

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:
<https://saskatoon.rasc.ca/newsletters.html>

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MEMBERSHIP? JOIN TODAY!

Regular: \$111.00 /year

Youth: \$61.10 /year

Family: \$105.50 + \$42.90/additional adult + \$22.20/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)
- borrow the Centre's projector to give astronomy outreach presentations – contact Les Dickson at astrochem@sasktel.net
- rent the Centre's Telescopes <https://saskatoon.rasc.ca/telescopes.html>
- use of the Centre library
- SkyNews Magazine (bimonthly)

SASKATOON CENTRE'S MAIN OFFICERS:

President – Brent Burlingham

Vice-President – John Takala

Secretary – Lorie Tedford

Treasurer – *vacant* (Les Dickson interim)

National Council Rep – Joelle Sheard-Patrick

Canadian Tire money - Darrell Chatfield

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

NEWSLETTER INFO

Newsletter Editor – Colin Chatfield

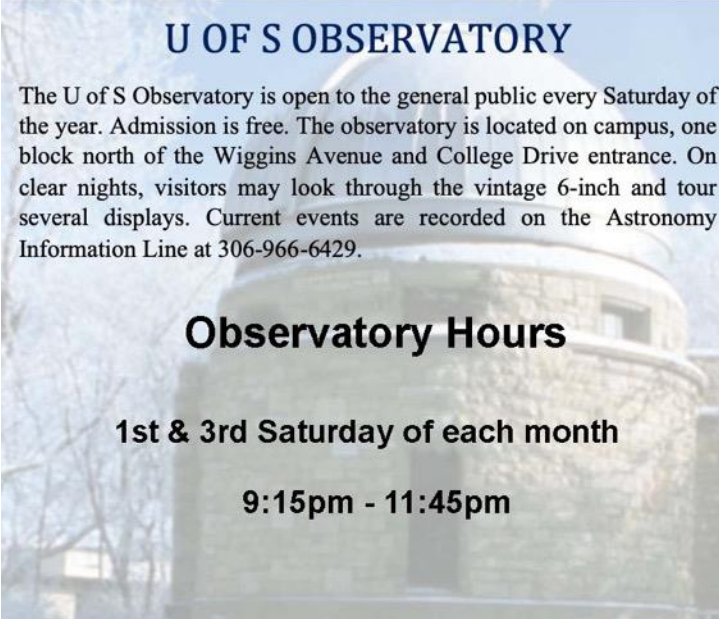
Copy & Collate – Les & Ellen Dickson

Labels & Temps – Mark de Jong

Web Posting/Content Editor – Tenho Tuomi/Andrew Kostiuik/Brent Burlingham

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@gmail.com 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@gmail.com for rates. Members can advertise non-commercial items for free.

A graphic with a background image of the U of S Observatory building. The text is centered and reads: "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", "1st & 3rd Saturday of each month", "9:15pm - 11:45pm".

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

1st & 3rd Saturday of each month

9:15pm - 11:45pm

Hours subject to change, so check below for more info -

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

Facebook - <https://www.facebook.com/usaskobservatory/>

RASC CALENDAR OF EVENTS & MEETING INFO

May 7	Wildwood School Star Party	Joelle Sheard
May 13	RASC Saskatoon Centre General Meeting	Brent Burlingham

Observer's group viewing starts at dusk at the Sleaford Observatory dark site. Get there early and set up for a great night of observing! Members and their guests only.

For a complete list of club events, please visit: <https://saskatoon.rasc.ca/activities.html>

May RASC General Meeting

for all members and guests

Join us on May 13th, 2024 at 8:00PM (Executive meeting at 7:00pm)

Webinar (info below)

***Please note:** the meeting will be at the U of S Observatory at 108 Wiggins Ave (on the U of S Campus)*

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

A Zoom registration link and phone-in numbers will be emailed to Members.

After that, the procedure to register and join the meeting is the same as for the webinar (explained below).

NOTE: links to register to attend the webinar will be emailed out as well so we know who is planning to attend. After registering, an email invitation will be sent with a link to join via computer or a number to phone in. When joining via computer, participants will have to first download and install the Zoom app, if they have not done so already.

8:15pm - **Main Program -**

“What’s Up This Month?” – Colin Chatfield

“James Webb Space Telescope update” - Dr. Michelle Thaller (from the Science channel’s *How the Universe Works* will report on the latest updates

BOOKS AND EQUIPMENT FOR SALE

All books are in either new, or like new condition. Retail price in brackets. Please email at novachat@sasktel.net or text/call 306-222-0515 if you want a particular book to make arrangements. All books being sold by Darrell Chatfield.

“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
“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

***NOTE: “I will be advertising the astronomy equipment and accessories from the Melby Estate in the next few newsletters. I will also bring a selection of eyepieces, etc. to the next few meetings for your perusal. Some items were never used. All monies go to the Estate. Thank you.”* Darrell Chatfield**

FOR SALE FROM THE MELBY ESTATE - A PARTIAL LISTING

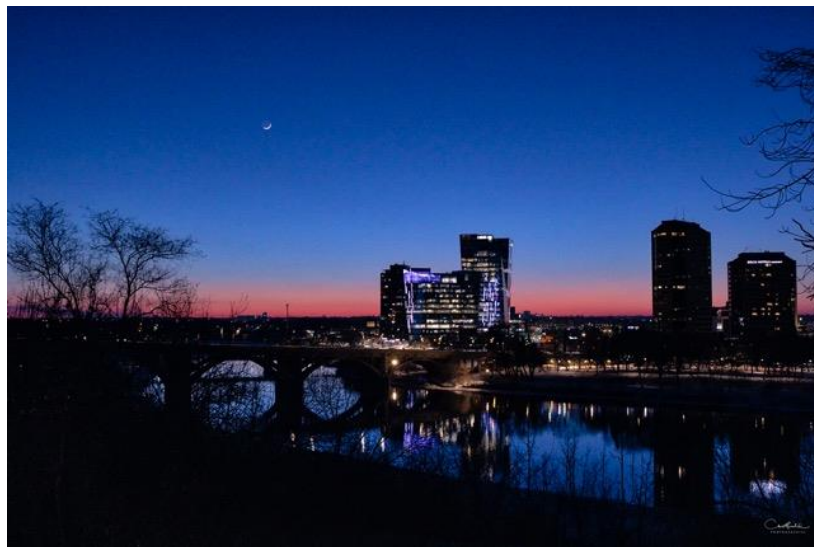
Please email me if you want to see any other set - novachat@sasktel.net. Darrell Chatfield

- **Marksman 7 x 50 binos.** Great condition. Hard shell case \$25.00
- **Bushnell Astralis 20 x 80 binos.** New. Never used. Built in tripod mount. Hard shell case with soft sided Velcro case for binos. \$145.00
- **2 - 1.25” rack and pinion focusers** for refractor type telescopes. Brand new. Never used. Inset diameter is 57mm. Heavy duty type with metal knurled knobs. All have boxes. \$20.00 each.
- **Original Celestron orange tube C5” scope** with tangent arm. Fork arms. SCOPE ONLY. No tripod or wedge. 5 x 30 finder, 1.25” visual back, diagonal, eyepiece, lens cap, metal case. Was used as a spotter scope. Not a mark on the tube. Clean looking. \$250.00
- **Original Celestron orange tube Nexstar C4SE scope.** Starbrite coatings. Comes with tripod, Starpointer red dot finder, 25mm Celestron eyepiece, metal case, manual. New condition. \$725.00

- **Original orange tube C14" scope.** Comes with fork arms, base, wedge, lens cap, 2" visual back, huge 2" diagonal, 5 x 70 finder, swing through locking tripod; 40, 25, 12, and 6mm Kellner eyepieces, 2" – 32mm. Konig eyepiece, 2x barlow, tele extender, hand toggle controller box for slow motion controls, counterweights and 2 rails, power cord, fitted carrying case. All in like new condition. Great looking scope. Hardly used! \$3000.00

- **3" Tasco refractor.** Fl is 1200mm. 6 x 30 finder. Slow motion controls. Counterweight. Sits on an equatorial mount base with an adjustable wooden tripod. The tripod is missing the spreader however. Comes with 0.965 eyepieces, barlow, extender. A more detailed list will be provided if interested. \$300.00

- 2 T mount adapters for Miranda cameras \$5.00 each
- 3 1.25" diagonals 2 new in boxes \$15.00 each
- 1 2" – 32mm Erfle eyepiece new in box \$85.00
- 1 2" – 60mm Kelner eyepiece new in box \$85.00
- 1 1.25" Celestron volcano top eyepiece in box \$15.00
- 1 1.25" Celestron volcano top eyepiece in box \$15.00
- 1 1.25" eyepiece extender - 3" long \$20.00
- 1 5x24mm Celestron orange tube finder new in box \$20.00
- 1 1.25" Celestron off axis guider c/w 12.5mm ep. Can be illuminated. New. \$45.00
- 1 Celestron 4x 1.25" eyepiece turret new in box \$65.00
- 1 Celestron 1.25" reticle. Can be illuminated \$20.00
- 1 3.5" long 1.25" tele-extender \$20.00
- 3 1.25" visual backs new \$10.00 each
- 1 1.25" to 0.965" visual back \$10.00
- 1 Camera to visual back adapter Lightly used \$10.00
- 1 Threaded visual back to 16mm male threads camera adapter \$10.00



Crescent Moon over downtown Saskatoon. Taken March 2024 by Colin Chatfield

SASKATCHEWAN SUMMER STAR PARTY 2024

Les Dickson

SSSP 2024 now in full swing.

SSSP is off to a great start! Camping reservations opened March 30 for sites in the Meadows Campground and the Dark-sky Campground. As of May 2, we had only 20 of 112 sites in the Meadows and 7 of 16 sites in Dark-sky Campground left to fill. Registration opened on April 20. As of May 2, we had received 36 registrations.

Other important dates to remember:

- June 7 – Release of held Resort Rooms
- July 6 - End of Early Registration
- Noon August 7 to noon August 11 – Saskatchewan Summer Star Party #27

We have what we think is a great line-up of speakers and presentations:

- Thursday evening "Under Living Skies" Public Lecture: Pierre Schierle "Astronomy Myths and Hoaxes"
- Friday Afternoon Clinic #1: Pierre Schierle "Green Laser Pointer Safety and Certification"
- Friday Afternoon Clinic #2: Denis Pilon "Sketching the Moon – Recording Observations at the Telescope"
- Friday Evening Clinic #1: Gerry Smerchanski "Binocular Tour of the Summertime Sky"
- Saturday morning: Jennifer Petriew & Joelle Sheard-Patrick "SSSP Kid's Workshop"
- Saturday afternoon speaker: Jeanine Holowatuik "There is No Aurora Season: Capturing the Beauty of the Aurora All Year in Saskatchewan"
- Saturday afternoon Fr. Lucian Kemble Memorial speaker: Roland Dechesne "The Impacts of Light Pollution on the Natural World"
- Saturday Evening Clinic #2: Tim Yaworski "The iPhone of Telescopes"

Other programming includes our Thursday evening BBQ featuring both hotdogs and hamburgers, and the Saturday evening banquet serving roast turkey, garlic mashed potatoes, seasonal vegetables, spinach and strawberry salad and pasta salad.

This year, we are working with the Regina Centre to fundraise for the Comet Petriew Cairn Restoration Project. This commemorative monument stands at the entrance to the Meadows Campground. Since it was erected in 2002, It has deteriorated to the point that it needs some serious attention. Donations to that project are done through the Regina Centre of the RASC and tax receipts are available. More information is available on the SSSP

2024 website. Contact the Regina Centre at info@regina.rasc.ca for more information on how to donate.

The planning committee for SSSP includes from Saskatoon: Les Dickson, Ellen Dickson, Rick Huziak, Andrew Kostiuk, George Charpentier, Joelle Sheard-Patrick, Greg Fusick and Brent Harrold, and from Regina: Vance Petriew and Pierre Schierle. We encourage members of our Centre to get involved and volunteer either for planning positions or for on-site help.

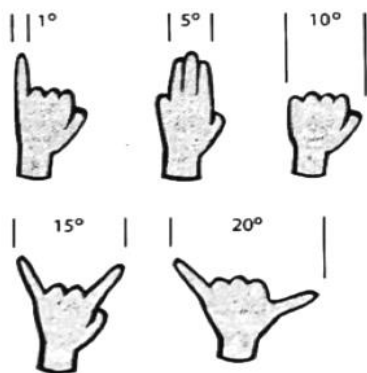
Our website is at <https://sssp.saskatoon.rasc.ca>. You can contact us at sssp.sk@sasktel.net (Rick Huziak) or call Les Dickson at 306-270-9184 (cell) or email him at astrochem@sasktel.net.

MAY NIGHT SKY EVENTS AND INFO

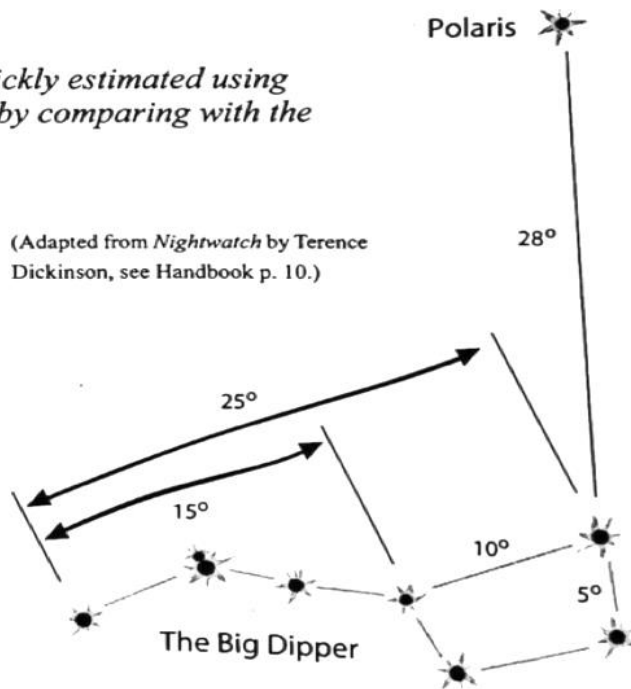
Images on the next few pages taken, with permission, from the 2024 Observer's Handbook. It can be obtained by joining the RASC here <http://rasc.ca/join> or ordered from <https://secure.rasc.ca/store/product/observer-s-handbook-2024>

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.

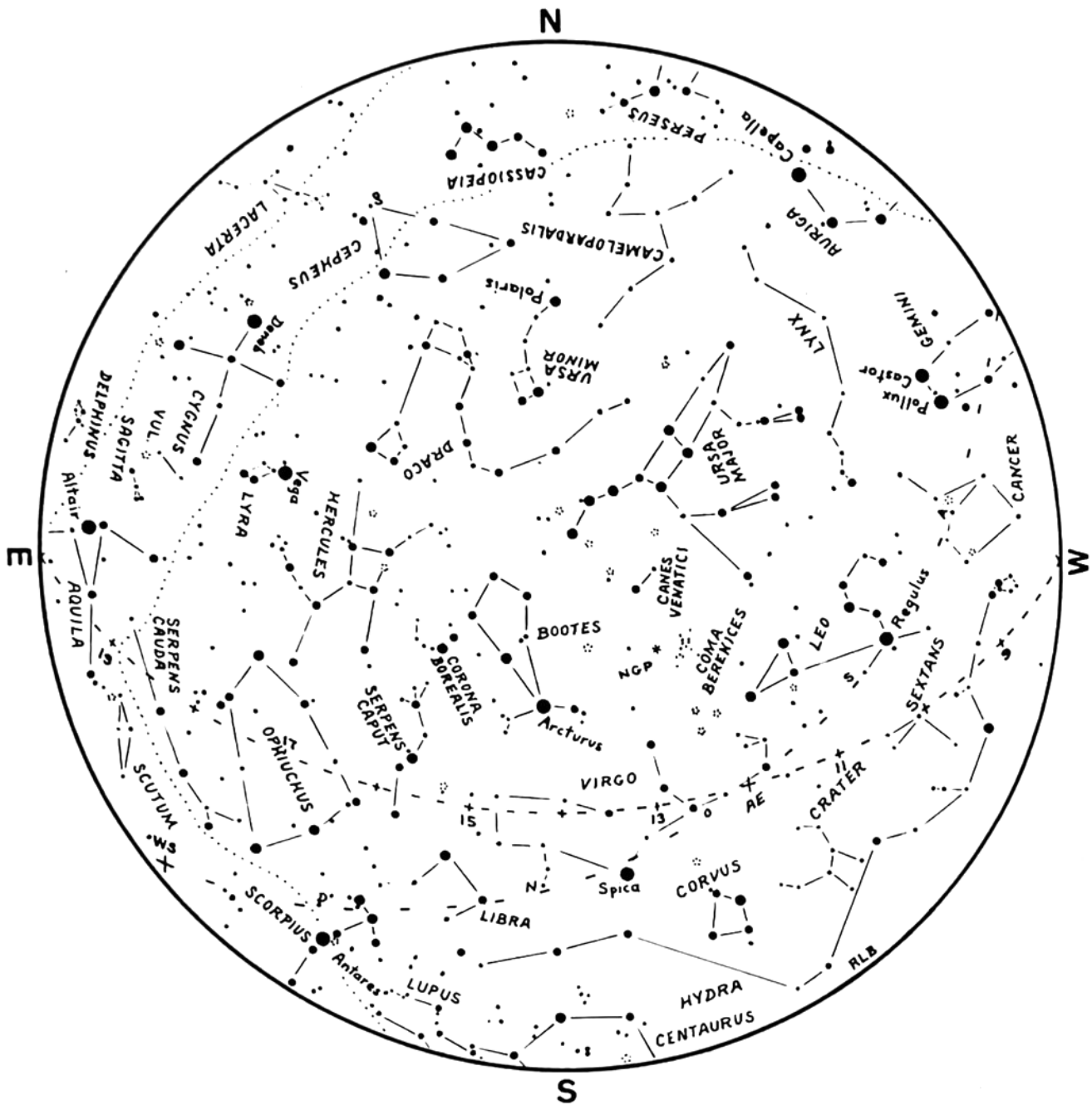


(Adapted from *Nightwatch* by Terence Dickinson, see Handbook p. 10.)



Time (UT)			MAY EVENTS		Jupiter's Satellites	
d	h	m			West	East
Wed.	1	11 27	last quarter		1.0	Io
Thu.	2				2.0	Europa
Fri.	3	14 30	Algol at minimum		3.0	
Sat.	4	19	Saturn 0.8° N of Moon, occultation†		4.0	
Sun.	5	2	Neptune 0.3° N of Moon, occultation†		5.0	Ganymede
		21	Mars 0.2° S of Moon, occultation*		6.0	Callisto
		21 54	η-Aquariid meteors peak		7.0	
		22	Moon at ascending node		8.0	
Mon.	6	8	Moon at perigee (363 163 km)		9.0	
		11 19	Mercury 4° S of Moon		10.0	
Tue.	7		Algol at minimum		11.0	
Wed.	8		Mars at perihelion		12.0	
		3 22	new Moon (lunation 1254)		13.0	
Thu.	9	0	Moon 0.4° S of Pleiades (M45)		14.0	
		8 08	Algol at minimum		15.0	
		22	Mercury greatest elongation W (26°)		16.0	
Fri.	10				17.0	
Sat.	11				18.0	
Sun.	12	4 57	Algol at minimum		19.0	
		23	Pollux 1.6° N of Moon		20.0	
Mon.	13	9	Uranus in conjunction with the Sun		21.0	
Tue.	14				22.0	
Wed.	15	1 46	Algol at minimum		23.0	
		11 48	first quarter		24.0	
Thu.	16	13	Juno 1.1° S of Moon, occultation§		25.0	
		23	Ceres stationary		26.0	
Fri.	17	19	Moon at apogee (404 640 km)		27.0	
		22 35	Algol at minimum		28.0	
Sat.	18	19	Jupiter in conjunction with the Sun		29.0	
Sun.	19	15	Pallas at opposition		30.0	
		16 35	Moon at descending node		31.0	
Mon.	20		Mercury at greatest heliocentric lat. S			
		10	Spica 1.4° S of Moon			
		19 24	Algol at minimum			
Tue.	21					
Wed.	22					
Thu.	23	13 53	full Moon			
		16 13	Algol at minimum			
Fri.	24	3	Antares 0.4° S of Moon, occultation††			
Sat.	25					
Sun.	26	13 02	Algol at minimum			
Mon.	27	5	Ceres 0.9° N of Moon, occultation†††			
Tue.	28					
Wed.	29	9 51	Algol at minimum			
Thu.	30	17 13	last quarter			
Fri.	31	1	Mercury 1.3° S of Uranus			
		8	Saturn 0.4° N of Moon, occultation**			

†Most of A...



REIMBURSEMENT FOR CENTRE EXPENSES

The Centre has a reimbursement procedure on submission of expense claims. A writeable pdf claim form can be found on the Centre webpage under the Executive tab. The expense form **must** be submitted *along with original receipts* to the Treasurer within 30 days of the transaction. All expenditures must be preapproved by the Executive or be within allocated budgets.

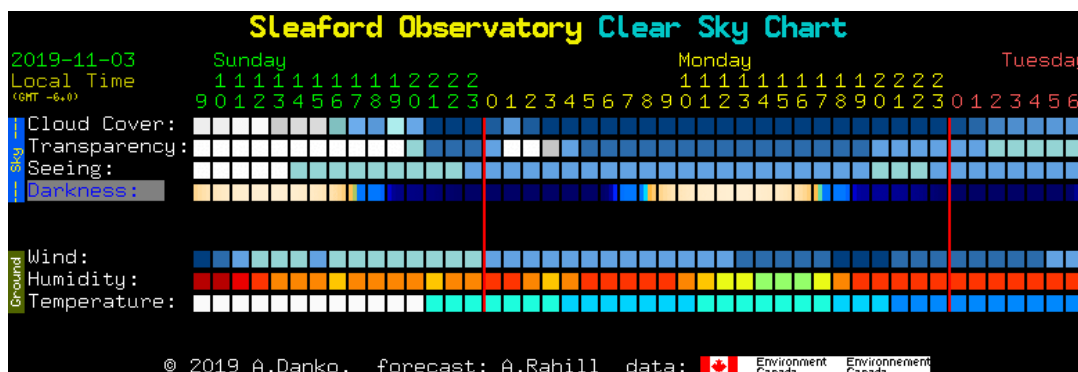
Please contact the Treasurer with any inquiries.

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



Saskatchewan Light Pollution Abatement Committee -

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



www.darksky.org

WILDWOOD SCHOOL STAR PARTY

Joelle Sheard-Patrick

Just a quick reminder/update for the wildwood school star party Tuesday May 7th, 5:30-8:45pm. If you could let me know if you will be attending and bringing your scope that would be great.

As the weather forecast isn't looking so good, and the skies won't be dark just yet, we will have a large 6 foot table set up in the gym. I had a few posters printed up for our table. Hoping some of you can bring your scopes to set up and show the kids. I will bring mine. I think the kids would love to see some big telescopes and I know many of you have one.

RASC members DO NOT need to buy a ticket. Bring your kids, grandkids, etc. It is open to the public.

As we won't be able to show the kids anything thru the scopes, I am wondering if any of you have some nice photos or prints of galaxies, clusters, nebulae, etc, that you might like to bring with you so they can see what's up there.

I have offered to do a craft with the kids - a constellation flashlight craft. Would love offers of help. We'll have the planispheres and moon gazer guides and some colouring pages. The whole school will be open, with each of the classrooms focusing on a singular constellation of the zodiac.

I do not know who will be attending on behalf of the U of S. Brent, do you know who will be there?

If any of you have ideas of things to do/talk about/show, please share. I'm looking forward to seeing some macaroni constellations and astronomy themed artwork!

Contact Joelle at jsheard@sasktel.net.



MINUTES OF APRIL MEETINGS

Lorie Tedford

**Minutes of the Monthly Executive Meeting of the RASC Saskatoon Centre
Monday, Apr 15, 2024 - 7:00pm. Hybrid: Online & In person: U of S Observatory**

Attending: Brent Burlingham, Lorie Tedford, Les Dickson, Yannis Pahatouroglou, Joelle Sheard-Patrick, Colin Chatfield, John Takala, Darrell Chatfield

- 1. Call to order** 7:00 pm – Brent Burlingham (President and Chair)
- 2. Approval of the Executive meeting minutes for March 2024** as printed in the February newsletter. Moved by Joelle Sheard-Patrick, seconded by Les Dickson; carried.
- 3. Call for additional announcements/items to add to the agenda.**
- 4. Announcements from the Chair** – Brent Burlingham
No announcements presented.
- 5. Old Business - Reports from the Executive Council**
 - 5.1. President's Report** – Brent Burlingham.
 - Working on gathering all items that pair with the Meade 16" to list it for sale on Astrobuysell, FB and Cloudy nights.
 - Discussed the potential of collaboration with Tim Yaworski for outreach events.
 - Successful collaboration with U of S and SuperDARN for the April 8th partial solar eclipse.
 - 5.2. Acting Treasurer** – Les Dickson.
 - Discussed the discrepancies found between the report for National and the SK Corp report.
 - Correcting the discrepancies is taking priority over handing the report in before the April deadline.
 - Discussed the need to have more sources of income other than relying on the Star Parties.
 - 5.3. National Council Rep** – Joelle Sheard-Patrick
No announcements presented.
 - 5.4. Activities Coordinator** – Joelle Sheard-Patrick
 - Wildwood Star party confirmed for May 7th.

5.5. Bylaws Committee – Les Dickson

No announcements presented.

5.6. SSSP 2024 Update – Les Dickson

- Guest speakers for the upcoming star party have been confirmed.
- Camping reservations and registration are now open.

5.7. Sleaford Update – Darrell Chatfield

- Sleaford observing coordinator position still vacant.
- Rekeying to happen.
- Darrell made the motion to sell survey equipment that is at the Sleaford Observatory, seconded by Les Dickson. Carried.

6. Old Business

6.1. Sleaford – Site Maintenance

- Discussed the need to have an Observers Group Coordinator.
- The proposal of a grass cutting and/or snow blowing schedule with members who are interested in helping.
- Discussed waiting until the fall to sell the snow blower.

7. Motion to adjourn by Yannis Pahatouoglou, seconded by Joelle Sheard-Patrick ; carried. 8:00 PM.

**Minutes of the Monthly General Meeting of the RASC Saskatoon Centre
Monday, Apr 15, 2024 - 7:00pm. Hybrid: Online & In person: U of S Observatory**

Minutes taken and prepared by Lorie Tedford.

- 1. Sharing/Networking Time** - 8:00-8:15 pm – all members.
- 2. Call to Order** – 8:22 pm – Brent Burlingham (President and Chair)
- 3. Call for additional announcements/items to add to the agenda.**
- 4. Call out to new members/guests:** Michelle.
- 5. Adoption of the March General meeting minutes** as printed in the February newsletter. Moved by Les Dickson, seconded by Lisa Codwell, carried.
- 6. Executive Meeting Summary** – Brent Burlingham
 - Current working on getting the necessary parts together to sell the Meade 16”, decide on a listing price and post the ad. The scope is too heavy to offer shipping, buyer will need to pick it up.

- Successful event at the U of S Observatory on April 8th for the partial solar eclipse. The RASC was joined by the U of S and SuperDARN. Had a good turn-out of people for the event even though the clouds rolled in.
- Potential collaboration with Tim Yaworski for outreach events, details pending.
- Sleaford yard maintenance and lack of help an issue. Discussed hiring the RM to clear snow and cut grass or creating a schedule of members who are interested in maintaining the site. As well as selling the snow blower and surveying equipment that was left at Sleaford.

6.1. (Acting) Treasurer: Les Dickson

- Discussed discrepancies between the financial report for National and the SK Corp. report.
- Addressing the discrepancies will take priority over the submitting the report before the April deadline.
- Presenting a six-month update of the finances of 2024 in comparison to last years.

7. New Business – no items brought forward to discuss.

8. Program

- 8.1. The Upcoming Sky presented by Colin Chatfield
- 8.2. Jeff Swick – “Centre for Backyard Astronomy and Beer Garden”

9. Call to adjourn – Moved by Les Dickson, seconded by John Takala; carried.

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. 312)
- THE FINEST NGC OBJECTS (p. 316),
- THE DEEP-SKY CHALLENGE OBJECTS (p. 320),
- DEEP-SKY GEMS (p. 322).

See 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** and the **Double Stars Observing Certificate** for intermediate to advanced members. In addition, **Astroimaging certificates** are available for those members with a photographic bent. See rasc.ca/astro-imaging-certificate

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,
Donna-Lee May*

Ron Waldron	108
Brent Gratias	104
Marcel Müller-Goldkuhle	94
Wade Selvig	75
Wayne Schlapkohl	43
Ellen Dickson	34
Graham Hartridge	9

CHATFIELD BINOCULAR CERTIFICATE

Certified at 35 to 40 Objects:

T. Tuomi, R. Huziak

Jim Goodridge	12
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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
Brent Burlingham	97

EXPLORE THE UNIVERSE

Certified at 55 to 110

Objects: *T. Tuomi, B. Gratias*

Wayne Schlapkohl	55
Jim Goodridge	35

ISABEL WILLIAMSON

LUNAR OBSERVING CERTIFICATE

Certified at 140 Objects:

T. Tuomi, N. Jensen

EXPLORE THE MOON CERTIFICATE

T. Yaworski

Brent Gratias	37
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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

LEVY DEEP-SKY GEMS

Certified at 154 Objects:

Tenho Tuomi	150
Darrell Chatfield	70

Messier, Finest NGC, and David Levy's Deep-Sky lists in the *Observer's Handbook*.

The Explore the Universe list is available here <http://www.rasc.ca/explore-universe>

Messier and Finest NGC lists, charts and logbooks: <https://www.rasc.ca/certificate-programs>

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

Chatfield Binocular List is at: https://saskatoon.rasc.ca/Chatfield_Binocular_List.pdf

“Isabel Williamson Lunar Observing Program Guide” program details can be found at:

<https://www.rasc.ca/isabel-williamson-lunar-observing-program>