

# POLARIS



## Royal Astronomical Society of Canada London Centre Newsletter November 2016

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### The Theory of Simultaneous Invention

Patrick Whelan

Do you ever think of new innovative things? Like coming up with a name for a product or a slogan for a product? Or you see two different things and you think of a way to combine them and make a much better device. Then after making your 'discovery' you find out it has been made! This sort of thing happens all the time. Example: Hollywood comes with a movie about an asteroid striking the Earth and the next thing you know there are two movies coming out with almost the same premise. (Deep Impact and Armageddon 1998) Here is an example of two discoveries happening at the same time: After Isaac Newton and Gottfried Wilhelm Leibniz had exchanged information on their respective systems of calculus in the 1670s, Newton in the first edition of his Principia (1687), in a scholium, apparently accepted Leibniz's independent discovery of calculus. Wow! Who was the first person to think to put a radio and a record player together? How about a radio and an alarm clock?

When I was in grade 3 my teacher Mrs. Lombardo asked us to create an advertisement for a product. I created an insect repellent called Bug Off. Years later I saw that name on a product. I invented it!

Sixteen years ago Bluetooth technology was becoming prevalent. I saw the many things it was being used for and I came up with an invention. A mobile screen that would be connected to the main computer in the house through Bluetooth. The screen you held wouldn't need a processor since it only showed you what was on the screen on your main computer. It would be very light because of this and very portable. I envisioned it having speakers and a touch screen so you didn't need a mouse. I saw my daughter using it around the house playing her kid's programs and animated books. When she went to bed I would use it to read online or run programs from my computer in the comfort of my couch or chair or outside. I never made one but I wondered why someone didn't! Well they did but it never sold because Microsoft killed saying it would violate software agreements on having more than one user per windows computer. It was called Smart Display. I invented it!

Know what else I 'invented'? I have a telescope on an equatorial mount. It has motors that will make the telescope follow the object in the sky I am viewing. I like

it but the mount has so many pieces and it is a pain in the 'you know what' to move and put together all the time. I also have a couple Dobsonian mounts. These are simpler but no motors to move them. There are also Dobsonian mounts that will now follow the sky as well. Both motorized mounts need to be oriented (orientated is NOT a word!) properly before using and also have small computers to guide them. So here is my idea. You take the Dobsonian mount and connect simple motors to both axes. There is no computer to drive them and you don't need to orient it in any way. The motors are connected to a joystick that will control both motors. The joystick doesn't self-centre...it stays where you put it. Up and down on the joystick moves the altitude motor and left and right moves the azimuth motor. How far you move the joystick determines how fast the motor spins. Now here is the fun part. For any curve, if you look at a small part of the curve it will approximate a line. This is called a linear approximation. So as an object moves in an arc across the sky, for a small amount of time it is approximately following a line. While looking through the telescope you move the joystick into such a position so that both motors are moving at just the right rate and it will follow the object for a while. Haha! It seemed easy enough but I never made one. (or for that matter, got someone else to make it!) Guess what? I became the recipient of a bunch of astronomical equipment when my close friend Matt Neima passed away. I gave most of it away but moved all the remaining odds and ends to my house when his family needed his house emptied out. I was going through things this week. Tripod legs and finders and hand controllers for telescopes and hey! What was this controller? It didn't go on a mount he had and it had a funny name. It was called a Train and Track. It looked odd and what does it do? You probably already know. It has two motors that go on an alt-azimuth mount. There are two speed controller knobs. They have + and - on them to make the motors go both ways. Yes...it has knobs instead of my idea of a joystick. This controller does exactly what I had thought of a number of years ago. The brochure states that it will track an object for about 10 minutes with 30 seconds of training.

I invented it!

## Moon Phases



November 7 2016



November 14 2016



November 21 2016



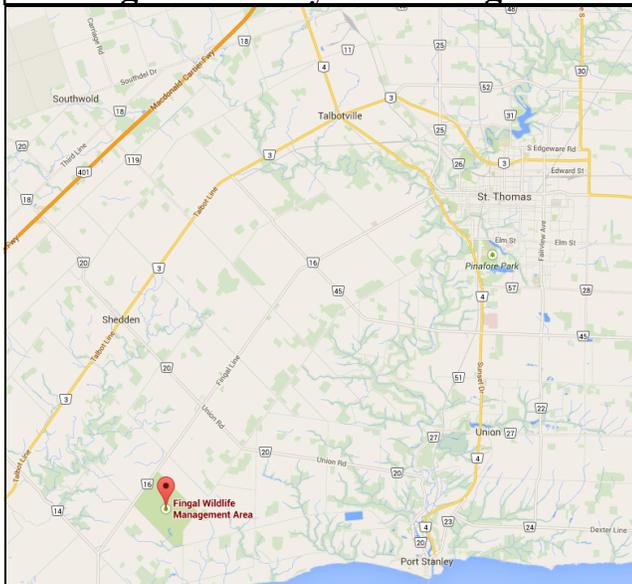
November 29 2016

## November Meeting

The guest speaker for November will be Professor Pauline Barmby from Western's Astronomy dept. Her talk is titled "Big Data in Astrophysics". Pauline worked with the team that won the Nobel Prize for discovering that the expansion of the Universe is accelerating.

London RASC Website: <http://www.rasclondon.ca/>  
London RASC Forums: <http://forums.rasclondon.ca/>

## Fingal Dark Sky Observing Site



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## Sky Events for Late November and Early December

November 21 Regulus 1.3° N of Moon  
 November 25 Jupiter 1.9° S of Moon  
 December 6 Neptune 0.7° S of Moon  
 December 11 Mercury greatest elongation E  
 December 12 Large tides  
 December 13 Aldebaran 0.5° S of Moon  
 December 14 Geminid meteors peak



Mercury well placed in evening twilight  
 Venus in the western sky after sunset  
 Mars sets mid evening  
 Jupiter low in the morning sky in Virgo  
 Saturn vanishing into evening twilight  
 Uranus well placed in the evening sky retrograding in Pisces  
 Neptune well placed in early evening sky, setting near midnight



### R.A.S.C. London Centre Library Books of the Month November 2016 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 November 2016 are as follows:

**Cataclysmic Cosmic Events and How to Observe Them**, by Martin Mobberley. c2009. (Astronomers’ Observing Guides)

**Foundations of Astronomy**, by Michael A. Seeds. – 7th Edition, c2003

**Sky & Telescope [compact disc]: January—December, 2015** (1 DVD-ROM disc) – c2016.

For a complete listing of our library collection please go to the Main Menu on the left side of the RASC London Centre Web site main page and click on Club Library:

<http://www.rasclondon.ca/library-and-rentals>

If there is a particular book or video you wish to borrow, please feel free to contact me by telephone at (519) 439-7504 or by e-mail at [rduff@sympatico.ca](mailto:rduff@sympatico.ca)

#### **Donations to RASC London Centre Library**

I wish to thank Robert Steer for donating the following DVD-ROMs to the RASC London Centre Library, at our monthly meeting, Friday, February 19, 2016:

**Sky & Telescope [compact disc]: January—December, 2015** (1 DVD-ROM disc) – c2016.

#### **Cronyn Observatory Exploring the Stars & Public Nights, October 17th—November 10th, 2016**

**By Robert Duff**

#### **Cronyn Observatory Public Night, Monday, October 17th, 2016**

Mostly cloudy skies greeted 3 visitors to Western University’s Cronyn Observatory Public Night, Monday, October 17th, 2016, 7:00 p.m. They were welcomed by graduate student Dilini Subasinghe and, since there was no slide presentation, were directed upstairs into the dome.

RASC London Centre was represented by Everett Clark and

Bob Duff. Graduate student Robin Arnason was telescope operator and directed the big 25.4cm refractor (32mm Erfle eyepiece, 137X) in the dome towards the lights on the communications tower in south London. Everett also set up the London Centre’s 25.4cm Dobsonian (17mm Nagler eyepiece, 66X) on roof patio outside the dome so as to view the wind turbine on the Engineering building. Bob later observed the yellow and blue double-star Albireo with the 25.4cm Dobsonian (17mm Nagler eyepiece, 66X). Everett Clark talked to one lady and her young son and gave them a “Star Finder” planisphere.

There were in all 3 visitors, including on lady and her young son and one student (who did not stay). The event was scheduled for 7:00—9:00 p.m. but the observatory was closed down

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early at 8:30 p.m.

### **Exploring the Stars, Western Aikido Club, October 24th, 2016**

Partly cloudy skies greeted 14 visitors (including one child) from the Western Aikido Club for Exploring the Stars at Western University's Cronyn Observatory, Monday, October 24th, 2016, 7:30 p.m. There was no slide presentation and graduate student Shannon Hicks welcomed everybody and brought them upstairs into the dome.

RASC London Centre was represented by Everett Clark, Paul Kerans and Bob Duff. Shannon gave the visitors a brief talk about the big 25.4cm refractor in the dome. Everett then directed the 25.4cm refractor (32mm Erfle eyepiece, 137X) towards Mars.

Shannon supervised as the visitors lined up and climbed the observing ladder to view Mars through the 25.4cm refractor, while Physics and Astronomy staff member Henry Leparskas talked to them about the big telescope and the history of the Cronyn Observatory. Shannon also directed the 25.4 cm refractor to the yellow and blue double-star Albireo after viewing Mars. Paul Kerans showed the visitors the Andromeda Galaxy (M31), globular cluster M13 and the Ring Nebula (M57) through the London Centre's 25.4cm Dobsonian (17mm Nagler eyepiece, 66X) set up on the roof patio outside the dome. Everett gave one "Star Finder" planisphere to a little girl accompanying the adults.

When the sky clouded out around 8:35 p.m., Shannon brought everybody downstairs into the "Black Room" for the "Transit Demonstration" activity, with the "Transit Demo" model simulating the detection of extra-solar planets. The event was over by around 9:00 p.m. after a very enjoyable evening of astronomy for the visitors.

### **Exploring the Stars, 1st Dorchester Cub Scouts, October 25th, 2016**

Clear skies greeted 23 visitors (14 children and 10 adults / leaders) from the 1st Dorchester Cub Scouts for Exploring the Stars at Western University's Cronyn Observatory, Tuesday, October 25th, 2016, 6:30 p.m. Graduate student Dilini Subasinghe began the digital slide presentation "The Cub Scout Astronomy Badge" and then took a short break when Everett invited everybody upstairs to view Venus through the London Centre's 25.4cm Dobsonian (17mm Nagler eyepiece, 66X) before the planet set below the buildings to the west. Dilini then finished the slide presentation and fielded questions.

Dilini followed the slide presentation with the "Constellations" activity, distributing 19 "Star Finder" planispheres. She then showed the Cubs the slide "Reading a Star Finder" followed by 2 constellations slides from the astronomy software program "Stellarium," for them to learn how to use the planispheres. Graduate student Robin Arnason assisted the Cubs in assembling the planispheres with adhesive tape.

RASC London Centre was represented by Everett Clark and Bob Duff. Bob gave a brief telescope talk about the observatory and the big 25.4cm refractor when everybody arrived upstairs in the dome. Everett and Robin showed the visitors Mars through the 25.4cm refractor, using the 32mm Erfle eyepiece (137X), and then Vega, using the Meade 28mm Super Wide Angle eyepiece (157X). Bob showed the visitors the yellow and blue double-star Albireo and the Ring Nebula (M57) through the London Centre's 25.4cm Dobsonian (17mm Nagler eyepiece, 66X).

The visitors were very appreciative and were gone by around 8:30 p.m. after a very enjoyable evening learning about astronomy and observing through telescopes.

### **Cronyn Observatory Public Night, Saturday, October 29th, 2016**

Cloudy skies greeted 28 visitors to Western University's Cronyn Observatory Public Night, Saturday, October 29th, 2016, 7:00 p.m. Graduate student Robin Arnason made his digital slide presentation "Zombie Stars: Black Holes, Neutron Stars and White Dwarfs."

RASC London Centre was represented by Paul Kerans, Peter Jedicke, Dale Armstrong and Bob Duff. Paul counted 21 visitor, including 2 children, early in the evening and Bob counted 20 (including 2 children) in the lecture room, when he arrived around 7:48 p.m. The count was 28 visitors in all, with the arrival of 7 more adults and children later in the evening.

Graduate student Shannon Hicks was telescope operator in the dome for the first hour, 7:00—8:00 p.m., with Robin Arnason taking over for the rest of the evening. However, cloudy skies ruled out observing and the dome remained closed. Peter Jedicke gave talk on the history of the Cronyn Observatory and the technical aspects of the big 25.4cm refractor in the dome. He showed the visitors the refractor's 25.4cm lens and also talked about the Schmidt camera and Cassegrain reflector telescope piggybacked on the big refractor. Peter also called their attention to the 2 clocks on the east wall of the observatory and explained the difference between Standard and Sidereal time.

Dale Armstrong set up the observatory's 8-inch (20.3cm) Meade Schmidt-Cassegrain (26mm Plossl eyepiece, 77X) on the table and opened the window, inviting visitors to view the red light above the campus buildings to the north.

Paul Kerans showed visitors his chondrite (stony) and iron meteorites as well as his Moon and Mars meteorite samples in small plastic display cases. Paul placed the lunar meteorite sample in a wooden block with a transparent Lexan polycarbonate sheet cover and invited visitors to "walk on the Moon." There were 5 "Star Finder" planispheres distributed.

Bob Duff talked with one family who had arrived later in the evening and showed them the wind turbine on the Engineering building through the London Centre's 25.4cm Dobsonian (17mm Nagler eyepiece, 66X) set up on the roof patio outside the dome.

The visitors were gone by around 9:00 p.m. Dale had brought his camera and tripod to take pictures. At the end of the evening he set up lights and an umbrella style reflector to take portraits of the RASC London members and Robin Arnason standing beside the 25.4cm lens of the big refractor. It was a nice ending to an enjoyable evening at the Cronyn Observatory.

### **Exploring the Stars, Best Buddies at King's University College, November 2nd, 2016**

Cloudy skies with rain showers greeted 26 visitors (including 3 children) from Best Buddies at King's University College for Exploring the Stars at Western University's Cronyn Observatory, Wednesday, November 2nd, 2016, 6:00—8:00 p.m. Graduate student Robin Arnason made the digital slide presentation "Constellations" and fielded questions. Robin followed this with the activity "Kitchen Comet," inviting everybody to the table set up at the front of the lecture room where he made a comet from dry ice and other materials.

RASC London Centre was represented by Everett Clark and Bob Duff, who arrived later around 7:15 p.m. Everett set up the observatory's 8-inch (20.3cm) Meade Schmidt-Cassegrain (26mm Plossl eyepiece, 77X) inside the dome and directed it through the door to the roof patio so as to view the lights on the communications tower in south London. Robin gave a talk about the big 25.4cm refractor in the dome, which remained closed due to rain.

When the group returned back downstairs Robin went to his laptop computer, connected to the digital slide projector, and opened the history page from the Cronyn Observatory Website and Bob Duff gave a talk about the history of the Cronyn Observatory and some of the technical aspects of the big 25.4cm refractor. Bob described the Schmidt Camera and Cassegrain reflector telescope piggy-backed on the 25.4cm refractor and Robin scrolled the history page down to show the 25.4cm refractor with the piggy-backed Schmidt Camera and Cassegrain reflector. Bob also explained the 2 clocks on the east wall of the dome and the difference between Standard and Sidereal Time.

The group left around 8:00 p.m. after an interesting and enjoyable evening learning about astronomy and telescopes.

### **Exploring the Stars, 10th London Guides and Pathfinders, November 7th, 2016**

Clear skies greeted 16 visitors (including 11 children and 5 adults / leaders) from the 10th London Guides and Pathfinders, for Exploring the Stars at Western University's Cronyn Observatory, Monday, November 7th, 2016, 6:30 p.m. Graduate student Kendra Kellogg presented the digital slide presentation "The Earth Moon System" and fielded questions. Kendra followed this with the activity "Crater Experiment" and invited the Guides to drop various size balls into a pan—placed on the floor—filled with flour and topped with chocolate powder to demonstrate impact cratering.

RASC London Centre was represented by Everett Clark, Norm McCall, Paul Kerans and Bob Duff. When the Guides arrived upstairs in the dome, Bob gave a brief talk on the history of the Cronyn Observatory and some of the technical aspects of the big 25.4cm refractor as well as the Schmidt camera and Cassegrain reflector piggybacked on the main telescope. Bob also called everybody's attention to the 2 clocks on the east wall and explained the difference between Standard and Sidereal Time.

Kendra and Everett directed visitors as they climbed the observing ladder to view the first-quarter Moon through the big 25.4cm refractor (28mm Meade Super Wide Angle eyepiece, 157X). They also showed the visitors the yellow and blue double star Albireo and the bright star Vega through the 25.4cm refractor (157X). The visitors were invited to "walk on the Moon" by stepping on Paul Kerans' lunar meteorite sample in a small plastic display case placed in a wooden block and protected with a transparent Lexan polycarbonate sheet cover.

On the roof patio outside the dome, Paul set up his 9.25-inch (23.5cm) Celestron Schmidt-Cassegrain (Vixen equatorial mount) and showed visitors Mars and the Moon (10mm Axiom LX eyepiece, 235X), and then globular cluster M13, the Owl Cluster (NGC457) and the planet Uranus (21mm Ethos eyepiece, 112X). Norm McCall showed visitors the Andromeda Galaxy (M31) and the Moon through the London Centre's 25.4cm Dobsonian (17mm Nagler eyepiece, 66X). Bob Duff directed the 25.4cm Dobsonian towards the Ring Nebula (M57). Bob and Norm talked with the visitors as they viewed the Ring Nebula (M57) through the 25.4cm Dobsonian.

The visitors were gone by around 8:00 p.m. after expressing their appreciation for an excellent evening of astronomy.

### **Exploring the Stars, University Heights Public School, Grade 5/6, November 8th, 2016**

Cloudy skies with rain showers greeted 74 visitors (including 39 children and 35 adults) from the University Heights Public School, Grade 5/6 class, for Exploring the Stars at Western University's Cronyn Observatory, Tuesday, November 8th, 2016, 7:00 p.m. Graduate student Robin Arnason presented the digital slide presentation "Extra Solar Planets" and fielded questions. Robin followed this with the activity "Kitchen Comet," building a model comet with dry ice and other materials on a table set up at the front of the lecture room.

RASC London Centre was represented by Everett Clark and Bob Duff. When everybody arrived upstairs in the dome, Bob gave a talk on the history of the Cronyn Observatory and some of the technical aspects of the big 25.4cm refractor, showing them the 25.4cm objective lens and demonstrating the telescope with the 32mm eyepiece (137X). Bob described the Schmidt Camera and Cassegrain reflector telescope piggy-backed on the 25.4cm refractor. Bob also explained the 2 clocks on the east wall of the dome and the difference between Standard and Sidereal Time.

Since rain showers ruled out opening the dome Bob supervised as

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visitors viewed the Western Sports & Recreation Centre through the observatory's 8-inch (20.3cm) Meade Schmidt-Cassegrain telescope set up inside the dome so as to view out the door to the roof patio—swapping in the 26mm Plossl eyepiece (77X), in place of the 12.5mm Ortho eyepiece (160X), for a better view.

The rain showers eased and Everett set up the London Centre's 25.4cm Dobsonian (17mm Nagler eyepiece, 66X) on the roof patio outside the dome to show visitors the wind turbine on the Engineering building and later the one-day-past-first quarter Moon, visible through thin moving clouds. The visitors were invited to "walk on the Moon" by stepping on lunar meteorite sample in a small plastic display case placed in a wooden block and protected with a transparent Lexan polycarbonate sheet cover. (The lunar meteorite sample in the display case and wooden block was provided by RASC London Centre member Paul Kerans.)

The children and adults asked many good questions and everybody was appreciative the excellent slide lecture on how exoplanets are discovered and the planets discovered so far, the comet making activity with dry ice and observing the Moon through a telescope, despite the unpromising weather. The visitors were gone by around 9:00 p.m.

### **Exploring the Stars, 36th London Sparks, November 10th, 2016**

Clear skies greeted 36 visitors (including 19 children and 17 adults / leaders) from the 36th London Sparks, for Exploring the Stars at Western University's Cronyn Observatory, Thursday, November 10th, 2016, 6:30 p.m. Graduate student Shannon Hicks presented the digital slide presentation "Constellations" and distributed 20 "Star Finder" planspheres to the 19 children and one of the adults for them to assemble and use later.

RASC London Centre was represented by Everett Clark, Paul Kerans and Bob Duff, who arrived later, around 6:50 p.m. Everett directed the big 25.4cm refractor in the dome towards the 3-day-past-first-quarter gibbous Moon, which made a splendid view through the 28mm Meade Super Wide Angle eyepiece (157X). Shannon and Everett supervised as the visitors climbed the observing ladder to view the Moon through the 25.4cm refractor. Everett later redirected the 25.4cm refractor (157X) towards the bright star Vega for everybody to view.

On the roof patio outside the dome, Everett and, later, Bob showed visitors the Moon through the London Centre's 25.4cm Dobsonian, using the 17mm Nagler eyepiece (66X). Paul Kerans set up his 9.25-inch (23.5cm) Celestron Schmidt-Cassegrain (Vixen equatorial mount) and showed visitors the Andromeda Galaxy (M31), Mars and the planet Uranus (21mm Ethos eyepiece, 112X). The visitors were very appreciative, expressing their thanks for a very enjoyable evening of astronomy, and were gone by around 7:30 p.m.



