Saskatoon Skies

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

Vol. 46, No. 01 January 2015

Good food and fellowship was had by all at our annual Christmas Potluck Supper held on Monday evening, December 15th. Photo by Tenho Tuomi

Saskatoon Centre
The Royal Astronomical Society of Canada
P.O. Box 317, RPO University
Saskatoon, SK S7N 4J8
WEBSITE:
http://www.usask.ca/rasc/
E -MAIL: rmwaldron@shaw.ca
To view *Saskatoon Skies* in colour, see our Website:
http://www.usask.ca/rasc/newsletters.html

In This Issue:

MEMBERSHIP? JOIN TODAY!

Regular: $82.00 /year **Youth: $43.00 /year** **Family: $77/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 http://www.rasc.ca/join-us

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
- borrow the Centre's Data Projector to give astronomy outreach presentations – contact Les Dickson at astrochem@sasktel.net
- 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.

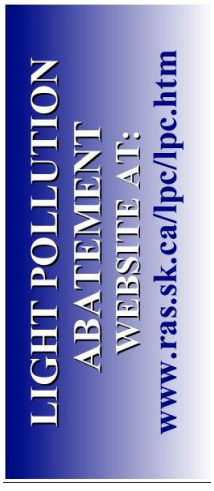
SASKATOON CENTRE'S MAIN OFFICERS:

President – Jim Goodridge, 306-370-8530
Secretary – Tenho Tuomi, 306-858-2453
Vice-President –
Treasurer – Norma Jensen, 306-244-7360

Bottle Drive & Canadian Tire $

By Jim Goodridge

If you cannot make it to a meeting but would like to contribute your Canadian Tire money please call me at 306-370-8530



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. Submissions should be sent by e-mail to the editor at rmwaldron@shaw.ca win msword or text format. Images: .jpg please, no larger than 1 – 1.5 MB, sent by e-mail as attached files. **Deadline for submission of all articles for an upcoming issue is the first Friday of the month!**

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. Saskatoon Skies accepts commercial advertising. Please call the editor 306-382-9428 for rates. Members can advertise non-commercial items free of charge.

RASC CALENDAR OF EVENTS

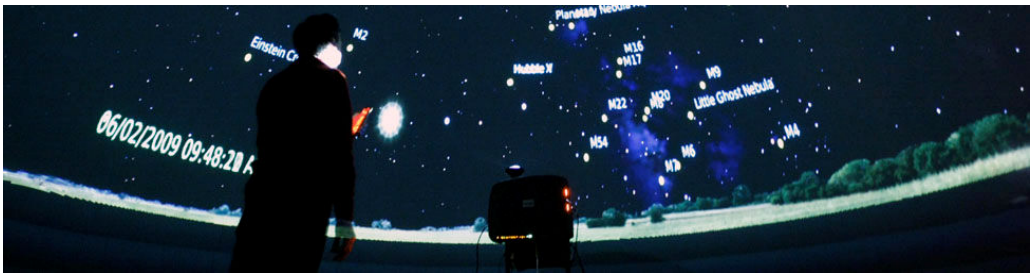
Jan 17	**Observer's Group at Sleaford**	Larry Scott
Jan 19	**RASC Executive & General Meetings – Location TBD**	Jim Goodridge
Feb 21	**Observer's Group at Sleaford**	Larry Scott
March 7	**Observer's Group at Sleaford**	Larry Scott
March 21	**Observer's Group at Sleaford**	Larry Scott

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

January RASC General Meeting

for all members and guests
Room 175 Physics Bldg
University of Saskatchewan
on
Monday, January 19th, 2015

Digitalis Planetarium Demonstration



Ron Waldron will set up the Digitalis Planetarium recently purchased by the FSIN for use in reserves around the province. Prepare to see the always cloudless skies of this digital planetarium and view a 360 degree movie as well.

8:00 PM

Note: There will be an EXECUTIVE MEETING beginning at 7:00 PM

Acclaimed Astronomer Looks Away from the Sky – *Star Phoenix*

<u>Editor's Note:</u> Our own Rick Huziak appeared on the front page of the Saskatoon Star Phoenix on Monday Dec. 22nd (winter solstice). The article written about his efforts in tackling light pollution brings him to the forefront locally and provincially in reducing wasted light and energy costs on our planet.

At the age of 11, Richard Huziak bought his first telescope.

Inspired by the success of the Apollo missions to the moon, a lifetime interest in the contents of the night sky has brought Huziak acclaim as an amateur astronomer. "It's nice to be recognized by your peers. I like astronomy," says Huziak.

From having an asteroid named after him to being credited with the observation of upwards of 165,000 variable stars, his acclaim is well deserved.

But this love for astronomy and the observance of the heavens has begun to take a different form, as Huziak has shifted his focus from the sky to battling the issue of light pollution and the myth of light security.

"I'm trying to expand the land of the living skies to 24 hours," says Huziak, who has begun to approach the issue of light pollution as a concerned citizen, not as an astronomer.

In lobbying for the reduction of light in nature preserves, Huziak has begun to tackle light pollution from an energy reduction point of view. This reduction in light emissions, in addition to securing a darker sky for astronomers, helps citizens to get back to looking at more cultural and historical views of our environment.

"We're not asking people to turn their lights off, but rather to shine them in an amount that is conducive to safety and security and that is not excessive."

The growth of Saskatoon corresponds with an understandable increase in energy use and consumption, but Huziak feels that society's equation of brightness with progress is problematic, especially with regards to myths about light safety and crime reduction.

"Light in your environment doesn't have to be big and bright to make a difference," says Huziak, who cites studies conducted in Britain that show a 20 to 40 per cent reduction in crime in neighbourhoods that reduced light emissions between the hours of 12 a.m. and 5:30 a.m. in an attempt to cut down on energy expenses.

Although the results of the study, which were announced in the Stafford Herald in July, suggest evidence of a correlation between a reduction in light emissions and crime rates, Huziak is vociferous about the need for an increase in surveillance to accompany a reasonable reduction in light emissions.

"Society tends to want to use light to prevent crime, as opposed to using surveillance to prevent crime," says Huziak.

"If you've had trouble outside, and no one comes to your help, then there hasn't been any surveillance. It doesn't matter how much light there is if no one comes to your help."

The myth of light security is something that Huziak is actively challenging in a way that tackles the issues of sustainability, reasonable energy use, and energy cost reductions in Saskatoon.

As the population continues to grow by an estimated three per cent each year, the city's light output is estimated to increase by seven per cent annually.

This increase in annual energy output, and society's fear of darkness, is something Huziak hopes can be lessened by education regarding light pollution, a conservative consumption of energy, and the use of innovative technologies.

"The innovation is the really important part," says Huziak, who argues that technology has advanced to the point that something as simple as installing motion detecting street lights can be a feasible way of decreasing energy consumption.

"We're not living in a bountiful world. We have limits on our energy. We can't keep over-consuming."

In a lifetime and career that has kept his eyes on the sky, Huziak has championed a shift toward the responsible and reasonable use of light and energy.

"The byproduct that I get at the end is a dark sky, which is the measure of how successful we are. If the sky doesn't become any darker, we haven't made any difference."

2015 – The International Year of Light

adapted from www.light2015.org

On 20 December 2013, The United Nations (UN) General Assembly 68th Session proclaimed 2015 as the **International Year of Light and Light-based Technologies (IYL 2015)**.

This International Year has been the initiative of a large consortium of scientific bodies together with UNESCO, and will bring together many different stakeholders including scientific societies and unions, educational institutions, technology platforms, non-profit organizations and private sector partners.

In proclaiming an International Year focusing on the topic of light science and its applications, the United Nations has recognized the importance of raising global awareness about how light-based technologies promote sustainable development and provide solutions to global challenges in energy, education, agriculture and health. Light plays a vital role in our daily lives and is an imperative cross-cutting discipline of science in the 21st century. It has revolutionized medicine, opened up international communication via the Internet, and continues to be central to linking cultural, economic and political aspects of the global society.

A Brief History of Light

From early attempts to understand the motion of stars and planets to the appreciation of the importance of light in photosynthesis, efforts to understand the nature and the characteristics of light have revolutionized nearly every field of science.

Where to begin?

An important stage of the evolution of the Universe occurred around 300,000 years after the Big Bang, when the temperature was cool enough (around 4000 degrees) for neutral atoms to form. Before that time, there were too many charged particles to allow light to travel more than a very short distance. After atoms were formed, light could travel immense distances. In fact, we can receive today 'light' (in the form of microwaves) that has been traveling for over 13 billion years.

Perhaps of more importance to us was the formation of the Sun and the solar system - including our planet - about 4.5 billion years ago. Earth has been bathed with light from the Sun ever since; it is our most important source of energy. Sunlight warms us, causes weather patterns, allows plants to manufacture oxygen and our food from carbon dioxide and water, and it allows us to find our way around in the daytime!

The use of sunlight in photosynthesis, to make oxygen and carbohydrates from carbon dioxide and water, is a process first established over two billion years ago by cyanobacteria. They made the large quantities of oxygen in the atmosphere which allowed oxygen-breathing life to evolve. Today plants use chlorophyll to achieve the same result, keeping the atmosphere breathable, and providing food energy for us and all other advanced life forms.

Of course, mankind has found other sources of light over the course of history. Fire is obviously the earliest of these: from the camp fires of our cave-dwelling ancestors to the spirit lamps still used where there is no electricity. But electricity is the source of artificial light today, starting with the invention of the incandescent light by Joseph Swan and Thomas Edison and progressing via fluorescent lighting to modern light emitting diode (LED) lights.

Mankind has also learned to control light. The use of mirrors and lenses to divert light, or to magnify images, dates from pre-history. Microscopes and telescopes, using multiple mirrors and/or lenses are two closely related inventions from just a few hundred years ago. They allow us to study objects smaller than our naked eyes can see, and objects at large distances, whether ships at sea, or astronomical bodies at enormous distances.

We can also send light from one place to another using optical fibres or 'light guides' . These allow us to use light to transmit large amounts of information, and to explore regions where we cannot go, such as in medical probes or endoscopes.

The following is a brief list of some of the events and purposes of the Year of Light. I have included links to visit for more information.

Einstein Centenary

In 1915, the theory of General Relativity developed by Einstein showed how light was at the centre of the very structure of space and time. There will be many events worldwide focusing on this seminal theory of the universe.

http://www.light2015.org/Home/CosmicLight/Einstein-Centenary.html

Dark Skies Awareness

In most large cities of the world, it is no longer possible to appreciate the beauty of the night sky. Inefficient public lighting both wastes energy and causes "light pollution" that hides our universe from us.

http://www.light2015.org/Home/CosmicLight/Dark-Skies-Awareness.html

A Universe of Images

From our nearest planetary neighbors to the most distant galaxies, the cosmos is a wonder to behold, and we are incredibly lucky in the 21st century to be able to see so many remarkable and beautiful images taken from telescopes and satellites.

http://www.light2015.org/Home/CosmicLight/Dark-Skies-Awareness.html

The Big Bang

In 1965, Bell-labs scientists Arno Penzias and Bob Wilson discovered the Cosmic Microwave Background, an electromagnetic echo of the origin of the universe. The Big Bang has now entered into popular culture, but most people have no idea really what it means for cosmology.

http://www.light2015.org/Home/CosmicLight/The-Big-Bang.html

Galileoscope

The Galileoscope is a high-quality, low-cost telescope kit developed by a team of leading astronomers and science educators. No matter where you live, with this easy-to-assemble kit, you can see the celestial wonders that Galileo Galilei first glimpsed over 400 years ago including lunar craters and mountains, four moons circling Jupiter, the phases of Venus, Saturn's rings, and countless stars invisible to the unaided eye.

http://www.light2015.org/Home/CosmicLight/Galileoscope.html

Lucky Lake Magnetometer Site – *Tenho Tuomi*

Many of you know about the magnetometer that is running at my place, which is monitored from Japan and has output on the website, http://step-p.dyndns.org/~khay/htmp/r-lcl.html for the past 24 hours. It has been useful for us for monitoring aurora.

Recently someone asked if there was a way to look at past records. It is a little complicated but it can be done.

- Go to the website, http://step-p.dyndns.org/~khay/ . Information for about 40 stations run by Dr. Hayashi can be found there.
- On the left side click on the first red item, "[1m-ajax]".
- On top set the starting date that you want.
- Other defaults are good for starters.
- Under "sites" check "lcl" (right side).
- Click the first "131" button for a one day gif image.
- Click the "1110" button for a 10 day gif image.
- "Draw days'" button on the bottom seems to do the same.

The magnetometer has been so steady lately that you could amplify the graph by changing the nT/div from100 to 12.5 to see more activity.

Multiple sites can be selected from the left buttons under "sites" and put on one graph with the "m11" button. Four sites are available for current dates from this page; Fort St. John, Lucky Lake, La Ronge, and Whitehorse.

There is much more that can be done from these pages but that is about all that I have used. If you dig deep enough you will even find a picture of me.

Observer's Group Report – *Larry Scott*

Happy New Year everyone. As I write this it's -40C with wind chill and there's a full Moon, not my favourite observing conditions so I am missing the Quadrantid meteor shower again. November and December rolled by and I was unable to get out even once for observing. The sky looked pretty good on Christmas day but I was otherwise occupied. It seems like a very long time since I last set up my scope. Thankfully Tenho and others keep posting their marvelous pictures so I can observe vicariously. Soon, however, I am hoping to get out to Sleaford again and perform some actual observing. Jupiter, Venus, and Mercury are coming round into the evening sky again and there's a marvelous comet to look at. Around January 8th or 9th the Moon will be getting up late enough for me, and others I hope, to head out. If the weather is fair enough I'll be out on Saturday, the 10th. There's an Observer's Group planned for January 17th and new Moon arrives on the 20th. By January 24th the Moon will be back blazing in the evening sky and I will return to observing vicariously.

President's Report – *Jim Goodridge*

Contrary to a bunch of my messages and announcements our meeting this month will be held in our regular meeting room (room 175) of the Physics building at the U of S. Yannis Pahatouroglou at the University has asked that we use room 175 for the meeting. Ron Waldron will be our presenter using the planetarium from the FSIN, and will set up in the foyer of the Physics building. Regular meeting is at 7:00 for the business portion, coffee is at 8:00 and Ron will give us an introduction to the planetarium at 8:15, followed by his show. This is an awesome opportunity to see the outreach that Ron does and experience the digital portable planetarium. We are inviting the Physics department as well as the Astronomy students so I would really appreciate you coming out and showing your support.

We still need someone or some people to organize Astronomy week at Lakewood Civic Centre and Beaver Creek. I can't set dates until we have an organizer for them.

Also we still lack a Vice President and a representative for national so please let me know if you would be interested.

Thoughts

I can't believe that another year is here and that it is once again time to make lists of how I will try to improve myself in 2015. Naturally, I will put losing weight at the top of the list followed by exercising more and trying to stay up to date with work and volunteer activities. I am writing this on January 5th so I am already behind staying up to date with getting these messages to the Newsletter Editor (Ron Waldron).

I was also looking at my observing programs which seem to have fallen by the wayside. A good part of that may be the weather as it always seems cloudy or for the last couple of nights at least, crazy cold but it also is because I tried to do too many things at once. There are so many neat things to look at in the sky that I find I can't make up my mind about whether I should do the Messier list, the Herschel 400, Variable Stars, Double Stars, Finest NGC, Explore the Universe or one of the several dozen lists from the Astronomical League. Plus there is always a bunch of observing that can be done for the Association of Lunar and Planetary Observers (ALPO). Then there are the organizations that require a certain number of hours. There is RASC, the Planetary Society, AAVSO, ALPO, ASP, Astronomical League, Webb Deep Sky Society, SSSP and the U of S campus observatory.

Maybe some of you are facing the same kind of thing and forgot that this is a hobby. We watched a short video at our potluck in December and the character in the video complained that he couldn't keep track of what was work and what was his hobby of astrophotography. So my major New Year's resolution is that I am going to drop a whole bunch of things that I can't possibly do anyways and concentrate on a few areas and make my hobby a hobby again. In other words a pastime that brings enjoyment and pleasure.

That being said, I am getting cataract surgery this year and there are so many good binocular lists and I'll have two good eyes and did you know that there are a whole bunch of binocular variable and double stars and someone did all of the Messier objects with binoculars?

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. Hydomako, T. Tuomi, L. Scott, G. Charpentier, B. Johnson, M. Clancy, L. Dickson, B. Burlingham, K. Houston, Norma Jensen

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	12

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		72
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
Jim Goodridge		35
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	20

HERSCHEL 400-II CLUB

Darrell Chatfield	Done!	400
Tenho Tuomi	New!	343
Rick Huziak		246

LEVY DEEP-SKY GEMS

Certified at 154 Objects:

Tenho Tuomi	150
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.astroloeague.org/al/obsclubs/herschel/hers400.html**
Binocular List is at: **http://homepage.usask.ca/%7Eges125/rasc/Chatfield_Binocular_List.pdf**
"Isabel Williamson Lunar Observing Program Guide:
http://www.rasc.ca/observing/williamson-lunar-observing-certificate
Program details can be found at: **http://www.rasc.ca/williamson/index.shtm**