

AUTORA



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The Royal Astronomical Society of Canada - Windsor Centre

October 2015

RASC Windsor Centre Financial Statement by Greg Mockler/The Editor

The RASC Windsor Centre fiscal year ended on September 30, 2015 and as the following financial statement provided by our Treasurer Greg Mockler shows we are in good financial shape with \$5,384.08 in the bank. Overall we had an overall operating surplus of \$1,076.76 which is a nice change from the deficits we have been running over the last few years. The change can be attributed to the increase in membership, a higher observatory fee, increased donations and the sale of a telescope mirror that was donated to the Centre. *The Editor*

Financial Statement for year ending September 30, 2015

		Last Year	Difference
Balance Sheet			
Assets			
Cash	5,384.08	4,307.32	1,076.76
Building & equipment	80,000.00	80,000.00	-
	<u>85,384.08</u>	<u>84,307.32</u>	1,076.76
Liabilities			
	-	-	
Accumulated surplus, open	84,307.46	85,267.35	- 959.89
Earnings (loss)	1,076.76	(959.89)	2,036.65
Accumulated surplus, close	<u>85,384.22</u>	<u>84,307.46</u>	1,076.76

Statement of Revenue & Expenses

Revenue			
Revenue - Donations - receipted	450.18	250.00	200.18
Revenue - Donations - not receipted	378.40	431.85	- 53.45
Revenue - Gifts from other registered charities	-	-	-
Revenue - Interest	-	0.29	- 0.29
Revenue - Sale of property or goods and services - scopes	350.00	-	350.00
Revenue - Membership fees - National	2,736.12	2,006.12	730.00
Revenue - Membership fees - Obs fee	1,030.00	510.00	520.00
Revenue - Fundraising - meetings	172.40	154.10	18.30
Revenue - Fundraising - 50/50 draws	105.75	96.50	9.25
Revenue - Fundraising - garage sale	-	-	-
Revenue - Fundraising - special events	418.00	33.00	385.00
Revenue - Fundraising - pubs	405.00	405.00	-
Total revenue	<u>6,045.85</u>	<u>3,886.86</u>	2,158.99
Expenses			
Expenses - Office supplies and expenses	199.15	142.75	56.40
Expenses - Occupancy costs - mtg rental	725.00	717.50	7.50
Expenses - Occupancy costs - obs rent	500.00	500.00	-
Expenses - Occupancy costs - obs utilities	480.00	480.00	-
Expenses - Occupancy costs - obs other	2,473.93	2,313.75	160.18
Expenses - Adv & promo	-	-	-
Expenses - Fundraising expenses - meetings	242.35	323.36	- 81.01
Expenses - Fundraising expenses - pubs	299.66	322.39	- 22.73
Expenses - Social	-	-	-
Expenses - Honoraria	49.00	47.00	2.00
Expenses - programs	-	-	-
Total expenses	<u>4,969.09</u>	<u>4,846.75</u>	122.34
Net Earnings	<u>1,076.76</u>	<u>(959.89)</u>	2,036.65

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Calendar of Events

Our next meeting...

Tuesday November 17, 2015

7:30 p.m.

at

Ojibway Park Nature Centre

5200 Matchette Road

Main Speaker...

Dr. Pierre Boulos

Topic...

"Tom Telescope"

Activities...

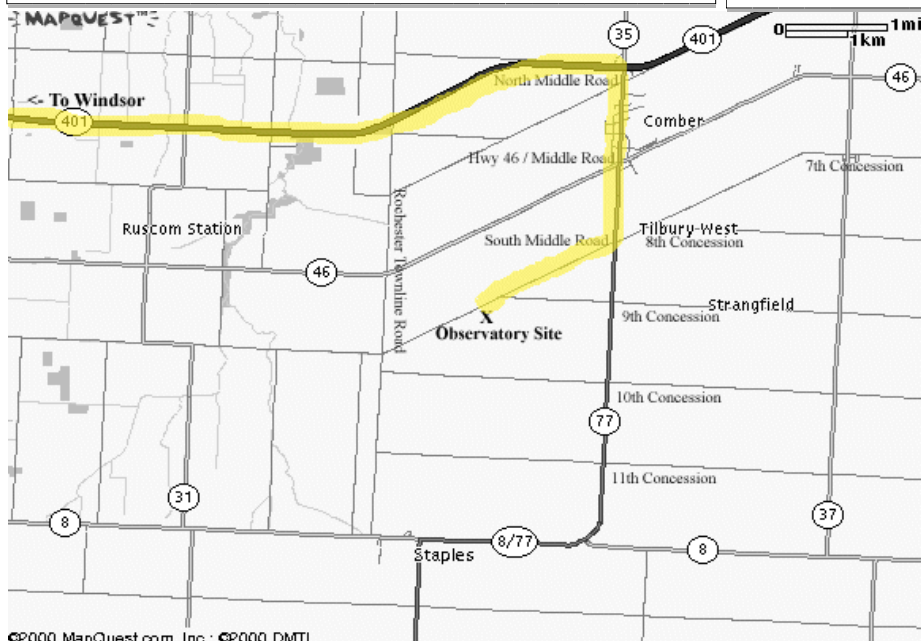
Open House Night at Hallam: The next open house night at Hallam is on Saturday November 14th at 7:00 p.m..

Venus and Jupiter: On the morning of Monday October 26th Venus reaches greatest elongation West and is just 1 degree away from Jupiter.

Uranus and the Moon: On the same morning of the 26th Uranus is less than a degree North of the Moon.

Morning Planets: On Friday November 6th and Saturday November 7th the Moon will slide passed first Jupiter and then Venus and Mars creating a nice visual grouping and a photographic opportunity.

Leonid Meteor Shower: Peaks on the night of Tuesday November 17th with the moon setting at 10:40 p.m..



Hallam Observatory Site

Directions: The map at left shows the Comber area and it includes the major highways (401, 77, 8 and 46) that are in the area of the observatory.

The most direct route from Windsor is "highlighted" on the map which is to take Highway 401 East to Highway 77 South to South Middle Road. Turn right onto South Middle Road and go about 1 kilometer and just after the point where Concession 9 joins it (it is hard to see this intersection) you will find the observatory site on the South side (left) of the road. 3989 South Middle Road.

If you hit the Rochester Townline Road (you come to a stop sign) you have gone too far.

Submissions

Aurora is published monthly except for July, August and December. The September, October, January, March and May issues are full newsletters (usually 6 pages) with a number of member submitted articles. The November, February, April and June issues are short flyers (2 pages).

Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you.

Submission deadline is the 1st of the month.

Editor: Steve Mastellotto Email: mmastellotto@cogeco.ca

Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at the Ojibway Park Nature Centre. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, a subscription to SkyNews magazine and access to the Centre's library and telescopes. Optionally the RASC Journal is available in print form—online version free.

Annual Membership Fees: Please see the RASC website at www.rasc.ca for current rates.

Contact Greg Mockler at (519) 326-7255 or visit our website at: <http://www.rascwindsor.com> for more information.

September 2015 Meeting Minutes by Steve Pellarin

The monthly meeting of the Royal Astronomical Society of Canada - Windsor Center was held at the Ojibway Park Nature Centre on Tuesday September 15, 2015.

Windsor Centre **President, Randy Groundwater**, chaired the meeting and called the meeting to order at 7:34 p.m. and welcomed members and guests back from a long summer break and noted the good turnout for the meeting. Randy invited the members to review the minutes of the June 16, 2015 meeting which were printed in the September newsletter.

A motion to accept the minutes of the June 16, 2015 membership meeting was made by Rick Marion, seconded by Steve Mastellotto. **MOTION CARRIED.**

Main Presentation

Randy then introduced our main speaker for the evening - **Dr. Bill Baylis, Honorary President**. Bill's talk was to focus on a type of extra-solar planet that has been discovered in large numbers over the past decade or so of searching - a type known as "**Hot Jupiters**".

Dr. Baylis was asked by Randy to speak on the recent City of Windsor decision to withdraw the use of the Marion street building from Science City and on the repercussions for the future of the organization. Bill thanked Randy for allowing him back to speak to us and went on to briefly discuss the current difficult situation facing the science museum. The current administration did not want to sink money into the deteriorating building and instead of offering the science museum an alternative location, simply told them that they needed to leave. Bill indicated that there are some leads and that he hoped to announce a new location for the museum within a couple of weeks. With the move, there is hope that new funding streams may become available for new exhibits, including a possible new area in the museum dedicated to astronomy.

Dr. Baylis then went on to begin his talk on "other" Jupiters, different from the one we know in our own solar system. He started with a review of the characteristics that define planets like Jupiter - gas giant planets that are the largest type of planet that we have yet found. Jupiter-like planets are much larger and more massive than Earth - at least 10 times our planets diameter, over 1000 times its volume and 300-400 times its mass. Our own Jupiter not only dominates our solar system in planet size but also has had a huge influence on the development of other planets and even on the evolution of life here on Earth.

Jupiter-like planets, like our own giant, most likely are fast rotating with thick atmospheres of hydrogen, helium and other gases. Dr. Baylis went on to give further details of the internal mechanisms at work inside gas giants, including how its enormous magnetic field works and how its Great Red Spot storm continues to spin. He also described how the giant planet effects its myriad of moons, particularly the inner Galilean ones, some of which support liquid water oceans due to tidal heating.

Bill then went on to discuss exo-planet Jupiters and how their

abundance in our surveys may in large part be due a detection bias of our current search techniques and equipment. Until recently, most of the Jupiter-like planets detected were astonishingly close in their orbits around their stars. With such a proximity to the host star, these gas giants are super heated (thus the term "hot Jupiters") and the effects are staggering. Besides bloating many of them up to enormous sizes, some have supersonic winds that constantly rip around from daylight side to night, while others are having their atmospheres stripped off their inner cores, like gargantuan comets might.

Dr. Baylis went on to discuss the various methods that astronomers are now using to detect exo-planets. He also noted that given current statistical trends, it now appears that there are more planets in our galaxy than stars (more than 400 billion). The Kepler spacecraft alone has discovered over 2,000 planet candidates. Bill then went on to give more details about the Kepler infrared space telescope. Bill also discussed a new type of adaptive optics system and camera built for the Gemini Telescopes in Hawaii and Chile (of which Canada plays a key supporting role) and how systems such as these have now been used to directly image and gather data about planets around other stars. He concluded his talk with a quick survey of new telescopes and spacecraft that are in development and what their projected capabilities will allow us to do in our search for smaller earth-like planets.

After taking a few questions, Randy thanked Bill for his very informative presentation, taking time to recognize his wife Bobbi in the audience.

Break and 50/50 Draw - Bill Baylis was the winner.

Announcements

1. Greg Mockler is taking orders for the new 2016 RASC calendars which will be available at the Oct. or Nov. meeting.
2. Randy reminded members that we are still collecting Canadian Tire money to help pay for odds and ends that we need to maintain the Hallam Observatory.
3. Steve Mastellotto asked members to submit articles, pictures, notes or anything astronomy related for the newsletter.
4. Steve also announced that they annual key fee for Hallam Observatory is now due. The cost is \$60 per year and you must have been a member for at least one year in order to be eligible.
5. Rick Marion announced that he is preparing a potential slate of officers for the upcoming annual elections for the club and invited any eligible member to contact him after the meeting or by email so that their name can be considered.
6. Next Hallam open house is Saturday, September the 19th, starting at 8:00 pm. The annual visit of the Tai Chi group to the observatory will take place the night before (Friday the 18th of Sept).
7. There is a centre council meeting coming up on Tuesday, October 13th at Steve Pellarin's house @ 7:30 PM.
8. Randy thanked Susan Sawyer-Beaulieu for her work in carrying out the CREW astronomy night fundraiser for the

(Continued on page 5)

At The Eyepiece: Adventures in VERY Small Apertures by Deb Ethier

This month's article is going to be something of a departure. At the risk of being labelled a Luddite, I'm going to tell you to ignore your software, your go-to, your push-to and your apps. I'm going to encourage you to explore one small part of the night sky starting with the smallest aperture available for astronomy – the human eye. We are going to back away from large instruments and start with the one available to our ancestors! The plan here is to really get to know an area without being “driven” there, then to explore it (again without electronic aids) with slightly larger apertures at low power – I used 8x40 binoculars, a 105mm Astroscan reflector with 16x and an Orion Starblast 6” reflector with 28x.

There is a wonderful part of the Autumn/Winter sky that I call the *Perseus Corridor*, filled with fun discoveries for your naked eye that then reveal surprises with only slightly larger apertures. You never know what you might “sweep up”, and I left out a lot of little gems so you can discover them yourself. Just hop from object to object using the map below or your finder. Don't cheat!

The starting point of this journey is the **α Persei Moving Group** (a very large group also known as Mel 20 and Cr 39/4). Consult the included map and find this large and brilliant group of silvery stars and what looks like some nebulosity. For those of you who know the mythology behind the constellation, I like to think that this is the mirror-like shield that Perseus used to reflect Medusa's hideous gaze back at her. Of interest, you are now looking “out” at an outer arm of our own galaxy; if you

look back over your shoulder, you're looking into the heart of the Milky Way (Sagittarius). The α Persei group is one of the nearest to our solar system, and truly *needs* small apertures. It's a fascinating area for further reading. Note that another interesting activity lies just east of this group, the short-term eclipsing binary variable Algol. You can note its changes easily.

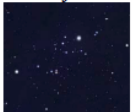




Now scan from the shield towards Cassiopeia and you will see a distinct fuzzy patch between the end pair of stars of the W and the α Persei group (consult map). Look long enough in a good sky and you will see a “barbell” shape to the fuzz. You're looking at the famous **Double Cluster** in Perseus (NGC 869 and 884). Keep looking and you might even see some indistinct twinkling of a star or two in the clusters with averted vision.

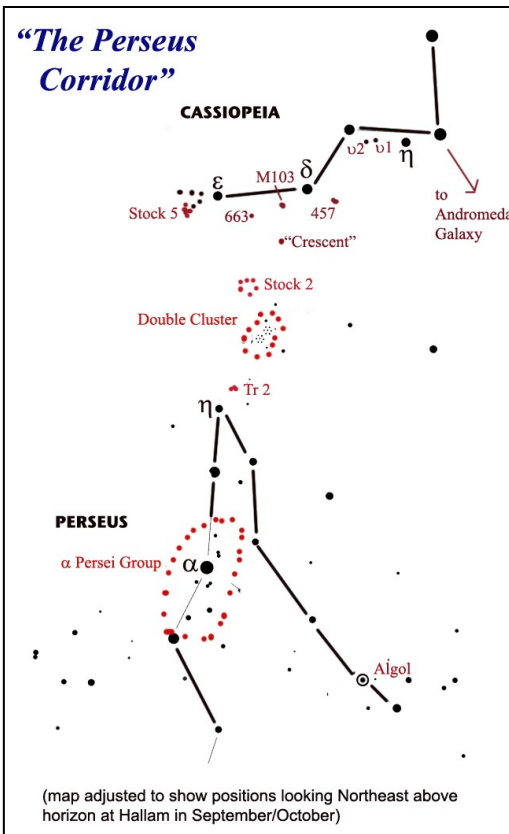
A straight line extending from α Persei beyond the Double Cluster will bring you to **NGC 457**, near δ Cass. With the eye it is only a faint star. Aperture reveals a surprise! Also, enroute to this object, starting with binoculars, you will notice *a lovely little semi-circle or crescent of stars*.

Continue the line to the naked-eye pair **v1/v2** in Cassiopeia. That completes the main line of the corridor. Now look along the W of Cassiopeia to ϵ , and you will notice a **faint fuzziness** just off this “end” star. Further surprises await!

Familiarize yourself completely with your eye, then try binoculars or a small ‘scope. Sweep your way along the corridor enjoying the journey and I promise you'll find other bonuses that I haven't even mentioned!

While here, look for the Andromeda Galaxy with your naked eye – just follow the pointing arrow made up of the three end stars of Cassiopeia's W as shown on the map – keep going and you can't miss the elongated fuzzy patch! Happy Trails!

Object	Naked Eye	8x40 binoculars	Astroscan	Orion Starblast 6
				
α Persei Moving Group	- prominent large, elongated brilliant group of silvery stars and what looks like some nebulosity	-the “nebulosity” is actually the density of stars; scan around.	-scan the length and breadth of this group, enjoying the many chains of stars and doubles.	-same as Astroscan; spend some time exploring – it's quite beautiful!
Double Cluster - NGC 869/884 - Stock 2 - Tr 2	-small “barbell” patch of fuzz; perhaps some tenuous resolution with AV? No sign of two other smaller clusters.	-lovely view of Double Cluster; St 2 (larger, looser and fainter) is found at the end of a curve of stars preceding, like a trail of breadcrumbs! Tr 2 to SE as a knot of stars.	-Double Cluster takes up a small part of FOV with St 2 on extreme edges; St 2 large and loose filling eyepiece (50-60 stars); Tr 2 shows a sickle shape of stars. -note differences in appearance between 869 and 884, one wreath-like and more open and the other denser with two brighter stars.	-Both members of Double Cluster in the same lovely FOV; - Tr 2 resolves into a rough sickle or question mark of about 7 stars of varying magnitude with some minimal haze of unresolved members.
- NGC 457 - NGC 439 - M103 - NGC 663	-faint star off of δ Cass.	-a lovely pair of stars (yellow and bluish) with a faint fuzzy patch extending from them with AV. -457, M103 and 663 will all be in the same FOV.	-one of the most charming small open clusters in the skies reveals itself – sometimes called the Owl Cluster, I call this the “Little Man”. The pair of stars become his eyes and the rest of the cluster outlines the stick man (be sure to wave back; you'll know what I mean) Notice the faint fuzz at his feet. This is NGC 439. -drive over to M103	-a wonderful cluster, and essential viewing. -NGC 439 in same FOV at low power; this is resolvable at higher powers in a 6” -sweep over to M103 and notice the distinct “Christmas Tree” outline (complete with ornaments!) -on to 663, where 659 and 654 will also be in the same FOV at low power.
Mini Hyades - Stock 5	-just a “faint fuzziness” off of ϵ Cass.	-closer inspection shows a faint sideways “V” of stars like the much larger Hyades	-the V is quite distinct; note the hazy bit (St 5) off of one of the arms.	-open cluster St 5 becomes a loose open circle of about a dozen stars.



September Meeting Minutes (continued)

(Continued from page 3)

- club in early August. Susan noted that despite the weather not cooperating, we had an enthusiast group out there and managed to collect \$140 for the Centre.
9. Steve Pellarin discussed the upcoming Lunar Eclipse public observing event at Sculpture Garden. The event is scheduled for Sunday, September 27th at 7:45 PM along the riverfront near the intersection of Askin Rd and Riverside Drive.
 10. Steve also put in a plug in for the new intro astronomy course that he is offering at St. Clair College. Classes will run on Monday nights from 7 - 9 p.m. and will run from September 21st - November 23rd.
 11. Randy then asked new faces in the crowd to stand and be recognized (as there were many new people at the meeting).

Director of Observing Report, Brian Thomas: Brian asked the audience for any observations that they'd like to share and several members discussed observations of the Perseid meteor shower and the great show that Venus, the moon and Mars are putting on. Art Rae reported on the great viewing of the Venus-Jupiter conjunction progression in late June and Brian showed a nice picture taken by Art Rae showing that event. Brian also showed images of Perseid meteors taken by club members Clark Johnson, Mahayarrahh Livingstone-Starr and Steve Mastellotto. He also showed an animation of a series of images that show the motion of Barnard's Star over the last 5 years - all images taken through the big scope out at Hallam by Dave Panton (and this year by Steve Mastellotto). Brian also showed a pair of images taken by member Pete Barbaro of Pluto through an 8" telescope taken several days apart and illustrated Pluto's motion. Brian also showed an amazing image of the nebulous regions around Chi Cygni in the summer Milky Way that he had captured this summer.

Brian discussed the latest news and pictures from the Dawn mission to Ceres as well as a few pictures of Pluto and its moons. Brian provided the current positions and visibility of the planets, Moon and activity on the Sun. Venus is climbing higher in morning sky currently and will reach maximum brilliancy (-4.8) on September 21st. Mars is slowly climbing higher before dawn as well, with Jupiter coming to join it in the morning sky. Uranus reaches opposition in Pisces on October 11th.

Brian reviewed the constellations now visible in the early evening and what the sky will look like early in the morning. He also noted the zodiacal light should be visible in the morning sky at this time of the year however, members had yet to see it this year.

Brian discussed the total lunar eclipse which will be the last total lunar eclipse visible from Windsor until January 2018 and he highlighted events for October and a few great binocular objects to observe in the fall skies and where to find them.

Randy thanked Brian for his presentation and reminded the audience that the **next regular membership meeting** will be on Tuesday, **October 20th at 7:30 p.m.** at the Ojibway Park Nature Centre.

Randy adjourned the meeting at 10:05 p.m.

Proposed 2016 Council of the RASC - Windsor Centre

Executive

President	Randy Groundwater
1st Vice-President	Mike Mastronardi
2nd Vice-President	Rick Marion
Secretary	Position Open
Treasurer	Greg Mockler
National Council Rep.	Mike Mastronardi

Councilors

Dr. Pierre Boulos	Steve Mastellotto
Paul Pratt	Paul Preney
Dr. Susan Sawyer-Beaulieu	Tom Sobocan
C. Joady Ulrich	

Appointed Officers

Honorary President	Dr. William Baylis
Past-President	Rick Marion
Alternative National Council Rep	Open Position
Librarian	Open Position
Recording Secretary	Open Position
Public Education Director	Open Position
Public Relations Director	Rick Marion
Directors of Observing	Juliana Grigorescu
	Steve Mastellotto
	Brian Thomas
Light Pollution Abatement Dir.	Open Position
Hallam Observatory Director	John Marn
Aurora Editor	Steve Mastellotto
Webmaster	Steve Mastellotto

Hallam Observatory Fee

A reminder that the Hallam Observatory annual access/key fee of \$60 is now due (October 1st). Please see our Treasurer Greg Mockler at the October meeting to pay for your key. If you no longer wish to have your own access to the observatory please turn in your key to Steve Mastellotto.

Calendars

Our Treasurer, Greg Mockler is taking orders for the 2016 RASC Calendar. Price will be \$17.50 including S&H and HST if he gets over 10 orders - this is the same price as last year and is substantially less than ordering directly from National. Please see Greg at the October meeting.

Member Astrophotos



Top Left: September 27, 2015 Total Lunar Eclipse composite by Brian Simpson. *Top Right:* M33 by Brian Thomas with his Williams Optics 132mm f/7 refractor and Canon 5D camera, 150 minute total exposure at ISO 1600. *Middle Left:* California Nebula (NGC 1499) by Brian Thomas with the same equipment as above and a 2 hour 9 minute exposure at ISO 1600. *Middle Right:* Morning planets Venus, Mars, Jupiter and Mercury from Hallam Observatory by Randy Groundwater shot on Saturday October 17, 2015 using a Canon 5D Mark III, 5 second exposure at ISO 800 through a Rokinon 35mm prime lens at f/2. *Bottom Right:* The Double Cluster (NGC 869/884) by Pete Barbaro taken from the City of Windsor with his Orion 110ED refractor, light pollution filter, Nikon D5100 on a CG5 mount. 16 sub-frames of 150 seconds each at ISO400.



IMPORTANT - Did you know that the RASC Windsor Centre is a registered charity?

To break even in a typical year we need to raise about \$750 over our normal income sources. In the past we have had garage sales, winery events and other fund raisers. These events are a lot of work for a few people and often the money is raised from other Centre members (e.g. sale of tickets to the winery event). It is difficult to get enough people involved in planning and staging an event, so alternately we are asking our members to look at making a charitable donation. If most members contributed a few dollars (even \$25 or \$50) we would raise more than a special event generates. Any donations made before the end of the year will be eligible for a charitable donation receipt which can be used on your 2015 tax return.

If you have any questions, please contact Greg Mockler, your earnest treasurer.