

Saskatoon Skies

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

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Royal Astronomical Society of Canada
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To view *Saskatoon Skies* digitally, see our website:
<http://www.usask.ca/rasc/newsletters.html>

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MEMBERSHIP? JOIN TODAY!

Regular: \$96.00 /year

Youth: \$52.00 /year

Family: \$90.50 + \$41/additional adult + \$21.10/additional youth

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. Members are encouraged to renew early to avoid disruption in publications. Renew through the National Office at <http://www.rasc.ca/join>.

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)
- borrow the Centre's projector to give astronomy outreach presentations – contact Les Dickson at astrochem@sasktel.net
- rent the Centre's Telescopes <https://www.usask.ca/rasc/telescopes.html>
- use of the Centre library

SASKATOON CENTRE'S MAIN OFFICERS:

President – Daryl Janzen

Vice-President – Jim Goodridge

Secretary – Rina Rast

Treasurer – Norma Jensen

National Council Rep – Les Dickson

Canadian Tire money - Darrell Chatfield

If you cannot attend a meeting but would like to donate your Canadian Tire money please email Darrell at novachat@sasktel.net.

Speakers are also needed for upcoming meetings. If anyone has a topic they would like to present on, even for a few minutes, please contact Rick Huziak at rickhuziak@shaw.ca.

NEWSLETTER INFO

Newsletter Editors – Colin Chatfield, Grant Ursaki

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 colcha@sasktel.net in MS Word or text format. Images (new or old): any format, less than 30MB, sent by e-mail as attached files. Send any articles of interest to the night sky or astronomy. **Deadline for submission of all articles for an upcoming issue is the first Friday of each month!**

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 email the editor at colcha@sasktel.net for rates. Members can advertise non-commercial items for free.



Caldwell 33 Eastern Veil Nebula by Rina Rast and Brennan Rodgers

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 306-966-6429.

Observatory Hours:

January – February	7:00 – 9:30 pm
March	8:00 – 10:30 pm
April – August	9:15 – 11:45 pm
September	8:30 – 11:00 pm
October – December	7:00 – 9:30 pm

U of S Observatory website -

<https://artsandscience.usask.ca/physics/facilities/observatory.php>



Saskatchewan Light Abatement Committee -

<http://myotherlife.net/slpac/>



www.darksky.org

RASC CALENDAR OF EVENTS

January 18	Observer's Group (weather permitting)	Larry Scott
January 20	RASC General Meeting - 8:00pm (info below)	Daryl Janzen
January 20	Visual Observing for Beginners - U of S Observatory	Jim Goodridge

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

January RASC General Meeting

for all members and guests

Join us on January 20, 2020 at 8:00PM

Room 175, Physics Building
University of Saskatchewan

7:00pm - **RASC Executive Meeting** (Members may attend the executive meeting as observers if they wish)

8:00pm - **Meet & Greet Social**

8:15pm - **Warm-up Program**

8:30pm - **Main Program**

- Speakers include Jim Goodridge - "What's up this month"
- Colin Chatfield & Tara Magee - "Saving the Swale"
- Rick Huziak - "SSSP 2019 - A Photo Essay" Rick will be presenting images taken of the star party taken by George Carpentier

9:45pm - **Visual Observing for Beginners** at the U of S Observatory. Jim Goodridge will be leading beginning observing sessions at the observatory for new members and beginning observers. Easy projects for eyes, binoculars & telescopes. No charge.

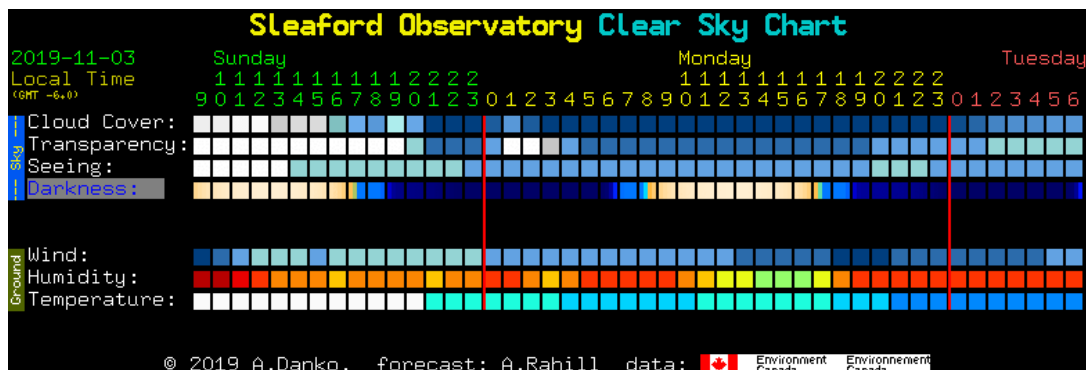
9:45pm - **After Meeting Meeting Social** at Alexander's restaurant (Cumberland Ave) for those interested

CLEAR SKY AND WEATHER INFO

To find clear skies, visit the Clear Dark Sky website -

<https://www.cleardarksky.com/csk/>

Once there, one can enter your location to find clear skies. The chart will appear as follows:



Environment Canada provides weather information for astronomy -

www.weather.gc.ca/astro



California Nebula by Dick Kirk

VISUAL OBSERVING FOR JANUARY

Jim Goodridge

This month the focus is on six constellations: Auriga, Gemini, Orion, Eridanus, Lepus, and Taurus. In those six constellations our targets include: 10 Messier objects; 11 Finest NGC objects; 16 double stars and 5 variable stars. All of the variable stars can be observed with binoculars and most of the double stars can be split in 10X50 binoculars. The double stars will benefit from increased magnification though, so it is best to use a telescope.

The Messier objects are all available in small telescopes and most are visible in binoculars but all of them benefit from increased aperture. Alan Dyer compiled the Finest NGC list using a Celestron C8 but most will be good in a six inch, but again, aperture is king.

Everything on the list is in Sky and Telescopes "Pocket Sky Atlas" and by the time our meeting comes about I will have binocular charts for the Variable Stars from the AAVSO available.

In choosing the objects I use the Messier list and Finest NGC list in the RASC Observers Handbook, the AAVSO Binocular Variable Star List and the Double Star Observing lists (binocular and telescope) from the Astronomical League as well as "Double Stars for Small Telescopes" by Sissy Haas. I then cross reference to other books including but not limited to "Celestial Harvest"; "Celestial Sampler"; "Turn Left at Orion"; "Deep Sky Wonders"; "Binocular Astronomy". And then everything is checked against the "Pocket Sky Atlas".

I will go over the object locations during the "What's Up This Month" presentation at the January RASC Saskatoon Centre meeting. Also I hope we can observe some of the objects using the T Cook and Sons refractor at the U of S Observatory after the meeting.

Don't forget to look at the constellations listed as well and note the brightest stars in each.

Auriga: Messier M36, M37, M38; Finest NGC: NGC1931; Double Stars Theta; Variable Stars UU Aur.

Gemini: Messier M35; Finest NGC: NGC2371/2, NGC 2392; Double Stars Alpha, Delta, 20; Variable Stars BU Gem.

Orion: Messier M42, M43, M78; Finest NGC: NGC1788, NGC1973, NGC2022, NGC2024, NGC2194; Double Stars Delta, Theta1, Theta2, Beta, Lamda, Iota, Sigma, Zeta; Variable Stars W Ori, Alpha Ori.

Eridanus; Finest NGC: NGC1232, NGC1535; Double Stars 32.

Lepus: Messier M79; Double Stars Gamma; Variable Stars R Lep.

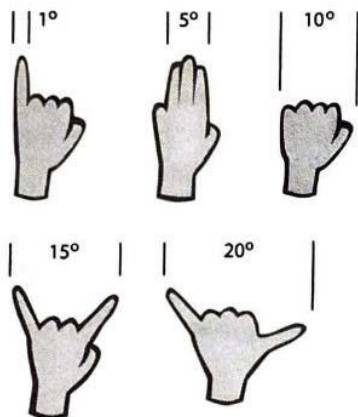
Taurus: Messier M1, M45; Finest NGC: NGC1514; Double Stars Theta1, Theta2.

JANUARY NIGHT SKY EVENTS AND INFO

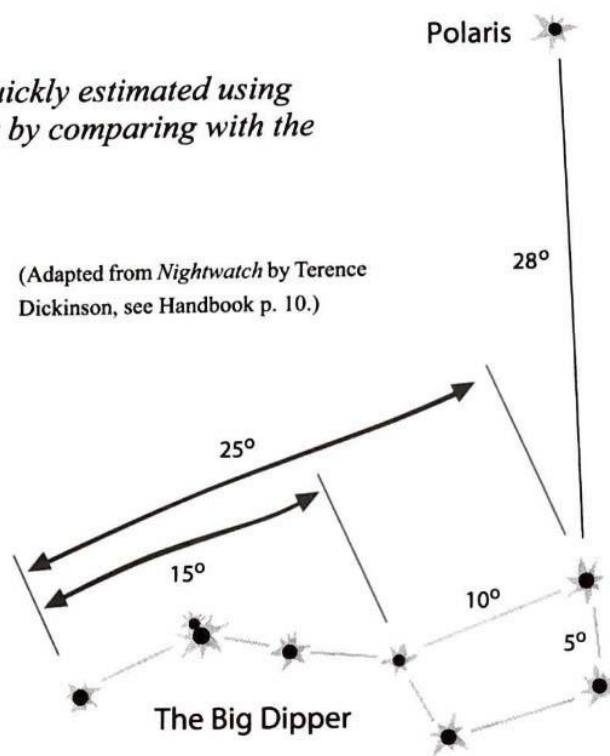
Images on the next few pages taken with permission from the 2020 Observer's Handbook. It can be obtained by joining the RASC here <http://rasc.ca/join> or ordered from <https://secure.rasc.ca/Portal/Shop/RASC/Store/StoreMain.aspx?Category=CURRPUB>

HANDY SKY MEASURES

Angular measure in the sky can be quickly estimated using the fingers of an outstretched arm, or by comparing with the star separations in the Big Dipper.



(Adapted from *Nightwatch* by Terence Dickinson, see Handbook p. 10.)



RASC OBSERVER'S HANDBOOK 2020

THE SKY FOR JANUARY

		Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune	Sun
RA	1	18h 18m	21h 09m	15h 44m	18h 28m	19h 31m	2h 02m	23h 10m	18h 42m
	11	19h 28m	21h 57m	16h 12m	18h 38m	19h 36m	2h 01m	23h 11m	19h 26m
	21	20h 39m	22h 42m	16h 40m	18h 48m	19h 41m	2h 02m	23h 12m	20h 09m
Dec	1	-24° 39'	-18° 21'	-19° 23'	-23° 12'	-21° 44'	+11° 51'	-6° 28'	-23° 05'
	11	-23° 51'	-14° 19'	-20° 51'	-23° 05'	-21° 33'	+11° 50'	-6° 23'	-21° 57'
	21	-20° 33'	-9° 40'	-22° 02'	-22° 56'	-21° 22'	+11° 51'	-6° 17'	-20° 07'
Dist	1	1.43	1.28	2.18	6.21	11.00	19.42	30.32	0.983
	11	1.43	1.22	2.11	6.18	11.02	19.58	30.47	0.983
	21	1.36	1.16	2.03	6.14	11.01	19.75	30.60	0.984
Mag	1	-0.9	-4.0	1.6	-1.8	0.5	5.7	7.9	
	11	-1.4	-4.0	1.5	-1.8	0.5	5.8	7.9	
	21	-1.2	-4.0	1.4	-1.9	0.5	5.8	7.9	
Size	1	4.7"	13.1"	4.3"	31.7"	15.1"	3.6"	2.2"	32' 32"
	11	4.7"	13.7"	4.4"	31.9"	15.1"	3.6"	2.2"	32' 32"
	21	4.9"	14.4"	4.6"	32.1"	15.1"	3.5"	2.2"	32' 30"

Moon: On January 0 at 0h UT*, Sun's selenographic longitude is 323.26° and increases 12.2° each day thereafter.

Greatest N declination on the 10th (+23.2°)

Greatest S declination on the 23rd (-23.2°)

Libration in longitude: E limb most exposed on the 21st (+5.4°)

W limb most exposed on the 8th (-5.7°)

Libration in latitude: N limb most exposed on the 3rd (+6.9°) and 30th (+6.8°)

S limb most exposed on the 16th (-6.8°)

Penumbral lunar eclipse on Jan. 10, visible from Australia, Asia, Europe, Africa, extreme eastern South America, northern North America, the Atlantic Ocean, the Indian Ocean, and the Pacific Ocean.

Mercury: Spends most of the month too close to the Sun to be visible, achieving superior conjunction on the 10th. Emerges in evening twilight very late in the month, shining brightly at mag. -1.0 on the 31st.

Venus: The brightest planet begins the year in the evening sky among the stars of Capricornus some 35° to the east of the Sun, poised for the best evening apparition for N. Hemisphere observers since 2012. The waxing crescent Moon makes a wide pass below Venus on the 27-28

Mars: Begins the year readily visible in the morning sky some 40° ahead of the Sun, shining at mag. +1.6 among the stars of eastern Libra. It passes through Ophiuchus in the second week of the month and then on into Sagittarius. It passes 5° north of Antares (its "rival") on the 17th, which shines about half a magnitude brighter with a similar colour. The waning crescent Moon passes 2° to the north on the 20th.
























Jupiter: Begins the year too close to the Sun to be seen, having been in conjunction on Dec. 27. It gradually emerges into bright morning twilight low in the SE in the second half of the month.

Saturn: In conjunction with the Sun on the 13th, and lost in bright twilight throughout the month.

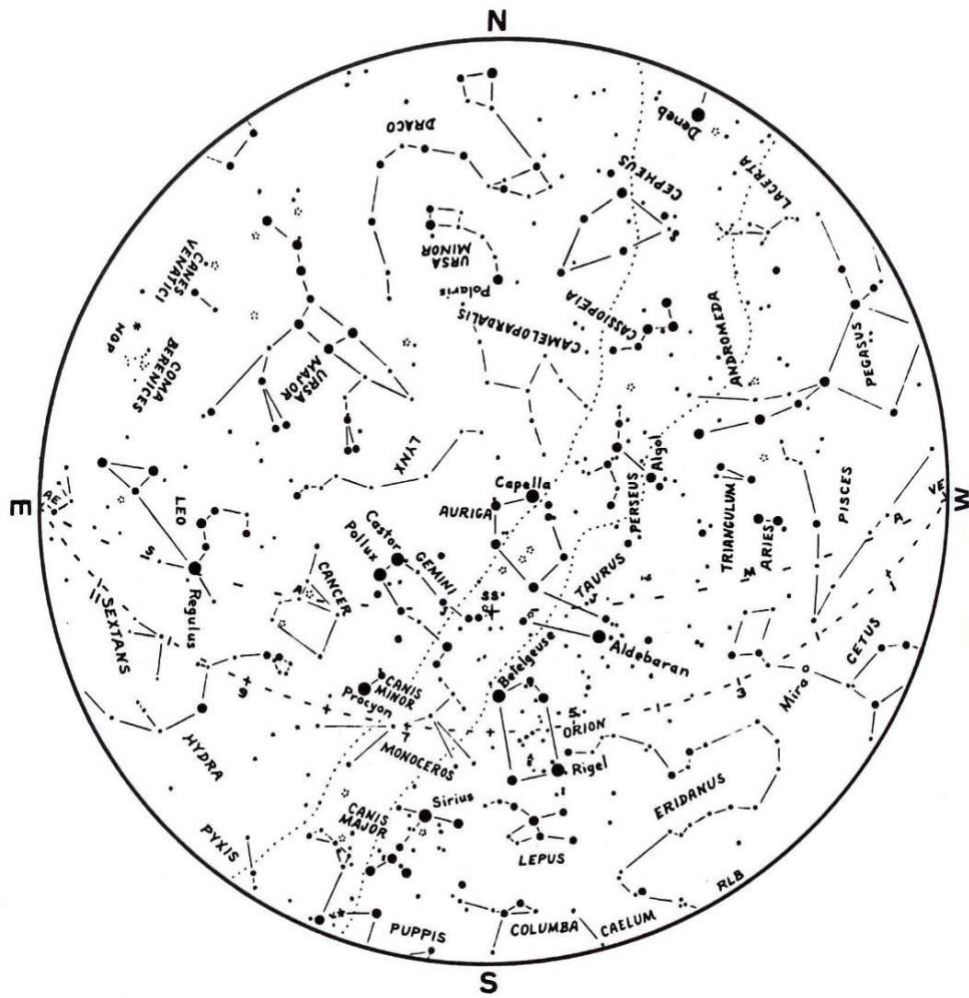
Uranus: Can be located among the stars of southern Aries throughout 2020. Begins the year in the evening sky, technically in retrograde motion but slowing to its second stationary point on the 11th, after which it begins to crawl eastward again. At mag. +5.8 it can be detected by the unaided eye in dark, moonless skies, though this challenge becomes a bit easier later in the year when the ice giant is closer to its (Oct. 31) opposition and is high in the sky in the overnight hours. Meridian transit times at Greenwich on the 1st, 11th, 21st—19:19, 18:40, 18:00 UT*.

Neptune: Can be found with optical aid among the stars of northeastern Aquarius, where it will spend 2020. In the evening sky at the beginning of the year.

*See p. 94, the bold-faced sentences of the first paragraph.

Time (UT)			JANUARY EVENTS		Jupiter's Satellites	
d h m					West	East
Wed.	1	21	Vesta stationary		1.0	IV
Thu.	2	2	Moon at apogee (404 580 km)		2.0	I
		20 27	Algol at minimum		3.0	
Fri.	3	4 45	First quarter		4.0	
Sat.	4	20	Quadrantid meteors peak		5.0	II
Sun.	5	8	Earth at perihelion (147 091 144 km)		6.0	
		17 16	Algol at minimum		7.0	III
Mon.	6				8.0	
Tue.	7				9.0	
Wed.	8	14 05	Algol at minimum		10.0	
Thu.	9	13	Moon 1.5° S of M35		11.0	
Fri.	10	15	Mercury in superior conjunction		12.0	
		19 21	Full Moon		13.0	
			Penumbral Lunar Eclipse (p. 126)		14.0	
Sat.	11	7	Uranus stationary		15.0	
		10 54	Algol at minimum		16.0	
Sun.	12	0	Moon 1.0° N of Beehive (M44)		17.0	
Mon.	13	15	Saturn in conjunction with the Sun		18.0	
		18	Ceres in conjunction with the Sun		19.0	
		20	Moon at perigee (365 958 km)		20.0	
Tue.	14	7 43	Algol at minimum		21.0	
Wed.	15				22.0	
Thu.	16				23.0	
Fri.	17	4 32	Algol at minimum		24.0	
		12 58	Last quarter		25.0	
Sat.	18				26.0	
Sun.	19		Mercury at greatest heliocentric lat. S		27.0	
Mon.	20	1 21	Algol at minimum		28.0	
		19	Mars 2° S of Moon		29.0	
Tue.	21				30.0	
Wed.	22	22 10	Algol at minimum		31.0	
Thu.	23	3	Jupiter 0.4° N of Moon, occultation†			
Fri.	24	21 42	New Moon (lunation 1201)			
Sat.	25	18 59	Algol at minimum			
Sun.	26					
Mon.	27	19	Venus 0.08° S of Neptune			
Tue.	28	7	Venus 4° N of Moon			
		15 48	Algol at minimum			
Wed.	29	21	Moon at apogee (405 393 km)			
Thu.	30					
Fri.	31	12 37	Algol at minimum			

†Madagascar, Kerguelen Is., S & E Australia, New Zealand, S & E Melanesia, SW Polynesia



Werner X by Dick Kirk

NEWS AND UPDATES FROM NATIONAL OFFICE

Les Dickson

The most recent National Council (NC) meeting was held by teleconference on Dec 1. I was unable to 'attend' the meeting (a long story for another time) but the draft minutes became available just a few weeks later. Below is a summary of a few significant developments.

Phil Groff was hired as the new Executive Director in the Fall. There are five main areas on which he will be focusing for the coming year:

- Membership: Phil wants the RASC to do a better job of dealing with the high turnover rate of new members. National Office will be sending out a survey to members to better define the membership market (?).
- Rationalizing Products and Services: *SkyNews* is being reworked now that the former editor and many columnists have left the publication. Chris Gainor was the guest editor for the first issue of 2020. He and his team will complete the transition in the second issue. The new-look website should be up soon.
- Building a Strong Technology Base: The current IMIS (computer) system is inadequate for the future plans for the website, which needs an overhaul as well. Fortunately, there are "out of the box" software packages available that are cheaper than the cost of the old system.
- Budget and Staff: The budget for the coming year looks like it will be balanced. Phil is hoping that "the staff experience can be enhanced". Not sure what that means; stay tuned.
- Governance Model: There are some inconsistencies between policy and bylaws (not specified) that need to be addressed. He may wish to get staff members to chair some of the Society's committees.

The role of National Council has been a subject of debate for some time now. The "advisory" aspect of NC has largely fallen by the wayside, although the Board of Directors (BoD) does consider NC in its deliberations. NC appears to be moving towards a communications role in which it is both a "vertical" conduit of information from Centres to National and back down, and a "horizontal" conduit of information sharing between Centres to solve common problems and mentor new Centres. There was a motion passed that "...National Council adopt being the primary communications method between Centres; the maintenance of the Centre Manual; and assist in the selection of Centres to host future General Assemblies."

NC will be reviewing the draft Centre Manual and will be providing feedback at the next NC meeting to the end of having the Centre Manual ready for approval at the 2020 General Assembly.

The next meeting is on February 9.

SLEAFORD SKYNET ROBOTIC TELESCOPE UPDATE

Daryl Janzen

I'm pleased to report on two important milestones in the U of S robotic telescope project that happened before Christmas: the high-speed internet link was setup by Redbird Communications in late November, and Scott Noble and I finished setting up remote control of the roll-off enclosure in late December. The final phase of the project—setting up the telescope—is planned for completion this spring.

RASC members wishing to access the internet will notice two current obstacles: the Wi-Fi is password protected, and the signal is weak because the router is currently located in a metal cabinet. It would not be difficult to mount the router outside the cabinet, and the Wi-Fi password can be shared with anyone wishing to access the internet at Sleaford. Anyone wanting access can contact me!

Setting up remote control—and eventually, robotic—operation of the roll-off enclosure posed a new safety concern that was addressed by constructing a chain-link fence around the facility and adding a lock-out at the gate, which will terminate remote operability if the gate is opened. The procedure for accessing the roll-off has been modified as a result. Anyone wishing to regain access should contact me for the modified procedure.



The telescope mount is expected to arrive sometime this winter, which will enable us to work on the final set-up. I'm including three pictures taken on January 5, 2020, from the webcams installed for remote monitoring. The below image from inside the enclosure shows a black stool where a pier has been removed. When the mount arrives, this pier and wedge will be modified at the Physics Machine Shop to ensure the telescope has full range of motion and cannot be damaged by the moving roof. Behind the stool, those familiar with the facility will note the new control cabinet, and the remaining USask telescopes that are on the adjacent piers. Two RASC telescopes are also in view: Eetook, the 12-inch Dobsonian which is stored at the bottom-left of the image, and the white Meade 16-inch LX200 on the pier at the far end.



BOOK DRIVE

Astronomy-related book donations are being accepted to the RASC Saskatoon Centre Library at the U of S Observatory during its regular Saturday evening open house, 7:00-9:30 pm in November to February or 8:00-10:30 pm in March.

BOOKS FOR SALE

All books are in either new, or like new condition. Retail price in brackets. Please email or text me if you want a particular book and I will bring it to the next meeting or arrange to meet you. All books being sold by Darrell Chatfield. Contact him at novachat@sasktel.net or 306-222-0515.

- “**Deep-Sky Observers Handbook**”..... Volume 1-5..... Enslow-Lutterworth..... \$40.00
- “**International Encyclopedia of Astronomy**” 1987 Patrick Moore Color..... \$10.00
- “**Backyard Astronomers Guide**” T. Dickinson & Alan Dyer 2008 Color..... \$25.00
- “**Atlas of Deep Sky Splendors**” 1978..... H. Verhenberg..... (50.00)..... B. & W..... \$22.00
- “**Turn Left at Orion**” 2000 Dan Davis B. & W. (29.99)..... \$15.00
- “**Amateur Astronomers Catalog of 500 Deep Sky Objects**” Vol 1 1980 B & W
R. Morales..... \$15.00
- “**Observing the Constellations**” 1989 J. Sanford Color charts..... \$10.00



Venus and Moon Conjunction taken December 28, 2019 at Robsart, SK by Daryl Janzen

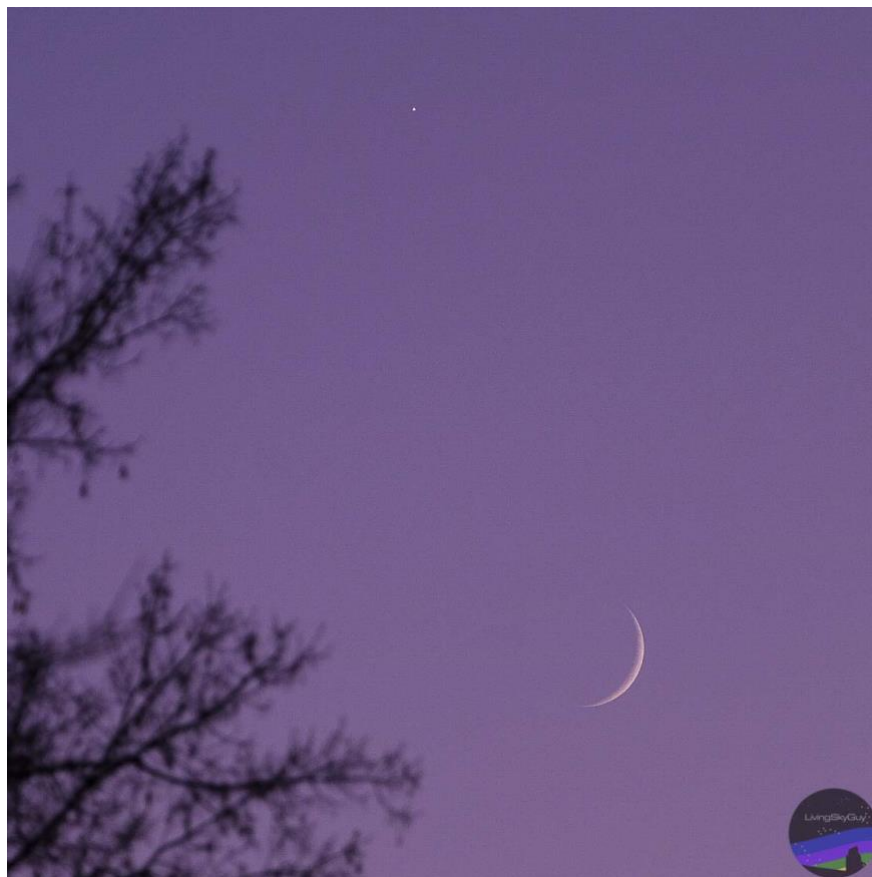
DECEMBER RASC POTLUCK

Colin Chatfield with photos from Mike Dolan

On December 9th, the Club held its annual potluck in the Physics building at the U of S. Lots of good food was consumed by those who attended, which numbered around twenty. We had good conversations and it's always good getting to know people on a different level outside of the astronomy chat that normally ensues when we're together.







Venus and Moon Conjunction taken December 28, 2019 by Tim Yaworksi

OBSERVING CERTIFICATES AND CLUBS

RASC OBSERVING PROGRAMS AND CERTIFICATES

The RASC offers four observing certificates for **members** who observe all objects in each of the following observing lists in this chapter:

- THE MESSIER CATALOGUE (p. 314)
- THE FINEST NGC OBJECTS (p. 318),
- THE DEEP-SKY CHALLENGE OBJECTS (p. 322),
- DEEP-SKY GEMS (p. 324).

See www.rasc.ca/certificate-programs for details and contact the RASC Observing Committee Chair at rasc.ca/contact/observing for further information.



The RASC also offers the **Explore the Universe Certificate** for novice observers (who do not have to be RASC members), the **Explore the Moon Certificate** for beginning members, and the **Isabel Williamson Lunar Observing Certificate** for intermediate to advanced members. In addition, **Astroimaging certificates** are available for those members with a photographic bent. See www.rasc.ca/astro-imaging-certificate

RASC OBSERVER'S HANDBOOK 2020

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. Chatfield, T. Tuomi, L. Scott, G. Charpentier, B. Johnson, L. Dickson, B. Burlingham, Norma Jensen

Ron Waldron	108
Marcel Müller-Goldkuhle	94
Wade Selvig	75
Wayne Schlapkohl	43
Ellen Dickson	34
Graham Hartridge	9

FINEST NGC CLUB

Certified at 110 Objects:

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

Larry Scott	110
Scott Alexander	97
Norma Jensen	83
Sandy Ferguson	23
George Charpentier	13

EXPLORE the UNIVERSE

Certified at 55 to 110

Objects: *T. Tuomi,*

Wayne Schlapkohl	55
Jim Goodridge	35

HERSCHEL 400 CLUB

Certified at 400 Objects:

R. Huziak, D. Chatfield, T. Tuomi

Gordon Sarty	251
Scott Alexander	117
Larry Scott	45
Sandy Ferguson	18

HERSCHEL 400-II CLUB

Darrell Chatfield	400
Tenho Tuomi	378
Rick Huziak	246

Chatfield BINOCULAR CERTIFICATE

Certified at 35 to 40 Objects:

T. Tuomi, R. Huziak

Jim Goodridge	12
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Isabel Williamson Lunar Observing Certificate

Certified at 140 Objects:

T. Tuomi, N. Jensen

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 here <http://www.rasc.ca/explore-universe>

On-line Messier and Finest NGC lists, charts and logbooks:

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

On-line Herschel 400 List:

<http://www.astroleague.org/al/obsclubs/herschel/hers400.html>

Binocular List is at: https://www.usask.ca/rasc/Chatfield_Binocular_List.pdf

"Isabel Williamson Lunar Observing Program Guide:

<http://www.rasc.ca/sites/default/files/IWLOP2015.pdf>

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