

POLARIS



Royal Astronomical Society of Canada London Centre Newsletter June 2017

Fixing Binoculars

Patrick Whelan

I friend of mine called me last week. He had bought a pair of 25x100 binoculars off the internet (eBay?) and when they arrived they were horribly out of collimation and he had to send them back. Sure he got his money back, but he was out \$100 for shipping!

Then he bought another pair and guess what? Yup. They were way out of collimation too! That is when he called me lamenting about his purchases. So I told him we could probably fix them up.

They were 'no name' binoculars. I couldn't find a manufacturing name on them anywhere. It did have BAK4 prisms printed on them. We put them on a sturdy tripod outside and looked through them. The right eye image was way above the left one.

Collimating binoculars is not as easy as collimating a reflector telescope. Perhaps even the word 'collimating' is wrong. What I am really doing is aligning one barrel of the binoculars with the other. There are some inherent problems in aligning binoculars. Let's say the left barrel of the binoculars is okay and the right barrel is pointing up. I could align them by making the left barrel point up as well. Now they are both 'wrong' but they are aligned and would seem acceptable looking through them. But we wouldn't be getting all the light through them. By standing back from the binoculars a meter or so and looking through the binoculars backwards, you can see the small hole of the eyepieces. As you move your head around you can make the hole seem football shaped or make it round. When you can make it round the image of the circle should also be in the middle of the front lens. With his binoculars, when we were looking (backward) through the right barrel, the hole of the eyepiece was round when it was near the top of the front lens. Hmmmm.

There are two screws to adjust each barrel's prisms. There is an outside screw near the eyepiece that adjusts the view left and right. There is another screw between the barrels and further from the eyepiece that

adjusts the view up and down. By adjusting the screw that moves the image up and down we were able to align the binoculars. Looking backward through the binoculars we could see the images of the eyepieces were acceptably in the middle and round so we were done.

There are lots of caveats (warnings) when attempting this. From what I have read, true collimating/aligning should be started by manipulating the front lenses. In most binoculars I have looked at, the front

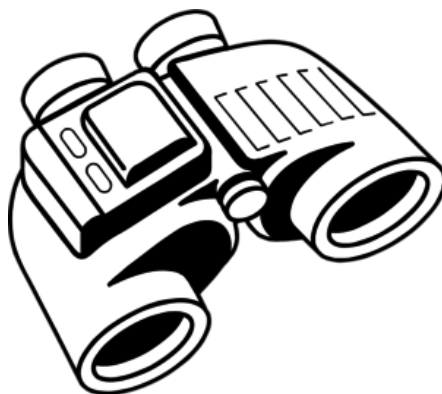
lenses are pretty much glued in. And if not there are no collimating screws like a refractor objective or any other apparent mechanism to adjust them. And there is also the possibility of aligning the barrels but having both barrels improperly collimated. (as I stated above) I guess one way to really check this would be to have a laser pointer (collimator) that could be put on the eyepiece and then shone through the binoculars and you could see if the laser beam exits the middle of the front objective.

The optics will probably make the beam diverge but I will give it a try when I get home. Yup I was right, the beam came out as a large circle when it hit the front objective.

Whether we achieved 'actual' 'perfect' 'true' alignment and/or collimation is hard to say. But my friend now has a pair of working binoculars instead of broken binoculars and he is very happy. And it won't cost him another \$100 to send them back.

Disclaimer: I know you have the binoculars, you have the set of jeweler's screwdrivers and you have a pair of eyes to check them out... but your actual results may vary! Please be careful! And don't run with screwdrivers in your hands, you might put someone's eye out!

I now absolve myself of responsibility for anyone practicing what I have written here. Let the fixer beware!



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Moon Phases



Full Moon: May 25, 2017



Last Quarter: June 1, 2017

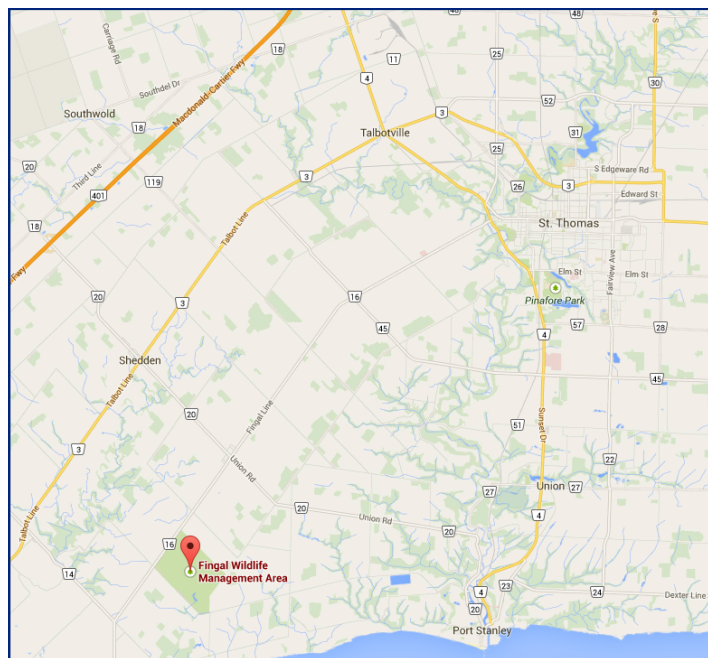


New Moon: June 9, 2017



First Quarter: June 17, 2017

Fingal Dark Sky Observing Site



Sky Events for Late June and early July

June 16 Double shadow transit on Jupiter
 June 16 Neptune 0.7° N of Moon
 June 20 Double shadow transit on Jupiter
 June 20 Venus 2.0° N of Moon
 June 21 Summer solstice
 June 22 Aldebaran 0.5° S of Moon
 June 23 Large tides
 June 23 Double shadow transit on Jupiter
 June 28 Regulus 0.03° N of Moon
 July 2 Juno at opposition
 July 13 Neptune 0.9° N of Moon
 July 20 Aldebaran 0.4° S of Moon
 July 20 Venus 3.0° N of Moon



Mercury visible in the morning sky
 Venus prominent in the dawn sky
 Mars not visible
 Jupiter in the evening sky
 Saturn very low in the southern sky
 Uranus in the morning sky in Pisces
 Neptune rises after midnight among the stars of central Aquarius



R.A.S.C. London Centre Library — Books of the Month, June 2017

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 June 2017 are as follows:

The Backyard Astronomer's Guide, by Terence Dickinson & Alan Dyer. Revised Edition. 2002.

In Search of Time: Journeys Along a Curious Dimension, by Dan Falk. c2008.

365 Starry Nights: an Introduction to Astronomy for Every Night of the Year, text and illustrations by Chet Raymo. c1982.

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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

Exploring the Stars Events & Cronyn Observatory Public Nights & Special Events, May 13th—June 3rd, 2017

By Robert Duff

Science Rendezvous at Western University, Saturday, May 13th, 2017

Written by Robert Duff, as Reported by Paul Kerans
 and Peter Jedicke

Mostly clear skies greeted an estimated 350—400 visitors to the Cronyn Observatory for Western University's Science Rendezvous event on Saturday, May 13th, 2017, 2:00 p.m. There was an estimated total of close to 1,000 visitors in all for this first Science Rendezvous event at Western University.

Graduate students present included Viraja Khatu, Shannon Hicks, Dilini Subasinghe and Robin Arnason. Viraja and Shannon supervised as visitors viewed the communications tower in south London through the big 25.4cm refractor (32mm Erfle eyepiece, 137X) in the dome.

Visitors were given tours of the downstairs “Black Room” and “Period Room.” Robin did the “Transit Demonstration” activity in the “Black Room,” showing visitors the “Transit Demo” model—demonstrating the transit detection method for finding extra-solar planets. RASC London member Mark Tovey gave tours of the historic “Period Room” (designed by Mark) recreating 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. Robin and Mark estimated some 200 visitors downstairs.

RASC London Centre was represented by Everett Clark, Paul Kerans, Heather MacIsaac, Peter Jedicke, Mark Tovey and Norm McCall. Recently retired staff member (and RASC member) Henry Leparskas was also there with his camera, taking pictures. Everett set up the observatory's 90mm Coronado H-Alpha Solar Telescope (25mm eyepiece, 32X) on its Sky-Watcher EQ5 mount on the roof patio outside the dome and Paul supervised as a steady stream of visitors viewed prominences on the Sun. Heather showed visitors the Sun through her Celestron Go-To 90mm Maksutov (32mm Plossl eyepiece, 39X) with a Kendrick Astro Baader film white-light solar filter. Peter Jedicke set up the Sunspotter (provided by Fanshawe College).

Norm McCall set up his Explore Scientific 152mm Maksutov-Newtonian Comet Hunter telescope—fitted with an Orion glass solar filter—on the north side near the main entrance to the observatory and showed visitors the Sun. Norm used an Explore Scientific 30mm eyepiece (24X) and Baader Hyperion Mark-III Zoom 8—24mm eyepiece, set at 24mm (30X) and 20mm (36X), with his 152mm Maksutov-Newtonian.

The sky was mostly clear early in the afternoon but gradually hazed over and was clouded out by 4:30 p.m. The Science Rendezvous event was over by around 5:00 p.m. and was a great success, inspiring curiosity in young people towards a science career.

Cronyn Observatory Public Night, Saturday, May 27th

Clear skies greeted 85 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, May 27th, 2017, 8:30 p.m. Professor Aaron Sigut presented the digital slide presentation "Are We Alone?" and fielded questions. Undergraduate student Tina Yu was "crowd manager" and welcomed people at the entrance, counting 60 visitors by 9:20 p.m. and 85 by the end of the evening.

Graduate student Dilini Subasinghe was telescope operator for the big 25.4cm refractor in the dome. RASC London Centre was represented by Bob Duff, Peter Jedicke, Mark Tovey and Henry Leparskas. London Centre member Richard Gibbens was also there and listened to the slide presentation. With help from Henry and Peter, Dilini directed the big 25.4cm refractor towards Jupiter in the bright early evening sky, using celestial coordinates from the Starry Night Pro software on the computer. A few visitors viewed Jupiter through the big 25.4cm refractor (32mm Erfle eyepiece, 137X) before Dilini redirected it towards the 2-days-past new crescent Moon. With Bob's assistance she swapped in the 28mm Meade Super Wide Angle eyepiece (157X) for a better view of the Moon, later redirecting the 25.4cm refractor for an excellent view of Jupiter.

Henry and Dilini set up the London Centre's home-built 30.5cm Dobsonian on the roof patio outside the dome. Peter and Bob took turns throughout the evening showing visitors Jupiter through the 30.5cm Dobsonian, using the

17mm Nagler eyepiece (88X). Peter later showed them Antares (88X) and Bob swapped in the 12.5mm Ortho eyepiece (120X) for visitors to view the "Double-Double" star system Epsilon Lyrae. Bob also showed a few visitors Mizar and Alcor (88X).

Mark Tovey gave visitors tours of the downstairs "1940s Period Room," a historic recreation (designed by Mark) 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 his work on the "1967 Period Room," recreating the early control room of the Elginfield Observatory to celebrate the 150th anniversary of Confederation—Canada 150. Henry gave 2 demonstrations of the "Transit Demo" model—showing how the transit detection method worked for finding extra-solar planets—in the "Black Room." Henry also gave one tour of the "1940s Period Room," before Mark arrived. The observatory was closed down around 11:00 p.m. after a very enjoyable evening of astronomy.

Cronyn Observatory Public Night, Saturday, June 3rd

Partly cloudy skies greeted 142 visitors to Western University's Cronyn Observatory Summer Public Night, Saturday, June 3rd, 2017, 8:30 p.m. Professor Stan Metchev made 3 presentations of his digital slide presentation "Towards Finding Other Earths" and fielded questions. He preceded these presentations with a spectacular NASA video featuring the latest pictures from the Juno spacecraft mission to Jupiter.

Professor Carol Jones was telescope operator for the big 25.4cm refractor and directed people into the dome and downstairs into the "Period Room" after the slide presentations. Graduate student Viraja Khatu was "crowd manager" and welcomed people at the entrance, counting 85 visitors by 9:10 p.m. and 142 visitors by the 10:45 p.m.

RASC London Centre was represented by Everett Clark, Heather MacIsaac, Steve Imrie, Bob Duff, Dale Armstrong and Peter Jedicke. London Centre member Richard Gibbens was also there and listened to the slide presentations.

Professor Carol Jones and Everett made ready the big 25.4cm refractor in the dome, which was directed towards Jupiter. Visitors viewed Jupiter between clouds and later the 2-day-past-first quarter gibbous Moon and (briefly) the communications tower in south London through the 25.4cm refractor with the 28mm Meade Super Wide Angle eyepiece (157X) installed.

Polaris On-Line

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