

POLARIS



Newsletter of the London Centre, RASC

August 2019

RASC London Centre Library

Books of the Month

August 2019

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 August 2019 are as follows:

Accessory to War: the Unspoken Alliance Between Astrophysics and the Military, by Neil deGrasse Tyson and Avis Lang. – New York; London: W. W. Norton & Company, c2018.

The Backyard Astronomer's Guide, [by] Terence Dickinson & Alan Dyer. Revised Edition. – Willowdale, Ont.: Firefly Books, 2002.

A Nightwatchman's Journey: The Road Not Taken, [by] David He. Levy. – Toronto: The Royal Astronomical Society of Canada, c2019.

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 anything you wish to borrow from the Library, please feel free to contact me by telephone at (519) 439-7504 or by e-mail at rduff@sympatico.ca

RASC London Centre Library New Acquisition:

The following book was purchased by RASC London Centre for the Library and received from the President Norm McCall at the Astronomy Sketching Workshop with Brian McCullough held in Western University's Physics and Astronomy building on Saturday, June 22, 2019:

A Nightwatchman's Journey: The Road Not Taken, [by] David He. Levy. – Toronto: The Royal Astronomical Society of Canada, c2019.

Star Night, E.M. Warwick Conservation Area, Thursday, July 25th, 2019

Written by Robert Duff, as Reported by Peter Jedicke

RASC London Centre conducted outreach activities for the Elgin County Library system in the afternoon and evening of Thursday, July 25th, 2019. Peter Jedicke gave his 45-minute digital slide presentation "*Our Wonderful Heavens*" at 3 Elgin County Library branches, including Rodney Library (10 youth and 4 adults), West Lorne Library (7 youths and 5 adults) and John Kenneth Galbraith Reference Library, Dutton (13 youths and 11 adults). Norm McCall joined Peter at the John Kenneth Galbraith Reference Library and presented the youth with RASC "*Star Finder*" planispheres. The total audience for these 3 public library branches was 50 people (30 youth and 20 adults).

At sunset Peter, Norm and Mark Pickett set up their telescopes at E.M. Warwick Conservation Area, near Eagle, Ontario. Peter set up his 40.6cm (16-inch, f/4.5) Truss-Tube Dobsonian (35mm Nagler eyepiece, 52X) and his 50mm Galileoscope refractor (20mm eyepiece, 25X). Norm and Mark both brought their Explore Scientific 152mm David H. Levy Comet Hunter Maksutov-Newtonian telescopes. Twilight observing began at 9:10 p.m. (21:10) under slightly hazy clear skies with noticeably less light pollution than sites closer to London. The observing field was ringed with tall trees, preventing a view of the horizon in all directions. Jupiter and Saturn were observed in all 4 telescopes. Towards the end of the evening around 10:00 p.m. (22:00), Norm showed the open star cluster M11 (also known as the Wild Duck Cluster) in his Maksutov-Newtonian and Peter showed the double star Gamma Delphini in his 40.6cm Dobsonian.

There were in all 40 people in attendance, including 22 youth and 18 adults. The evening of star gazing at E.M. Warwick Conservation Area ended around 10:30 p.m. (22:30).

Cronyn Observatory Public Nights & Special Events, July 10th—August 7th, 2019

By Robert Duff

Solar Observing & Evening Stargazing, International ACAC Conference , Western University, July 10th—11th, 2019

There were some 1,600 participants to the International ACAC (Association for College Admission Counseling) 2019 Conference, held at Western University, July 8th—12th, 2019. There was a huge tent set up on University College Hill big enough for 263 tables with a stage and dance floor. There were Aboriginal Culture exhibits amongst other things. Telescopes from the Cronyn Observatory were set up on the northeast corner (lower part) of UC Hill, for solar and evening observing on Wednesday, July 10th, 6:00—9:00 p.m., and Thursday, July 11th, 2019, 6:00—10:00 p.m.

International ACAC Conference, Wednesday, July 10th, 2019

Clouds and rain greeted the 2019 International ACAC Conference participants on Wednesday, July 10th, 6:00—9:00 p.m. Professor Jan Cami, graduate student Hadi Papei, and RASC members Heather MacIsaac, Peter Jedicke, Norm McCall and Fraser McCrossan showed up for the event. They brought over the Coronado 90mm H-alpha solar telescope and the Meade 8-inch (20.3cm) Schmidt-Cassegrain from the Cronyn Observatory but clouds and rain showers ruled out most observing. There were just 5 people who looked through telescopes.

Set up began at 5:30 p.m. Jan set up and operated the Coronado 90mm H-alpha solar telescope on the Sky-Watcher EQ5 computerized mount and Heather and Fraser set up the Meade 20.3cm Schmidt-Cassegrain (26mm Plossl eyepiece, 77X) with the Kendrick Astro Baader film solar filter. Fraser operated the 20.3cm Schmidt-Cassegrain but the Sun was obscured by clouds. Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (32mm Plossl eyepiece, 39X), with a Kendrick Astro Baader film solar filter, and briefly observed the Sun before clouds rolled in. Hadi set up the University's Orion 15cm Orion AstroView 6 Newtonian reflector on its equatorial mount and observed the one-day-past-first quarter Moon in daylight.

With clouds rolling in and rain in the forecast, they moved the telescopes and cart under a tarp. Jan and Hadi joined the festivities in the big tent while the RASC members retired to the Grad Club for snacks and music. The group reconvened after the rain stopped around 8:30 p.m. However, cloudy skies ruled out observing and so everybody packed up the telescopes to try again the next day.

International ACAC Conference, Thursday, July 11th, 2019

Mostly clear skies greeted the 2019 International ACAC Conference participants, Thursday, July 11th, 6:00—10:00 p.m. The equipment from the day before had been loaded on to a cart in the lecture room of the Cronyn Observatory and only needed to be wheeled out and the telescopes set up. There was a video projection on the University College tower, a snack truck and an ice cream truck, outdoor games and small campfires. There were some 250 people who looked through telescopes and none were youth.

Telescope set up and observing commenced around 5:30 p.m. and wrapped up at 11:10 p.m. Professor Jan Cami and graduate student Hadi Papei were there, along RASC members Heather MacIsaac and Henry Leparskas, who arrived around 5:30 p.m., and Peter Jedicke at 6:30 p.m., with Dale Armstrong and Everett Clark arriving later. Jan operated the observatory's Coronado 90mm H-alpha solar telescope and quickly exchanged the CEMAX 25mm eyepiece (32X) for the CEMAX 12mm eyepiece (66.7X), to show visitors a better view of 3 solar prominences on the edge of the Sun. Heather operated her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (32mm Plossl eyepiece, 39X) as well as the observatory's Meade 8-inch 20.3cm Schmidt-Cassegrain (26mm Plossl eyepiece, 77X)—both telescopes fitted with the Kendrick Astro Baader film solar filters. There were no sunspots visible, and the flag above University College could be seen in front of the Sun as it moved across the sky. Dale showed visitors the Sun through his 80mm Vernonscope refractor with a white light filter solar filter.

Jan took over the Meade 20.3cm Schmidt-Cassegrain (26mm Plossl eyepiece, 77X), for evening observing and visitors were able to take pictures of the 2-day-past-first quarter Moon with their smartphones, using the smartphone adapter. The Moon was observed in daylight through the University's 15cm Orion AstroView 6 Newtonian reflector set up on its standard equatorial mount. After twilight, Everett transferred the 15cm Orion Newtonian reflector to the Coronado's computerized Sky-Watcher EQ5 mount and viewed the Moon, Jupiter and Saturn. Hadi, Peter and Everett operated the 15cm reflector. Dale showed visitors the Moon through his 80mm Vernonscope refractor and invited people to take pictures with their smartphones.

Peter brought his 50mm Galileoscope (20mm eyepiece, 25X) and invited visitors to view the Moon and Jupiter—supervised by Peter, Hadi and Henry. Henry set up his camera and took some fantastic pictures. The event shut down after a great night of observing, which ended with a projection show of fireworks on the University College tower. Everybody was gone by midnight.

Cronyn Observatory Public Night, Saturday, July 13th, 2019

Clear skies greeted some 77 visitors (including about 17 youth) to Western University's Cronyn Observatory Summer Public Night, Saturday, July 13th, 2019, 8:30—11:00 p.m. Postdoctoral Fellow Auriane Egal made 2 presentations of her digital slide presentation "*Summer Meteors: What to Expect?*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. Undergraduate student Samaunus Safa was "crowd manager," greeting and directing visitors into the lecture room, dome or downstairs for demonstrations and history room tours. Samaunus counted all the visitors on his smartphone, with a separate count for youth (children, high school age or younger). There were some 77 visitors (including an estimated 17 youth) counted by the end of the evening.

Graduate student Collin Knight was telescope operator in the dome and directed the big 25.4cm refractor to show visitors the

4-day-past-first quarter gibbous Moon, using the Meade 28mm Super Wide Angle eyepiece (157X). He later directed the 25.4cm refractor towards Jupiter and then Saturn, alternating between the Meade 28mm SWA eyepiece (157X) and the 17mm Nagler eyepiece (258X) for the best views of both planets.

RASC London Centre was represented by Heather MacIsaac, Peter Jedicke, Bob Duff, Mark Tovey, Fraser McCrossan, Steve Imrie and Everett Clark. On the observation deck outside the dome, Heather set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (12.5mm Plossl eyepiece, 160X) and directed it towards the communications tower in south London. Bob operated the 20.3cm Schmidt-Cassegrain for the evening, showing visitors the Moon, Jupiter and Saturn (20mm Plossl eyepiece, 100X), later swapping in the 12.5mm Plossl eyepiece (160X) for a better view of Jupiter. He also combined the Meade 2X Barlow lens with the 20mm Plossl eyepiece (200X) for a better view of Saturn through the 20.3cm Schmidt-Cassegrain. Steve set up the RASC London Centre's home-built 30.5cm Dobsonian (18mm Radian eyepiece, 83X) and showed visitors the Moon, Jupiter and Saturn. Heather set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and showed visitors the Moon (32mm Plossl eyepiece, 39X) and Jupiter (22mm Vixen Lanthanum LVW, 57X). Fraser McCrossan set up his Williams Optics Megrez 80 APO refractor on a Celestron NexStar SE computerized mount and showed visitors the communications tower (Hyperion 17mm eyepiece, 28X) early in the evening and later the Moon, using a Hyperion 5mm eyepiece adapted to 4mm (120X) with a fine tuning ring. Some visitors took pictures of the Moon through the Megrez 80mm refractor with their smartphones, using Fraser's smartphone adapter.

Downstairs in the "Black Room" undergraduate student Armin Buijs gave demonstrations of 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.

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. The "1967 Period Room," recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150, and the "W. G. Colgrove Workshop Period Room" remained closed. The 3 "Period Rooms" were designed by RASC London Centre member Mark Tovey.

The observatory was closed down around 11:00 p.m., after a very interesting and enjoyable evening, including the slide presentations about summer meteors, demonstrations of

spectroscopy and the transit method for finding exoplanets, tours of the 1940s history room and observing the Moon, Jupiter and Saturn through telescopes.

Boys & Girls Club of London, Solar Observing at the Cronyn Observatory, July 18th, 2019

Partly cloudy skies greeted 38 visitors (31 children and 7 leaders—including 2 adults) from the Boys & Girls Club of London for Solar Observing at Western University's Cronyn Observatory, Thursday, July 18th, 2018, 12:00 noon–3:00 p.m. Graduate student Hadi Papei presented the digital slide presentation "*Exoplanets*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. Hadi followed this with the "*Crater Experiment*" activity, inviting everybody to the front of the lecture room where he placed a pan of flour mixed with some chocolate powder, into which various size objects (including a golf ball, tennis ball and a rock) were dropped to demonstrate impact cratering. The 38 visitors included 36 youth (31 children and 5 youth leaders) and 2 adult leaders. Hadi then divided the visitors into 2 groups with one half going upstairs into the dome and the other accompanying him downstairs for demonstrations in the "*Black Room*." The 2 groups later changed places.

Hadi did the demonstrations the "*Black Room*," including "*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.

RASC London Centre was represented by Bob Duff and Peter Jedicke. Bob directed the 25.4cm refractor (32mm Erfle eyepiece, 137X) in the dome towards a white light on the communications tower in south London and also set up the observatory's Coronado 90mm H-alpha solar telescope on the Sky-Watcher EQ5 mount on the observation deck. Peter and Bob set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (26mm Plossl eyepiece, 77X) inside the dome—installing the Kendrick Astro Baader film solar filter—so as to view the Sun through the slit in the dome.

Peter gave telescope talks to each of the 2 groups when they arrived in the dome, including advice on safe solar observing. The visitors climbed the observing ladder to view the white light on the communications tower through the 25.4cm refractor. Peter invited them to view the Sun through the 20.3cm Schmidt-Cassegrain with the Baader film solar filter. The Sun appeared as a white featureless disk with no sunspots visible. Outside on the observation deck, Bob showed the visitors the Sun through the Coronado 90mm H-alpha solar telescope (CEMAX 18mm eyepiece, 44X), later swapping in the CEMAX 12mm eyepiece (67X) for the last few visitors.

Everybody was gone by around 3:00 p.m. after an interesting and enjoyable afternoon learning about exoplanets, how meteor craters are formed, the transit method for detecting exoplanets, spectroscopy and telescopes, and observing the Sun through solar filtered telescopes.

Indigenous Youth Group at the Cronyn Observatory, July 18th, 2019

Partly cloudy skies greeted 17 visitors (including 11 youth and 6 leaders) from an Indigenous Youth group (ages 12–15) for evening observing at Western University's Cronyn Observatory, Thursday, July 18th, 2019, 9:00—11:00 p.m. Graduate student Hadi Papei presented the digital slide presentation "*The Search for Earth 2.0*" and fielded questions. This was done on the large TV screen newly installed in the lecture room.

There was some uncertainty as to the visitor count. RASC member Bob Duff was advised by one of the leaders prior to the event that there were 12 children and 6 leaders. He was advised after the event by another leader that there were 11 children and 7 leaders. However, Bob counted only 17 visitors in the lecture room during the slide presentation. In the absence of any further clarification, the visitor count has been placed as 17 visitors (including 11 youth and 6 leaders).

RASC London Centre was represented by Bob Duff and Mohammed Mubeen. They made ready the big 25.4cm refractor in the dome, installing the Meade 28mm Super Wide Angle eyepiece (157X). On the observation deck, Bob set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (20mm Plossl eyepiece, 100X). Mohammed and Bob also set up the RASC London Centre's home-built 30.5cm Dobsonian (18mm Radian eyepiece, 83X). When everybody 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 rotated the dome for demonstration. Bob also showed them the 2 clocks on the east wall of the dome and explained the difference between Standard and Sidereal Time.

The visitors enjoyed impressive views of Jupiter and Saturn through the 25.4cm refractor with the Meade 28mm SWA eyepiece (157X). Bob later swapped in the 17mm Nagler eyepiece (258X) for a better view of Saturn. Hadi showed the visitors Jupiter through the 20.3cm Schmidt-Cassegrain (20mm Plossl eyepiece, 100X). Mohammed operated the 30.5cm Dobsonian showing the visitors Jupiter (18mm Radian eyepiece, 83X; and 12.5mm Ortho eyepiece, 120X) and Saturn (12.5mm Ortho eyepiece, 120X).

The visitors were gone by 10:40 p.m. after an interesting and enjoyable evening learning about the search for Earth-like exoplanets and observing through telescopes.

Moon Landing 50th Anniversary at the Cronyn Observatory, July 20th, 2019

Mostly clear skies followed by clouds and rain greeted an estimated 275 visitors (including some 125 children and youth) to the Moon Landing 50th Anniversary special event at Western University's Cronyn Observatory, Saturday, July 20th, 2019, 5:00–11:00 p.m. The event organizers were Professor Jan Cami and Dr. Parshati Patel, Outreach Program Coordinator for Western's Centre for Planetary Science and Exploration (CPSX) and Dr. Mark Tovey (RASC). Parshati Patel greeted visitors to the observatory.

This special program highlighted the Apollo 11 mission and focused on the Canadian contributions to the project and future return to the Moon. Family friendly activities (5:00—8:30 p.m.) included: (1) a Virtual Reality view of Apollo 11, (2) Touch and look at a real Moon rock, (3) Static displays of Apollo 11 components and other objects that landed on the Moon, (4) Take a selfie with astronauts Neil Armstrong, Buzz Aldrin and David Saint-Jacques on the Moon, (5) Navigate a lunar crater yourself with a Lego rover and (6) Win beautiful Moon-prizes with the raffle.

The Lego rover and some other activities took place in the adjacent Spencer Engineering Building along with digital slide presentations in the evening in room SEB 2200, including "*To the Moon with Apollo*" and "*On the Moon with Apollo*," presentations about the Apollo mission and its challenges (including the TV footage from 50 years ago) by Peter Jedicke; "*Canada's Contribution to the Apollo Moon Landing*" by Mark Tovey; and "*Canada's Return to the Moon*" a presentation about Lunar Gateway—the future return to the Moon of which Canada is a part, by Professor Sarah Gallagher. Peter gave his 2 presentations once each. Mark gave his presentation once and Professor Sarah Gallagher gave her presentation twice.

RASC London Centre was represented by Everett Clark, Henry Leparskas, Heather MacIsaac, Bob Duff, Peter Jedicke, Mark Tovey, Edith Tovey, Mohammed Mubeen (5:00–8:15 p.m.), Steve Imrie (8:15–11:00 p.m.). Graduate student Dave Clark represented both Western and the RASC with an activity in the Spencer Engineering Building using cardboard cut-outs of the

Sun, Moon and planets and his "ClearSky" software to show the distance relationships and demonstrate eclipses. Mike Hanes visited and listened to the slide presentations in the Engineering building, Joe O'Neil briefly visited the observatory with his camera in the early evening and Dale Armstrong showed up (10:00–11:00 p.m.) with his camera. Henry, Mohammed and graduate student Hadi Papei managed the Apollo displays, giving tours of the downstairs Lunar Module displays in the hallway and "Black Room." Mohammed and Henry also photographed the event with their cameras.

Everett and Heather set up the observatory's Coronado 90mm H-alpha solar telescope (CEMAX 25mm eyepiece, 32X) with the Sky-Watcher EQ5 mount on the observation deck. Heather set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (32mm Plossl eyepiece, 39X), with a Kendrick Astro Baader film solar filter. Bob soon took over the Coronado 90mm H-alpha solar telescope and swapped in the CEMAX 18mm eyepiece (44X) to show visitors a better view of the Sun.

Everett and Bob directed the big 25.4cm refractor in the dome towards the communications tower in south London around 6:15 p.m. Graduate student Mark Froncisz was telescope operator for the evening but clouds and rain soon ruled out observing. Mark Tovey gave tours of the historic "1940s Period Room." The visitors were gone by around 11:00 p.m. after a very successful and enjoyable evening learning (and reliving) the Apollo 11 landing on the Moon.

Indigenous Services Mini-University, Special Event at the Cronyn Observatory, July 21st, 2019

Partly cloudy skies greeted 30 visitors (23 youth and 7 leaders) from the Indigenous Services Mini-University Crane Group (ages, 14—17) to Western University's Cronyn Observatory, Sunday, July 21st, 2019, 9:00—11:00 p.m. They were welcomed by Professor Jan Cami and graduate student Hadi Papei. Professor Jan Cami presented the digital slide presentation "*The Search for Earth 2.0*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. Jan followed this with the "*Transit Demonstration*," with the "*Transit Demo*" model, showing how Kepler space telescope used the transit detection method to find Earth-sized planets within the habitable zones of stars. He then divided everybody into 2 groups with one going upstairs into the dome and the other downstairs for the "*Spectroscopy Demonstration*" in the "Black Room."

Downstairs in the "Black Room," Jan made 2 presentations—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.

RASC London Centre was represented by Everett Clark, Bob Duff and Heather MacIsaac. Everett set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain on the observation deck, with some assistance from Bob; and Heather set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain. Bob gave 2 telescope talks on some of the history and technical aspects of the big 25.4cm refractor in the dome. Everett showed the visitors Jupiter through the 25.4cm refractor (17mm Nagler eyepiece, 258X). Bob showed them Jupiter through the 20.3cm Schmidt-Cassegrain (20mm Plossl eyepiece, 100X) and Heather showed them Jupiter through her 90mm Maksutov-Cassegrain (Vixen 17mm Lanthanum LVW eyepiece, 73.5X).

The visitors were gone from the dome by 10:20 p.m. and the observatory was shut down around 10:35 p.m. after an interesting and enjoyable evening learning about the search for Earth-like planets, spectroscopy and observing Jupiter through telescopes.

Shad Canada at the Cronyn Observatory, July 22nd, 2019

Partly cloudy, later clearing skies greeted 73 visitors (including 66 youth and 7 staff members) from the Shad Canada program to Western University's Cronyn Observatory, Monday, July 22nd, 2019, 8:00—10:30 p.m. They were welcomed by Professor Jan Cami and graduate students Klay Kulik and Hadi Papei. Shad Canada is a STEAM and entrepreneurship program involving 1,000 gifted grade 10 and 11 students in a 27-day program in 17 universities across Canada. The Shad program at Western University attracted highly gifted students from across Canada.

Professor Jan Cami presented the digital slide presentation "*Cosmic Recycling*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. Everybody was then divided into 3 groups, with one group remaining in the lecture room for the "*Transit Demonstration*" and the other 2 groups going downstairs for the "*Spectroscopy Demonstration*" in the "*Black Room*" and a tour of the "*1940s Period Room*." The 3 groups later changed places. Jan made 3 presentations—one to each group—in the lecture room of the "*Transit Demonstration*" model, showing how Kepler space telescope used the transit detection method to find Earth-sized planets within the habitable zones of stars. Downstairs in the "*Black Room*" RASC member Henry Leparskas made 3 presentations—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. Henry also gave 3 tours of the "*1940s Period Room*" and invited everybody to sign the guest book.

RASC London Centre was represented by Bob Duff and Henry Leparskas. Bob and graduate student Klay Kulik made ready the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X) in the dome and the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (26mm Plossl eyepiece, 77X)—already set up on the observation deck by Henry Leparskas. Both telescopes were directed at the communications tower. Bob gave telescope talks to 2 of the 3 groups of students and included the history of the observatory and technical aspects of the 25.4cm refractor. He showed them the Schmidt camera and Cassegrain reflector telescopes piggy-backed on the main telescope and explained the difference between a reflector and refractor telescope. He also showed them the 2 clocks on the east wall of the dome and explained the difference between Standard and Sidereal Time.

Graduate student Hadi Papei operated the 25.4cm refractor and showed the students Jupiter, with the Meade 28mm SWA eyepiece (157X). He soon swapped in the 17mm Nagler eyepiece (258X) for a better view of Jupiter, and then Saturn through the 25.4cm refractor. Bob operated the 20.3cm Schmidt-Cassegrain, showing the students Jupiter, using the 20mm Plossl (100X) and 12.5mm Ortho (160X) eyepieces. He later showed them Saturn through the 20.3cm Schmidt-Cassegrain, using the 20mm Plossl (100X)—later adding the Meade 2X Barlow lens for a magnification of 200X on the ringed planet. Bob also showed them the star Arcturus and yellow and blue double star Albireo through the 20.3cm Schmidt-Cassegrain, using the 26mm Plossl eyepiece (77X). Klay was answering questions for most of the evening and readjusted the 20.3cm Schmidt-Cassegrain a couple of times.

The event was over by around 10:30 p.m., after a very interesting and enjoyable evening with the slide presentation "*Cosmic Recycling*," the "*Transit*" and "*Spectroscopy*" demonstrations, tours of the "*1940s Period Room*" and observing through telescopes.

Summer Academic Writing Clinic (SAWC), Evening Observing at the Cronyn Observatory, July 24th, 2019

Clear skies greeted 24 students, from the Summer Academic Writing Clinic (SAWC) for incoming first-year students, for evening observing at Western University's Cronyn Observatory, Wednesday, July 24th, 2019, 8:30—10:30 p.m. Professor Jan Cami presented the digital slide presentation on "*Astronomy and Space Research at Western*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. The students were then divided into 2 groups, with one group going downstairs for the "*Spectroscopy Demonstration*" in the "*Black Room*" while the other remained upstairs for the "*Transit Demonstration*" in the lecture room. The 2 groups later changed places.

Jan gave 2 demonstrations—one to each group of students—of the "*Transit Demonstration*" model, showing how the transit detection method worked for finding extra-solar planets, set up at the front of the lecture room. Downstairs in the "*Black Room*" RASC member Henry Leparskas showed the students the Apollo 11 display from the Moon Landing 50th Anniversary event held on July 20th, 2019. He then gave 2 demonstrations—one to each group of students—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. Finally, he showed them the "*1940s Period Room*," a recreation (designed by RASC London member Mark Tovey) 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. He invited them to sign the guest book.

RASC London Centre was represented by Henry Leparskas, Heather MacIsaac, Bob Duff and Paul Kerans. Henry located Jupiter with the big 25.4cm refractor (17mm Nagler eyepiece, 258X) in the dome—in daylight around 8:15 p.m.—using celestial coordinates provided by the

planetarium software “*Stellarium*” on the computer. Henry also set up the observatory’s Meade 8-inch (20.3cm) Schmidt-Cassegrain on the observation deck.

Heather set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and Paul set up his Celestron 9.25-inch (23.5cm) Schmidt-Cassegrain on a computerized Vixen equatorial mount. When everybody 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.

Graduate student Hadi Papei was telescope operator for the big 25.4cm refractor in the dome. After Bob had finished his talk, Hadi invited the students to view Jupiter and (later) Saturn through the 25.4cm refractor (17mm Nagler eyepiece, 258X). Heather showed them Jupiter through her 90mm Maksutov (13mm Vixen Lanthanum LVW eyepiece, 96X). Paul showed them Jupiter, Saturn and the Ring Nebula (M57) through his 23.5cm Schmidt-Cassegrain (21mm Ethos eyepiece, 112X). Bob operated the 20.3cm Schmidt-Cassegrain (20mm Plossl eyepiece, 100X) and soon swapped in the Tele View 13mm Plossl eyepiece (154X) for a better view of Jupiter. He later combined the Meade 2X Barlow lens with the 20mm Plossl eyepiece for a magnification of 200X on Jupiter. Bob also showed the students Saturn through the 20.3cm Schmidt-Cassegrain, using the Tele View 13mm Plossl eyepiece (154X). Seeing conditions were good and Jan brought out the smartphone adapter and helped several students take pictures of Jupiter through the 20.3cm Schmidt-Cassegrain, with their smartphones.

There was an International Space Station (ISS) pass predicted for 9:33–9:38 p.m. (21:33:19–21:38:52) travelling west-northwest to northeast, reaching a maximum altitude of 23 degrees above the north-northwest horizon at 9:36 p.m. (21:36:05). The students were all out on the front lawn of the observatory with Jan, Heather, Hadi and Henry to view the ISS pass. (See: *ISS - Visible Passes* for London, Ontario, on *Heavens Above*: <http://www.heavens-above.com/>)

The students were gone by around 10:30 p.m. after expressing their thanks for an enjoyable evening learning about astronomy at Western University, how exoplanets were detected using the transit method, and about spectroscopy; viewing an ISS pass and observing through telescopes under clear skies!

Cronyn Observatory Public Night, Saturday, July 27th, 2019

Partly cloudy skies greeted an estimated 80 (80—100) visitors (including 16 youth) to Western University's Cronyn Observatory Summer Public Night, Saturday, July 27th, 2019, 8:30—11:00 p.m. Postdoctoral Associate Mohammad Reza Ghoreyshi presented his digital slide presentation "*Astrophotography with simple cameras*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. There were 35 people (including 8 youth) counted in the lecture room at 8:45 p.m. with more arrivals for a count of 49 visitors by 9:00 p.m. The total for the evening was an estimated 80 (80—100) visitors, including 16 children and youth.

Downstairs in the "*Black Room*" undergraduate student Meet Panchal gave demonstrations 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. RASC member Peter Jedicke gave tours of 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*" remained closed. The 3 "*Period Rooms*" were designed by RASC London Centre member Mark Tovey.

RASC London Centre was represented by Henry Leparskas, Steve Imrie, Heather MacIsaac, Bob Duff, Peter Jedicke and Everett Clark. Henry directed the big 25.4cm refractor in the dome towards Jupiter, using celestial coordinates provided by the planetarium software "*Stellarium*" on the computer. Graduate student Collin Knight was telescope operator and showed visitors Jupiter through the 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece (157X)).

Heather MacIsaac set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain and her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain on the observation deck. Heather showed visitors Jupiter through her 90mm Maksutov-Cassegrain, using a Vixen 22mm Lanthanum LVW eyepiece (57X) and later Saturn, using a Vixen 17mm Lanthanum LVW eyepiece (73.5X), and Jupiter again (73.5X). Bob Duff operated the 20.3cm Schmidt-Cassegrain, showing visitors Jupiter, using the 20mm Plossl (100X) and Tele Vue 13mm (154X) eyepieces. Bob combined the 20mm Plossl eyepiece with the Meade 2X Barlow lens (200X) to show visitors a good view of Saturn. Steve Imrie operated the RASC London Centre's home-built 30.5cm Dobsonian (18mm Radian eyepiece, 83X), showing visitors Jupiter and Saturn.

The observatory was closed down by 11:00 p.m. after an excellent evening of slide presentation, spectroscopy demonstrations, history room tours and observing through telescopes.

Cronyn Observatory Public Night, Saturday, August 3rd, 2019

Clear skies greeted 210 visitors (including 59 youth) to Western University's Cronyn Observatory Summer Public Night, Saturday, August 3rd, 2019, 8:30—11:00 p.m. Graduate student Ben George presented his digital slide presentation "*How the Faintest Stars are the Future*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. Undergraduate students Samaunus Safa and Meet Panchal, shared the task of "crowd manager," greeting and counting visitors on their smartphones, with Meet counting 59 children and youth, and Safa counting 210 visitors in all.

Downstairs in the "*Black Room*" undergraduate student Armin Buijs gave demonstrations 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. RASC member 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. The "*1967 Period Room*," recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150, was also open for visitor's inspection. The "*W. G. Colgrove Workshop Period Room*" remained closed. The 3 "*Period Rooms*" were designed by RASC London Centre member Mark Tovey.

RASC London Centre was represented by Henry Leparskas, Everett Clark, Heather MacIsaac, Bob Duff and Steve Imrie. Henry directed the big 25.4cm refractor in the dome towards Jupiter, using celestial coordinates provided by the planetarium software "*Stellarium*" on the computer. Graduate student Ameet Sidhu was telescope operator for the evening and showed visitors splendid views of Jupiter through the 25.4cm refractor (17mm Nagler eyepiece, 258X).

On the observation deck outside the dome, Steve Imrie directed the RASC London Centre's home-built 30.5cm Dobsonian (18mm Radian eyepiece, 83X) westwards towards the 3-day-past-new crescent Moon, before it disappeared below the roof of the Spencer Engineering Building. As the sky darkened, Steve showed visitors Jupiter and Saturn through the 30.5cm Dobsonian (83X). Heather MacIsaac showed a few visitors the communications tower in south London and, as twilight deepened, Jupiter, through her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (Vixen 22mm Lanthanum LVW eyepiece, 57X). Bob Duff operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (20mm Plossl eyepiece, 100X), which was at first directed towards the communications tower. He swapped in the Tele Vue 13mm Plossl eyepiece (154X) to show visitors an excellent view of Jupiter, as it appeared in the deepening twilight. Heather assisted with locating Saturn in the 20.3cm Schmidt-Cassegrain, and Bob combined the Tele Vue 13mm Plossl eyepiece with the Meade 2X Barlow lens (308X) for an impressive view of the ringed planet. However, Bob soon swapped in the 20mm Plossl eyepiece with the Meade 2X Barlow lens (200X) for a better view of Saturn.

There was an International Space Station (ISS) pass predicted for 9:24–9:30 p.m. (21:24:24–21:30:51) travelling northwest to east-southeast, reaching a maximum altitude of 69 degrees above the north-northeast horizon at 9:27 p.m. (21:27:45). Many

visitors on the observation deck viewed the ISS pass. (See: *ISS - Visible Passes* for London, Ontario, on *Heavens Above*: <http://www.heavens-above.com/>)

The observatory was closed down shortly after 11:00 p.m. after an excellent evening of slide presentation, spectroscopy demonstrations, history room tours and observing through telescopes.

Summer Academic Writing Clinic (SAWC), Evening Observing at the Cronyn Observatory, August 7th, 2019

Clear skies greeted 30 visitors—including 22 incoming first-year students, 3 staff members and 5 Western student volunteers—from the Summer Academic Writing Clinic (SAWC) for incoming first-year students, for evening observing at Western University's Cronyn Observatory, Wednesday, August 7th, 2019, 8:30—10:30 p.m. Professor Jan Cami presented the digital slide presentation on "*Astronomy and Space Research at Western*" and fielded questions. This was done on the large TV screen newly installed in the lecture room. The students were then divided into 2 groups, with one group going downstairs for the "*Spectroscopy Demonstration*" in the "Black Room" while the other remained upstairs for the "*Transit Demonstration*" in the lecture room. The 2 groups later changed places.

Jan gave 2 demonstrations—one to each group of students—of the "*Transit Demonstration*" model, showing how the transit detection method worked for finding extra-solar planets, set up at the front of the lecture room. Downstairs in the "Black Room" RASC member Henry Leparskas showed the students the Apollo 11 display from the Moon Landing 50th Anniversary event held on July 20th, 2019. He then gave 2 demonstrations—one to each group of students—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. Finally, he 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. The "*1967 Period Room*," recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150, was also open for the students' inspection. Henry invited them to sign the guest book. The "*Period Rooms*" were designed by RASC London Centre member Mark Tovey.

RASC London Centre was represented by Henry Leparskas, Heather MacIsaac, Bob Duff and Peter Jedicke. Peter gave a brief telescope talk when all the students arrived upstairs in the dome. Graduate student Hadi Papei was telescope operator and showed the students Saturn in the 25.4cm refractor (17mm Nagler eyepiece, 258X). Peter operated the London Centre's home-built 30.5cm Dobsonian (18mm Radian eyepiece, 83X) for the evening, briefly viewing the first quarter Moon before the students arrived on the observation deck. Bob assisted with identifying the crater Alphonsus on the lunar day / night terminator. Peter showed the students Jupiter through the 30.5cm Dobsonian—and later Saturn and the Moon, after the main group had left. Peter also located the double star 70 Ophiuchi with the 30.5cm Dobsonian—to be seen by at least one remaining keen visitor. Heather MacIsaac showed visitors Saturn through her

Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (Vixen 17mm Lanthanum LVW eyepiece, 73.5X).

Bob Duff operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain, showing students the Moon using Peter Jedicke's University Optics 40mm Kellner eyepiece (50X). He later swapped in the 20mm Plossl eyepiece (100X) to show a few students a higher magnification view of the Moon. Bob later combined the Meade 2X Barlow lens with the 20mm Plossl eyepiece (200X) to obtain a pleasing view of Saturn through the 20.3cm Schmidt-Cassegrain.

After the students were gone, Hadi redirected the 25.4cm refractor (17mm Nagler eyepiece, 258X) from Saturn towards Jupiter. Only one staff member and Western student volunteer remained. Jan came upstairs into the dome and tried using the blue filter to enhance contrast on Jupiter and reveal a feature that might have been the Great Red Spot, but the results were inconclusive. The 2 remaining visitors were shown the yellow and blue double star Albireo, globular cluster M13 and the Ring Nebula, M57, through the 25.4cm refractor. The 25.4cm refractor was then directed again towards Saturn, which was now an impressive sight having risen higher in the sky to reveal several moons, including Titan, Rhea and (possibly) Iapetus. The Cassini Division was visible in Saturn's rings as well as cloud belts on the planet's surface.

The students were gone by around 10:30 p.m. after an enjoyable evening learning about astronomy at Western University, the transit method for detecting exoplanets, spectroscopy, some of the history of the observatory and observing through telescopes. Observing continued after the students had gone, with Jan and the RASC members and a couple of the visitors, until the observatory was closed down around 11:35 p.m.