



**July 2016 - Volume 11, Number 7**

We welcome your comments on the *Bulletin*.  
Email them to the Editor, David Garner at  
[bulletin@rasc.ca](mailto:bulletin@rasc.ca)

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## **News from the Society Office**

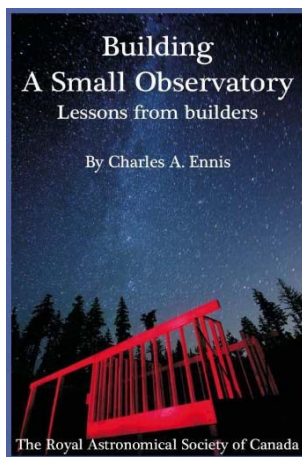
by [Randy Attwood](#), RASC Executive Director

### ***RASC Tours:***

#### ***Arizona Astronomy Tour scheduled for September 2016!***

After a successful trip to astronomy and space exploration sites in southern California last November, we are planning a five-day trip to Arizona in September to visit the following amazing astronomy sites: Kitt Peak National Observatory, Mount Lemmon SkyCenter, Lowell Observatory, Arizona Meteor Crater, with sightseeing in Sedona and Canyon de Chelly. Please check out the [website and PDF brochure](#) here! **If you are interested and want more information please contact Executive Director Randy Attwood at the National Office: [execdir@rasc.ca](mailto:execdir@rasc.ca) .**

**NEW** Item: [Building a Small Observatory for sale on eStore:](#)



This book is the result of interviews with 140 small observatory owners in 10 countries to discover what it takes to fund, build, and operate a small observatory. As a planning guide, it will help you maximize your chances of successfully creating a trouble free installation, and help find the best site and equipment. Learn from the experience of those who went before you. Don't make the mistakes that others have made! **Pricing: \$17.95 + shipping and taxes.**

## Observer's Calendar 2017

A beautiful calendar showcasing RASC members' astroimages with information on what's up in the sky tonight. A perfect gift for the beginner and a must-have for the experienced observer. **Available for pre-order July 5<sup>th</sup>!**



## Annual Report 2015

The Annual Report 2015 – Extended version is now available online here:  
<http://www.rasc.ca/annual-report-2015-extended> .

## Revisiting an Old Question: Where are the Women?

by **Charles Ennis**, RASC, National Secretary

When I joined the Sunshine Coast Centre of the RASC in BC in 2013 I noted that the majority of members of my Centre were older white males like me. I then asked myself a question that RASC Past President Mary-Lou Whitehorne of the Halifax Centre asked in her article in the June 1993 issue of the RASC Bulletin: Where are the Women?

When I joined the Board of the Sunshine Coast Centre in the fall of 2013, I diligently sought out female astrophysicists and cosmologists to speak to our Centre in the hopes that this would encourage young women to get involved in science and encourage older women to join our band of amateur astronomers. My conversations with these female scientists taught me that, while women now represent the majority of young university graduates, women are still underrepresented in science, technology, engineering, mathematics and computer science (STEM) fields. The UNESCO Institute for Statistics reports that only 28% of the world's researchers are women.<sup>1</sup> Statistics Canada reports that the National Household Survey (NHS) showed that women accounted for 39% of university graduates aged 25 to 34 with a STEM degree in 2011, compared with 66% of university graduates in non-STEM programs.<sup>2</sup> Among STEM graduates aged 25 to 34, women accounted for 59% of those in science and technology programs, but accounted for 23% of those who graduated from engineering and 30% of those who graduated from mathematics and computer science programs.<sup>3</sup>

So even though the number of women in STEM programs has increased, women are still a minority in this field. The number of female members of the RASC is much lower than these national averages. Whitehorne looked at the membership rolls when she was president and discovered that only 8% of RASC was female. I searched through the current list of 4975 RASC members looking for female

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<sup>1</sup> UNESCO Institute for Statistics: <http://www.uis.unesco.org/ScienceTechnology/Pages/women-in-science-leaky-pipeline-data-viz.aspx>

<sup>2</sup>Stats Canada website:<http://www.statcan.gc.ca/pub/75-006-x/2013001/article/11874-eng.htm>

<sup>3</sup> Ibid.

names and arrived at a figure of 18%, which is a slight improvement. I took a look at my own Sunshine Coast Centre's membership rolls and discovered that, since we've made the effort to feature female scientists as speakers, one quarter of our 72 members are now female. So my SC Centre is higher than the national RASC average and approaching the percentage of women working in STEM fields in Canada.<sup>4</sup> So where are the women? Why aren't they joining the RASC? We have had women like Whitehorne in prominent positions in the organization. Here in B.C. the presidents of the Victoria and Vancouver Centres are both very competent women.

Another thing that surprised me was to see that a venerable organization like the RASC had only just adopted an anti-harassment policy in March of 2015. Then I started talking to female members who realized that as a former police detective I'd dealt with countless investigations of sexual assault, criminal harassment, and domestic violence. They told me alarming stories of how they'd been the victims of sexual harassment in the past, and how they felt they needed to behave in certain ways and dress in a certain fashion because they feared that someone would blame them for having invited or enticed the perpetrators into behaving badly to them. I know that many sexual predators try to shift the blame for their behaviour onto the victims. That any of our members should feel it necessary to behave in such a manner to feel safe while participating in RASC events is totally unacceptable.

Finally, a few hours after the new Board of Directors was installed at the London General Assembly in May 2016, an emergency meeting was held to deal with an alleged incident of harassment. This resulted in the GA organizers ejecting a male attendee from the event for observed behaviour that violated the Society's anti-harassment policy. Two females were witnessed by many as the objects of this behaviour. For the first time in the history of the RASC, a disciplinary committee was struck and has recommended the member's permanent removal from the Society for the observed violation of the anti-harassment policy. This violation

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<sup>4</sup> Amanda Shendruk. 18 June 2015. Maclean's Magazine, Gender Inequality in the Sciences? It's Still Very Present in Canada. <http://www.macleans.ca/society/science/gender-inequality-in-the-sciences-its-still-very-present-in-canada/>

was unacceptable and proves that we are not yet doing nearly enough to promote and respect women and minorities within the RASC.

In the June 2015 issue of Maclean's Magazine, journalist Amanda Shendruk reported:

*Last week, Nobel laureate Tim Hunt made some foolish remarks to a group of scientists and journalists: "Let me tell you about my trouble with girls. Three things happen when they are in the lab. You fall in love with them, they fall in love with you and when you criticize them, they cry." Unsurprisingly, the comments were not well received, and within a week he had resigned from a number of prominent positions in the U.K.*<sup>5</sup>

In November 2015 renowned astronomer Geoff Marcy resigned his tenured position at UC Berkeley<sup>6</sup> after he'd finally been called to account following decades of sexual harassment.<sup>7</sup>

Hunt's comments and Marcy's behaviour have ignited an international discussion about the status, treatment, and experience of women in STEM, and in light of what has been happening to women in the RASC lately, we need to do the same. Gender inequality is not a thing of the past. While as a society we've made great advances in equal opportunities, we obviously have a long way to go yet. I have no doubt that the majority of our members are unlikely to ever engage in such behaviour, but we must all ensure that all members and Society employees will enjoy an environment free from all forms of harassment. To quote our policy manual:

*The RASC is committed to providing an atmosphere that encourages the free expression and exchange of ideas. The RASC is dedicated to equal opportunity and*

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<sup>5</sup> Amanda Shendruk. 2015 June 18. Maclean's Magazine, Gender Inequality in the Sciences? It's Still Very Present in Canada. <http://www.macleans.ca/society/science/gender-inequality-in-the-sciences-its-still-very-present-in-canada/>.

<sup>6</sup> Alexandre Witze. 2105 December 19. Nature, Berkeley Releases Report on Astronomer Sexual Harassment Case, <http://www.nature.com/news/berkeley-releases-report-on-astronomer-sexual-harassment-case-1.19068>

<sup>7</sup> AzeenGhorayshi. 2015 November 11. Buzz Feed News, Here is how Geoff Marcy's Sexual Harassment Went on for Decades, [https://www.buzzfeed.com/azeenghorayshi/how-harassment-stays-secret?utm\\_term=.snkGMw2pkk#.ewYxnE7zWW](https://www.buzzfeed.com/azeenghorayshi/how-harassment-stays-secret?utm_term=.snkGMw2pkk#.ewYxnE7zWW)

*treatment for all members in accordance with the Canadian Charter of Rights and Freedoms. Harassment, sexual or otherwise, is a form of misconduct that undermines the integrity of the Society and, as such, is not tolerated.*

As Whitehorne said in her 1993 article: “It is not that the RASC does not welcome women, for it does. However, society makes it nearly impossible for a woman to participate actively in organizations such as ours.”<sup>8</sup> One Board member commented to me that he had “noticed a lack of minorities in the Society as well, and have observed members make anti-religious, anti-Islamic, anti-LGBT comments, and worse. This is a quick way to cause some members or prospective members to leave. We all need to be reminded to be on best behaviour.”<sup>9</sup>

Here we are almost a quarter century later and we have still not solved this problem. Until we prove that the RASC can provide that safe environment, we can’t expect women to feel comfortable joining, actively participating, and enriching the Society. The membership of the Society should familiarize itself with the RASC policy and create an atmosphere in which people of any gender, sexual orientation, or spiritual path feel comfortable and secure.

There is an old adage amongst members of my spiritual path: It takes both genders to hold up the sky. Let’s hold up the sky together to create a place where all can feel comfortable and enjoy the wonders of the skies above.

Charles Ennis

National Secretary

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<sup>8</sup> Mary Lou Whitehorne. June/July 1993. RASC Journal, Reflections- Where are the Women?, page 1.

<sup>9</sup> E mail from private correspondent, 2016 June 14.

## The Astroimaging Certificate Program

by **Tenho Tuomi**, RASC, Toronto Centre

The Astroimaging Certificate program is finally running on our RASC national webpages under Observing / Certificate Programs / Astroimaging Certificate. Check out the criteria, and names of the three who have already earned a certificate. Download an application form and start working for your astroimaging certificate.

<http://www.rasc.ca/astro-imaging-certificate>

Tenho Tuomi  
Chair, Astroimaging Committee

## *Juno Mission: Jupiter Orbit Insertion*

by **Anthony Gucciardo**, Yukon Centre

If you can't be at the Jet Propulsion Laboratory or in orbit around Jupiter for Jupiter Orbit Insertion, the next best place to be might be at the Yukon College, hosted by the RASC Yukon Centre, in front of a large screen networked to NASA's *Eyes on the Solar System* programming. NASA will provide live TV commentary which not only include interviews and live views from mission control, but also a presentation about the *Eyes on the Solar System*.

*Eyes on the Solar System* has developed a module dedicated to the *Juno Mission* to Jupiter. In this online, interactive visualization, the RASC Yukon Centre can ride along with the *Juno* spacecraft, ***in real-time***, as it arrives on July 4 or, travel backward or forward in time from launch to its planned fiery end of mission in February 2018, using the classroom's *Smart Board*.

NASA's *Juno* spacecraft will arrive at Jupiter to study our solar system's largest planet. From a unique polar orbit, *Juno* will repeatedly dive between the planet and its intense belts of charged particle radiation, coming about 5,000 kilometers from the cloud tops at closest approach. *Juno's* primary goal is to improve our

understanding of Jupiter's formation and evolution. The spacecraft will investigate the planet's origins, interior structure, deep atmosphere and magnetosphere. *Juno*'s study of Jupiter will help us to understand the history of our own solar system and provide new insight into how planetary systems form and develop in our galaxy and beyond.

Come join the RASC Yukon Centre, at the Yukon College, for an out of this world Event on 2016 July 4 in Room 2402, to celebrate Juno's arrival at Jupiter after an extraordinary 2,800 million kilometre journey, and witness, as Juno arrives in Jupiter's orbit, at speeds exceeding 250,000 km/h, making this spacecraft one of the fastest human-made objects ever made! This **FREE** event is open to the public, and Christa Van Laerhoven, a member of the RASC: Yukon Centre and a CITA planetary scientist and orbital dynamicist, will be on-hand to guide the presentation as the spacecraft performs its Jupiter orbital insertion!

## Event Information

### Timings:

- Presentation about the Juno spacecraft **(7 p.m. to 7:30 p.m.)**
- Talk about the mission **(07:30 p.m. to 8:15 p.m.)**
- Jupiter Orbit Insertion (JOI) - burn begins at **8:18 p.m.**
- The burn is scheduled to end at **8:50 p.m.**
- Closing remarks **(8:50 p.m. to 9 p.m.)**

### A Mission of Many Firsts:

- First space mission to operate a solar-powered spacecraft at Jupiter
- Farthest solar powered spacecraft from Earth
- First space mission to orbit an outer-planet from pole to pole
- First space mission to fly as close as 4000 km to Jupiter's cloud tops
- First mission to be designed to operate in the heart of Jupiter's radiation belts
- First mission to carry a titanium radiation vault to protect the spacecraft's most sensitive instruments from a planet's intense belts of radiation
- First spacecraft to fly 3D-printed titanium parts (Waveguide brackets)
- Will be the fastest spacecraft to enter orbit around a planet at 209,214 km/h relative to Earth
- Will take the highest-resolution images of Jupiter in history

Check out this video: <https://youtu.be/iNirssyUWkA>



## **Asteroids with Canadian Connections**

by **Eric Briggs**, National Council, Recorder

The following asteroids have been added to the list of asteroids with Canadian connections:

(21330) Alanwhitman = 1997 AT20

Discovered 1997 Jan. 11 by Spacewatch at Kitt Peak.

Alan Douglas Whitman (b. 1946) is a Canadian amateur astronomer and former weather service officer. He is a skillful observer and has written and lectured widely. Name suggested by R. and P. Jedicke.

Orbit type: Main Belt

MPC 100606

<http://rasc.ca/asteroid/21330>

(21336) Andyblanchard = 1997 BU8

Discovered 1997 Jan. 31 by Spacewatch at Kitt Peak.

Andy Blanchard (b. 1956) founded AstroCATS, an annual telescope exhibit, in 2013, and won a Service Award from The Royal Astronomical Society of Canada in 2016.

Name suggested by R. and P. Jedicke.

Orbit type: Main Belt

MPC 100606

<http://rasc.ca/asteroid/21336>

(21349) Bevoke = 1997 ER31

Discovered 1997 Mar. 10 by Spacewatch at Kitt Peak.

John Beverly "Bev" Oke (1928–2004) did his PhD at Princeton University and had an outstanding career in spectroscopy and instrument design for large telescopes. Name suggested by R. and P. Jedicke.

Orbit type: Main Belt

MPC 100606

<http://rasc.ca/asteroid/21349>

(21350) Billgardner = 1997 EN32

Discovered 1997 Mar. 11 by Spacewatch at Kitt Peak.

William David Anstruther Gardner (b. 1974) is an amateur astronomer in

Ingersoll, Ontario, active in The Royal Astronomical Society of Canada, London Centre. Name suggested by R. and P. Jedicke.

Orbit type: Main Belt

MPC 100606

<http://rasc.ca/asteroid/21350>

(21362) Dickarmstrong = 1997 HS3

Discovered 1997 Apr. 30 by Spacewatch at Kitt Peak.

Richard Armstrong (1937–1991) studied radiogenic isotope geochemistry, geology of the American Cordillera, geochronology, and Earth's geochemical evolution.

Name suggested by R. and P. Jedicke.

Orbit type: Main Belt

MPC 100606

<http://rasc.ca/asteroid/21362>

(21367) Edwardpleva = 1997 LU1

Discovered 1997 June 2 by Spacewatch at Kitt Peak.

Edward Gustav Pleva (1912–2008) was a geography educator who taught for 39 years at Western University and was editor of The Canadian Oxford School Atlas.

Name suggested by R. and P. Jedicke.

Orbit type: Main Belt

MPC 100606

<http://rasc.ca/asteroid/21367>

(229781) Arthurmcdonald = 2008 PS1

Discovered 2008 Aug. 3 by V. S. Casulli at Vallemare Borbona.

Arthur B. McDonald (b. 1943) is a Canadian physicist who received the 2015 Nobel Prize for Physics for his discovery of neutrino oscillations, showing that the neutrino has mass.

Orbit type: Main Belt

MPC 100610

<http://rasc.ca/asteroid/229781>

## **Star Trails – A Must Watch!**

by **Brandy Yanchyk**, Edmonton Centre

Have a look at this new series called Star Trails. You can find it on it on Facebook, Twitter, Instagram, Linked In and Google Plus.

The hashtag is @StarTrailsFilm. Please join the #StarTrails Facebook community:  
[www.facebook.com/Star-Trails-222651021431030/](http://www.facebook.com/Star-Trails-222651021431030/)

You can see all five episodes here and the 90 minute ambient video: [www.youtube.com/playlist?list=PLuj3rWl-eKLFjgVsWSXI5-PNJCS296kOW](http://www.youtube.com/playlist?list=PLuj3rWl-eKLFjgVsWSXI5-PNJCS296kOW)

The new documentary series Star Trails about dark sky enthusiasts will air on TELUS Optik Local in June. Click here to see the promo: <https://vimeo.com/155877170>

Brandy Yanchyk  
Producer/Director/Writer

## **Thank You to our Sponsors!**

by **Julia Neeser**, RASC Marketing Coordinator

The Royal Astronomical Society of Canada has a unique partnership with our friends in the astronomy industry. We are now offering companies the distinction of becoming a charter sponsor of the RASC, Canada's pre-eminent amateur astronomy organization. This offer is available only to those industry leaders who recognize the value in being associated with the amateur astronomy community.

<http://www.rasc.ca/rasc-sponsors>.



## What's New in the Sky

Members are encouraged to check out the **Northern Skies** section of the RASC website. Thanks to Gary Boyle for keeping us all in the know. Julia Neeser creates "The Solar System" monthly with data from James Edgar's "Skies" newspaper articles at <http://www.rasc.ca/observing>.



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