POLARIS

Royal Astronomical Society of Canada
London Centre Newsletter
July 2018

Top Telescopes for Astronomers

Compiled By: Norman McCall

So, your friend – knowing your expertise in astronomy – asks you "what kind of telescope should I buy?" Often your immediate impulse is to start pontificating regarding your favorite scope or possibly, discussing the type of scope you first owned or even suggesting he start from scratch and build themselves a Dob – since it will have "better optics than money can buy". However, what is more important in the discussion is what recommend what is best for them.

The correct answer therefore depends on their level of expertise and their commitment to the hobby. For example: are they a beginner looking for a budget scope? Or are they somewhere between an amateur, a "serious user" or a semi-professional (however you may define that).

This article (taken from information on the web) recommends telescopes you may want to consider.

How to Pick the Best Telescope for You

In choosing the **best telescopes**, you should consider your level of expertise. There are numerous choices out there and selecting the best one can be mind-boggling especially if you only have a limited budget. Most people think that getting a starter telescope costs a lot. In reality, there is a legion of options out there which only costs below $250. However, it is also essential that it is made of high-quality optics and has a firm mount in order to have an enjoyable experience. Keep in mind that you should choose a model that is very easy and convenient to use. Additionally, it should also be portable.

If you're not sure how to choose which is the best telescope for you, then follow these suggestions to make your decision.

Aperture is the Most Important Element

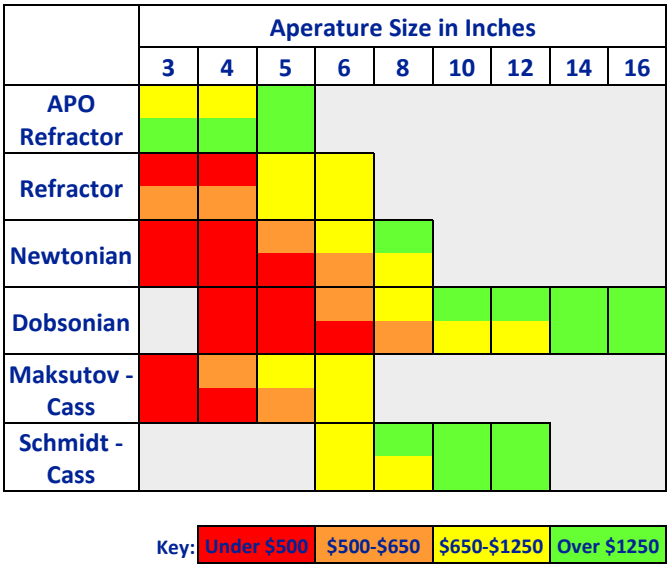
Above all else, aperture size is *the* primary consideration when buying a telescope!

All telescopes work by gathering in light and focusing it to a point. Eyepieces are used to magnify the focussed image so you can see details of faint and distant objects. To see fainter objects and greater detail you need to collect more light. The way to do that is to have a bigger aperture, which is why, after you have a budget set, this is usually the main consideration of a telescope purchase.

Dobsonian telescopes offer the most aperture for your dollars. Known as 'light buckets' and with no frills attached, Dob's offer just pure, unadulterated light collecting capability.

Other types of scope either cost more for the same sized aperture – or you get a smaller aperture for the same price – because some of the manufacturing cost of non-Dobsonian telescopes goes into mounts, tracking, lens quality, etc. These scopes — Refractor, Newtonian and Catadioptric (Maksutov-Cassegrain, Schmidt-Cassegrain) — offer benefits over a Dobsonian, depending on the type of astronomy you want to do.

A cost comparison of aperture and type of telescope is listed in the following chart.



The Pros and Cons of Buying a Refractor Telescope

Refractors are the only telescope type which does not contain a mirror. These are the original style of scope using only a glass lens to focus the light entering the telescope tube.

A fixed lens is a big pro for some users because there's no need to collimate. And, especially with higher quality lenses, there's the added benefit of fewer optical distortions, such as chromatic aberration. This makes some refractors great for astrophotography, but they are generally the very expensive 'apochromatic' lenses and generally out of reach of new starters.

(Continued on page 2)

On the 'cons' side for refractors are cost versus size. Making lenses is only cheap when they are small, which is why so many entry-level telescopes are refractors. As lens size increase, they quickly become very expensive to make, especially as the quality of glass used to make them improves.

Refractors make great entry level scopes (where they are much cheaper) and are hard to beat at the top end of the quality scale, especially for astrophotography. However, in the mid ranges, you run the risk of having the worst of both worlds: smaller aperture *and* inferior quality glass. At the higher end of the refractor is the **apochromat**, or **apochromatic** lens (**apo**), which is a telescope with multiple lenses that has better correction of chromatic and spherical aberration than the basic achromat (single) lenses used in an entry level refractor. *Achromatic* lenses are corrected to bring two wavelengths (typically red and blue) into focus in the same plane while apochromatic lenses are designed with additional lenses which bring three wavelengths (typically red, green, and blue) into focus in the same plane.

The Pros and Cons of Buying a Newtonian Reflector Telescope

The Newtonian reflector is simply a mirror at one end of a tube which gathers light entering at the opposite end. That primary mirror reflects collected light up to a secondary mirror which, in turn, focuses it towards an eyepiece mounted on the side of the telescope tube.

Generally speaking a more expensive reflector will have a larger aperture and a better-quality mirror, in terms of shaping and coatings used to defeat inherent optical defects.

Newtonians are the workhorse of the telescope world. They can turn themselves to planets, deep sky, visual observing and astrophotography (with an equatorial mount), which is fantastic. The downside of this general usage capability is they tend not to be amazing at any one thing!

For most new astronomers, this is not an issue. If you don't choose a Dob, you are almost certain to grab a Newtonian reflector on an equatorial mount and enjoy the versatility it offers.

Newtonian reflectors come into their own at the mid-price ranges, say $300 - $1000 (USD), where you'll get a decent aperture and a good mount. At the top end of that price bracket the mounts can also be motorized at a future date to give go-to and tracking functionality.

A Newtonian is a great way into the hobby of astronomy if you've never tried it before.

The Pros and Cons of Catadioptric (Compound) Telescopes

Catadioptrics (or cat's) pull off a very clever trick: they combine lenses and mirrors to create a long focal length in a much shorter tube.

For example, in a Dobsonian with a focal length of 1500mm, the tube will be around 60 inches (five feet) long! The same focal length squeezed into a cat might need a body of only two feet in length.

The obvious advantage of this is as much light-gathering power (aperture) and magnification (focal length) as a Dob in a significantly smaller, lighter and more transportable package. The downside of a compound scope is that, inch for inch, it will cost you a lot more than a Dob or Newtonian reflector (only high-end refractors are more expensive per inch of aperture).

Because they are smaller-bodied telescopes, compounds are easy to motorize. Connected to computer-controlled go-to and tracking, cat's are a good choice for astrophotography. However, Celestron's famous NexStar range - which features twice in this best telescopes of 2018 list - is supplied with an altazimuth mount, which makes astrophotography harder than if it were mounted on an equatorial tripod.

Cat's are ideal for you if you want to look at planets and deep space objects and you're happy to let a computer find and follow your evening's targets. You might also benefit from the go-to capabilities of a motorized catadioptric scope if you live under heavily light-polluted skies because they find objects that are too hard to see, even through your finderscope.

Best Telescopes of 2018—Comparison Chart

The table below summarizes some of the best rated telescopes for 2018 with recommendations for 4 categories of users: budget, amateur, serious and professional. Take your pick and check them out. Maybe it is time for upgrade or at least you will have the knowledge to recommend a suitable scope to the next person who asks.

Level	Refractor	Newtonian
Budget	Meade Infinity 102mm AZ ~C$350	PowerSeeker 127 EQ ~C$195
Amateur	Celestron Omni XLT102 ~C$400	Orion AstroView 6" ~C$495
Serious	Celestron Omni XLT 150mm ~C$1,325 w mount	Orion SkyView Pro 8" ~C$975
Professional	Sky-Watcher 120mm ProED ~C$2,750 + mount	Celestron Advanced VX8 ~C$1,575 c/w AVX mount
Level	**Dobsonian**	**Compound**
Budget	Orion SkyQuest XT6" ~C$300	Orion StarMax 90mm ~C$200
Amateur	Sky-Watcher 8" Collapsible ~C$2,575	Celestron NexStar 4SE ~C$650
Serious	Orion XT10" SkyQuest ~C$800	Celestron NexStar 6SE ~C$1,050
Professional	Meade 16" LightBridge ~C$2,600	Celestron CPC1100 StarBright SCT ~C$3,900

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.

Sky Events for Late June and Early July

July 25: Saturn 2° S of Moon
July 27: Mars at opposition & Full Moon
July 31: Mars at closest approach
Aug. 4: Last Quarter
Aug. 11: New moon
Aug. 13: Perseid meteors peak
Aug. 26: Full moon

Planets

Mercury: Continues to stretch its separation from the Sun achieving max on August 12th
Venus: Remains well placed on the evening sky.
Mars: Continues to grow until it achieves closest approach to earth on 31st. since 2003.
Jupiter: Well placed in the evening sky throughout the month.
Saturn: Well positioned in the late evening sky.
Uranus: Visible in the morning sky among the stars of Pisces.
Neptune: Visible in the overnight and morning hours in Aquarius.

R.A.S.C. London Centre Library — Books of the Month, July 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 July 2018 are as follows:

- *The Dobsonian Telescope: a Practical Manual for Building Large Aperture Telescopes,* by David Kriege, Richard Berry. – Richmond, Va.: Willmann-Bell, c1997 (2009 printing).
- *The Science of Shakespeare: A New Look at the Playwright's Universe,* by Dan Falk. C2014
- *Uncovering the Secrets of the Red Planet: Mars*, by Paul Raeburn. Foreword and Commentary by Matt Golombek. – Washington, D.C.: National Geographic Society, c1998. (Includes 2 pairs 3-D glasses enclosed in back cover.)

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, June 9th — July 7th 2018

By Robert Duff

Cronyn Observatory Public Night, Saturday, June 9th, 2018

Cloudy skies with light rain (drizzle) later in the evening greeted 28 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, June 9th, 2018, 8:30 p.m. Graduate student Ben George presented the digital slide presentation *"Brown Dwarfs and Their Potential for Finding Exoplanets"* and fielded questions. Graduate student Megan Tannock was initially at the door doing "crowd control" and counted 26 visitors during the slide presentation, with 2 more arriving during the questions after the presentation. Since there were few visitors, Megan went downstairs into the *"Black Room,"* after 30 minutes of opening, to do the *"Transit Demonstration"* and *"Spectroscopy Demonstration."* In all there were 28 visitors, including 2 who showed up after the slide presentation.

Graduate student Keegan Marr was telescope operator for the big 25.4cm refractor in the dome and, since it was cloudy, showed visitors the communications tower in south London through the big 25.4cm refractor in the dome. Since there were few guests and it began to drizzle rain, Keegan closed the dome and talked to the visitors about the 25.4cm refractor. Keegan focused on showing off the dome and allowing children to rotate the dome.

RASC London Centre was represented by Everett Clark, Heather MacIsaac and Paul Kerans. Everett set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain inside the dome so as to view the communications tower in south London through the door to the observation deck. Paul hauled out the London Centre's home-built 30.5cm Dobsonian and 25.4cm Dobsonian telescopes from the storeroom and collimated the 30.5cm Dobsonian. Paul also spoke to a couple of visitors and showed them his iron and chondrite meteorites.

Downstairs in the *"Black Room,"* Megan demonstrated 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. She also unlocked the door to the historic *"1940s Period Room"* for the visitors to explore. Paul Kerans came down later and showed a couple of visitors around the *"1940s Period Room."*

Since there were few visitors, with everybody gone by 10:15 p.m., Keegan closed the dome by 10:30 p.m. It was an interesting evening for the visitors, with the slide presentation on brown dwarfs and exoplanets, demonstrations of the transit detection method for finding extrasolar planets, the spectroscopy demonstration and a tour of the 1940s history room.

Cronyn Observatory Public Night, Saturday, June 16th, 2018

Mostly clear skies with some hazy clouds greeted some 47 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, June 16th, 2018, 8:30 p.m. Graduate student Keegan Marr made 2 presentations of the digital slide presentation *"Star Formation"* and fielded questions. RASC London member Bob Duff counted 35 people in the first lecture, 8 in the dome and one in the *"1940s Period Room"* around 8:57 p.m. There were 12 people in the second slide lecture and, since some people were in the dome during the first slide presentation, the estimated total is 47 visitors for the evening.

RASC London Centre was represented by Everett Clark, Dale Armstrong, Heather MacIsaac, Steve Imrie, Bob Duff, Mark Tovey and Henry Leparskas. Graduate student Mark Froncisz was telescope operator in the dome and, with some help from Everett, showed visitors Venus, the 3-day-past-new crescent Moon and then Jupiter through the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X).

Mark Froncisz and Henry Leparskas together set up the London Centre's home-built 30.5cm Dobsonian and the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain on the observation deck. Steve Imrie operated the 30.5cm Dobsonian (17mm Nagler eyepiece, 88X) showing visitors the 3-day-past-new crescent Moon and Jupiter, Saturn, the Ring Nebula (M57) and the double star Mizar and Alcor. Dale Armstrong operated the 8-inch (20.3cm) Schmidt-Cassegrain showing visitors the Moon, using the 26mm Plossl eyepiece (77X), then swapping in the 15mm Sky-Watcher UltraWide eyepiece together with the CEMAX 2X Barlow lens (266X) to show visitors Jupiter. (The CEMAX 2X Barlow lens was borrowed from the observatory's 90mm Coronado Solar Telescope.) Dale also showed visitors the stars Antares and Arcturus, the double star Izar (Epsilon Bootis), and the globular cluster M13 through the 8-inch (20.3cm) Schmidt-Cassegrain. Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and showed visitors Venus, using a 17mm Plossl eyepiece (73.5X) and later Jupiter, swapping in the 12.5mm Ortho eyepiece (100X) from the 20.3cm Schmidt-Cassegrain for a better view of Jupiter.

Dale spent some time early in the evening helping a high school volunteer with her Celestron 114mm equatorial Newtonian reflector, which was directed towards the communications tower in south London to align the finderscope, and later directed towards the Moon.

Downstairs in the history rooms, Mark Tovey showed visitors the newly created *"W. G. Colgrove Exhibit"* and 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. Mark also showed them the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. Both "*Period Rooms"* and the *"W. G. Colgrove Exhibit"* were designed by RASC London Centre member Mark Tovey.

Henry Leparskas showed up later in the downstairs *"Black Room"* and did 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.

The visitors were gone by around 11:00 p.m., after a very enjoyable evening learning about astronomy and observing through telescopes.

Cronyn Observatory Public Night, Saturday, June 23rd, 2018

Partly clear, later cloudy skies greeted 46 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, June 23rd, 2018, 8:30 p.m. Graduate student Mark Froncisz presented his digital slide presentation *"Exploring the Outer Planets"* and fielded questions. RASC London member Bob Duff counted 18 visitors in the lecture room at 8:30 p.m. and 37 by the end of the slide presentation. More visitors arrived and graduate student Meet Panchal, who was telescope operator for the big 25.4cm refractor in the dome, counted 46 visitors by the end of the evening.

RASC London Centre was represented by Everett Clark, Henry Leparskas, Bob Duff, Steve Imrie, Dale Armstrong, Mark Tovey and Heather MacIsaac. Everett set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain (20mm Plossl eyepiece, 100X) inside the dome door so as to view the bicycle rack in front of the Student Western Sports & Recreation Center. The 20.3cm Schmidt-Cassegrain was soon moved to the observation deck where Dale showed some visitors Venus, the 3-day-past-first quarter gibbous Moon and Jupiter, using the 26mm Plossl eyepiece (77X). Heather set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (17mm Plossl eyepiece, 73.5X) and briefly observed Venus before it was obscured by clouds. She then swapped in the 32mm Plossl (39X) to show visitors the Moon and Jupiter through her 90mm Maksutov-Cassegrain. Everett directed the 20.3cm Schmidt-Cassegrain towards the communications tower in south London after the sky clouded over.

There was a visitor from the CHRW Radio Western campus broadcast station and she briefly interviewed Henry Leparskas and Bob Duff. Henry gave her a tour of the dome, where she viewed Venus and the Moon through the telescopes set up on the observation deck. Henry then brought her downstairs where he briefly showed her the *"W. G. Colgrove Exhibit"*—W. G. Colgrove's workshop—before Mark Tovey came by and continued with a tour of the workshop and historic *"Period Rooms."* The visitor from CHRW Radio Western interviewed Mark Tovey and Dale Armstrong extensively. She also interviewed Mark Froncisz after his slide presentation.

Bob Duff listened to the slide presentation as he counted visitors and then went upstairs into the dome where he gave one couple, and later 3 students, a brief talk on some of the history of the observatory and technical aspects of the big 25.4cm refractor, using the Meade 28mm Super Wide Angle eyepiece (157X), which was in the telescope's diagonal, to explain how magnification was calculated. He also explained the 2 clocks on the east wall and the difference between Standard and Sidereal Time. The dome remained closed due to the dark clouds coming in from the north and expected rain.

Henry Leparskas spent most of the evening downstairs in the *"Black Room"* where he did 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 spent the evening in the downstairs history rooms, showing 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 newly created *"W. G. Colgrove Exhibit."* Henry gave 2 small groups of people specific tours of the history rooms to answer specific questions they had asked, while Mark was engaged with other groups. Both "*Period Rooms"* and the *"W. G. Colgrove Exhibit"* were designed by RASC London Centre member Mark Tovey.

Most of the visitors were gone by around 10:30 p.m. and the observatory was closed down by around 11:00 p.m., after an interesting and enjoyable evening with the slide presentation on the exploration of the outer planets, demonstrations of the transit detection method for finding extrasolar planets, the spectroscopy demonstration, tours of the history rooms and observing through telescopes.

Asteroid Day at the Cronyn Observatory, June 30th, 2018

Hazy skies greeted 37 visitors to Western University's Cronyn Observatory for Asteroid Day, Saturday, June 30th, 2018, 6:00—8:00 p.m. This special event was hosted by Western University's Centre for Planetary Science and Exploration (CPSX) in collaboration with the Department of Physics and Astronomy and the Department of Earth Sciences. Asteroid Day is held each year on the anniversary of the 1908 Tunguska impact event in Siberia—the largest in recent history—and is a global awareness campaign bringing people around the world together to learn about asteroids and how to protect future generations from cosmic impacts. The event organizer was Western University doctoral graduate in astronomy, Parshati Patel, who is Outreach Program Coordinator for Western's Centre for Planetary Science and Exploration.

RASC London Centre was represented by Everett Clark, Henry Leparskas, Heather MacIsaac, Norm McCall, Bob Duff, Mark Tovey and Edith Tovey. There were 2 tables set up inside the door to the lecture room, on the left and right-hand sides respectively: (1) the *"Meteorites and Impactites Display,"* presided over by Geoscience Collections Curator Alysha McNeil and 2 graduate students, and (2) the *"Edible Rock Analysis"* display, presided over by undergraduate student Dana Beaton.

Mark Tovey presented his digital slide presentation *"W. G. Colgrove and the Dresden Meteorite"* in the lecture room and fielded questions to an audience of 10 people. Mark then gave tours of the downstairs history rooms, showing 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 newly created *"W. G. Colgrove Workshop Period Room."* The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

Since it was daylight, the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X) in the dome was directed towards the communications tower in south London. On the observation deck outside the dome, Henry Leparskas showed visitors prominences and other features on the Sun through the observatory's 90mm Coronado H-Alpha Solar Telescope (CEMAX 18mm eyepiece, 44X) on the Sky-Watcher EQ5 mount. Heather MacIsaac showed people the Sun through her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain (32mm Plossl eyepiece, 39X) with a Kendrick Astro Baader film solar filter.

The event was over by around 8:00 p.m. after an enjoyable afternoon for the visitors learning about meteorites, the history of the observatory and viewing the Sun through solar filtered telescopes.

Cronyn Observatory Public Night, June 30th, 2018

Hazy skies greeted 146 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, June 30th, 2018, 8:30 p.m. Graduate student Shannon Hicks made 2 presentations of her digital slide presentation *"What Makes a Planet Habitable?"* and fielded questions. Graduate student Collin Knight was in charge of "crowd control" and counted 146 visitors for the evening. There were 52 visitors counted by 8:38 p.m., with more people arriving during Shannon's first slide presentation. There were half that many people for her second presentation.

RASC London Centre was represented by Everett Clark, Henry Leparskas, Heather MacIsaac, Steve Imrie, Norm McCall, Bob Duff, Dale Armstrong, Mark Tovey and Edith Tovey. Graduate student Ben George was telescope operator in the dome and showed visitors the planet Venus and later Saturn through the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X). Everett assisted in the dome and on the observation deck and talked to visitors throughout the evening, distributing 10 *"Star Finder"* planispheres.

On the observation deck outside the dome, Steve Imrie and Norm McCall operated the London Centre's home-built 30.5cm Dobsonian (17mm Nagler eyepiece, 88X) and showed people Venus, Jupiter and Saturn. Venus appeared gibbous, near half-phase, and 3 of the 4 Galilean moons were visible around Jupiter. Norm located Saturn in the hazy southeastern sky using the observatory's 10 X 50mm binoculars and Steve directed the 30.5cm Dobsonian towards the ringed planet. Most people were able to see Saturn's moon Titan and some an additional moon (possibly Rhea). Norm used his Mobile Observatory smartphone app to explain the orientation of the planets around the solar system and their location in the night sky.

Dale Armstrong and Everett Clark set up the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain on the observation deck. Dale operated the 20.3cm Schmidt-Cassegrain for the evening and began by showing visitors the communications tower in south London, using the 26mm Plossl eyepiece (77X). With deepening twilight he swapped in the 15mm Sky-Watcher UltraWide eyepiece together with the CEMAX 2X Barlow lens (266X) to show them Jupiter through the 20.3cm Schmidt-Cassegrain. (The CEMAX 2X Barlow lens was from the observatory's 90mm Coronado Solar Telescope.) The Great Red Spot was visible for 25 minutes, to the delight of many visitors, before it rotated out of view. Dale swapped in the 12.5mm Ortho eyepiece (160X) to view Saturn and later directed the 20.3cm Schmidt-Cassegrain towards the orange colored 2-day-past-full waning Moon rising in the east. Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and showed visitors Venus, using the 32mm Plossl eyepiece (39X), and Jupiter and Saturn, using the 17mm Plossl eyepiece (73.5X). After the public had gone, Heather tested her newly acquired Vixen 8mm Lanthanum LVW eyepiece (156X) for an awesome view of Jupiter in her 90mm Maksutov-Cassegrain telescope.

Bob, and later Norm, spent some time helping a high school volunteer with her Celestron 114mm equatorial Newtonian reflector, which was directed towards the communications tower

in south London to align the finderscope and later directed towards Jupiter.

Henry Leparskas spent most of the evening downstairs in the *"Black Room"* where he did 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 spent the evening in the downstairs history rooms, showing 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 newly created *"W. G. Colgrove Workshop Period Room."* The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

The observatory was closed down around 11:15 p.m. after an enjoyable evening of astronomy for the visitors, graduate students and RASC London Centre members.

Cronyn Observatory Public Night, Saturday, July 7th, 2018

Clear skies greeted 235 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, July 7th, 2018, 8:30—11:00 p.m. RASC London Centre member Henry Leparskas presented the "Einstein's Equivalence Principle" experiment, which consisted of a metre long stick topped by transparent plastic sphere containing a cup with a ball attached to a spring. Henry showed how, when the stick is held vertically and tossed in the air (or dropped), gravity is cancelled out in free fall, enabling the spring to pull the ball into the cup — since the ball experiences zero gravity — thus demonstrating Einstein's "Equivalence Principle" that gravitational force is indistinguishable from acceleration. Henry circulated the device among some of the visitors to try the experiment themselves. There were 43 visitors in the lecture room by 8:15 p.m.

Professor Pauline Barmby made 2 presentations of her digital slide presentation *"The Gemini Observatory"* and fielded questions. Graduate student Megan Tannock was initially at the door doing "crowd control" before going downstairs into the *"Black Room,"* around 8:30 p.m., to do the *"Transit Demonstration"* and *"Spectroscopy Demonstration."* RASC London member Bob Duff took over the visitor count which came to 235 people by the end of the evening.

Megan Tannock spent most of the evening downstairs in the *"Black Room"* where she did 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 spent the evening in the downstairs history rooms, showing 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 newly created *"W. G. Colgrove Workshop Period Room"* was also open for visitors to inspect. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

RASC London Centre was represented Everett Clark, Henry Leparskas, Steve Imrie, Dale Armstrong, Heather MacIsaac, Bob Duff, Steve Gauthier, Peter Jedicke and Mike Flegel. Everett made ready the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X) in the dome and directed it towards Venus, although it was not visible in the bright early evening sky. Graduate student Hadi Papei arrived and was telescope operator for the evening, showing visitors Venus and Jupiter through the 25.4cm refractor (Meade 28mm SWA eyepiece, 157X). Peter Jedicke gave 3 short talks in the dome to visitors who were lined up all the way down the stairs to view through the big 25.4cm refractor. Mike Flegel answered some questions. Everett talked to visitors and gave out 2 *"Star Finder"* planispheres.

On the observation deck outside the dome, Steve Imrie directed the London Centre's home-built 30.5cm Dobsonian towards the wind turbine on the Engineering building and then showed visitors Venus (17mm Nagler eyepiece, 88X). He was soon joined Steve Gauthier and they took turns showing people Jupiter and Saturn through the 30.5cm Dobsonian (17mm Nagler eyepiece, 88X), later swapping in the 12.5mm Ortho eyepiece (120X) for a better view of Saturn. Steve Gauthier answered questions from visitors. Dale set up and operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain for the evening and began by showing visitors Jupiter (12.5mm Ortho eyepiece, 160X). He later swapped in the 15mm Sky-Watcher UltraWide eyepiece (133X) and then the 26mm Plossl (77X) to show them globular cluster M13. Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and showed visitors Venus, Jupiter and Saturn, using the 17mm Plossl eyepiece (73.5X).

The visitors were gone by 11:00 p.m., after an interesting and enjoyable evening with the slide presentation *"The Gemini Observatory,"* the *"Transit"* and *"Spectroscopy"* demonstrations, tours of the history rooms, and observing Venus, Jupiter, Saturn and M13 through telescopes. The 25.4cm refractor was directed towards Mars, rising low in the southeastern sky, around 11:30 p.m. after the visitors had gone, and Dale installed the No. 25 Red planetary filter on the Meade 28mm SWA eyepiece (157X) to try and highlight features on the planet's surface.

Indigenous Services Mini-University, Special Event at the Cronyn Observatory, July 2nd, 2018

Mostly clear skies greeted 22 visitors, including 17 students (14-17 years of age) and 5 leaders, from the Indigenous Services Mini-University, for a Special Event at Western University's Cronyn Observatory, Monday, July 2nd, 2018, 9:00 p.m. Professor Jan Cami presented his digital slide presentation on *"Astronomy and Space Research at Western"* and fielded questions. Jan then divided them into 2 groups, taking one downstairs for demonstrations in the *"Black Room"* and a tour of the historic *"1940s Period Room"* and *"1967 Period Room,"* while the other went upstairs into the dome.

Graduate student Viraja Khatu was telescope operator in the dome. RASC London Centre was represented by Henry Leparskas, Bob Duff, Heather MacIsaac and Dale Armstrong. Bob directed the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 157X) towards the communications tower in south London. Before the first group of visitors arrived in the dome, Viraja directed the 25.4cm refractor towards Venus and later Jupiter and Saturn, which made excellent sight for the visitors through the Meade 28mm SWA eyepiece (157X).

Henry Leparskas set up the London Centre's home-built 30.5cm Dobsonian (17mm Nagler eyepiece, 88X) on the observation deck and showed the visitors Venus, Jupiter and the "Double-Double" star system Epsilon Lyrae. The Great Red Spot was visible on Jupiter. Dale Armstrong operated the observatory's Meade 8-inch (20.3cm) Schmidt-Cassegrain, installing the 15mm Sky-Watcher UltraWide eyepiece together with the CEMAX 2X Barlow lens (266X) to show them Jupiter. (The CEMAX 2X Barlow lens was from the observatory's 90mm Coronado Solar Telescope.) Heather MacIsaac set up her Celestron NexStar 90SLT 90mm Maksutov-Cassegrain and showed the visitors Venus, Jupiter and Saturn, using the 17mm Plossl eyepiece (73.5X).

Downstairs in the *"Black Room"* Professor Jan Cami made 2 demonstrations, one to each group, 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. Jan also gave them a tour 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; and the *"1967 Period Room,"* recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. Both "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

The visitors were gone by 11:00 p.m., after an enjoyable evening learning about astronomy at Western University and observing through telescopes. The RASC London members and Viraja remained behind until 11:30 p.m. to help Jan test his newly acquired 2-inch planetary eyepiece filters on the 25.4cm refractor. These included the Celestron No. 25 Red, No. 12 Yellow, No. 58A Green and No. 80A Blue filters, and an Antares No. 21 Orange filter. (Planetary filters are identified by the Kodak Wratten numbers used in photography.) As best as can be remembered, the No. 58A Green and No 21 Orange filters were tested on Saturn and the No. 25 Red and No. 80A Blue filters were tested on Jupiter, using the Meade 28mm SWA (157X) and 17mm Nagler (258X) eyepieces in the 25.4cm refractor.

Cronyn Observatory Public Night, Saturday, July 7th, 2018

Clear skies greeted 235 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, July 7th, 2018, 8:30—11:00 p.m. RASC London Centre member Henry Leparskas presented the "Einstein's Equivalence Principle" experiment, which consisted of a metre long stick topped by transparent plastic sphere containing a cup with a ball attached to a spring. Henry showed how, when the stick is held vertically and tossed in the air (or dropped), gravity is cancelled out in free fall, enabling the spring to pull the ball into the cup—since the ball experiences zero gravity—thus demonstrating Einstein's "Equivalence Principle" that gravitational force is indistinguishable from acceleration. Henry circulated the device among some of the visitors to try the experiment themselves. There were 43 visitors in the lecture room by 8:15 p.m.

Professor Pauline Barmby made 2 presentations of her digital slide presentation *"The Gemini Observatory"* and fielded questions. Graduate student Megan Tannock was initially at the door doing "crowd control" before going downstairs into the *"Black Room,"* around 8:30 p.m., to do the *"Transit Demonstration"* and *"Spectroscopy Demonstration."* RASC London member Bob Duff took over the visitor count which came to 235 people by the end of the evening.

Megan Tannock spent most of the evening downstairs in the *"Black Room"* where she did 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 spent the evening in the downstairs history rooms, showing 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 newly created *"W. G. Colgrove Workshop Period Room"* was also open for visitors to inspect. The 3 "*Period Rooms"* were designed by RASC London Centre member Mark Tovey.

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