

POLARIS



Royal Astronomical Society of Canada
London Centre Newsletter
October 2011

Imaging the Moon and planets Patrick Whelan

I had some fun the last couple months trying my hand at imaging. I decided I wanted to image the moon and the planets since they are bright and easy to see from my urban location. Rather than using a dedicated imaging camera I used my video camera. The video camera I used is a Sanyo Xacti FH1 'Dual Camera' that records in high definition. The 'dual camera' part means the camera has the ability to take photo stills while recording video.

I read that imaging the planets is best with a webcam because you need a lot of frames to 'stack' to create an image. (more on stacking later) Taking a lot of images with a normal camera can take huge amount of time. My video camera will take 30 or 60 frames per second! I wasn't sure how using my video camera for imaging would turn out but that is part of the fun.

I use a big plastic contraption (the camera mount) that allows me to hold the video camera (or any camera for that matter) up to an eyepiece. The camera mount clamps onto an eyepiece and then the camera attaches and views through the eyepiece. The camera mount has fine adjustments so you can point the camera into the centre of the eyepiece. The first night out I used my Skywatcher 100mm ED refractor on my LXD75 mount. I pointed the telescope at Jupiter and realized it was too low in the sky for good imaging (or even good visual observing) but I could experiment. It took me a while to point the video camera into the middle of the eyepiece. I zoomed out a lot and then could see the eyepiece vignetting when I got off to one side or the other. I realized I needed to zoom in a fair bit not to vignette the image. I can watch the LCD panel on the video camera to see how things were going. I realized a few things: I needed to use manual focus and manual exposure. The image was still changing dynamically when I realized I also needed to use manual ISO! I played around with the exposure and ISO settings and then started taking video clips. I could see the moons of Jupiter in the video screen and Jupiter was rather nice too. I was recording video at 1920x1080 which is standard high definition. You can see my Jupiter image at: <http://patusratus.ca/astronomy.html> and click on Jupiter Image Sept 17 2011.

Then I copied the video into my computer. I wanted to use Registax with my video, but it uses AVI and

my camera creates MP4 video files. I converted the MP4's and then used an AVI splitter utility to snip out pieces of video where I wasn't shaking the camera (by walking around on my deck or changing camera settings) and also to get reasonable file sizes and number of frames. I used about 1000 frames to create the image. Registax will take all the frames in the video and try to align them with each other. The atmosphere makes the image bounce around a fair bit so this has to be done. Then the software puts the images on top of each other and this is called stacking. This reduces noise in the final image since the noise is in a different place in every image but the detail is always in the same place. The noise cancels out and the details get reinforced.

My next target was the moon. For this session I used my Orion 127mm Maksutov telescope. I could only image a very small part of the moon at one time using my video camera and telescope. So as I scanned up and down the moon I snapped photo stills with the video camera. When I was finished I had a long video of the 'Moon scanning' as well as 100 photos. I used panorama software (Auto Pano Pro) to stitch all the photos together into one big image of the moon. As it turned out I was actually missing a very small piece of the centre of the moon, so I had to back into the video and grab a couple more frames from it to get a full image. (details...details..) When I was finished I had an image that was roughly 9,000 by 9,000 pixels. It is an 81 megapixel image! For comparison each frame is 1920x1080 so they are 2 megapixel images. You can see the moon image on my website at: <http://patusratus.ca/astronomy.html> and click on 'Moon Images 2011'. There are other of my much earlier moon images on my site but they are not even close in quality to this last one. If you would like to experiment with photo stitching you can download Auto Pano Pro as a time limited demo or you can download Microsoft ICE for free. ICE (Image Composite Editor) is freeware and is very good, especially when you consider the price!

In conclusion I would like to say that imaging the planets and the moon isn't as hard as I thought. But you do need the equipment and patience and you have to choose the right software! I found it very fun and indeed enjoyable and I will be doing more of it in the near future.

Moon Phases



October 4 2011



October 12 2011



October 20 2011



October 26 2011

Patrick's Jupiter Image



London Centre Executive

President

Dave McCarter

email: dmccarter (at) sympatico.ca

Vice-President and Newsletter Editor

Patrick Whelan

email: patusratus (at) sympatico.ca

Treasurer and Sky & Telescope Coordinator

Bill Gardner

email: gardner.w (at) rogers.com

Secretary

Gary Hinks

email: mapleway (at) executlink.com

National Representative

Craig Levine

email: craigslevine (at) gmail.com

Observer's Chair

Mike Roffey

email: mroffey (at) sympatico.ca

Webmaster

Rick Saunders

email: ozzzy (at) bell.net

Honorary President and once National President

Peter Jedicke

email: PJedicke (at) fanshawec.ca

Past President

John Rousom

email: jdr (at) netscape.ca

Tri-County Public Star Party Coordinator, Librarian and Hume Cronyn Coordinator

Robert Duff

email: rduff (at) sympatico.ca

ATM Chair

Mike Hanes

email: subareau (at) gmail.com

LONDON RASC MONTHLY MEETINGS

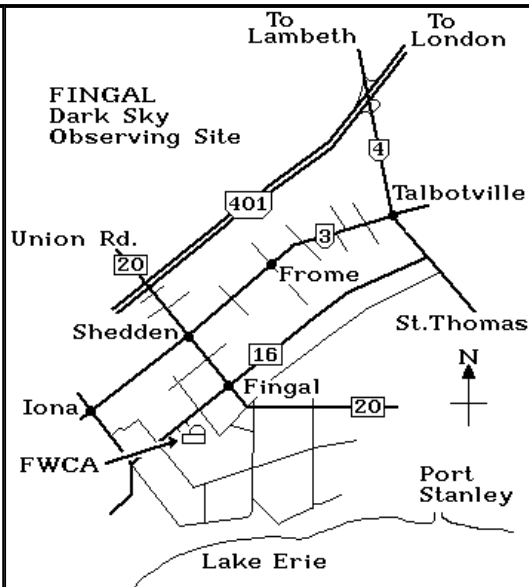
The London RASC group meets at Fanshawe College in London Ontario, September through July on the third Friday of the month at 19:00. We meet in room B1073.

Everyone interested in astronomy is invited to attend and enjoy our guest speaker, member activity and observing reports, announcements of new discoveries and upcoming events, telescopes and telescope accessories show and tell, and other fun activities. Have a look at our future and past activities on our website to see what we are doing.

Parking is free on Friday evenings, and there is plenty of room in the east parking lot off Oxford St. and parking spaces on the south side of B building. Enter the college by B building doors near Oxford Street, just west of the bus stop. College signs at key hallway locations will help you find us.

The London RASC webpage can be found at: www.rasc.ca/London

Our dark sky observing site is at the **Fingal Wildlife Management Area**.



Sky Events for late October and early November 2011

Oct 24 Zodiacal light visible in N latitudes in East before dawn for 2 weeks

Oct 24 Double shadow transit on Jupiter

Oct 26 Large tides

Oct 28 Mercury 0.2 N of Moon

Oct 28 Venus 1.8 N of Moon

Oct 29 Jupiter at opposition

Oct 31 Double shadow transit on Jupiter

Nov 2 Mercury and Venus 2 degrees apart

Nov 6 Daylight saving time ends

Nov 10 Mars 1.4 N of Regulus

Nov 10 Mercury 1.9 N of Antares

Nov 13 Mercury and Venus 2 degrees apart

Nov 14 Mercury greatest elongation east

Nov 18 Leonid meteors peak

Mercury is in evening twilight in the last half of the month

Venus is low in the southwestern evening twilight

Mars is in the eastern morning sky

Jupiter rises in the early evening and is visible all night

Saturn is in conjunction with the Sun

Uranus visible most of the night

Neptune well placed in Aquarius



R.A.S.C. London Centre Library

Books of the Month October 2011

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 October 2011 are as follows:

NightWatch: a Practical Guide to Viewing the Universe, by Terence Dickinson. 3rd Edition, Revised and Expanded for Use Through 2010. 1998 (2003 printing).

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

Universe on a T-shirt: the Quest for the Theory of Everything, by Dan Falk. c2002.

For a complete listing of our library collection please see our RASC London Centre Library Web page at: http://www.astro.uwo.ca/~rasc/newrasc_library.html

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



Star Nights & Other Events

By Robert Duff

Star Night, Windermere Manor, October 4th, 2011

Some 25 visitors along with 12 from RASC London Centre, including 9 members with 3 family members, enjoyed a fabulous dinner beginning around 6:30 p.m. in the Grand Hall of Windermere Manor, Tuesday, October 4th, 2011. Ten more visitors along with 2 more RASC London Centre members joined in the observing after the dinner for a total of 35 visitors and 11 RASC London Centre members.

Dave McCarter began his digital slide presentation around 7:10 p.m.

Observing began in the parking lot around 8:30 p.m. with RASC London Centre members setting up their telescopes, including, Paul and Charlene Kerans with their 22-inch (56cm) Obsession and 30.5cm Truss-Tube Dobsonians; Bob Duff, with his 20.3cm Dobsonian; Adam Priestap-Suttis, with his 20.3cm Sky-Watcher Dobsonian; Mike Roffey, with his 80mm Celestron refractor; Roman Dubinski, with his 127mm Sky-Watcher Maksutov telescope and 20X100 Zhumell binoculars; Peter Jedicke, with 40.6cm Dobsonian; Mike Costa, with 25.4cm Dobsonian; and Dave McCarter, with his 25.4cm Dobsonian. Other members pre-

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sent were Joe O'Neil and Robert Atkinson. In all there were 11 RASC London Centre members with 9 telescopes and one tripod-mounted binoculars set up.

The sky was clear and the one-day-past-first quarter Moon, Jupiter, Albireo, Vega, M31 and M57 were among the objects observed. Refreshments were rolled out on a service cart by Windermere staff. The observing session was over by around 10:30 p.m., after most visitors had gone home. Many thanks go to all the RASC London Centre members who contributed to making this a successful evening under the stars.

Star Night, Byron Northview Public School, October 5th

The sky was clear with some hazy clouds when Dave McCarter began his outdoor digital slide presentation before 80 people, including 44 grade-6 students plus parents and teachers, at Byron Northview Public School, Wednesday, October 5th, 7:00 p.m.

Afterwards people viewed the 2-day-past-first-quarter Moon, Albireo, Epsilon Lyrae, M57, Vega and the planet Jupiter through Dave's 25.4cm Dobsonian and Bob Duff's 203cm Dobsonian. The grade-6 teacher also had his Antares 20.3cm Dobsonian and there were other telescopes brought by families, including a 13cm Sky-Watcher Newtonian, a Celestron NexStar Newtonian and two 60mm refractors. Everybody was gone by around 10:00 p.m. after a very enjoyable and informative evening of astronomy.

Star Night, Parkhill Public Library, October 17, 2011

Dave McCarter began his digital slide presentation Asteroids! before a small group of parents and children in the Parkhill Public Library, Monday, October 17th, around 6:30 p.m. Charlie Barbara arrived shortly thereafter and Bob Duff and a couple of library patrons helped carry in and set up his meteorite collection on a table. Paul and Charlene Kerans arrived and set up their 30.5cm Meade LightBridge Dobsonian in the grassy field at the back of the library parking lot behind the library. Dave took the group outside to observe the International Space Station (ISS) pass at 7:17 p.m. but it was mostly cloudy and the ISS not seen. Dave continued the talk past 7:30 p.m. Some of the visitors and 2 library staff members came outside to see Paul and Charlene's telescope but by now the sky was completely clouded out. However, people were duly impressed by Dave's slide talk and Paul and Charlene's telescope and RASC London Centre members may visit the library again under more favourable seeing conditions, perhaps in the spring. There were in all 17 adults and children plus 2 library staff members for a total of 19 people.

International Observe the Moon Night (InOMN), Cronyn Observatory, Saturday, October 8th, 2011

Centre for Planetary Science & Exploration (CPSX)
Outreach Coordinator Dr. Alyssa Gilbert, graduate students

Emily McCullough and others hosted the International Observe the Moon Night (InOMN) at the Cronyn Observatory on Saturday, October 8th, 5:00—9:00 p.m. There were digital slide presentations and observing.

There were two digital slide presentations, including one by graduate student Bhairavi Shankar, An Overview of the Moon: Learning about the Earth's Closest Neighbour, and Dr. Phil Stooke, Exploring the Moon in the 21st Century. There was also a question and answer session by Canadian Space Agency Astronaut Bjarni Tryggvason.

Emily showed people views of the 5-day-past-first-quarter Moon and Jupiter through the 25.4cm refractor, usable only towards the east since the dome motor was disabled. RASC London Centre members Dave McCarter, Peter Jedicke and Bob Duff were also there and visitors viewed the Moon, Jupiter, M13, M31, Albireo and Epsilon Lyrae through the London Centre's Dobsonian. In all there were about 50 visitors.

Exploring the Stars, Space Society of London (SSoL), October 12th, 2011

Despite clouds and rain, 13 Western students, members of the Space Society of London (SSoL), showed up at the Cronyn Observatory for an evening of Exploring the Stars, Wednesday, October 12th, 7:00 p.m. Graduates student Emily McCullough made her digital slide presentation, Space Junk, Space Non-Junk and Missions to Outer Space. She followed this with tour of the 25.4cm refractor in the dome. RASC London Centre member Bob Duff demonstrated the 25.4cm Dobsonian and explained the difference between a reflector and refractor telescope. Since SSoL was planning to have a constellations observing evening in front of Middlesex College on Tuesday, October 18th, Bob gave them 3 assembled Star Finder planispheres and explained how to use them. They also plan to observe the Orionid meteor shower, Friday night, October 21st / 22nd, from Middlesex College. The students were gone by 9:07 p.m. after an enjoyable and interesting evening despite the rain.

Exploring the Stars, 79th London Brownies, October 13th, 2011

Graduate student Emily McCullough made her digital slide presentation Brownie Space Exploration before a group of 30 visitors (21 children and 9 adults), at the Cronyn Observatory for Exploring the Stars, Thursday, October 13th, beginning shortly after 6:30 p.m. Mostly cloudy skies and uncertainty as to whether the disabled dome motor was repaired limited observing. Emily showed half the group Vega, directly overhead, through the big 25.4cm refractor. RASC London Centre member Bob Duff showed the other half of the group Albireo through the London Centre's Dobsonian, until it was clouded out. Everybody was gone by 8:05 p.m. after an enjoyable evening despite the clouds.