



## Upcoming Events

### Meetings

November 8  
December 13  
January 10, 2020

### Members' Observing Nights

November: TBA  
December: TBA  
Weather Permitting

### Special Events

Saturday, January 18, 2020: Pot luck  
(location TBA)

### Oak Hammock Marsh Astronomy Night

November 21  
December 19 ("Winter Constellations")

### University of Manitoba Open House

November 27  
**No open house in December**  
January 29, 2019

### New Moon

November 26  
December 25

# Winnicentrics

*The Newsletter of the Winnipeg Centre of the Royal Astronomical Society of Canada*

Regular meetings of the Winnipeg Centre are held in the Robert B. Schultz Lecture Theatre in St. John's College at the University of Manitoba, 92 Dysart Road. Free parking is available in the lot across the street. The theatre is on the lower (basement) floor of the College. Meetings are usually held on the second Friday of each month from 7 p.m. to 10 p.m. After the meetings, members who wish to do so usually retire for pizza and more conversation about astronomical subjects.

One of the summer meetings, usually in June but occasionally July, is not at St. John's College but is instead a barbeque at either a member's house or at Glenlea. Check the RASC Winnipeg website (<http://winnipeg.rasc.ca/>) in summer months to confirm the dates and locations of meetings and social gatherings.

Meeting dates and places may be adjusted during exam times and during Bombers home games or other stadium events.

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**Outreach**

**New Winnipeg Centre Website Coming**

**Astronomy News**

## Subscribe To Our YouTube Channel !

RASC Winnipeg meetings from January 2019 to the present  
are online at:

<https://www.youtube.com/channel/UCI-5qhaejiUZHBnQdrbYDAA>

If enough viewers subscribe to the channel, a more  
appropriate address using the RASC name can be  
obtained.

## WHO, WHERE, WHEN?

### Executive Council

#### Winnipeg Centre Officers & Volunteers

**President:** Bryan Stach

**Vice-President:**  
Dennis Lyons

**Secretary:** Cliff Levi

**Treasurer:** Abdul al-Manni

**Past President:**  
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Kaeren Anderson

**Observatory Director:**  
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Winnicentrics is published six times or more each year by the Winnipeg Centre, RASC. Winnicentrics is produced by and for the members of the Winnipeg Centre. Any opinions expressed are those of the author.

If you have comments, questions, or concerns about Winnicentrics, you can contact any of the councillors above.

## Notices



Challenge your observing skills with the RASC *Explore the Universe* program. Visit <https://rasc.ca/explore-universe> or contact Dennis Lyons for more information.

### November 2019 Meeting Schedule

- 7:00 pm Beginner's Session
- 7:30 pm Announcements
  - What's Up? Upcoming events in the sky
  - What's New? New discoveries in astronomy
- 8:30 pm Break for Coffee and Refreshments
- 9:00 pm Featured Presentation

### December 2019 Meeting Schedule

- 7:00 pm Green Laser Pointer Seminar/update  
(Dennis Lyons)
- 7:30 pm Announcements
  - What's Up? Upcoming events in the sky  
(Jay Anderson)
  - What's New? New discoveries in astronomy  
(Danielle Pahud)
- 8:30 pm Break for Coffee and Refreshments
- 9:00 pm Featured Presentation: "History of Science - Johannes Kepler" by Gerry Smerchanski

### January 2020 Meeting Schedule

- 7:00 pm Beginner's Session
- 7:30 pm Announcements
  - What's Up? Upcoming events in the sky
  - What's New? New discoveries in astronomy
- 8:30 pm Break for Coffee and Refreshments
- 9:00 pm Featured Presentation: "The Orbital Position of Satellites" by Philip Ferguson

## Astronomical Events November 2019 - January 2020

### The Planets

#### *Mercury:*

- After the transit on November 11, Mercury visible in morning sky, reaching its highest point on November 27.
- Back in evening sky in January.

#### *Venus:*

- In the evening sky. By the end of January 2020, setting nearly four hours after the sun and bright.

#### *Mars:*

- Visible in pre-dawn sky but very small.

#### *Jupiter:*

- Appears in morning sky from December 15 but still close to sun and difficult to view until late January.

#### *Saturn:*

- Visible in evening sky until December 28, then approaching conjunction with the sun.

#### *Uranus:*

- In evening sky but sinking lower.

#### *Neptune:*

- In evening sky. Viewing will be poor by the end of January 2020.

### The Sky

- November 28: Orionid meteor shower
- December 14: Geminid meteor shower
- December 21: Solstice
- January 4, 2020: Quadrantid meteor shower
- January 15, 2020: Asteroid 511 Davida at opposition (magnitude 9.6, in Gemini)
- January 21, 2020: Asteroid 5 Astraea at opposition (magnitude 8.9, in Cancer)

## OPEN HOUSE at Lockhart Planetarium

Last Wednesday  
of Every Month

240 University College  
7:00 p.m.

(No open house in December 2019)



## **BINOCULARS FOR CHRISTMAS**

**Ken Tapping, 3rd December, 2019**

The range of things available to backyard astronomers is now, er, astronomical. Choosing presents for the family astronomer is more complicated than ever. That means, unless you also share that interest, getting anything for an experienced backyard astronomer should be done in response to hints, notes left around or other useful information about what he or she wants. If necessary, insist that Santa wants a List. On the other hand, if your family astronomer is a beginner, then things are easier. If there are no binoculars in the house, then think of getting some for Christmas. These are great for looking at the Moon, star clusters, exploring the Milky Way, and for searching for comets.

A pair of binoculars consists of two telescopes fastened together so they point in the same direction. Binoculars are described by two numbers, for example 8x30. The first number is the magnification - how many times closer it makes something look. The second is the diameter of the objective lenses in millimetres. Magnification is nice, but the most important number here is the size of the objective lenses. Most astronomical objects are faint, so catching as much light as possible is important. One can get huge binoculars that are wonderful astronomical instruments, but they are heavy and will need tripods to hold them steady. If binoculars are not easy to hold still while you look at something for a few minutes, they are too heavy. In addition, tiring hands start to shake, and magnification makes the shaking more of a problem. So we have to compromise observing power with convenience and usability. For small hands maybe 7x40 (seven times magnification with 40mm objective lenses). For average observers, 7x50 binoculars are good, general-purpose instruments to have around. One alternative which is expensive but getting cheaper is a pair of "image stabilized" binoculars. These have sensors and a little computer inside which detects the shaking and wobbles little mirrors or prisms to correct it. These devices are amazing things to use. If the astronomer has any problems with holding things still, these binoculars will open doors to a new realm of enjoyment.

Binoculars are getting better and better, and the two potential problems described here are getting rarer and rarer. However, it is best to keep an eye open for them, especially when buying from anywhere other than a science store. The first is chromatic aberration. This arises because the lenses are not focussing all colours equally. Look at the edge of a dark thing against a bright one, like a roofline against the sky. The problem will show up as false colours. There shouldn't be any. The second problem is the two telescopes making up the binoculars might not be pointing in exactly the same direction, a problem called poor collimation. This manifests itself as either a feeling of not-quite-rightness, or you might even see double. Your brain can often correct this, but at the expense of discomfort and headaches. It should be possible to set up the binoculars so they are completely comfortable to use, for long periods.

If you have a science store or a good camera store nearby, go there. Try out the goods before buying. Another possibility is talk to members of the local astronomy club. Otherwise buy from a good dealer. I suggest buying an astronomy magazine, such as SkyNews (Canadian), Sky and Telescope (American) or Astronomy (American). The companies advertising in them are reputable and there are usually articles about hardware choices. Have a read before going shopping. I end with a warning though; you might get hooked yourself.

Mercury and Mars lie low in the southeast before dawn. Jupiter and Venus are close together very low in the southwest in the sunset glow, with Saturn a little higher and to the left. The Moon will reach First Quarter on 4th December.

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Article reprinted with the kind permission of Dr. Tapping.

### ***Editorial on Christmas Binoculars***

***Darren Hennig, RASC Winnipeg Chapter Mentorship director***

***I'd like to thank again Dr. Ken Tapping for his generous contribution to our monthly newsletter – I think it really neat to remind all that binoculars are always a great addition to the observational lineup.***

***In line with this, for those that have not seen my talk a little over a year ago on Introduction to Binoculars, please check it out in the RASC Winnipeg meeting archives. Please feel free to contact me or approach me at the meetings if you have any questions, or comments, too! (continued on page 5)***

***I pretty much agree with everything Dr. Tapping mentioned in his article. However, over the years, and after owning countless pairs of binoculars myself, I find that there are some things that are worth mentioning to assist those looking to purchase (or have a family member do so for them this holiday season) a pair of GOOD astronomical binoculars:***

- The best pairs are the ones that get USED! Make sure these are well-made, have smooth operation, are easy to focus, light weight, and tripod mountable in case you wish to do so. For those looking at smaller roof prism designs, these CAN still be mounted in a variety of ways on a tripod.
- IMO, I find the two “sweet spots” for astronomical binoculars (non-image stabilized) is either a 10x50mm or the 15x70mm pair, or very close to those ranges. The 10x50 is great, and highly useful; however, several manufacturers also offer a 11x56 pair, which handles much like the 10x50s, but has a bit more “bite” into the sky. They might be worth considering as an alternative! The venerable 15x70mm pairs are not very easily hand held – at least over moderate periods: Most of these should be tripod mounted, but they are nearly the ideal format as an astronomical instrument for general use. For those wanting a “do it all” kind of instrument, this is an excellent choice.
- Having said the above, the MINIMUM size suitable for decent astronomical use is a 7x to 8x40mm pair or in that range... 8x42, 10x42, 8x44, etc. are also great choices for astronomy “on the go”, when you need a small pair to do a lot of things (hiking, fishing, sports, etc.). Don’t underestimate the power of these 42mm class instruments – under darker skies, they will go easily to around 10<sup>th</sup> magnitude (or a bit deeper with experience), and will show MANY gorgeous swaths of milky way details and are superb for larger open clusters!
- Avoid overly large exit pupils – these may be determined by taking the first number (magnification) of the pair and dividing into the second (aperture size). Try and stay generally in the 4-6mm range for best overall utility. It is rare when one can get to 7mm (with a 7x50 pair) and you lose light since the cone exceeds most older observers’ pupil dilation size, and in less dark situations, this is almost never met regardless of the observers age or health status. So you end up with reduced aperture since the optic vignettes or truncates the light cone. To be avoided.
- Try and get a pair with a reasonable apparent field of view at the eyepiece... this should be in the 56° to 68° ideally, for a comfortable view with an immersive feel to it. Avoid Ultrawide angle pairs, as these tend to be very soft in the outer 25-30% of the view, and most budget UWA pairs will have horrible false color or chroma near the edge, and other aberrations, like coma. To determine the field of view, if not mentioned on the pair or in documentation, if they show a figure like “305 feet at 1000 yards), you can approximate this by taking the arctangent of the first figure divided by 3x the second (to get units right). If the True Field is given, the pair will approximately have an apparent field by taking this figure times the magnification.
- When looking at a head and tripod options for your binocular, make sure the tripod is lightweight, can stand to 5 feet minimum with the center column retracted, and just over 6 feet (~2m) when fully extended. Use a non-fluid pan head or good quality ball pan head whenever possible. Fluid-filled heads get VERY stiff or don’t move under colder temperatures. Another option is a good monopod with Ball head or pistol style grip.
- Finally, quality. Not all binoculars are created equally. Even some of the “big three” (Celestron, Meade, Orion) have QA/QC issues that crop up. Make sure to inspect the pair you are interested in, and check the pupils on the eyepieces for truncation, which is a sign of an inferior pair. Also, inspect coatings, make sure they are uniform and as deep as possible to reduce light scatter and optimize light transmission. Expect to spend AT LEAST \$120 or more for a decent pair, \$180 or so for a better pair, and over \$300-400 and up for a more premium pair (most cost in the \$500-1000+ range, FYI). Buy the BEST pair you can afford. Make sure they have a good strap and case. Don’t forget that other companies like Oberwerk, for example, also inspect EACH pair going out and many of their pairs are superb. Avoid box store purchased binoculars whenever possible, as these may have been used and returned and may have issues. Do your homework, and please contact me if you need help! We also have other very experienced binocular members in the club, too!

***Getting a good pair will offer years (and countless hours) of wonderful experiences under the stars, in a unique way that gives you a true extension to your eyes, and help you continue to learn the sky and perhaps maybe even see the night sky in a “different light”!***

***Merry Christmas and Seasons Greetings to all RASC Winnipeg members! Clear skies, and keep looking up!***

***Darren Hennig, M.Sc.***

***RASC Winnipeg***

***Councillor/Mentorship program Lead***



Spruce Woods Star Party 2019, by Daemon Nightshade.

IC 4685, M8 Lagoon Nebula and M20 Trifid Nebula, imaged at Spruce Woods by Sheila Wiwchar. Photographed with William Optics Star 71, Canon 60Da, and Sky-Watcher HEQ5 mount.



# TRANSIT OF MERCURY - NOVEMBER 11, 2019



RASC Winnipeg Centre members assemble at Glenlea at dawn on a cold Remembrance Day morning.



A hot breakfast and a few minutes in the warm room, then back outside for another look.



Transit observations in full swing.

Meanwhile, over in Charleswood...

...Commemorative Transit of Mercury cookies!  
Conception and execution by Luba Krosney.



# WINNIPEG CENTRE OUTREACH



Sheila Wiwchar discusses astrophotography at Oak Hammock Marsh Astronomy Night, November 2019



Observing on the roof of the Oak Hammock Marsh Interpretive Centre

## New Website and Social Media

A redesign of the **RASC Winnipeg Centre website** (<https://winnipeg.rasc.ca/>) is underway and is currently in testing. Launch of the new site is expected in the first quarter of 2020.



We now have an **Instagram** account (<https://www.instagram.com/rascwinnipeg/>). Information on how to submit photos will be forthcoming.

Our **Facebook** page is also being reorganized - more information to follow.

## Some late-breaking news in astronomy

### A planet bigger than its star

About 1500 light years away from Earth, white dwarf WDJ0914+1914 has a companion planet. Fittingly, WDJ0914+1914 I -- only as big as the Earth -- is orbited by a Neptune-sized planet. It's unknown why the close-orbiting planet wasn't destroyed when the star was in its red giant phase, but one possibility is that the planet drew closer to the star after it became a white dwarf. The star is making up for lost time, however. The planet, only 0.07 AU away, is being bombarded by photons and losing mass at a rate of 3000 tons a second.

<http://www.astronomy.com/news/2019/12/first-giant-planet-discovered-around-a-tiny-white-dwarf-star>

### ESA confronts problem of space junk

In conjunction with Swiss company ClearSpace Today, the European Space Agency is undertaking a mission to remove a single piece of debris from orbit. The ESA-owned target object, an upper stage from a 2013 launch of a Vega rocket, is currently in low Earth orbit at an altitude of 600-800 km and has a weight similar to that of a dead satellite. ClearSpace-1, the first scheduled garbage retrieval mission, is scheduled for 2025.

<https://www.universetoday.com/144353/an-upcoming-esa-mission-is-going-to-remove-one-piece-of-space-junk-from-orbit>

### Three supermassive black holes merging in NGC 6240

It appears that NGC 6240 may be the site of three galaxies merging, rather than two. Recent observations by the Multi Unit Spectroscopic Explorer (MUSE) on the European Southern Observatory's Very Large Telescope in Chile indicate that the southern black hole in a previously discovered pair is actually two black holes in close proximity -- only 650 light years apart. The estimated combined mass of the trio is nearly 1.2 *billion* solar masses (400 million for the northern black hole, 700 million and 90 million for the southern black holes  $S_1$  and  $S_2$ ).

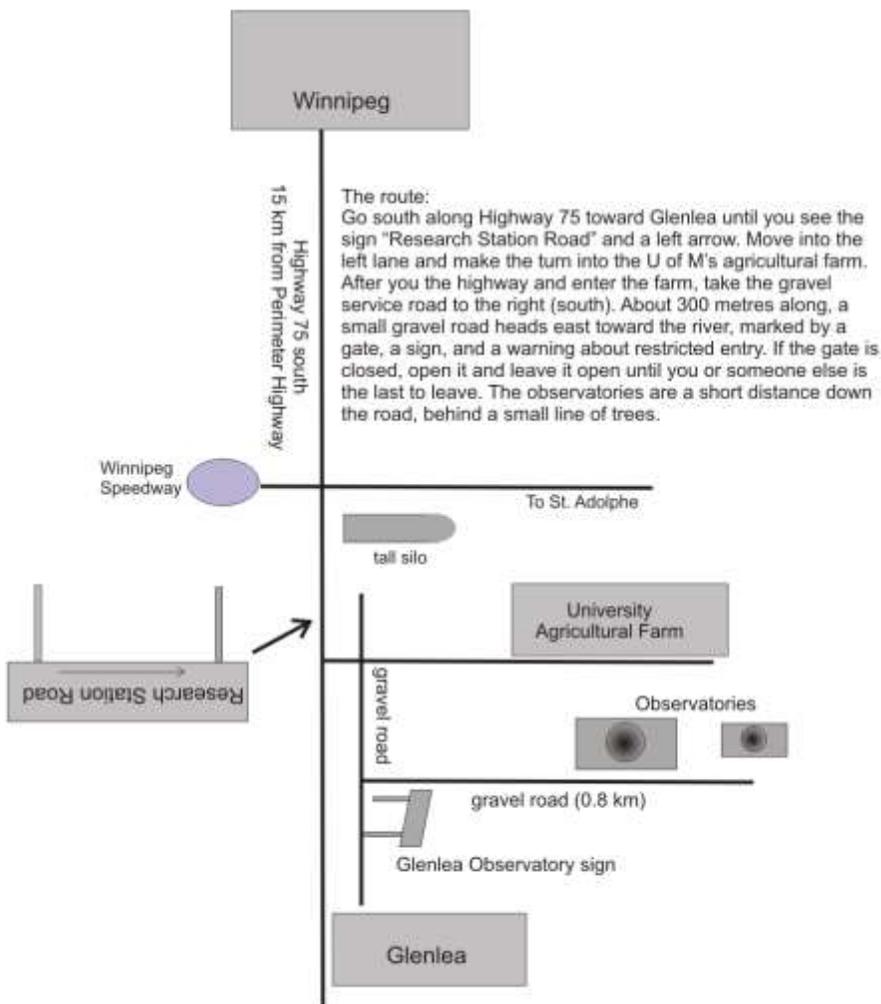
<https://www.skyandtelescope.com/astronomy-news/three-black-holes-merging-nearby-galaxy/>

### Electrostatic charge may be key to planetary formation

In experiments to determine how planets could form from clouds of dust, a problem emerges when particles reach a size of about 1 millimetre: Instead of sticking, the grains of dust tend to bounce off one another. To test the effect of electrostatically charging the particles, a team led by astrophysicist Tobias Steinpilz of the University of Duisburg-Essen shook thousands of glass beads and then launched them 100 metres into the air to briefly simulate weightlessness and overcome the effects of Earth's gravity on the beads. The result? Larger clumps of matter.

<https://www.sciencenews.org/article/electric-charges-dust-grains-may-help-explain-how-planets-are-born>

## Finding the Observatory



The Winnipeg Centre maintains a working observatory and warm room at the University of Manitoba's Research Farm. The observatory contains a 30 cm Meade telescope on a fork mounting. Members of the Centre may sign out the use of this telescope provided they have first taken a short instruction course on its use.

The Meade provides outstanding views of the night sky. Its large aperture collects more than 1800 times as much light as the human eye. It is capable of magnifying more than 500 times under favourable conditions.

The warm room provides a convenient place for members to take refuge from winter temperatures and summer mosquitoes, or to wait out a passing cloud. The building also provides desk space and lighting

for planning a night's observing session. A cement pad in front of the warm room and observatory provides a convenient space to place members' telescopes while conducting personal observing programs.

Etiquette requires that you approach the observing site with your headlights off if that's possible on your model of car. Headlights should remain off, but you can still use your parking lights to drive. Proceed slowly, and be careful about parked cars along the road, or people walking. If you cannot turn off your headlights, make a cardboard or garbage bag mask to dim the lights. You might wish to turn around at the end of the road so that you are facing the direction back toward the highway at the end of the evening.

Remember to close the gate if you are the last one to leave.

