and nobody had to sit around pretending that they didn't want to be somewhere else. Doing everything before the banquet is a great idea.

Saturday night I went on the binocular star walk that was hosted by Ron Waldron. It was very well attended and Ron did a great job. If you haven't had the chance to go on one of these, try to find the time, as they are very entertaining and informative. Also a fair number of the attendees were not hardcore amateur astronomers so it doesn't hurt to have some more experienced people spread throughout the group. I had packed my telescope up earlier in the day, as I needed to leave early on Sunday and didn't want to carry it from the valley of the dobs to the baseball diamond where I parked my car. I used binoculars for Saturday night and my logbook says that I had very good views of M31 and the double cluster NGC 869/884.

Some brief thoughts that occurred to me during the star party and things I would do differently:

Leave earlier so that I arrive mid afternoon on Thursday. Thursday just felt too rushed with arriving around 4:30.

Have a better observing plan. During regular observing I do 2 or 3 objects. I thought that at the SSSP that I would do more in a night but I seemed to still do well with 2 or 3 (more for variable and double stars but 2 or 3 for deep sky). With that limit in mind I should focus on the objects that I really need to get early in the night and then relax and just enjoy.

Funniest moment was when I overheard two people arguing over whose eyesight was worse and who could see the least! I kept thinking that if I were a police officer I would have to take their drivers licenses away from them, as they would be a serious threat to public safety. I would have thought that amateur astronomers would have been more prone to exaggerate what they could see.

I need to spend more time at Sleaford, RASC Saskatoon's observatory site, as I was hard pressed to find my way around a sky that had lots of stars and the milky way present.

The necessity is the mother of invention award should go to Tenho Tuomi whose solution to the lack of a counterweight on his 12 inch Dob was to use a trailer hitch and tape it to the bottom. I think it should be called the Lucky Lake Counterweight Mk 1, or part number LLCW-1. Normally Tenho's OTA rides on an equatorial mount in his observatory and the transition back to a Dob required a counterweight as he uses an 80mm refractor as his finder scope.

Lessons learned from the keynote address on the ramifications of discovering comet Petriew:

- 1) Make sure that Rick Huziak is your observing partner or is at least close by;
- 2) It became apparent during the address that the discovery was handled very well from a media standpoint. Without the heavy media involvement the discovery would have been a little blurb outside of the astronomical community, but, because a member of the

RASC Regina Centre had many years of experience in media, the discovery story became national news.

It seems that media training could be very beneficial for the RASC executive.

I was on the road by 7:30 Sunday morning and made it home for lunch. I cannot believe how perfect the star party was. The weather was awesome, the skies were incredible, and the company was great. I cannot think that it can get better than this. As I mentioned before I have already booked a room for next year and I will register as soon as registration opens. If you haven't been to a SSSP, you have to go and if you were there for the rainy years, then you really should give it another chance.



## Observers Group

by Larry Scott

We had a well attended Observers Group on August 11th with nine people showing up at Sleaford. Some clouds early on dissipated leaving a fine summer evening with a clear sky. It was an unusual evening in that with all these people not one telescope was used due to the annual Perseid meteor shower. It did not disappoint with many meteors visible including several very bright ones. Moonrise shortly after midnight resulted in a brief but memorable night.

Getting home early gave me more time on Sunday to pack for SSSP.

Congratulations again to everyone responsible for organizing the SSSP. It was another fine weekend with lots of activities and the added bonus of clear skies – a sincere thank you to you all.

Next Observers Group will be September 15th with moonless evenings from the 8th to the 21st.

# Observing Clubs and Certificates

Join the Club! Observe all 110 Messier, 110 Finest NGC, 400 Herschel I or II, 140 Lunar, 154 Sky Gems 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, K.  
Houston*

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
Graham Hartridge	9

## Chatfield BINOCULAR CERTIFICATE

### Certified at 35 to 40 Objects:

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

Jim Goodridge	Up!	12
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## 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		58
Sandy Ferguson		23
Kathleen Houston		23
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
Jim Goodridge	Up!	35

## 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	14

## HERSCHEL 400-II CLUB

Darrell Chatfield	Done!	400
Rick Huziak		246

## LEVY DEEP-SKY GEMS

### Certified at 154 Objects:

Tenho Tuomi	149
Darrell Chatfield	70



The Messier, Finest NGC and David Levy's Deep-Sky Gems 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: <http://www.rasc.ca/observing>

On-line Herschel 400 List: <http://www.astroloague.org/al/obsclubs/herschel/hers400.html>

Binocular List is at: [http://homepage.usask.ca/~%7Eges125/rasc/Chatfield\\_Binocular\\_List.pdf](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.shtm>