POLARIS

Royal Astronomical Society of Canada
London Centre Newsletter
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My 2018 Summer Trip Across the Planetary Sky

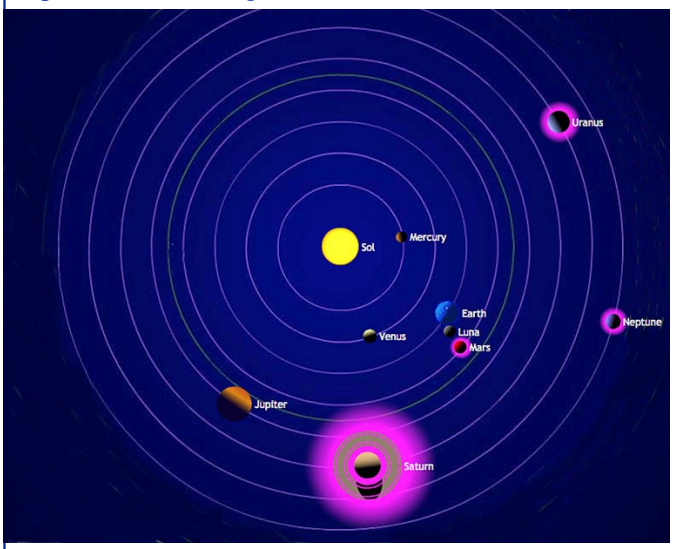
Written By: Norman McCall

As we move into September and enjoy the last few weeks of the summer of 2018, I reflect on the celestial display that streamed nightly across the sky between the curtains of twilight and dawn.

The unique planetary alignment of 2018 (as per the picture below) allowed earth bound sky watchers the unique opportunity to observe **all eight planets** as they traveled across the night sky all **in a single evening**! For me the goal for 2018 was to travel to all eight planets from the luxury of my backyard observatory.

The Visual Observer Trip – Venus, Jupiter, Saturn and Mars

The unique planetary alignments of 2018 allowed the casual visual observer – using only the unaided eye – to catch a partial show of this majestic event by observing Venus, Jupiter, Saturn and Mars as nightly they cast their magical spell across planet Earth. Throughout this past summer, each night they faithfully blazed their trail of wonder across the celestial firmament – like brilliant actors parading their grandeur on the darkened stage of the night sky! To me the visual experience of seeing the four major planets flow across the evening sky was **a delightful visual planetary trip** that I will not forget.



Planet positions 22-Aug-18 Not to scale.
See: theplanetstoday.com

For those of you who may have missed the event, your next opportunity to see them perform their dance over the course of a single night will be in June 2019, assuming you live in mid-northern latitudes.

Start of My Planetary Journey

For me the journey began in early July when I held my first 2018 VIP Star Party BBQ with family and friends to showcase my new Celestron EdgeHD C11 SCT and my Sky Thrall Observatory. Together we began the first leg of my 2018 summer field trip across the planetary sky starting at the centre of our solar system.

The Sun – Apollos the God of Light

The first stop on our journey was the Sun – our local star – aptly named after Apollos the God of Light. With the aid of a new hand made solar filter (thanks to the guidance of Mike Hanes) we focused our attention on the ball of fire which makes life on this earth possible.

Searching across its surface, our attention focused on observing several small sun spots. Due to low contrast they were just barely visible. To assure my guests we were not "seeing things" – as in imagining things – I used my Mobile Observatory astronomy application on my Android phone to access on-line images of the current solar activity providing credence to our observations.

Once the patches of interest were confirmed, together we stretched our observing skills to see subtle elements of solar activity – the umbra (centre) and penumbra (outer) regions – to the delight of everyone. From time to time large clouds drifted across the sky masking the Sun from view and forcing us to take an occasional break from our journey.

Mercury – The Messenger God

As the sun sets and dusk approaches, Venus, is the first visual planet to unveil its presence. As the Roman "goddess of love" it seduces the viewer to adore its beauty. However, do not yield to the temptation! Rather you must first pursue Mercury, named after the fast-moving Roman Messenger God. As the innermost planet, it races around the Sun every 88 Earth days. Lurking just above the horizon it is often veiled from sight in the rays of Apollos.

Although Mercury is small it did not escape our pursuit. As the sun dropped off stage west, it was with delight from my SkyThrall Observatory with my VIP family and friends that we captured an enchanted moment together viewing the sparkle of the innermost planet. Before long it

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stole away behind a neighbour's rooftop to continue its endless pursuit of the Sun.

Venus – Goddess of Love and Beauty

We next continued our journey by travelling over to the brilliant Venus – rightly named for the Goddess of Love and Beauty. Clothed in white and shining like a diamond it boldly demanded nothing lass than our full attention. It filled us with admiration and confirmed its stature and place not only in ancient mythology but within our solar system.

Using a low power eyepiece, the apparition was like that of a young maiden in the sky teasing us with a partial view of her crescent face, glistening like silver reflecting the power of the setting sun. On the darkening stage of the eyepiece we each basked in the view of its rays, like those of a giant diamond engagement ring. When compared to Mercury, Venus clearly stole the show until it slowly rolled off the stage and disappeared into the western sky.

Jupiter – God of the Sky & Thunder

Jupiter is named by the Romans after the God of the Sky and Thunder. As the largest planet in our solar system, Jupiter still demands respect from all who are privileged to view it with the aid of a telescope. Dressed in magnificent storm-swept bands and arrayed with it four brilliant moons – Io, Europa, Ganymede and Callisto danced in unison around their planetary master forever honouring the God of Thunder.

As host of my VIP Star Party, I was anxious to entertain my guests with a view of the largest planet before it could hide behind my neighbour's tree. Therefore, while it was still early evening (the sun in early July was setting around 21:30 hours) I drove the scope over to Jupiter (while it was not visible to the naked eye) in the off chance it could be seen through the C11 before twilight had begun.

To my delight and surprise, the C11 EdgeHD captured Jupiter with the blue sky as the backdrop. As one might expect, the contrast was very low, and the moons were nowhere to be seen. However, it was a pleasure to give my guests their first view of the "king of the planets" before the sun was even set.

Saturn – the God of Agriculture and Harvest

After the sun had set and the night sky darkened, the next entertainer to focus on was Saturn, named by the Romans after Saturnus (Latin), the God of Agriculture and Harvest. Being quite visible to the naked eye, this jewel of the sky has been known to humanity since prehistoric times. However, it was not until Galileo in 1610, with the aid of his primitive telescope were astronomers able to begin to unravel its ancient secret – the planet was arrayed with beautiful rings!

Viewed through my backyard telescope it shimmered in all its beauty to the delight of my guests. Although clouds sought to mask the view and rob us of the entertainment, each of my guests was able to steal a view and see for themselves the rings, its long-kept secret.

My friends then headed home, and I retired for the night energized to continue my journey over the following weeks.

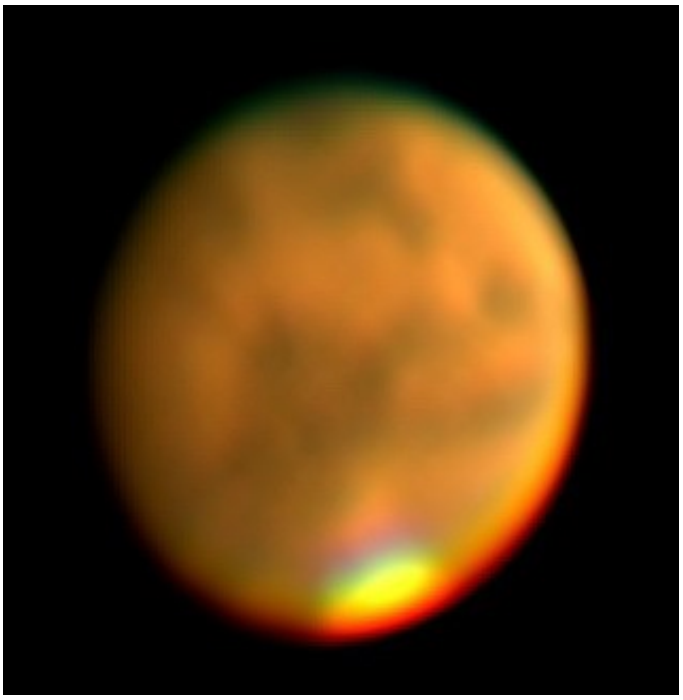
Mars – God of War

Mars, the Roman God of War lived up to its name in 2018 when it reached opposition (i.e. opposite the Sun in the Earth's sky) on July 27th and then achieved its closest approach in 17 years on July 31st. Growing to a magnitude of -2.8 it was twice as bright as Jupiter, but dimmer than Venus. Boasting a 24.3" disk (almost at its maximum of 25.1") the Red Planet did not disappoint earthlings on its neighbouring planet.

Warmed by the Sun, Mars managed to veil its surface in a fit of summer dust storms. For viewers in earth's Northern latitudes as the planet was low in the sky, atmospheric turbulence impaired the view more then usual. However, for the astute observer with perseverance and clear and stable viewing conditions, the southern polar cap was visible in spite of the summer storm clouds.

However, to capture significant detail of the God of War requires the use of high-speed astrophotography and lucky-imaging techniques. The image below was captured by Dale Armstrong on September 11, 2018 at Fingal using the 12-inc RC telescope at f/20 and a ZWO ASI224MC high-speed video camera operating at more than 200fps using ROI cropping. (During the session I was a student observing his techniques.)

Once digitally processed, the image reveals detail not available to the visual observer. As the dust had settled down from earlier in the summer, processing revealed Niliacus Lacus, Mare Erythraeum and the bright Argyre Basin just above the South Polar Cap. Dale's processed image will be a delightful memento to help me remember my 2018 planetary journey!



Mars, Credits: Dale Armstrong 2018

Neptune – God of the Sea

My next stop on my journey was a trip to Neptune, the eighth planet in our solar system it is named by astronomers after the Roman God of the Sea. While it is the fourth-largest planet by diameter, the third-most-massive planet and the densest giant planet, its blueish color gives it a characteristic mystique.

Rising onto the evening stage at 19:00 hours in the second week of September, it presented me with an opportunity to view this mysterious object. Using my Celestron setup I selected Neptune from the solar menu on my Celestron NexStar+ hand controller. Pressing GoTo, the scope began my journey over to my target.

Anxiously I searched the field of view looking for the blue giant. To my surprise, it was nowhere to be seen. To in-

crease my field of view, I switched to a Hyperion 36mm Aspheric 72° eyepiece. Still no luck.

Diligently I scanned the whole field of view looking for a majestic blue planet. As my eyes became dark adapted, I gradually became suspicious of a blue tinged "star' near the centre of the FOV. After centering the object, I stepped up the magnification with my 2.5x Barlow. Finally, the God of the Sea stepped onto the centre stage in my eyepiece. (I had been mistakenly been looking for a large planet.) I had reached the next destination of my planetary journey: Planet Neptune.

Uranus – God of the Sky

Uranus is named after the Greek God of the Sky and is the seventh planet from the Sun. Although discovered by William Herschel in 1781, it was ultimately named Uranus by the German astronomer Johann Elert Bode in order maintain conformity with the other planetary names in the theme of classical mythology. Unfortunately, the planet is an almost featureless planet in visible light, without the cloud bands or storms associated with the other giant planets. Rising in East in the late evening it was my last and final and stop of my 2018 summer trip across the planetary sky.

The opportunity came on Monday September 17 at 23:50 hours when I made one last loving security check of my backyard observatory before heading off to bed. To my surprise, the sky was clear and the stars inviting. Here was a chance to finish my journey. With adrenalin rising, I opened up SkyThrall to begin a late-night observing session.

Within 10 or 15 minutes I was travelling off to Neptune in my C11 telescope riding on my Celestron CGX-L mount. Using my GoTo feature, the scope quickly arrived at my destination. Having learned my lesson in searching for Neptune – expecting to see a large planet when due to distance its appearance was small – I was drawn into the first bright (white) object in the eyepiece. Upon closer inspection I met with disappointment as it was just another star. Correcting course I travelled around the immediate area which resulted in more dead ends. (Who was it that told me this hobby was easy?)

Eventually I realized there was an issue with scope alignment requiring me to restart the session after completing a full multi-star alignment of my mount. This time the GoTo command immediately brought me to Uranus, the final stop on my 10-week journey. Using various eyepieces and a 2.5X Barlow I able to fully view this mysterious planet using magnifications from 136 through 245 and beyond. Shortly after 01:15 hours (yes AM) I ended my trip across the planetary sky. I could now park my scope, closed down my SkyThrall Observatory and head off to bed satisfied that I had achieved my objective of visiting each of the major planet in the summer of 2018!

I'm now looking forward to June of 2019 when I may be fortunate enough to repeat the journey in a single evening. Let me know if you are interested in joining me on my travels!

Club Activities

Please check the on-line Forums to stay up to date with scheduled outreach activities, member visits to Fingal and other club events. Members are strongly encouraged to volunteer attend and support public outreach events.

Speaker's List for Monthly Club Meeting

October 19th.	**James Edgar Pat** , RASC National President
November 16th.	**Jeffery VanKerkhove**, Physics & Astronomy, Western University. Talk TBA
December 21st.	**Ryan Fraser** , Club member. Talk on Converting from CCD to CMOS Astro
January 18th.	**Jim Goetz**, KW-RASC member. Talk on The RASC's SRO Sierra remote observatory
February 15th.	**Bjarni Tryggvason**. Talk on ISS projects
March 15th.	**David H Levy** (To be confirmed)
April 19th.	Members night
May 17th.	**Nicole Mortillaro** , Senior Reporter Science at CBC
June 21st.	**Brian McCullough**. Ottawa Centre Talk on Astro Sketching a short talk Friday Night followed by a work shop on the Saturday for those who want to learn to sketch.

Sky Events for Late August and Early September

Events

Sep. 23: Equinox
Sep. 25: Full Moon
Oct. 2: Last quarter
Oct. 4: Moon 1.2° S or Beehive (M44)
Oct. 9: New moon
Oct. 13: Zodiacal light visible in N lat. In E before morning twilight for next 2 weeks
Oct. 16: First quarter

Planets

Mercury: Reemerges in the evening sky early in the month.
Venus: Reaches stationary point on Oct. 5th and retrogrades towards the Sun.
Mars: Now in full retreat fading from mag. –1.3 to –0.6 over the month.
Jupiter: Low in southwestern sky in evening twilight, Jupiter's observing window is now closing rapidly.
Saturn: Low in the southwestern sky in early evening hours.
Uranus: Reaches opposition on the 24th.
Neptune: Visible most of the night throughout the month.

R.A.S.C. London Centre Library — Books of the Month, September 2018

By Robert Duff

As always, these "Books of the Month" are available for loan to members, to be returned at the following monthly meeting. The books for September 2018 are as follows:

- *The Backyard Astronomer's Guide, by Terence Dickinson & Alan Dyer. Revised Edition. 2002.*
- *Clyde Tombaugh: Discoverer of Planet Pluto, by David H. Levy. – Cambridge, Mass.: Sky Publishing Corp., c2006.*
- *Explore the Universe Guide: an Introduction to the RASC ETU Certificate Program, by Brenda Shaw. – Toronto: The Royal Astronomical Society of Canada, [2016]*

For a complete listing of our RASC London Centre Library collection please click on the Library menu at the top of the RASC London Centre main Web page: http://rasclondon.ca/

If there is a particular book or video you wish to borrow, contact Bob at 519-439-7504 or by e-mail at **rduff@sympatico.ca**

Cronyn Observatory Public Nights, & Special Events, July — August 2018

By Robert Duff

Cronyn Observatory Public Night, Saturday, July 14th, 2018

Partly cloudy, gradually clearing skies greeted 82 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, July 14th, 2018, 8:30 p.m. Graduate student Taylor Armitage made 2 presentations of her digital slide presentation *"Why is Pluto No Longer a Planet?"* and fielded questions. There were about 30 visitors for Taylor's first slide presentation and 17 for the second slide presentation. RASC London Centre members Bob Duff and Peter Jedicke counted a total of 82 visitor for the evening. Graduate student Ameek Sidhu did the *"Transit Demonstration"* and the *"Spectroscopy Demonstration"* downstairs in the *"Black Room."*

Graduate student Collin Knight was telescope operator in the dome and directed the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X) towards Venus as the sky cleared in the west. He directed the 25.4cm refractor towards Jupiter in the hazy, cloudy, southern sky later in the evening.

RASC London Centre was represented by Everett Clark, Heather MacIsaac, Bob Duff, Peter Jedicke, Henry Leparskas, Mark Tovey and Dale Armstrong. On the observation deck outside the dome Everett showed visitors Venus and Jupiter through the London Centre's home-built 30.5cm Dobsonian (17mm Nagler eyepiece, 88X) and Peter showed them the star Altair. Henry showed visitors the double star Mizar and Alcor (88X) and then swapped in the 12.5mm Ortho eyepiece (120X) to show them the "Double-Double" star system Epsilon Lyrae through the 30.5cm Dobsonian. Dale operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain, showing visitors Jupiter, using the 12.5mm Ortho eyepiece (160X) and later swapping in the 18mm Radian eyepiece (111 X) for a better view.

Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and showed visitors Venus and Jupiter, using the 17mm Plossl eyepiece (73.5X). Heather also showed interested visitors the optical tube for the Dobsonian telescope she was building, made of a concrete form tube with a 2-inch focuser installed. She later tried fitting the primary mirror cell in the concrete form tube, with some assistance from Everett and Dale.

Downstairs in the *"Black Room"* graduate student Ameek Sidhu did the *"Transit Demonstration"* activity, with the *"Transit Demo"* model—showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

Henry Leparskas and later Mark Tovey showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. Mark also showed them the newly created *"W. G. Colgrove Workshop Period Room,"* which was open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

The visitors were gone by around 11:00 p.m. and the observatory was closed down by 11:30 p.m. after an enjoyable evening of astronomy.

Summer Academic Writing Clinic, Evening Observing at the Cronyn Observatory, July 18th, 2018

Mostly clear skies greeted 22 visitors, including 18 students, 3 staff members and one volunteer, from the Summer Academic Writing Clinic for incoming first-year students, for evening observing at Western University's Cronyn Observatory, Wednesday, July 18th, 2018, 8:30—10:30 p.m. Before the slide presentation, RASC London Centre member Henry Leparskas met the group outside the Cronyn Observatory at the sundial, and presented a brief history of the sundial and the observatory.

Graduate student Viraja Khatu presented the digital slide presentation on *"Astronomy and Space Research at Western"* and fielded questions. They were then divided into 2 groups with graduate student Shannon Hicks taking one group of 11 visitors downstairs to show them the *"Transit Demonstration"* in the *"Black Room."* Viraja brought the other group of 11 visitors upstairs into the dome. The 2 groups later changed places.

RASC London Centre was represented by Henry Leparskas, Bob Duff, Heather MacIsaac, Norm McCall and Peter Jedicke. Henry made ready the big 25.4cm refractor in the dome (17mm Nagler eyepiece, 258X) and set up the London Centre's home-built 30.5cm Dobsonian (Meade 28mm Super Wide Angle eyepiece, 54X) and the observatory's Meade 8-

inch (20.3cm) Schmidt-Cassegrain (12.5mm Ortho eyepiece, 160X) on the observation deck. Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and installed her newly acquired Vixen 22mm Lanthanum LVW eyepiece (57X).

Viraja showed the students Venus and Jupiter through the 25.4cm refractor (17mm Nagler eyepiece, 258X) and, with Bob's assistance, directed the telescope to show them Saturn. Viraja helped Henry locate globular cluster M13 overhead with the 25.4cm refractor, with Bob swapping in the Meade 28mm Super Wide Angle eyepiece (157X) for a better view.

Bob swapped in the 18mm Radian eyepiece (83X) in place of the Meade 28mm SWA eyepiece (54X) in the 30.5cm Dobsonian and Henry, Norm and Peter showed the students Venus, Jupiter and Saturn. Peter also showed them globular clusters M80 and M13 through the 30.5cm Dobsonian (18mm Radian eyepiece, 83X). Bob replaced the 12.5mm Ortho (160X) with the 20mm Plossl eyepiece (100X) in the 20.3cm Schmidt-Cassegrain to show the students the 6-day-past-new thick crescent Moon. Bob later swapped the 12.5mm Ortho (160X) back in to show them a good view of Saturn through the 20.3cm Schmidt-Cassegrain. Henry showed them the yellow and blue double star Albireo and, with some assistance from Bob, the "Double-Double" star system Epsilon Lyrae through the 20.3cm Schmidt-Cassegrain (160X). Henry also showed the students M13 though the 20.3cm Schmidt-Cassegrain, using the 26mm Plossl (77X) and 20mm Plossl (100X) eyepieces. Heather showed the students the Moon, Venus, Jupiter, the double star Mizar and Alcor and M13 through her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain, using the Vixen 22mm Lanthanum LVW eyepiece (57X).

Downstairs in the *"Black Room"* graduate student Shannon Hicks did the *"Transit Demonstration"* activity, with the *"Transit Demo"* model—showing how the transit detection method worked for finding extra-solar planets. Shannon also showed them the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display. Henry showed the second group of students the *"1940s Period Room,"* which was designed by RASC London Centre member Mark Tovey.

The students were gone by around 10:30 p.m. after a very enjoyable evening of astronomy under clear skies and the observatory was closed down around 11:00 pm.

Cronyn Observatory Public Night, Saturday, July 21st, 2018

Partly cloudy skies greeted some 62 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, July 21st, 2018, 8:30 p.m. Graduate student Meet Panchal presented his digital slide presentation *"A Kilonova Detection: Gravitational Waves from Colliding Neutron Stars"* and fielded questions. RASC London Centre member Bob Duff counted 43 visitors around 8:44 p.m. in the lecture room during the presentation, with more people arriving for an estimated total of 62 visitors for the evening.

Graduate student Collin Knight was telescope operator in the dome and directed the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X) to show visitors the 2-day-past-first quarter Moon, before it clouded out, and then the communications tower in south London.

RASC London Centre was represented by Everett Clark, Henry Leparskas, Bob Duff, Heather MacIsaac, Dale Armstrong, Mark Tovey, Peter Jedicke and Paul Kerans. London Centre member Richard Gibbens was also there and listened to the slide lecture. Paul and Bob set up the London Centre's home-built 30.5cm Dobsonian (17mm Nagler eyepiece, 88X) on the observation deck to show people the Moon. Dale operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (26mm Plossl eyepiece, 77X) and showed visitors the Moon, the communications tower and one of the lights visible in the windows of the Engineering building. Heather showed visitors the Moon through her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (Vixen 22mm Lanthanum LVW eyepiece, 57X). Heather and Paul invited visitors to "walk on Mars and the Moon" by stepping on the 2 round wood and clear plastic display cases containing tiny *"Mars Rock"* and *"Moon Rock"* meteorite samples.

Downstairs in the *"Black Room"* Henry Leparskas did the *"Transit Demonstration"* activity, with the *"Transit Demo"* model—showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

Mark Tovey showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The "*W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

The visitors were gone by around 10:45 p.m. after an enjoyable evening learning about astronomy and observing the Moon between clouds through the telescopes.

Indigenous Services Mini-University, Special Event at the Cronyn Observatory, July 23rd, 2018

Partly cloudy skies greeted 29 visitors, including 24 students (11-13 years of age) and 5 leaders, from the Indigenous Services Mini-University, for a Special Event at Western University's Cronyn Observatory, Monday, July 23rd, 2018, 9:00 p.m. Professor Robert Cockcroft presented the digital slide presentation on *"Air and Atmospheres"* and fielded questions. After the slide presentation graduate student Shannon Hicks directed everybody upstairs into the dome.

RASC London Centre was represented by Everett Clark, Henry Leparskas, Bob Duff and Heather MacIsaac. Henry and Everett operated the big 25.4cm refractor in the dome, installing the Meade 28mm Super Wide Angle eyepiece (157X) to show the students the 4-days-past-first quarter gibbous Moon and then Jupiter. Henry swapped in the 18mm Radian eyepiece (244X) to show the visitors a good view of Jupiter and Shannon supervised observing through the 25.4cm refractor. On the observation deck outside the dome, Everett and Bob set up the London Centre's home-built 30.5cm Dobsonian (17mm Nagler eyepiece, 88X) and Bob showed the students the Moon. Heather showed the students the Moon through her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain, using the Vixen 22mm Lanthanum LVW eyepiece (57X). Everybody went downstairs for demonstrations in the *"Black Room"* when the sky clouded over.

Downstairs in the *"Black Room"* Shannon Hicks did the *"Transit Demonstration"* activity, with the *"Transit Demo"* model—showing how the transit detection method worked for finding extra-solar planets; while Robert Cockcroft did the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

There was some lightning in the sky later in the evening and the visitors departed around 10:15 p.m. after expressing their appreciation for an enjoyable and interesting evening learning about astronomy and observing the Moon through telescopes.

Summer Academic Writing Clinic, Evening Observing at the Cronyn Observatory, July 25th, 2018

Clear skies greeted 31 visitors, including students and several staff members, from the Summer Academic Writing Clinic for incoming first-year students, for evening observing at Western University's Cronyn Observatory, Wednesday, July 25th, 2018, 8:30—10:30 p.m. Before the slide presentation, RASC London Centre member Henry Leparskas brought the students over to the sundial outside around 8:15 p.m. and made a brief presentation on the history of the sundial and the observatory. Graduate student Shannon Hicks presented the digital slide presentation on *"Astronomy and Space Research at Western"* and fielded questions. The students were then divided into 2 groups with Shannon taking one group downstairs to show them the *"Transit Demonstration"* and the *"Spectroscopy Demonstration"* in the *"Black Room."* The other group went upstairs into the dome. The 2 groups later changed places.

RASC London Centre was represented by Henry Leparskas, Heather MacIsaac, Bob Duff and Peter Jedicke. Henry operated the big 25.4cm refractor in the dome, showing visitors Venus, Jupiter, Saturn and the yellow and blue double star Albireo, using the 17mm Nagler eyepiece (258X). Henry swapped in the Meade 28mm Super Wide Angle eyepiece (157X) for a better view of Albireo and the Ring Nebula (M57) in the 25.4cm refractor.

Henry had set up the London Centre's home-built 30.5cm Dobsonian on the observation deck and Bob operated it for the evening, showing the students the 6-day-past-first quarter gibbous Moon, Jupiter and Saturn, using the 18mm Radian eyepiece (83X). Bob later swapped in the 12.5mm Ortho eyepiece (120X) for a better view of Saturn through the 30.5cm Dobsonian. Heather showed the students the Moon, Jupiter and Saturn through her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain, using the Vixen 22mm Lanthanum LVW eyepiece (57X). She also swapped in the observatory's 12.5mm Ortho eyepiece (100X) for a higher magnification view of Jupiter. The 2 round wood and clear plastic display cases containing tiny *"Mars Rock"* and *"Moon Rock"* meteorite samples were also on display in the dome.

Downstairs in the *"Black Room"* Shannon gave 2 demonstrations—one to each group of students—of the *"Transit Demonstration"* activity, with the *"Transit Demo"* model—showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

The students were gone by around 10:05 p.m. after a very enjoyable evening of astronomy under clear skies and the observatory was closed down around 10:30 pm.

Cronyn Observatory Public Night, Saturday, July 28th, 2018

Partly cloudy skies greeted 246 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, July 28th, 2018, 8:30 p.m. Professor Sarah Gallagher made 2 presentations of her digital slide presentation *"How to Ruin a Beautiful Machine: Radiation Damage in the Early Days of the Chandra X-ray Observatory*," first at 8:30 p.m. and the second time at 9:25 p.m. Graduate student Collin Knight was in charge of "crowd control" and counted 246 visitors for the evening.

Graduate student Hadi Papei was telescope operator for the big 25.4cm refractor in the dome and showed visitors Venus, using the 17mm Nagler eyepiece (258X), the one-day-past-full waning gibbous Moon, using the 32mm Erfle eyepiece (137X), and Mars, using the 17mm Nagler eyepiece (258X). RASC London Centre was represented by Everett Clark, Henry Leparskas, Paul Kerans, Heather MacIsaac, Dale Armstrong, Peter Jedicke, Steve Imrie, Frank Sowa, Norm McCall, Mike Roffey, Mark Tovey and Edith Tovey, and youth member Jacob Renders.

There were 5 amateur telescopes set up for the evening, including 4 telescopes on the observation deck and one on the sidewalk on the south side of the observatory. On the observation deck, Dale Armstrong operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain showing visitors Jupiter, Saturn and Mars, using the Sky-Watcher 15mm UltraWide eyepiece together with the CEMAX 2X Barlow lens (266X). (The CEMAX 2X Barlow lens was from the observatory's 90mm Coronado H-Alpha Solar Telescope.) Dale later showed them the Moon through the 20.3cm Schmidt-Cassegrain, using the 26mm Plossl eyepiece (77X). Steve Imrie and Paul Kerans operated the London Centre's home-built 30.5cm Dobsonian (Meade 28mm Super Wide Angle eyepiece, 54X) showing visitors Jupiter, Saturn and Mars. Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain, showing visitors Jupiter and Saturn (13mm Vixen Lanthanum LVW eyepiece, 96X) and the Moon (22mm Vixen Lanthanum LVW eyepiece, 57X). Frank Sowa set up his Meade 10-inch (25.4cm) Schmidt-Cassegrain on a Celestron AVX mount and, together with Norm McCall, showed visitors Jupiter, using a 40mm eyepiece (62.5X).

Paul Kerans installed the Rigel QuikFinder on the 30.5cm Dobsonian and checked the telescope's collimation, which was good. Paul also helped Jacob Renders and Mike Roffey set up the London Centre's 25.4cm Dobsonian (18mm Radian eyepiece, 62X) on the sidewalk on the south side of the observatory—to handle the overflow crowd. Jacob and Mike showed visitors Jupiter, Saturn, the Moon and the yellow and blue double star Albireo.

There was an International Space Station (ISS) pass predicted (9:50—9:55 p.m.) travelling northwest to northeast, reaching a maximum altitude of 18 degrees above the northern horizon—too low to be visible from the observation deck. (See: *ISS – Visible Passes* for London, Ontario, on *Heavens Above*: http://www.heavens-above.com/)

Downstairs in the *"Black Room"* Henry Leparskas did the the *"Transit Demonstration,"* with the *"Transit Demo"* model, showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury. Henry also helped Mark Tovey with tours of the historic *"1940s Period Room."*

Mark Tovey and Edith Tovey showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The *"W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

Peter Jedicke gave 3 telescope talks in the dome throughout the evening. The sky clouded over by around 10:10 p.m. just as Mars was rising above the trees to the southeast. The observatory was closed down around 10:30 p.m. after an enjoyable evening of astronomy.

Mars Opposition at the Cronyn Observatory, Tuesday July 31st, 2018

Cloudy skies greeted 143 visitors to Western University's Cronyn Observatory Special Public Night for the Mars Opposition, Tuesday, July 31st, 2018, 8:30 p.m.—1:00 a.m. (August 1st). Although Mars reached opposition on Friday, July 27th, its closest approach to Earth was on Tuesday, July 31st, 2018. There were 2 digital slide presentations including (1) Professor Jan Cami, *"Mars Tonight: Close Encounters of the Bright Kind"* (8:45 p.m.); and (2) Professor Livio Tornabene, *"Mars: Up, Close and Personal – High Resolution Views from Orbit"* (9:30 p.m.). Professor Livio Tornabene showed mostly images from the High Resolution Imaging Science Experiment (HiRISE) camera on board the Mars Reconnaissance Orbiter (MRO), but also images from the European Space Agency's and Roscosmos' ExoMars Trace Gas Orbiter's Colour and Surface Stereo Imaging System (CaSSIS).

There was a second digital slide projector and screen set up with a 10x10 foot canopy tent on the south side of the observatory—to handle the overflow crowd. RASC London member Dave Clark operated the live feed slide presentation in the canopy tent. Department of Physics and Astronomy staff member Phin Perquin helped set up the AV equipment for the live streaming to the tent.

There were 74 people in the lecture room (9:22 p.m.) and 14 in the canopy tent for Professor Jan Cami's slide presentation. There were 58 people in the lecture room (9:45 p.m.) for Professor Livio Tornabene slide presentation. Graduate student Viraja Khatu did "crowd control" and counted 143 visitors for the evening.

Downstairs in the *"Black Room"* Professor Robert Cockcroft did the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury. Graduate student Shannon Hicks did the *"Crater Demonstration"* and invited children to *"Draw Your Own Martian."*

Graduate student Ben George was telescope operator in the dome and he directed the big 25.4cm refractor to show visitors the communications tower in south London, using the Meade 28mm Super Wide Angle eyepiece (157X), and later swapped in the 32mm Erfle eyepiece (137X) to show them the star Vega between clouds.

RASC London Centre was represented by Everett Clark, Henry Leparskas, Steve Imrie, Dave Clark, Bob Duff, Paul Kerans, Dale Armstrong, Mike Roffey, Frank Sowa and Edith Tovey. Heather MacIsaac arrived around 11:00 p.m. Dale and Mike set up the London Centre's home-built 30.5cm Dobsonian (18mm Radian eyepiece, 83X) on the observation deck and Steve directed it overhead to show visitors Vega. Bob showed people Altair through the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (26mm Plossl eyepiece, 77X). Frank Sowa set up his Celestron NexStar 6SE 15cm Schmidt-Cassegrain and showed visitors Jupiter and Saturn (17mm Hyperion Modular eyepiece, 88X) and Vega and the "Double-Double" star system Epsilon Lyrae (40mm eyepiece, 37.5X)—all glimpsed between clouds. Frank directed his 15cm Schmidt-Cassegrain (26mm Plossl, 58X) towards the communications tower when the sky was obscured by clouds.

Dale Armstrong gave a telescope talk in the dome and Paul Kerans showed visitors his iron and chondrite meteorites and *"Visitors from Space"* collection, inviting people to view a tiny fragment of a Mars meteorite through his microscope. The observatory's 2 round wood and clear plastic display cases containing tiny *"Mars Rock"* and *"Moon Rock"* meteorite samples were also on display.

Henry Leparskas and Edith Tovey showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The *"W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

Cloudy skies prevented any observation of Mars. However, the visitors enjoyed exploring Mars with the slide presentations, the spectroscopy and impact crater demonstrations, tours of the history rooms, examining meteorites and briefly viewing through telescopes before the observatory closed down at 11:30 p.m.

Cronyn Observatory Public Night, Saturday, August 4th, 2018

Clear skies greeted 189 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, August 4th, 2018, 8:30 p.m. Graduate student Ameek Sidhu made 2 presentations of her digital slide presentation *"Spitzer Space Telescope – Observing the Universe in Infrared"* and fielded questions. Professor Margaret Campbell-Brown did the *"Transit Demonstration"* and the *"Spectroscopy Demonstration"* downstairs in the *"Black Room."*

RASC London Centre was represented by Dave Clark, Paul Kerans, Bob Duff, Everett Clark, Heather MacIsaac, Dale Armstrong, Henry Leparskas and new member Lynn Jones. Bob counted 88 visitors before Lynn Jones took over at the door and counted another 101 arrivals for a total of 189 visitors.

Professor Peter Brown was telescope operator in the dome and showed visitors Venus, Jupiter and Mars through the big 25.4cm refractor (17mm Nagler eyepiece, 258X). On the observation deck, Dale Armstrong operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain, using the 15mm Sky-Watcher UltraWide eyepiece together with the CEMAX 2X Barlow lens (from the 90mm Coronado H-alpha solar telescope) for a magnification of 266X, to show visitors Jupiter, Saturn and Mars. Bob Duff operated the London Centre's home-built 30.5cm Dobsonian and showed visitors Jupiter and Saturn (18mm Radian eyepiece, 83X), swapping in the 12.5mm Ortho eyepiece (120X) for a closer view of Saturn. Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain, showing visi-

tors Jupiter (22mm Vixen Lanthanum LVW eyepiece, 57X) and then Saturn and Mars (13mm Vixen Lanthanum LVW eyepiece, 96X). Paul Kerans set up his Celestron 9.25-inch (23.5cm) Schmidt-Cassegrain on a Vixen equatorial mount and showed visitors Jupiter, Saturn, Mars and the Ring Nebula (M57) using his 21mm Ethos eyepiece (112X).

Dave Clark set up his Celestron Super C8 (20.3cm) Schmidt-Cassegrain on the sidewalk the south side of the observatory and showed people Venus, Jupiter and Saturn, using his 32mm Plossl eyepiece (63.5X), swapping in his 10mm Radian eyepiece (203X) for a better view of Saturn—with the Cassini Division very noticeable in both eyepieces. Mars was also observed through the Celestron Super C8 Schmidt-Cassegrain (10mm Radian eyepiece, 203X).

Dave moved his Celestron Super C8 Schmidt-Cassegrain onto the pavement as Saturn went behind the Engineering building and tried using the 10mm Radian with a 2X Barlow lens (406X) on Saturn and Mars, but the results were poor, showing less detail with than without the Barlow. Dave used his laptop computer to demonstrate planetary alignments and distances, other Mars oppositions and the reason for Venus' phase.

Seeing conditions were exceptionally good in all telescopes, at moderately high magnifications, the cloud belts on Jupiter and the 4 Galilean moons and were clearly visible as was the Cassini Division in Saturn's rings. Mars showed a bright orange disk with the south polar cap visible and some indistinct dark features noticeable.

Downstairs in the *"Black Room"* Professor Margaret Campbell-Brown did the the *"Transit Demonstration,"* with the *"Transit Demo"* model, showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

Henry Leparskas showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The *"W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

The visitors were mostly gone and the observatory was closed down around 11:00 p.m. after an excellent evening of planetary observing with special attention directed towards Mars.

Summer Academic Writing Clinic, Evening Observing at the Cronyn Observatory, August 9th, 2018

Partly cloudy skies greeted 34 visitors, including students and several staff members, from the Summer Academic Writing Clinic for incoming first-year students, for evening observing at Western University's Cronyn Observatory, Thursday, August 9th, 2018, 8:30—10:30 p.m. Professor Jan Cami presented the digital slide presentation on *"Astronomy and Space Research at Western"* and fielded questions. The students were then divided into 2 groups with one group going downstairs where graduate student Shannon Hicks showed them the *"Transit Demonstration"* and the *"Spectroscopy Demonstration"* in the *"Black Room."* The other group went upstairs into the dome. The 2 groups later changed places.

RASC London Centre was represented by Heather MacIsaac and Bob Duff. When the first group arrived upstairs in the dome, Bob gave a talk on the history and technical aspects of the big 25.4cm refractor. He pointing out the Schmidt camera and Cassegrain reflector telescope piggy-backed on the 25.4cm refractor and explaining the difference between a refractor and reflector telescope. He also showed them the 2 clocks on the east wall of the dome and explained the difference between Standard and Sidereal Time.

Downstairs in the *"Black Room"* Shannon gave 2 demonstrations—one to each group of students—of the *"Transit Demonstration"* activity, with the *"Transit Demo"* model—showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

When both groups were together in the dome, Professor Jan Cami showed them Jupiter, Saturn and Mars through the 25.4cm refractor, using the 17mm Nagler eyepiece (258X). On the observation deck, Bob showed them Saturn and Mars through the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (20mm Plossl eyepiece, 100X). Heather showed them Saturn and Mars through her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain, using her 13mm Plossl (96X) eyepiece.

The students were gone by around 10:20—10:25 p.m., after a very enjoyable evening of astronomy under clear skies, and the observatory was closed down around 10:30 pm.

Cronyn Observatory Public Night, Saturday, August 11th, 2018

Partly cloudy skies greeted some 192 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, August 11th, 2018, 8:30 p.m. Professor Martin Houde made 2 presentations of his digital slide presentation *"Submillimetre Astronomy,"* first at 8:30 p.m. and the second time at 9:45 p.m. Undergraduate summer research student from Simon Fraser University, Dave Miller, was "crowd manager" and together with RASC London Centre member Bob Duff, counted visitors. Bob counted 65 visitors in the lecture room at 8:43 p.m., during the first slide presentation, and 36 visitors at 9:54 p.m., during the second slide presentation. Many visitors simply went upstairs into the dome or downstairs for demonstrations in the *"Black Room"* and tours of the historic *"Period Rooms."* In all, there were 192 visitors counted for the evening.

Graduate student Collin Knight was telescope operator in the dome and showed visitors Jupiter and Mars through the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X). When the sky clouded out he directed the 25.4cm refractor to show people the lights on the communications tower in south London. RASC London Centre was represented by Henry Leparskas, Steve Imrie, Everett Clark, Bob Duff, Paul Kerans, Peter Jedicke, Heather MacIsaac and Mark Tovey.

On the observation deck, Steve Imrie operated the London Centre's home-built 30.5cm Dobsonian (17mm Nagler eyepiece, 88X) and began by showing a few people the wind turbine on the Engineering building, later directing the telescope towards Mars. Paul Kerans set up his Celestron 9.25-inch (23.5cm) Schmidt-Cassegrain on a Vixen equatorial mount and showed visitors Jupiter and Mars (21mm Ethos eyepiece, 112X). Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain, showing visitors Jupiter (22mm Vixen Lanthanum

LVW eyepiece, 57X) and then Mars (13mm Vixen Lanthanum LVW eyepiece, 96X).

Downstairs in the *"Black Room"* Henry Leparskas did the the *"Transit Demonstration,"* with the *"Transit Demo"* model, showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

Henry, later joined by Mark Tovey, also showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The *"W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

Peter Jedicke gave 2 telescope talks in the dome as people lined up to view through the big 25.4cm refractor. The sky completely clouded over later in the evening and the dome was closed by around 10:45 p.m. with Henry and Peter talking to a few visitors downstairs in the *"1940s Period Room"* until 11:15 p.m. It was an enjoyable evening of astronomy for everybody, despite the partly cloudy sky.

Girl Guides Camp, Special Event at the Cronyn Observatory, August 15th, 2018

Partly cloudy skies greeted 43 visitors (19 children and 24 adults) from the Girl Guides Camp, Special Event, at Western University's Cronyn Observatory, Wednesday, August 15th, 2018, scheduled 8:30—10:30 p.m. The Guides, with their parents and leader, arrived early at 8:00 p.m. Graduate student Viraja Khatu had set up a table in the lecture room where the leader filled out registration forms for the Guides in the camp. They did a few readings from 8:00—8:30 p.m., all to prepare the Guides for the event—as explained to Viraja by the Guide leader.

Viraja began her presentation at 8:30 p.m. The title of the presentation was *"The Scout / Guide Astronomy Badge,"* with the title slide *"The Basics,"* and she modified it slightly to include a few slides towards the end on black holes. This was to fulfill the badge requirements for the Guides. She then divided the Guides into 2 groups with approximately half going upstairs into the dome and the other half accompanying Viraja downstairs for demonstrations in the *"Black Room."* The 2 groups later changed places.

RASC London Centre was represented by Henry Leparskas, Paul Kerans and Heather MacIsaac. Upstairs in the dome, Henry gave 2 talks, one to each group, on the history of the Cronyn observatory and some technical aspects of the big 25.4cm refractor. He also explained the 2 clocks on the east wall and the difference between Standard and Sidereal Time. Henry showed the Guides the yellow and blue double star Albireo through the 25.4cm refractor, using the Meade 28mm Super Wide Angle eyepiece (157X), and then swapped in Heather's 17mm Vixen Lanthanum LVW eyepiece (258X) to show them Mars. On the observation deck, Paul showed the Guides the double star Mizar and Alcor and Jupiter, Saturn and Mars through the London Centre's home-built 30.5cm Dobsonian telescope (17mm Nagler eyepiece, 88X). Heather showed the Guides Mizar and Alcor and then Mars and Saturn though her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (17mm Plossl eyepiece, 73.5X)

Downstairs in the *"Black Room"* Viraja explained the 3 photographs on the wall and gave 2 demonstrations—one to each group of Guides—of the *"Transit Demonstration"* activity, with the *"Transit Demo"* model—showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

Viraja also gave both groups brief tours of the historic*"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display. Viraja answered a few questions about the *"1940s Period Room"* without explaining anything in particular and a few of the visitors signed the guest book.

Towards the end of the event, Henry, Paul, Heather and Viraja were handed Girl Guide Badges in appreciation for putting the event together for the group. Some of the Guides and their parents began leaving at 10:30 p.m. and everyone was gone by 10:50 p.m. Henry, Paul, Heather and Viraja closed down the observatory and left by 11:05 p.m., after a very enjoyable evening of astronomy.

Boys & Girls Club of London, Solar Observing at the Cronyn Observatory, August 16th, 2018

Cloudy skies with some light rain greeted 37 visitors (32 children, 1 staff member and 4 helpers) from the Boys & Girls Club of London for Solar Observing at Western University's Cronyn Observatory, Thursday, August 16th, 2018, scheduled 1:30—3:30 p.m. They arrived at 2:00 p.m. and graduate student Viraja Khatu presented the digital slide presentation *"Our Star – The Sun"* and fielded questions. Viraja then divided the children into 2 groups with one half going upstairs into the dome and the other accompanying her downstairs for the *"Spectroscopy Demo"* in the *"Black Room."* The 2 groups later changed places.

Downstairs in the *"Black Room"* Viraja explained the 3 photographs on the wall and gave 2 demonstrations—one to each group—of the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

London Centre was represented by Heather MacIsaac and Paul Kerans. Cloudy skies and rain ruled out solar observing and the dome remained closed. Heather gave 2 talks, one to each group, on some of the technical aspects of the big 25.4cm refractor. She rotated the dome to show how it worked and explained the 2 clocks on the east wall and the difference between Standard and Sidereal Time.

The children were able to view the trees behind the Western Sports & Recreation Center through Heather's Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (17mm Plossl eyepiece, 73.5X) set up inside the dome to view out the door. Paul also set up the observatory's 90mm Coronado H-Alpha Solar Telescope on display inside the dome. The visitors were gone by 3:30 p.m. after an interesting afternoon learning about the Sun, spectroscopy, telescopes and astronomy.

Cronyn Observatory Public Night, Saturday, August 18th, 2018

Hazy skies greeted 127 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, August 18th, 2018, 8:30 p.m. Graduate student Viraja Khatu made 2 presentations of her digital slide presentation *"Chaotic Creatures in the Universe: Supermassive Black Holes in Action!"* and fielded questions. RASC London Centre members Lynn Jones was

"crowd manager," and counted 127 visitors for the evening, and Henry Leparskas did the *"Transit Demonstration"* and the *"Spectroscopy Demonstration,"* downstairs in the *"Black Room,* "and showed visitors the historic *"Period Rooms."*

RASC London Centre members Henry Leparskas, Heather MacIsaac, Bob Duff, Lynn Jones and Frank Sowa were there early in the evening and were later joined by Everett Clark and Mark Tovey. Graduate student Hadi Papei was telescope operator in the dome and showed visitors the first quarter Moon through the big 25.4cm refractor, using the 52mm Erfle eyepiece (84X) and later the Meade 28mm Super Wide Angle eyepiece (157X). On the observation deck, Bob showed visitors the Moon through the London Centre's home-built 30.5cm Dobsonian (18mm Radian eyepiece, 83X). Heather showed visitors the Moon though her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (22mm Vixen Lanthanum LVW eyepiece, 57X). Frank Sowa set up his Celestron NexStar 6SE 15cm Schmidt-Cassegrain and showed visitors the Moon and Saturn, using his 17mm Hyperion Modular eyepiece (88X), and Mars, with his 8mm Orion Stratus Wide-Field eyepiece (187.5X), and Mars again with the 17mm Hyperion eyepiece (88X). The sky was so hazy that to the unaided eye only the Moon was visible. Nevertheless, Frank located Saturn and Mars with his computerized Celestron NexStar 6SE telescope.

Downstairs in the *"Black Room"* Henry Leparskas did the the *"Transit Demonstration,"* with the *"Transit Demo"* model, showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury. Henry also showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The *"W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

The visitors were gone by around 11:00 p.m. and the observatory was closed around 11:30 p.m., but not before Viraja, Hadi and the RASC London Centre members had viewed Mars through the 25.4cm refractor, using Heather's 13mm Vixen Lanthanum LVW eyepiece (337X).

Cronyn Observatory Public Night, Saturday, August 25th, 2018

Cloudy skies and rain greeted 50 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, August 25th, 2018, 8:30 p.m. Graduate student Collin Knight gave 2 presentations of his digital slide presentation *"Cryovolcanism on Enceladus"* and fielded questions. There were 43 visitors in the lecture room for the first presentation and 8 for the second presentation. RASC London Centre member Lynn Jones was "crowd manager," listened to the first slide presentation, and counted 50 visitors for the evening.

RASC London Centre was represented by Bob Duff, Heather MacIsaac, Henry Leparskas, Peter Jedicke, Dale Armstrong, Lynn Jones, Mark Tovey and Everett Clark, who arrived later around 10:26 p.m. Graduate student Keegan Marr was telescope operator in the dome which remained closed because of the rain.

Dale Armstrong and Heather MacIsaac set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain so as to view out the dome door to the observation deck. Dale directed the 20.3cm Schmidt-Cassegrain towards the TV screen visible in the Western Sports & Recreation Center windows, removed the diagonal and installed the 26mm Plossl eyepiece (77X). When the visitors from the first slide presentation arrived upstairs in the dome, Dale gave a talk about the history of telescopes and the Cronyn Observatory as well as the technical aspects of the big 25.4cm refractor. He explained how the Schmidt camera and the Cassegrain reflector telescope worked—both piggy-backed on the 25.4cm refractor—as well as the Standard and Sidereal Time clocks on the east wall. He explained how Sidereal Time was used to locate objects in the sky using the right ascension and declination circles on the equatorial telescope mount. Dale gave a second shorter telescope talk to several more visitors, later in the evening.

Downstairs in the *"Black Room"* Henry Leparskas did the the *"Transit Demonstration,"* with the *"Transit Demo"* model, showing how the transit detection method worked for finding extra-solar planets, and the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury. Henry also showed visitors a replica of the Dresden Meteorite, made by 3D printer, displayed on a table in the *"Black Room."*

Mark Tovey showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The *"W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

Peter Jedicke listened to the first slide presentation and later visited the dome. Heather invited visitors to "walk on the Moon and Mars" by stepping on the observatory's 2 round wood and clear plastic display cases containing tiny *"Moon Rock"* and *"Mars Rock"* meteorite samples.

There were 11 *"Star Finder"* planispheres distributed in the dome, including 9 given out to interested visitors by Heather and 2 more given out by Henry to a couple of girls when he came upstairs into the dome towards the end of the evening. The visitors were gone the observatory was closed down around 11:00 p.m. after an enjoyable evening of slide presentation, demonstrations in the *"Black Room,"* tours of the historic *"Period Rooms"* and a tour of the big 25.4cm refractor in the dome.

Cronyn Observatory Public Night, Saturday, September 1st, 2018

Partly cloudy skies greeted some 40 visitors to the to Western University's Cronyn Observatory Summer Public Night, Saturday, September 1st, 2018, 8:30 p.m. Professor Pauline Barmby presented her digital slide presentation "*What is Astronomy Good for, Anyway?"* before an audience of 30 people and fielded questions. She made a second shorter presentation at 9:15 p.m. to a small group of visitors. Graduate student Collin Knight was in charge of "crowd management," and RASC London member Bob Duff counted visitors.

Graduate student Jeff Vankerkhove was telescope operator for the big 25.4cm refractor in the dome. However, since

cloudy skies seemed to rule out observing, Jeff spent the evening in the downstairs *"Black Room,"* showing the *"Spectroscopy Demonstration,"* with the visitors putting on *diffraction grating* glasses to view the spectra of 4 gas discharge lamps, including hydrogen, helium, neon and mercury.

RASC London Centre was represented by Bob Duff, Heather MacIsaac, Peter Jedicke, Dale Armstrong, Mark Tovey and Edith Tovey. London Centre member Lynn Jones was also there and listened to the first slide presentation. Heather showed visitors Saturn through the big 25.4cm refractor in the dome, using the Meade 28mm Super Wide Angle eyepiece (157X). Collin Knight came upstairs later and took over showing Saturn and then Mars through the 25.4cm refractor. Hazy clouds obscured most sky objects early in the evening. On the observation deck outside the dome, Dale showed visitors the star Vega and the yellow and blue double star Albireo through the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain, using the 26mm Plossl eyepiece (77X). He later swapped in the 12.5mm Ortho eyepiece (160X) to show visitors Saturn and Mars through the 20.3cm Schmidt-Cassegrain. Heather gave out 6 or 7 *"Star Finder"* planispheres and Bob showed 2 of the visitors how to assemble and use them.

Mark Tovey showed visitors the *"1940s Period Room,"* a recreation of Dr. H. R. Kingston's 1940 office, with his brass refractor and the *Sotellunium*—a mechanical eclipse demonstration model built by W. G. Colgrove—on display; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. The *"W. G. Colgrove Workshop Period Room"* was also open for visitors' inspection. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

There were some good views of Saturn and Mars through the 25.4cm refractor, using the 18mm Radian eyepiece (244X), after 11:00 p.m. when the visitors were gone. It was a good evening of astronomy, despite the hazy, cloudy sky.