

POLARIS



Royal Astronomical Society of Canada
London Centre Newsletter
February 2010

Solar Cycles Patrick Whelan

If you observe the Sun, you know there has been very few sunspots in the last couple years. We are at a solar minimum. But this solar minimum is a biggie. It is the minimum of the century! But the good news is that the Sun can only get more active from here. That is one of the reasons I bought a new telescope. It is a Coronado PST. Instead of just viewing sunspots this telescope can see details all over the surface of the Sun as well as seeing prominences that leap off the Sun. These look like great arcs of fire that spew off the Sun and then fall back down.

The sunspots are a cycle the Sun goes through. It is called the solar cycle or the solar magnetic activity cycle. It is this activity that drives space weather and also to a smaller extent drives the weather on Earth. The cycle is observed by counting sunspots.

The solar cycle was discovered in 1843 by Samuel Heinrich Schwab. After 17 years of observations he started to notice a trend. He looked at data going back to the mid 1700's. It was thought at first the solar cycle was about 11.04 years but now it is thought the cycle is about 10.66 years. This is not carved in stone though. Some cycles can be as short as 9 years or as long as 14 years.

After a solar minimum sunspots first start to appear at mid latitudes. Then the start appearing closer to the equator. Then there is a solar minimum again. The graph at the bottom shows this. It is called the butterfly diagram, for reasons you can see.

Back in 1908 George Ellery Hale and others showed that sunspots were strongly magnetized. They went on to discover something about the magnetic polarity

sunspot pairs:

The polarity is always the same in a given solar hemisphere throughout a given sunspot cycle.

The polarity is opposite across hemispheres throughout a cycle.

The polarity reverses itself in both hemispheres from one sunspot cycle to the next.

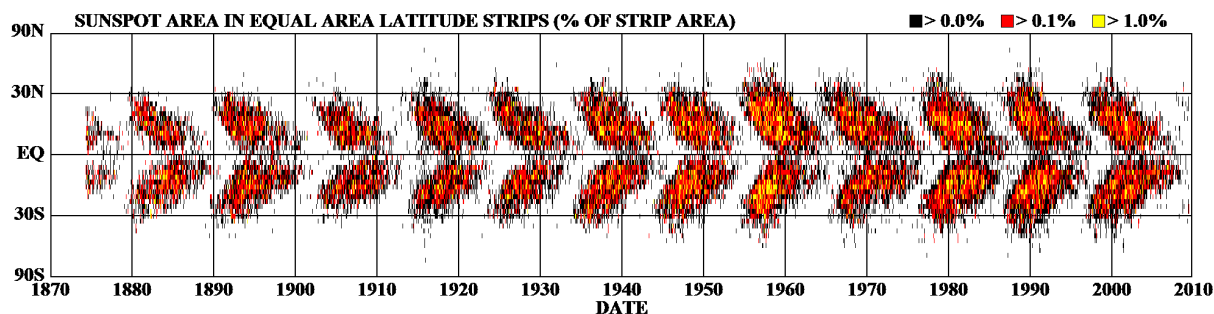
What this showed was that the cycle really wasn't 10.66 years long. The magnetic cycle was actually 21.32 years long!

Fifty years later it was shown by the father-and-son team of Harold Horace Babcock that the entire Sun had a magnetic field. And that magnetic field actually reversed itself in sync with the sunspot cycle! The magnetic field reverses every 10.66 years.

Some of the best data of the Sun comes from a project called SOHO, the Solar and Heliospheric Observatory.

One of the latest projects to observe the Sun is called STEREO. (Solar TERrestrial Relations Observatory) Two nearly identical observatories - one ahead of Earth in its orbit, the other trailing behind - will trace the flow of energy and matter from the Sun to Earth. They will reveal the 3D structure of coronal mass ejections. They are like a gigantic pair of eyes constantly observing the Sun. And like their name, they see in 3D!

There are a lot of reasons for observing the activity on the Sun. Greater solar activity means more charged particles hitting Earth. This can disrupt communications for us here on Earth. Telephone and power lines act as huge antennas!



Moon Phases



February 14 2010



February 22 2010



February 28 2010



March 7 2010

Forests

Perhaps like others, I have a forest growing in my house. For the most part it isn't green and there really aren't any flowers. Not really.

It is taking over my house slowly but surely. Much like a vine will slowly grow over the outside of your house and over your fences. Soon there is nothing but vine.

The forest in my house is composed mainly of glass and steel and plastic. Most of the structures are supported on three trunks. The main bulk of the forest is tubular. Some are short and some are long. Some are squat and some are slender. They are multiplying. They are invading much if not all of my spaces.

They are telescopes, hear them roar.

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Find the Polaris newsletters on the internet at: www.patusratus.ca/Polaris

LONDON RASC MONTHLY MEETINGS

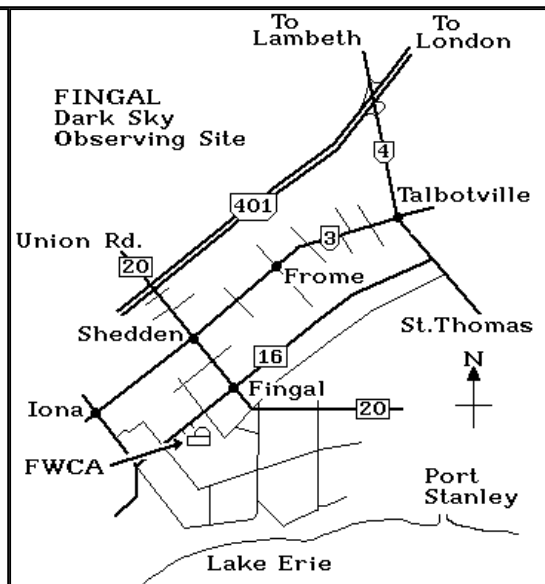
The London RASC group meets at Fanshawe college in London Ontario, September through July on the third Friday of the month at 19:00. They meet in room B1073.

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:

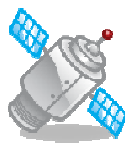
www.rasc.ca/London

They have a preferred observing site at Fingal Wildlife Management area.



Sky Events for February and March 2010

February 21 Moon 0.1° S of Pleiades (M45)
 February 27 Large Tides
 March 3 Zodiacal light
 March 7 Antares 1.3° S of Moon
 March 7 Double shadow transit on Jupiter
 March 10 Double shadow transit on Jupiter
 March 14 Daylight saving time begins
 March 14 Double shadow transit on Jupiter
 March 17 Double shadow transit on Jupiter



Mercury is in the Eastern morning sky
Venus enters the Western evening sky
Mars is visible most of the night, retrograding in Cancer
Jupiter vanishes into evening twilight by mid-month
Saturn rises in mid-evening
Uranus vanishes into the evening twilight
Neptune is not visible

R.A.S.C. London Centre Library Books of the Month February 2010 By Robert Duff

In order to make our library collection available to members, I bring three books to our general monthly meetings. These "Books of the Month" are available for loan, to be returned at the following monthly meeting.

The books for February 2010 are as follows:

Looking Up: a History of the Royal Astronomical Society of Canada, by R. Peter Broughton. c1994.

Relativity: the Special and the General Theory, by Albert Einstein. Authorized translation by Robert W. Lawson. Introduced by Roger Penrose. London: The Folio Society, 2004.

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

For a complete listing of our library collection please see our RASC London Centre Web site at:
<http://www.rasc.ca/london>



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

London Astrophotography Email List

London Centre has a new email list with the purpose of being a forum for astrophotographers to communicate with and get assistance from other members on images that are being worked on.

If you are interested in, the URL to join is:

<http://www.rasc.ca/mailman/listinfo/london-imagers>

As this list is about imaging, there will be no restriction on attachment size and therefore **email messages may be very large.**

The Bob Duff Report

**Exploring the Stars, Cronyn Observatory,
January 12th—February 11th, 2010
By Robert Duff**

I have assisted at all but one (January 20th) of these events, bringing the RASC London Centre’s photographic display and setting it up and laying out some of our brochures.

9th London Brownies, January 12th, 2010

Graduate student Amanda Papadimos made her digital slide presentation, “Constellations,” before a group of 28 visitors (18 children and 10 adults) from the 9th London Brownies on Tuesday, January 12th, 7:00 p.m. The activity, “Rocket Races,” followed with the Brownies making model rockets from plastic bottles, propelled along a nylon rope by air rushing from an attached balloon.

Since it was cloudy I directed the big 25.4cm refractor in the dome towards the red lights on the communications tower in south London. I also set up the 25.4cm Dobsonian on the roof patio, directing towards the weather vane on the Engineering building. However, the sky cleared and the Brownies viewed Mars, the Orion Nebula (M42) and the star Betel-

geuse through the 25.4cm Dobsonian (17mm Nagler eyepiece, 67X).

University Lab School (Senior Kindergarten), January 13th, 2010

Graduate student Alexander DeSouza made his digital slide presentation, “Earth and Moon,” before 25 visitors (13 children and 12 adults) from the University Lab School (Senior Kindergarten) on Wednesday, January 13th, 6:00 p.m. This included the activity, “Earth & Moon,” demonstrating the Moon’s motion around the Earth and eclipses using small, inflated models of the Earth and Moon.

Alexander already had the big 25.4cm refractor (Meade 28mm Super Wide Angle eyepiece, 156X) in the dome tracking Jupiter, which he showed the visitors. I showed them the Orion Nebula (M42) through the 25.4cm Dobsonian (17mm Nagler eyepiece, 67X). I also showed a few people Mars, appearing as a tiny disk, low on the eastern horizon. The evening event ended with everybody gone by 7:15 p.m.

70th London Cubs, January 14th, 2010

(Continued on page 5)

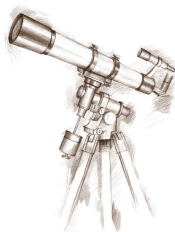
February Pocket Sky Atlas Challenges

This month we start the march of the “M’s”. They slowly creep up from the Easter horizon and soon they will be calling astronomers, night after night, with their delights. As enticing as those Messier objects may be, try to spend some time on the other weird and wonderful stars and objects that hint at warmer days of spring. Get comfortable with them now so you can get the most out of your observing sessions when the weather warms up.

I’ve indexed the object to its star chart page.

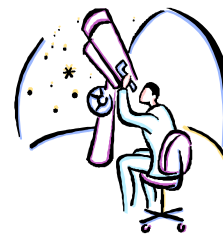
Naked Eye:

68, 74, 81 and, 85 Geminorum , Pages 24, 25.



Small Scopes and binoculars:

30, 31Xi and 32 Geminorum, Page 25 (30 is listed, the other two are just below it on the same “leg”.)
M44, Page 35



Larger Scopes:

NGC 3640 page 34; NGC 2683, Page 35

Bonus objects:

Lorenzin Tau LEO, Page 34 (you’ll have to do some homework on this one!)
Groombridge 1830, Page 32

**Happy hunting.
John Kulczycki**

Cloudy skies greeted 24 visitors (16 children and 8 adults) from the 70th London Cubs to the Cronyn Observatory for Exploring the Stars, Thursday, January 14th, 6:30 p.m. Graduate student Emily McCullough made her digital slide presentation, "Constellations." Visitors viewed the red lights on the communications tower in south London through the big 25.4cm refractor in the dome and the weather vane the Engineering building through the 25.4cm Dobsonian telescope (17mm Nagler eyepiece, 67X). Emily also handed out printed copies of a monthly sky chart for January 2010.

67th Brownies, January 19th, 2010

It was cloudy and snowing when 17 visitors (12 children and 5 adults) from the 67th Brownies arrived at the Cronyn Observatory for Exploring the Stars, Tuesday, January 19th, 6:30 p.m. Graduate student Amanda Papadimos made her digital slide presentation, "Seeing the Universe," and followed this with a tour of the big 25.4cm refractor in the dome, kept closed because of falling snow.

Afterwards, in the lecture room, she distributed 20 copies of "Mary Lou's New Telescope," which I had brought. At their request she read the story and it was well received. Amanda ended the evening with the Brownies doing a connect-the-dot constellation activity on paper with colour pencils. She gave them Galileo Moment cards and they were gone by 7:57 p.m. after an enjoyable evening.

Jeanne Sauve French Immersion Public School, Grade-6, January 20th, 2010

Clear skies greeted some 31 visitors (18 children and 13 adults) from the grade-6 class of Jeanne Sauve Public School on Wednesday, January 20th, 6:00 p.m. Graduate student Alexander DeSouza made the digital slide presentation, "Comets & Asteroids," followed by the activity, "Kitchen Comet," using dry ice and other materials to make a comet.

The event was over when I arrived around 7:30 p.m. The big 25.4cm refractor in the dome was guiding on the star Betelgeuse, with the Meade 28mm Super Wide Angle eyepiece in the diagonal (156X). Greg Andres and his son Abram, was there, with his 20.3cm Sky-Watcher Dobsonian set up on the roof patio. Mike Roffey was also there with his 80mm Sky-Watcher refractor on his Go To mount. I briefly observed the Orion Nebula (M42) through Mike's telescope. Other objects observed included the five-day-old crescent Moon. Mars

was very low on the eastern horizon.

Many thanks go to Greg Andres and Mike Roffey for setting up telescopes and helping out with this event. Alexander DeSouza found the group enthusiastic and everybody had a good learning experience.

Jeanne Sauve French Immersion Public School, Grade-6, January 21st, 2010

The sky was clear and hazy when 48 visitors (including 22 students and 2 other children, and 24 adults) from the grade-6 class of Jeanne Sauve Public School, arrived Thursday, January 21st, 6:00 p.m.

Graduate student Emily McCullough made her digital slide presentation, "Comets & Asteroids." Due to hazy sky conditions, we went up into the dome immediately after Emily's presentation. The 6-day-old crescent Moon made a pleasing image in the big 25.4cm refractor, using the Meade 28mm Super Wide Angle eyepiece (156X).

While Emily showed half the group the Moon through the big refractor, I took the other half out on the roof patio to observe the Moon through the 25.4cm Dobsonian, using the 17mm Nagler eyepiece (67X). We then switched groups. Besides the Moon, I also showed some members of the second group the Orion Nebula (M42), despite the haze. With my green laser pointer I also pointed out a few stars, including, Betelgeuse, Rigel and Capella.

Emily then took the group back downstairs to do the activity, "Kitchen Comet," making a comet with dry ice and other materials. The activity went past 8:00 p.m. and everybody clearly had a good time. Emily gave the teacher some Galileo Moment cards to distribute and I added a few featuring Jupiter and Saturn.

Exploring the Stars, January 26th, 2010

There was no group named for Exploring the Stars on Tuesday, January 26th. Two people, a man and his daughter showed up for a presentation at 6:30 p.m. Graduate student Amanda Papadimos made her digital slide presentation, "Big Bang," about the origins of the Universe. Afterwards she gave them a tour of the big 25.4cm refractor in the dome, which remained closed due to cloudy and snowy conditions. I also showed them the RASC London Centre's 25.4cm Dobsonian. Amanda gave them a copy of the book, "Mary Lou's New Telescope" and they took a RASC London Centre

brochure and booklet, "Become a Sidewalk Astronomer." They clearly enjoyed their visit. We closed the Observatory around 6:40 p.m.

99th Pathfinders & 98th Guides, January 27th, 2010

Graduate student Emily McCullough made her digital slide presentation "Misconceptions" before a group of 18 visitors (13 children and 5 adults) from the 99th Pathfinders and 98th Guides, Wednesday, January 27th, 7:00 p.m. She involved the children in demonstrating planetary motions with inflated models of the Sun, Earth and Moon. Emily showed the visitors the gibbous Moon, as it occasionally appeared through hazy clouds, in the big 25.4cm refractor in the dome, using the 32mm Erfle eyepiece (137X). From the Observatory's roof patio I showed them the Moon through the RASC London Centre's 25.4cm Dobsonian, using the 17mm Nagler eyepiece (67X). I gave one Leader a RASC London Centre brochure and booklet, "Become a Sidewalk Astronomer." They were gone by 8:10 p.m. after an enjoyable evening of astronomy.

Cronyn Observatory Open House, January 30th, 2010

Clear skies and cold temperatures greeted 51 visitors at the Cronyn Observatory Open House, Saturday, January 30th, 7:00—9:00 p.m. Graduate student Amanda Papadimos made her digital slide presentation, "Planets, Planets, Planets."

Dave McCarter operated the big 25.4cm refractor in the dome, showing visitors Mars and the full Moon, using the Meade 28mm Super Wide Angle eyepiece (156X). We had four amateur telescopes set up on the Observatory's roof patio. Through the RASC London Centre's 25.4cm Dobsonian visitors viewed Mars (6mm Orthoscopic eyepiece, 190.5X) and the Moon at 190.5X and 67X (using the 17mm Nagler eyepiece). Besides Mars and the Moon, people viewed the Orion Nebula (M42) and the Andromeda Galaxy (M31) through Greg Andres' 20.3cm Sky-Watcher Dobsonian and the Pleiades through Mike Roffey's 80mm Sky-Watcher refractor. Two other amateur astronomers who were not RASC London members, Paul Kerans and Charlene, impressed visitors with their 30cm Meade truss-tube Dobsonian.

Richard Gibbens, Peter Raine and Cheri McCracken were also there bringing the total of RASC London Centre presence (including myself) to 7 members. There were 4 amateur telescopes set up, including the 30cm Meade truss-tube Dobsonian brought by 2 non-members.

Amanda distributed Galileo Moment cards and people took some RASC London Centre brochures as well as several copies of "Become a Sidewalk Astronomer." We closed the Observatory around 9:00 p.m. Our thanks go to everybody who helped make this star night success.

Youth Groups (St. Paul's Church), February 4th, 2010

Cloudy skies greeted 18 visitors from St. Paul's Church youth group. Thursday, February 4th, 7:00 p.m. Graduate student Amanda Papadimos made her digital slide presentation, "The Life and Times of Stars."

Amanda showed them the red and white lights on the communications tower in south London through the big 25.4cm refractor (32mm Erfle eyepiece, 137X) in the dome. I showed them the weather vane on the Engineering building through the 25.4cm Dobsonian (17mm Nagler eyepiece, 67X) from the Observatory's roof patio.

Amanda took them back downstairs for a sky tour with "Starry Night" sky charting software. There was a question and discussion concerning the Grimsby meteorite fall. I gave Amanda Star Finder planispheres and some 17 were distributed. I went around the group, assembling the Star Finders with Scotch tape. Amanda gave out Galileo moment cards and I gave a RASC London Centre brochure to an interested member of the group. They thanked us for the interesting and informative evening and were gone by 8:40 p.m.

Exploring the Stars, February 10th, 2010

Wednesday, February 10th, was a family booking for Exploring the Stars at the Cronyn Observatory. Graduate student Alexander DeSouza made the digital slide presentation, "Our Solar System," for 3 visitors (2 adults and 1 child) beginning around 6:30 p.m. This was followed by a sky tour with "Starry Night EDU" software. Since it was cloudy with some light snow falling, Alexander showed them the big 25.4cm refractor without opening the dome. I gave them a "Star Finder" planisphere, a RASC London brochure and booklet, "Become a Sidewalk Astronomer." Alexander gave them some Galileo Moment cards. They thanked us for what was clearly an enjoyable evening and were gone by 7:20 p.m.

Star Nights & Other Events

By Robert Duff

London Scouting Oak Tree Conference, Spencer Hall, January 23rd, 2010

Dave McCarter presented an Astronomy Resource show to 26 Scout Leaders attending the London Scouting Oak Tree Conference held at Spencer Hall, Saturday, January 23rd.

He gave out "Star Finder" planispheres to everyone and showed the leaders how to use them. He also distributed Exploring the Stars program cards.

Odd Fellows Lodge, Harrietsville, January 25th, 2010

Harold Tutt and Dave McCarter made a presentation to 27 members of the Odd Fellows Lodge in Harrietsville on Monday, January 25th. Harold brought three telescopes, setting up his Celestron 8-inch Schmidt-Cassegrain, 80mm refractor and 50mm Galileoscope to display and explain. Dave delivered his new digital slide presentation, "Boundless Interest," following an

excellent potluck dinner. Star Finder planispheres were distributed to everyone and Dave and Harold explained how to use them. Several copies of "Mary Lou's New Telescope" and London Centre pamphlets were given out.

20th Beavers Star Night, Stoneybrook Public School, January 27th, 2010

On Wednesday, January 27th, Dave McCarter and John Kulczycki provided a star night for the 20th London Beavers at Stoneybrook Public School. They viewed the Moon in a cold hazy sky through Dave's 80mm Stel-larvue and John's 90mm Orion refractors. Afterwards, Dave gave his PowerPoint presentation about the Moon, prepared specifically for their age group, and answered many questions. The 15 Beavers, 5 parents and 3 Leaders were greatly impressed.