Winnicentrics

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

Upcoming Events

Next meetings
July 12, 2019 – **Barbecue**
August 9, 2019

Members' Observing Night
July: TBA
August: TBA
Weather Permitting

July 2	**New moon**
July 20	**50th Anniversary of Apollo 11 moon landing**
July 28-29	**Delta Aquarids meteor shower**
August 1	**New moon**
August 12-13	**Perseids meteor shower**
August 30	**New moon SWSP starts**

Deadline for the next issue is August 26, 2019

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.

The July 2019 meeting will not be held 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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Spruce Woods Star Party Update

The 2019 Star Party is from Friday, August 30 to Monday, September 2. Deadline for early registration is **August 15** – register now and save!

More information, including the full schedule, registration form and maps at:

https://winnipeg.rasc.ca/spruce-woods-star-party/

WHO, WHERE, WHEN?

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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

Please watch for and complete our upcoming survey for Winnipeg Centre members. Your responses to this survey will help your board to provide the best possible experience for our members.

New member? We have a mentoring program. Whether your goal is to improve your knowledge of the night sky, set up a new telescope or explore astrophotography, help and advice is available. Contact Darren Hennig for details.

July 2019 – Barbecue

Friday, July 12, 2019 at approximately 6:00 p.m.
Glenlea Observatory
(In the event of rain, an alternative site will be announced a day or two beforehand.)

Open to Centre members and their guests. Bring food and drink to suit your appetite. Mosquito repellant recommended. If you can bring a barbecue, let us know so we know how many to expect.

August 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 by Ralph A. Croning: *Meteor Hunting*

Astronomical Events July – August 2019

The Planets

Mercury:

- August 9: Greatest elongation west, in morning sky (peak altitude August 13)

Venus:

- August 15: At greatest brightness for year, but low in sky at sunset

Mars:

- August 25: At aphelion, but approaching conjunction with sun

Jupiter:

- Retrograde in Ophiuchus, reaching western stationary point on August 11 – 12.

Saturn

- July 9: At opposition, in Sagittarius

Uranus

- In morning sky in Aries

Neptune

- In morning sky in Aquarius

The Sky

July 28 – 29: Delta Aquarids meteor shower maximum

August 12 – 13: Perseids meteor shower maximum . Waxing gibbous moon will impact observation.

Glenlea Cleanup

Just wanted to say thanks for everyone who helped out in restoring Glenlea. Everything is back online and the warm room is stocked up with coffee, water etc. In fact, a spring cleaning was done and here are the pictures show what a good job everyone did. - Bryan Stach

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.

Sacramento Mountains Spectroscopy Workshop

By Gord Tulloch, RASC Winnipeg

(Editor's note: The first part of this article was published in the May/June *Winnicentrics* but the rest of it was inadvertently omitted. It is republished here in its entirety.)

Introduction

I thought it would be interesting to members to get a synopsis of this workshop, which brought together some of the luminaries of the amateur spectroscopy world (many of them from France, where amateur spectroscopy really originated and has a large following.) Amateur spectroscopy, like amateur photometry, is an excellent opportunity for amateurs to make real contributions to the sciences, where amateur / professional collaboration results in a more thorough understanding of our Universe.

Spectroscopy is essentially a technique where a prism or diffraction grating is used to split light from a telescope into its component colors, which can then be analyzed to learn more about the source. Generally spectra can be of low resolution which can indicate the temperature and composition of a star, or high resolution, which allows specific spectral lines to be examined to learn more about radial velocities and unusual emission or absorption. For example, Be stars (a hot topic at the workshop) emit in Hα and absorb, indicating the star is surrounded by a hot ring of gas that emits in that wavelength, turning the normal absorption line of the stellar spectra into a characteristic M shape.

Travel to the Workshop

The workshop was held in Las Cruces, NM, which is about 45 minutes north of the Texas border at El Paso. Flying to Las Cruces turned out to be a bit of a grind but that was due to limiting our flights as much as possible to WestJet to take advantage of a companion pass and dollars earned on our credit card. We flew from Winnipeg to Vancouver to Phoenix, then a cheap flight to El Paso on Southwest Airlines. After an overnight in El Paso (and some of the best authentic Mexican food we've ever had) we drove a rental to the beautiful Hotel Encanto de Las Cruces. The Hotel Encanto is Southern New Mexico's Premier resort hotel and we really enjoyed our stay there, despite disappointing temperatures in the mid-teens centigrade for our entire stay. The next AAVSO Annual Meeting will be held at this hotel, so here's your chance!

Figure 1 - Views of Hotel Encanto de Las Cruces

The Workshop

The workshop began Friday morning with an informal breakfast in the Hotel's nightclub for attendees only. I was pleased to meet up with Dave Lane of the RASC Halifax Centre (former National President) and Dr. Stella Kafka, Director of the AAVSO, at breakfast. Several other Canadians were in attendance including Mike Jefferson from the Hamilton Amateur Astronomers and Jay Lavender of the Edmonton Centre (we may see Jay at SWSP this year!) It looked like there was approximately 60 attendees and presenters at the workshop, so quite a sizable affair. The event sold out so it could get even larger next year!

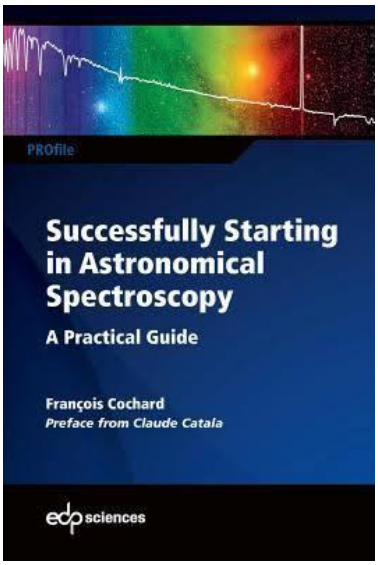


Figure 2 - Cochard's Book

Day 1 Sessions

The program for the workshop included some beginner spectroscopy sessions, primarily conducted by François Cochard, who literally wrote the book on amateur spectroscopy (his book was recommended reading before attending the conference.) The first few sessions after opening up the workshop were François presenting basics of spectroscopy and a rundown on available equipment. Cochard is a French amateur astronomer and co-founder and manager of Shelyak Instruments, so the focus was primarily on the Shelyak instruments that are today considered standards: Lhires III, LISA, eShel and Alpy 600. Cochard is also the organizer of the Spectro Star Party every year at the Observatoire de Haute Provence (OHP), where he has assisted many observers in their first steps in spectroscopy.

Next up were the conference organizers, Joe Daglen and Ken Hudsen, presenting an overview of the ISIS spectroscopy software (http://www.astrosurf.com/buil/isis-software.html) written by revered French amateur Christian Buil, who was in fact in the audience. No pressure there! ISIS is a very complex piece of software so the presentations and instructions included in the workshop website (http://www.smswweb.com/#software) were instrumental in many attendees successfully using the software. In fact, a story I heard over and over during the workshop is "I bought an <insert spectrometer here> and never figured out how to get the damned thing working!" By the end of the conference attendees were confident they could return home and make productive use of their equipment and software.

Dave Whelan of the observatory at Austin College in Sherman TX gave an excellent technical presentation on "Interpreting the Spectra of intermediate and high-mass stars," which included some intriguing information on Be stars and their spectra. While for some this presentation and others like it during the workshop were a little on the difficult side, I found the presenter very engaging and the presentation very accessible.

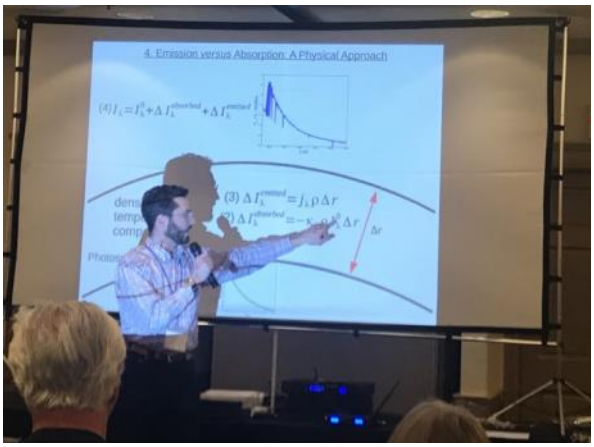


Figure 3 - Dr. Whelan presenting

Dr. Kafka, Director of the AAVSO then gave a presentation about the new AAVSO Spectroscopy Database that will soon be available for submission of spectra obtained by amateur astronomers, a database very similar to the photometry database I submit observations to on a regular basis. Astronomers regularly download data from AAVSO databases to assist them in their papers, and extension of the AAVSO's scope into spectroscopy is a very logical step. Her presentation included a lot of other ways amateurs could get involved in the science of Astronomy.

The evening was cloudy and rainy, so a planned observing session at the home of one of the local attendees to collect data for Day 2 was cancelled. However, it was an excellent opportunity to take advantage of the strong astronomy culture of the community and see a play named "Silent Sky", the story of Henrietta Leavitt, who was a "computer" at the Harvard Observatory in Massachusetts, responsible for realizing that Cepheid variables varied in proportion to their intrinsic brightness, which opened up a path to understand how far these stars are away from us, and by extension, the galaxies containing them. While this play was quite entertaining it was a trifle fanciful, with a romance that I suspect was not in character for Ms. Leavitt or her times!

Figure 4 - Poster for *Silent Sky*

Day 2 Sessions

The second day of the workshop continued with a nice breakfast where attendees mingled, followed by presentations on reducing data using ISIS. After the unfortunate weather the previous night, only sample data was available but the sessions were useful in working through the entire process of calibrating and analyzing spectral images.

François Cochard was then back demonstrating Demetra (https://www.shelyak.com/logiciel-demetra/?lang=en), which is a new tool recently released by Shelyak. Entertainingly he completed the same tasks we had taken four hours of workshop time to run through in about 30 seconds on Demetra (!) but it was a bit of an unfair comparison, as Demetra is limited in many ways. However Francois's demonstration was refreshingly simple and the user interface was extremely user friendly. That's not saying there are some complexities under the cover, and Francois was careful to note that setting up the data correctly is as important with Demetra as ISIS, but the workflow with Demetra is vastly more effective. The user interface leads the user through the process of acquisition or selection of calibration images as well as acquisition of spectra, and provides effective management of files without needing the user to do a lot of extra work keeping track of file names and folders etc. François also followed his Demetra demonstration with a deeper dive into Shelyak's spectroscopy lineup and how they are used. Another technical session followed lunch, this time from Dr. Katie Devine from the physics faculty at the University of Idaho. Dr. Devine covered Radial Velocity and Line Broadening in Spectra, which was extremely useful in understanding and interpreting spectra.

Finally Drew Chojnowsky, a PhD candidate at New Mexico State University, gave a very interesting presentation on the Spectroscopy of Be Stars, expanding on the presentation Dr. Whelan did on the first day.

The evening of the second day consisted of a cocktail party with heavy appetizers (e.g. dinner) for attendees and guests, which was a very welcome time to spend getting to know other attendees and their significant others.

Final Day Sessions

The final day of the workshop was heavy on French accents! First of all, Valerie Desnoux was kind enough to demonstrate her free Vspec software for spectral analysis. Once you have spectral data "in the can" VSpec is a powerful tool to compare the spectra to others and analyze what you're seeing in a simple easy-to-use manner.

Next, a trio of students from Dr. Devine's class provided a demonstration of work they'd done interning at an amateur observatory owned by Joe Daglan, one of the workshop organizers. The students spent a week at the observatory capturing spectra and analyzing them, producing results that were extremely impressive. Drew Chojnowsky commented at one point ,"Wow, good job, that's totally close to the published value for radial velocity of that object." This was a really compelling presentation for how well-equipped amateurs (or clubs!) can participate in the STEM education of our youth.

Christian Buil was then on tap for a talk on his new UVEX (UltraViolet Explorer) 3D printable spectroscope. Mr. Buil is a brilliant professional engineer in optics at Centre National d'Etudes Spatiales and his designs helped launch both amateur use of CCDs (Christian made the first CCD amateur image of an astronomical object in 1984 and designed multiple experimental cameras. His book *CCD Astronomy* was published in1990 by Willmann-Bell) and spectroscopy by launching Shelyak Instruments. His new product is open source, with optical components easily obtainable from suppliers and a 3D printed structure. The spectroscope

Figure 4 - An early UVEX 3D printed Prototype

will augment the existing lineup by providing a cheap (about $300) entry for amateurs into the discipline when the design becomes freely available later this year. Even though the device will be accessible for beginners, the ability to rotate the diffraction grating enables the observer to image in the UV, visible, and IR wavelengths with the same device. An Alpy 600 is a necessary add-on component to this camera is it will require use of the Alpy slit attachments as well as the Alpy off-axis guider to be useful.

Ms. Desnoux also provided a presentation on submitting Be spectra to the BeSS database, while Olivier Garde presented a method for Confirmation of Planetary Nebula Candidates with Spectroscopy, which was a fascinating look at planetaries that might be lurking in the images amateurs make of common objects, and how spectra can confirm that they are indeed the puffs of gas emitted by stars in their death throes.

Finally there was a panel discussion on Spectroscopy with our French visitors, and the conference wound up with some lessons learned in Spectroscopy from the organizers.

Activities for Guests

While it was no effort whatsoever to get my wife Marie to agree to take a trip to New Mexico in February, I was concerned that shopping would get a little boring after a few days. Luckily, the spouses of the conference organizers put together a program of interesting things to do that kept everyone busy for the entire conference.

Workshop Presentations and Materials

Given that the web site for the workshop will not be up and running for more than a few months I have mirrored the entire site including presentation slide decks and associated support materials on my web site at https://www.gordtulloch.com/www.smswweb.com.

Final Thoughts

We were not unhappy to head home as five days is quite long enough to be away. New Mexico is quite alien to us as there's little green to be found, and the whole place looks like a gravel pit. We enjoyed the milder temperatures – as we were leaving temps were heading towards the mid-20s, which would have made excursions uncomfortable, as acclimatized as we are to the deep freeze back home.

The Sacramento Mountains Spectroscopy Workshop 2019 was, however, quite a success, and I am pleased that I had the opportunity to attend. It was a very worthwhile trip!

While the approximately $3,000 cost to get set up to properly take spectra is still accumulating in my piggy bank, once I'm ready to move forward I'll do so with a very comprehensive understand of the software and techniques
required to submit very competent and useful observations to the AAVSO database. I know now my own journey will probably include an Alpy 600 low-resolution spectrograph and a UVEX when available. I'd strongly recommend future conferences for those at all interested in spectroscopy. See you there!

A Busy Spring for Astronomy Outreach

RASC Winnipeg Centre members have been talking to a lot of people about astronomy this year. In addition to helping out at monthly Astronomy Night events at Oak Hammock Marsh, and the Nature Conservancy of Canada event described in the May newsletter, Winnipeg Centre also had a information table at the Concert Hall in late March when the Winnipeg Symphony Orchestra presented Holst's *Planets.* The Friday night show was especially busy with interested concertgoers nearly wiping out our supply of literature and planispheres, necessitating a hasty order for a fresh batch.

May 11, Astronomy Day, saw two separate groups out and about. At Indigo Books on Kenaston Street, we had two solar scopes outside on the sidewalk, plus an information table inside the store.

Meanwhile, several miles to the east, *Science Rendezvous* was in progress at the University of Manitoba – with even *more* telescopes set up for safe solar viewing. *(Photos: Bryan Stach)*

A big thank you to everyone who came out to help with these events.

– Kaeren Anderson

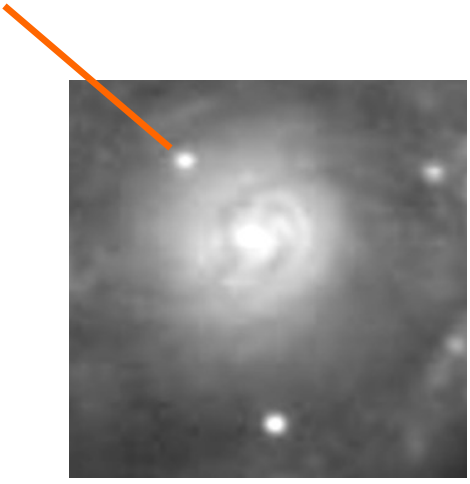
Paul Paradis: Moon shot May 12, 2019.

Photo taken with Samsung A8 (really!) through 6.0" f.8 DIY Newtonian, and Celestron NexYZ cell phone adapter. Post processing in PS Elements.

Sheila Wiwchar : Noctilucent clouds, photographed Friday June 7 from Kaleida, Manitoba.

Kevin Galka: M100 galaxy (May 6, 2019 at Sandilands Provincial Forest). "Funny I never shot this before as it's a beautiful galaxy. Figuring it was a good fit for the CR6 scope (Celestron 6" refractor) and CCD, I decided that was my first target of the night. I moved the scope to M100 and waited for dark to settle in. Taking my first shot of five minutes showed this was indeed a beautiful galaxy, teeming with other galaxies all around it! Very good choice indeed."

SN2019ehk



"Stacked M100 and wow, was it beautiful, but there were a couple of "smudges" that I wanted to see if they were distant galaxies or something wrong with the camera. Started up WorldWideTelescope (WWT), jumped over to M100 and no issues, they were indeed galaxies. MCG+03-32-011 (low surface brightness galaxy) is the one on left side of the about three-quarters of the way down (just below the bright star near the edge). Very cool stuff; well, at least I thought so and to be honest that's really what counts :) .

"However, I quickly noticed something else while looking at WWT. Something wasn't jiving with my M100 and the one on WWT. There was an extra star on mine! Now, I've been imaging galaxies long enough to know what an extra star on a galaxy is. SuperNova!!!! To the SN database I went. Aw, didn't discover it; that happened April 29th. Not my closest, but still not bad. The name is SN2019ehk and on my image it's the star in the 11 o'clock position just above the core of the galaxy."

Some late-breaking news in astronomy

Infrared observation aids in detection of active galactic nuclei

Supermassive black holes, ranging in size from hundreds of thousands to billions of solar masses, are currently thought to be at the centre of most large galaxies. A subset of these black holes, known as active galactic nuclei (AGN), feeds more vigorously from its surroundings. In particular, merging galaxies provide an abundance of "food" for AGNs.

Ryan Pfeifle of George Mason University, speaking at the annual meeting of the European Astronomical Society, presented eight double and triple AGNs discovered by his team. Data was obtained from the NASA's Wide-Field Infrared Survey Explorer (WISE) telescope, the Chandra X-ray Observatory, and the European Space Agency's XMM-Newton X-ray telescope. The infrared capability of the WISE telescope was particularly useful in finding these black holes, detecting light re-emitted by the dust that obscures the AGNs. Subsequent X-ray observations provided additional data on the objects.

The presence of multiple AGNs in a system, as a harbinger of an upcoming black hole merger, is also of interest to gravity wave researchers.

Link: http://www.astronomy.com/news/2019/06/astronomers-uncover-hidden-sets-of-black-holes-in-merging-galaxies

Hayabusa 2 to attempt second landing on asteroid

The Japan Aerospace Exploration Agency (JAXA) has given the go-ahead for its Haybusa 2 probe to land for a second time on asteroid Ryugu to collect more samples. The landing is scheduled for July 11, 2019.

In April, Hayabusa 2 released the Small Carry-On Impactor, an explosive device that created a new crater on the asteroid. The upcoming touch-and-go landing will be made near the impact site in the hope of recovering previously buried material dislodged by the Impactor. The subsurface materials may provide insight into the chemical composition of the early solar system.

Hayabusa 2 is to begin its return trip to Earth in late fall of 2019.

Link: https://astronomynow.com/2019/07/05/hayabusa-2-cleared-for-second-touchdown-on-asteroid/

50th Anniversary of Apollo 11 Moon Landing

It's hard to believe that fifty years ago this July, humans set foot on the moon for the first time. Whether July 20, 1969 was before your time or a powerful memory from your childhood, you can feel the excitement of a truly amazing time in history.

- A listing of some of the many commemorative events: https://www.nasa.gov/specials/apollo50th/events.html
- ***CapCom GO! The Apollo Story*** is playing at the Manitoba Planetarium until September 2, 2019. Check the Planetarium website (https://manitobamuseum.ca/main/visit/planetarium/) for show times.

New Members Observing Sessions

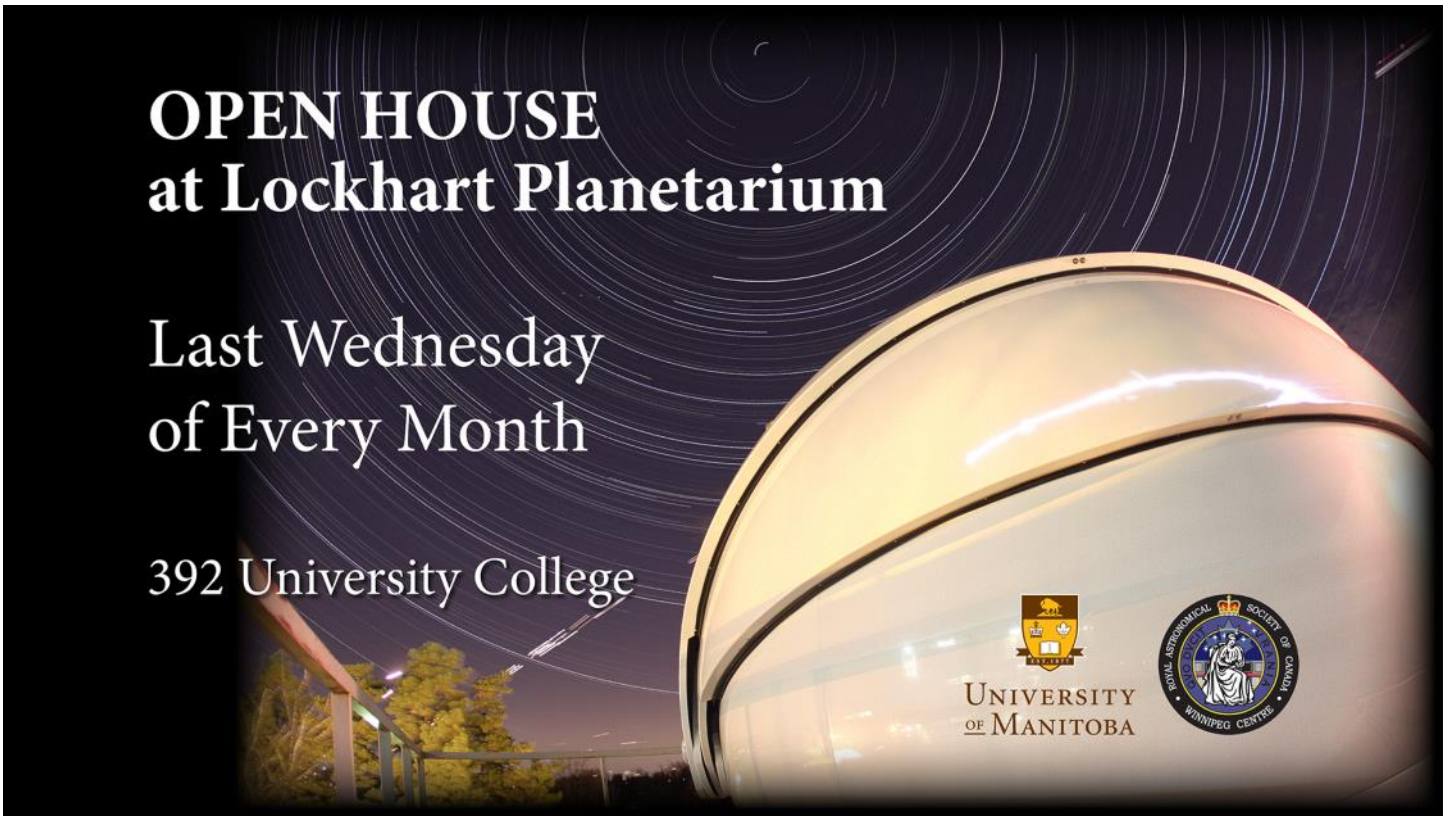
As part of the RASC Winnipeg Centre mentoring program, we have instituted *New Members Observing Night* and *Solar Day* to help new members learn the sky and use telescopes, binoculars and other equipment. Birds Hill Park, specifically the Chickadee Trail picnic site on North Drive, was chosen for the first two sessions in the spring. *Solar Day* was held at Glenlea in late June. Primary contact for the project is Darren Hennig.

Birds Hill Park has been a good general-use venue, particularly for members north of Winnipeg who would otherwise have a long drive to get down to Glenlea. One downside of the Chickadee site is light pollution from cars passing on North Drive, especially now that the weather has warmed up. A second area, Group Use Area #2 on Festival Drive near the east gates, is currently unavailable due to the Folk Festival, but we should be able to use it starting around July 19-20.

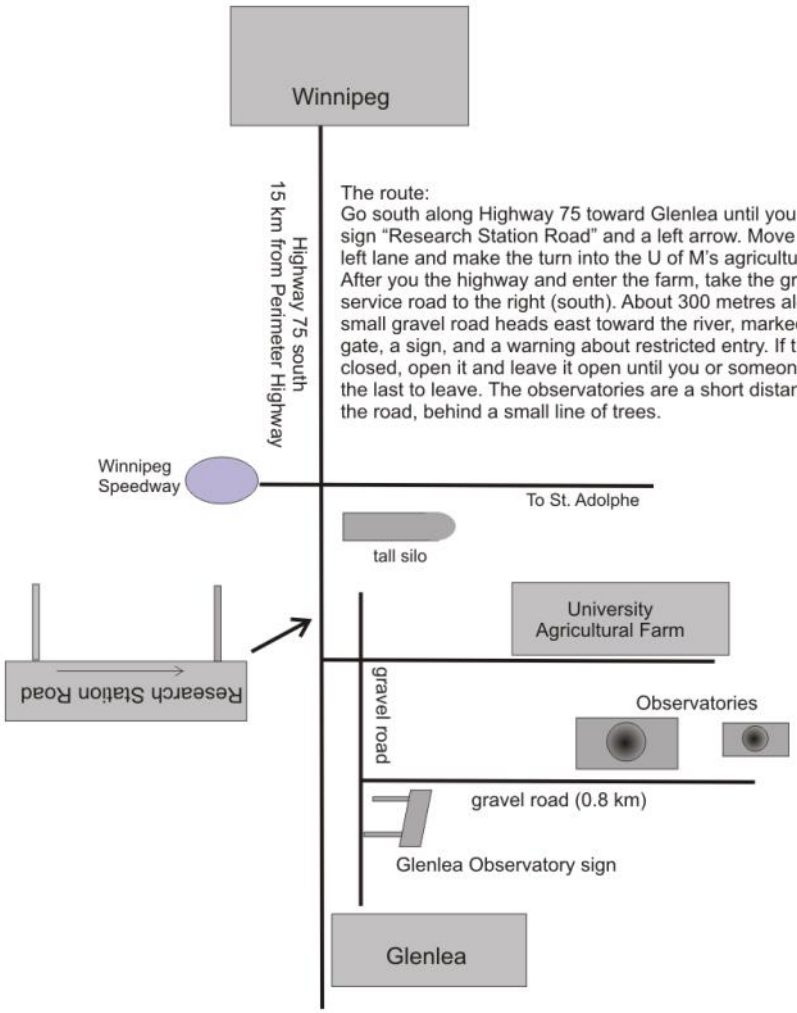
To legally stay in BHP for any length of time, such as during an observing session, you will need a park pass. The $40 annual pass can also be used for family camping trips and for the Spruce Woods Star Party, and can be purchased at Manitoba Liquor Mart outlets, Canadian Tire, and businesses that sell fishing and hunting licenses.

Weather permitting, there will be at least two more group observing sessions at BHP in July/August before the Star Party and two in September/October, as well as sessions at Glenlea. Upcoming events, including updates on weather conditions and cancellations, are announced on the RASC mailing list at lists.umanitoba.ca, as well as on a "new members" mailing list. Contact Darren Hennig or Bryan Stach to be added to the mailing list.

Thank you to the RASC Winnipeg council for supporting this initiative, to Darren, Bryan, Abdul Al-Manni, Dennis Lyons and Bill Krosney for making the sessions happen, and to everyone who came out to participate!



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.