

# DDO Doings

The Doings of the David Dunlap Observatory

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<http://www.theddo.ca>



## ***Welcome to the second issue of the revived DDO Doings!***

For decades, the David Dunlap Observatory was a centre for astronomy education, inspired by staff astronomers like Clarence Chant and Helen Sawyer Hogg. In 2009, the International Year of Astronomy, it's about time for astronomy education to rise at the DDO, with the renewed help of the Royal Astronomical Society of Canada, Toronto Centre.

One IYA global project is the Galileo Teacher Training Program, training thousands of teachers and their colleagues to teach astronomy. In Ontario, astronomy appears primarily in grades six and nine. Our secondary school science curriculum has been revised for 2009, and teachers deserve our support. Canada's International Year of Astronomy Committee aims to establish legacy partnerships to sustain public interest in astronomy.

The Science Teachers Association of Ontario (STAO) and the Royal Astronomical Society of Canada, Toronto Centre have both provided exemplary service to science education for over a century. Together we have developed, and continue to develop resources for teachers for grades six and nine to teach astronomy with confidence and skill. As usual, the 2009 annual meeting of the Canadian Astronomical Society included a workshop for local schoolteachers co-sponsored by STAO, and the first astronomy-themed STAO Summer Institute for Teachers was held in August.

How does the DDO fit in? Canadian astronomers, and their contributions to astronomy are an explicit part of the curriculum, and the DDO has figured prominently in Canadian astronomy since 1935. The Royal Astronomical Society of Canada, Toronto Centre has had a public education presence at the DDO since it first opened in 1935. Astronomical technology is also central to the curriculum, and the DDO still houses Canada's largest telescope.

The DDO has hosted over a thousand visitors during this summer's shortened schedule. Students are again experiencing the awe of being in the dome with the giant telescope, and interacting with astronomers first-hand. The RASC Toronto Centre can host thousands of students and teachers from local school boards each year, as the McLaughlin Planetarium used to do before it closed in the 1990s.

A modest admission fee, augmented by donations, helps the RASC fund activities here. Let's ensure that the DDO again becomes a major force in inspiring students' interest in astronomy, and in science and technology in general. It's needed!

***John R. Percy***

***Department of Astronomy and Astrophysics, University of Toronto  
RASC Toronto Centre President 1970-71, RASC National President 1978-80***

## Take Your Class to the DDO

A new school year is underway, and if you're looking for astronomy activities for your students, why not bring them to the observatory? The following tours are available for grade 6 and grade 9 classes to help fulfill the astronomy curriculum requirements:

### The Sun (2hr trip)

- The sun as a star, sunspots, solar cycle and space weather
- Weather permitting, safe viewing of the sun through a solar telescope
- Tour of the 74" telescope (no viewing during the day)
- Activity with UV sensitive beads (supplied)

### The Nature of Light - Spectroscopy (2hr trip)

- Overview of the study of spectroscopy and how it applies to astronomy
- Build a working spectroscope and identify various gases (materials supplied)
- Activity with UV sensitive beads (materials supplied)

Evening tours are also available for schools as well as Guiding and Scouting groups. Please contact **info@theDDO.ca** or **905-883-0174** for information on pricing and booking. Maximum tour size is 40 people including students, teachers, and assistants/chaperones.

High school students can fulfill their **community service requirements** by volunteering at the DDO. They can assist with our public programs and tours as well as other observatory functions. The RASC Toronto Centre is a registered charity. Interested students can contact the DDO at **info@theDDO.ca** or **905-883-0174**.



## Research at the DDO: LCROSS

LCROSS is NASA's Lunar Crater Observing and Sensing Satellite. It was launched with the Lunar Reconnaissance Orbiter (LRO) on 18 June of this year, and is scheduled to crash into the surface of the Moon on 9 October at approximately 07:30 am Eastern time. One of the key goals of this mission is to determine how much water ice exists in darkened craters on the Moon. Telescopes all over the world – including the 74" reflector at the DDO – will be working with NASA and watching the Moon when this happens, in hopes of observing and analysing the plume of debris kicked up by the impact.

You can watch the mission coverage from home on NASA TV, which is available on some satellite TV and digital cable services, or on the internet at <http://www.nasa.gov>. More information on LCROSS is available at <http://lcross.arc.nasa.gov>.

This table gives Epoch 2000.0 ephemerides for LCROSS at 2 AM EDT on the dates listed. Ephemerides were generated using JPL's HORIZONS system at <http://ssd.jpl.nasa.gov/>.

Date	R.A.	Dec.
Oct 4	01h 48m 23s	-29° 49' 44"
Oct 5	02h 30m 14s	-21° 41' 55"
Oct 6	03h 10m 20s	-12° 12' 05"
Oct 7	03h 50m 05s	-01° 35' 39"
Oct 8	04h 31m 12s	+09° 46' 20"
Oct 9	05h 15m 31s	+21° 48' 03"

What are ephemerides? Pronounced e-FEM-er-id-eez, ephemerides are lists of co-ordinates on the sky where a certain object can be found at certain times. An ephemeris (singular) consists of

1. a date and time in a standard format
2. a meridian somewhere west of the vernal equinox
3. a parallel somewhere north or south of the equator



### **Crossing Saturn's Ring Plane**

When Galileo made his first observations of Saturn he saw what he thought were two large companion planets hovering on either side of it (he called them *ansae*, which is the Latin word for handles!). These, of course, turned out to be Saturn's rings.

At one point Galileo thought he saw these objects disappear. He was actually seeing the rings edge-on, which happens every fifteen years when Earth is aligned the right way with Saturn's ring plane.

It happened again this year – specifically, on 4 September – but unfortunately it was difficult or impossible to observe, due to Saturn's close proximity to the Sun as seen in our sky on that date. To learn more about Saturn and to see pictures, visit the Planetary Society at <http://www.planetary.org>.



### **The Harvest Moon**

Harvest Moon is the name given to the full Moon that occurs closest to the autumnal equinox. The equinox is on 22 September this year, so the Harvest Moon will be on 4 October. Watch for the Moon to rise in the east just as the Sun is setting in the west; as seen from Richmond Hill and the Toronto area this will happen just before 7 pm local time.

An optical illusion makes the Harvest Moon – or any other rising Moon – look bigger on the horizon than it does when it's overhead. Try to measure the size of the Moon in the sky by comparing it to your little finger at arm's length, and then measure it again later when the Moon has risen higher.



### **The DDO on Facebook**

If you have a Facebook account you can now follow us for updates on future tours and events! Log into Facebook, visit <http://bit.ly/DDOFacebook> and click "Be a Fan" to get messages in your Facebook inbox.



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ASTRONOMY AT THE DAVID DUNLAP OBSERVATORY 1935-1967

BY JOHN F. HEARD AND HELEN SAWYER HOGG

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*THE OBSERVATORY AND THE SOCIETY.* During all of its existence the David Dunlap Observatory has had a very close relationship with the Royal Astronomical Society of Canada, and much of the administrative and editorial work of that organization has been done by some of its staff members. The interest aroused by Dr. C.A. Chant in astronomy around Toronto, particularly through the Toronto Centre of the R.A.S.C., was in large measure responsible for the very existence of the Observatory. Dr. Chant's own record with the *JOURNAL* of the Society is an impressive one. He founded it in 1906 and edited it for 50 years, until his death in 1956 at the age of 91. During this period the assistant editors were first Dr. F.S. Hogg, and then after his death in 1951 Miss Ruth J. Northcott. Miss Northcott was appointed Editor after Dr. Chant's death and has continued in this post ever since. The very valuable annual publication, *The Observer's Handbook*, is also part of the editorial duties.

The library amassed by Dr. Chant for the Society, mainly on an exchange basis for the *JOURNAL*, proved to be one of the cornerstones of the Observatory, even before the actual cornerstone was laid. This library, first loaned to the Observatory, was subsequently purchased by the University of Toronto in 1961. As a result, the Observatory library ranks among the two or three most complete astronomical research libraries in Canada. It has provided the basis for many research papers of an historical or bibliographical nature, in addition to its ordinary use as a reference library.

Beginning with Dr. Chant, six members of the Observatory staff have been national presidents of the Society. In addition other members of the staff have given generously of their time to further the work of various Centres (particularly Toronto), both by accepting positions as officers of Centres, and by delivering lectures at many Centres. Three of the present staff members have received the Service Award Medal of the Society.

The very existence of the Society and of the Observatory is largely due to one remarkable man, Dr. C.A. Chant. With quiet persistence and persuasion he did an enormous amount to elevate astronomy in Canada to an international status. There is no doubt that the Society has played a major role in the existence and strength of the David Dunlap Observatory. We of the Observatory staff like to think that over the years we have made some repayment of the Observatory's debt to the Society.

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<http://toronto.rasc.ca>