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Roger Hill, Editor

For all of those who came forward to sit on the Board...thanks! It's nice to see some new faces, as it forces those of us who've "always done it that way" to justify why. It also makes all of us look at problems and deficiencies in a different light. It's almost always possible to do things better, but it's equally as important to avoid the mistakes of the past. This is what makes this board so interesting.

At the October General Meeting, Andy paid me a nice compliment by stating that although I've been President on 6 occasions, that in being editor of Orbit, I've really found my calling. So...for better or for worse (and really because no-one else stepped forward), I'll be doing Orbit for at least another year. I think Ken Chilton was Editor for 10 years, so if I can last until Volume 50, I can match Ken in at least one way.

Enough navel gazing...what's going on for the next little while in the Centre?

Well, one thing that we've done is had a good look at one of our neighbour Centres in London to get an idea of the sorts of things that work well that we should be copying. We've also spoken to people who did not renew their memberships, but who were kind enough to say why.

It basically came down to the number of events that we have offered. Whether this was deserved or not (I don't think that last years Board could have done much more and still kept their day jobs!) is immaterial, really. Our aim this year will be to offer an event at the observatory each week when we don't have the monthly meeting.

To this end, the Public Nights have been changed to Stargazing nights. On nights like these, please bring your telescope out and enjoy the camaraderie of fellow astronomers, learn from them or offer guidance. Having problems learning to polar align, wondering if there are filters that can reduce light pollution, having problems getting your camera to focus, or what focal length of eyepiece should be next in your collection? These are the nights to come out. Or just come to chat with friends.

Over the last few years I ran a series of four seminars for the City of Burlington. These were an attempt at informing the public about some of the basics of astronomy. For me, I've been involved for more than a few years, and I've come to expect that members of the Hamilton Centre are generally conversant with the somewhat arcane terminology our hobby uses. It's been obvious, with some conversations I've had over the last couple of years, that this is not always the case, and that the Hamilton Centre members might benefit from the sort of seminar that I ran for Burlington. It turns out that the Prince George Centre out in BC has just such a program, and they offered their course material to other Centres. The course, called NOVA (New Observers to Visual Astronomy), runs for 9 nights, and costs \$115, although that includes the cost of a membership and a copy of the Beginners Observers Guide (\$19.95, not including tax, shipping and handling).

What I've offered to do is to run the same course here in Hamilton, starting in January. The course will run once a month and will be designed to ensure that the participants qualify for the RASC's Explore The Universe certificate. I'm not sure which night will be the first night, as I will have to check my schedule, but either Wednesday or Thursday nights when there is no other event scheduled that week. So, no Stargazing, no General meeting, or no astrophotography night. You'll have to buy a copy of the Beginners Observing Guide, which will be used as the textbook, and we'll ask for a \$5 donation each night from each participant to help offset costs (snow ploughing, electricity, etc).

Let me know if you're interested!

Roger Hill

Presidents Message—Andy Blanchard

October came and went in such a hurry I feel like I missed it. Although on reflection we did accomplish a great deal this month. With the elections now over we now have a bigger board, and we have reallocated our resources.

Gary Bennett is our Membership Director in charge of programs for new and old members. He will be introducing programs that will foster new members while enriching the experience of the current membership.

Joe Pipitone has taken on not only the librarian position but also the duties of recorder.

Shawn Preston has taken over the administration of our technology (website and email system). Look forward to perhaps a webcam at the observatory soon.

Jason Blaine has completely restored our observatory to a first class location for families to star gaze.

Roger Hill has come back to the board and is sharing his years of experience, while also remaining as your Orbit Editor.

Gary Colwell is concurrently rounding up members of the outreach committee so we can get out into the community and share our love of the sky. I encourage all of you who volunteered last year on this committee to drop Gary an email. He can be reached at supergiant2003@hotmail.com

Dana Barton has volunteered as our Director of youth development, an area we are desperately in need of help with.

Also we have a great big thank-you to Will Gray for continuing on for another year as our treasurer.

We have elected to change a few items, Arm Chair Astronomy on the 2nd Tuesday of each month will be Star Gazing or a movie night, While Public night gets a new name Star Gazing for the Public. Our Astrophotography night will return with a more structured program. (10 Steps to Successful Astrophotography, as in the past on the last Thursday of each month.

Starting with the December meeting we will be going back to an 8pm start time. The December meeting will also be our 2nd annual SWAP Meet, so think about what you don't need and be ready to buy what new item you won't need in the future. KW Telescopes will be at the December meeting with goodies from their store again, just in time for Christmas.

AstroCASM is scheduled for the full moon at the end of May, and the most likely location at this time will be the Sports Centre at Sheridan College in Oakville, more on this later. Also the year end banquet is starting to take shape. We are also working with Scouting and a new partner to be disclosed next month that should increase our membership dramatically. If you want to know more our board meeting is the second Thursday in the month at the observatory.

Our speaker in November is Don Pullen, who will be speaking on his passion radio astronomy. Don has been pursuing this aspect of our hobby and will share his experience and successes. Also be sure to attend, and remember this will be the last meeting at 7:30 so don't come at 8pm or you will be late.

Also if you have any ideas, question or a suggestion bad or good, I really need to hear it.

Andy Blanchard
President RASC Hamilton
atacamandy@hotmail.ca

Membership Report by Gary Bennett

For most of you, this is the first time you are seeing a report from the Membership Committee. As my first official duty under this new portfolio, I am pleased to welcome some of the new members that have joined us recently:

Byron Thorson
Isadora Van Riemsdijk
Ron Quinsay

On The Radar: Within the next few weeks we will finally have a New Member Welcome Kit. Even some of our long time members may have forgotten about some of the benefits available to members, so I will distribute a copy of the document to all members as soon as it is ready to be unveiled.

Observatory Facilities: Some of our long time members may have forgotten that we have a terrific observatory facility that is available 24/7 to our members. Jason Blane and his team of volunteers have done an amazing job sprucing up the observatory and the surrounding grounds. I think you will be impressed! I urge you to come on out and enjoy an evening of stargazing. If you would like some company, post an email to astronomers@hamiltonrasc.ca and invite others to join you.

There are still quite a few members who don't have a key to get into the observatory buildings and I urge you to contact me if you would like one. There are some simple prerequisites:
Must be an adult member for 1 year.

A \$ 25.00 annual fee that helps to cover the cost of changing the locks (and keys) when needed.
Training to use the big scope and mount (a 1-evening event). We have a User Guide now so it will be less intimidating even if you forgot what you learned during training.

Measuring the focal length of your telescope by Roger Hill

The question came up recently about trying to empirically determine the focal length of a telescope. If you have a DSLR, it's easy!

The solution is to work backwards from a captured image and calculate the focal length directly. All you need to know the pixel size of your camera (in microns) and then use the following formula:

$F = 206.265 * P * U / O$, where P is the size of the object in pixels as captured, U is the pixel size of the camera in microns, and O is the true size of the object in arc-seconds. F will be the focal length as calculated from this formula, in mm.

A quick example: Mizar and Alcor (double star in Ursa Major) are 709 arc seconds apart, a Canon 40D has 5.71 micron pixels, and if the stars are measured as being 1800 pixels apart, then $F = 206.265 * 1800 * 5.71 / 709 = 2995\text{mm}$

This allows you to actually measure the focal length of your telescope and camera combination. This can change whenever Barlow lenses and focal reducers are used. The focal length can also be affected if you have an SCT or any telescope that has an amplifying secondary (NOT a Newtonian) and focus is achieved by altering the spacing between the secondary and the primary.

By the way, it's not unknown for commercial optics to vary (sometimes by up to 10%) from their stated values. It just might be worth your while to find out what your telescope really is!

A Cosmic Tease: Trials of the Herschel Space Telescope Science Teams

By Dr. Marc J. Kuchner

Vast fields of marble-sized chunks of ice and rock spun slowly in the darkness this week, and I sat in the back of a grey conference room with white plastic tables spread with papers and laptops. I was sitting in on a meeting of an international team of astronomers gathered to analyze data from the Herschel Infrared Observatory. This telescope, sometimes just called Herschel, orbits the Sun about a million miles from the Earth.

The meeting began with dinner at Karl's house. Karl charred chorizo on the backyard grill while the airplanes dribbled into Dulles airport. Our colleagues arrived, jetlagged and yawning, from Germany, Sweden, and Spain, and we sat on Karl's couches catching up on the latest gossip. The unemployment level in Spain is about twenty percent, so research funding there is hard to come by these days. That's not nice to hear. But it cheered us up to be with old friends.

The meeting commenced the next morning, as the vast fields of ice and rock continued to spin—shards glinting in the starlight. Or maybe they didn't. Maybe they didn't exist at all.

You see, this team is looking at a series of images of stars taken by a device called a bolometer that is blind to ordinary starlight. Instead, the bolometer inside Herschel senses infrared light, a kind of light that we would probably refer to as heat if we could feel it. But the idea of pointing the bolometer at the stars was not to collect ordinary starlight. It was to measure heat coming from the vicinity of these stars, like an infrared security camera, in case there was something else to be found lurking nearby.

And lo and behold, for a handful of stars, the bolometer measurements were off the charts! Maybe something was orbiting these stars. From the details of the bolometer readings—which channels lit up and so on—you would guess that this stuff took the form of majestic fields or rings of icy and rocky particles. It would be a new kind of disk, a discovery worth writing home to Madrid about.

There are several teams of astronomers analyzing data from the Herschel Space Telescope. They call themselves by oddly inappropriate sounding acronyms: GASPS, DUNES, DEBRIS. For the time being, the scientists on these teams are the only ones with access to the Herschel data. But in January, all the data these teams are working on will suddenly be released to the public. So they are all under pressure to finish their work by then. The team whose meeting I was sitting in on would like to publish a paper about the new disks by then.

But it's not so simple. The stars that this team had measured were relatively nearby as stars go, less than a few hundred light years. But the universe is big, and full of galaxies of all kinds—a sea of galaxies starting from maybe a hundred thousand light years away, and stretching on and on. Maybe one of those background galaxies was lined up with each of the stars that had lit up the bolometer—fooling us into thinking they were seeing disks around these stars.

The team argued and paced, and then broke for lunch. We marched to the cafeteria through the rain. Meanwhile, vast fields of marble-sized chunks of ice and rock spun slowly in the darkness. Or maybe they didn't.

What else did Herschel recently uncover? Find out at <http://spaceplace.nasa.gov/comet-ocean>.

Samuel Pierpoint Langley, who developed the bolometer in 1878. His instrument detects a broad range of infrared wavelengths, sensitive to differences in temperature of one hundred-thousandth of a degree Celsius (0.00001 C). In 1961, Frank Low developed the germanium bolometer, which is hundreds of times more sensitive than previous detectors and capable of detecting far-infrared radiation.



Observing Certificate Programs Offered by the RASC

Did you know that the RASC offers six observing certificate programs to promote active observing? By successfully completing each of these programs you are eligible for an official certificate from the RASC. Observing certificates are a great way to challenge yourself, learn more about the night sky and get the most out of our challenging and rewarding hobby.

- Explore the Universe Certificate - A challenging program for the new astronomer covering all major astronomical objects including constellations, bright stars, the Moon, Deep Sky Objects, and Double Stars. Suitable for both binoculars and telescopes.
- Messier Certificate - Take a stroll through astronomical history as you follow Charles Messier's 18th century journey through the northern skies. His famous list of 110 "not comets" includes some of the most spectacular objects in the northern hemisphere.
- Finest NGC Certificate - A somewhat more challenging list for the experienced observer, developed by Sky News Magazine Associate Editor Alan Dyer. The Finest NGC list includes a further 110 objects, mainly from the New General Catalogue.
- Isabel Williamson Lunar Certificate - The RASC's lunar observing certificate program. It includes a comprehensive list of the best features visible on the surface of the Moon and detailed observing notes and explanations that will guide you through a complete tour of the amazing surface of our nearest neighbour in space.
- Deep Sky Gems - A lengthy list containing many interesting and challenging objects for all observers.
- Deep Sky Challenge - These 45 objects challenge even experienced observers and require the use of both small wide-field instruments as well as large aperture to complete.

The RASC's observing certificate programs are supported and managed by the Observing Committee. Participation in this committee is welcome. To find out more contact the RASC Observing Committee Chair.



RASC On-line Communities.

The RASC hosts a number of on-line discussion groups are an excellent way to stay in touch with RASC members from across the country. Discussion groups are accessible either on-line via our discussion forums or via email direct to your inbox.

National Discussion Groups

National discussion groups bring together members from across the RASC to discuss subjects of general interest. Currently the RASC is offering:

- RASCals - The RASC's informal town hall has been operating continuously since November 1995 and has over 300 members who share the latest interesting astronomy news as well as updates on RASC activities and politics.
- Astro-Sketchers - The RASC Astrosketchers group brings together RASC members who are interested in sharing the pursuit of sketching astronomical objects at the eyepiece. (See also the AstroSketchers page.)
- RASCAG - The RASC Astroimaging Group (RASC-AG) brings together RASC members who are interested in sharing the latest techniques and assist each other with astroimaging and processing.
- EPO - The Education and Public Outreach (EPO) discussion group shares tips and techniques for science communication to school groups and the general public and works to leverage the Society's capabilities to reach across the country.
- LPA - The National Light Pollution Abatement (LPA) discussion group works to reduce light pollution by sharing resources and success stories from interested members across Canada.

Centre E-mail Discussion Groups

Most RASC Centres also host one or more local e-mail discussion groups. Some are hosted on local Centre website while others are hosted via commercial services such as Yahoo Groups or Google Groups. To find out more about your local Centre e-mail list consult your local Centre website or newsletter.

Discussion Group Etiquette

RASC discussion groups are moderated which means that activity on the list is managed for the benefit of all participants. Please try to keep your messages related to the RASC (including how to improve our society), amateur astronomy in Canada, observing, etc. Other friendly topics are generally permitted as long as they are kept to a minimum. Private email responses to messages that wander off topic are definitely encouraged.

We try to maintain friendly conversations here, so use lots of "emoticons" like :-), :-), etc. to help us understand your mood, if the subject is controversial, why not wait until the following day before replying. The list moderator reserves the right to remove anyone from the list who abuses the list rules or its members. You will be warned before this happens.

Pictures from the Opening of the London Centre Observatory from Colin Haig



Congratulations to the London Centre on the Grand Opening of their brand new observatory in Fingal, Ontario on Sunday, October 21st.

Rick Saunders, Everett Clarke (Dave's son), Craig Levine, Peter Jedicke, Dave Rubenhagen, and dozens more were all there. We had a fantastic BBQ, too much food, the skies cleared up, and I think many folks stayed up all night.

RASC Book Review by Joseph Pipitone

The New Astronomy Guide: Stargazing in the Digital Age
By Patrick Moore and Pete Lawrence, Carlton Books, 2012.

The authors' stated motive for writing this book was to combine for the first time the science and practice of astronomy and to fill the need of the recent surge in media interest in all things astronomy. This book is promoted as a guide to the new accessible technology such as computerized telescopes, software for processing images and other devices that now make high quality amateur astronomy easier and more affordable.

Sir Patrick Moore is considered the father of modern astronomy in the U.K. and has authored many books and papers on astronomy for both professional and lay audiences. His popular BBC series the Night Sky has been running for over 55 years and is still going strong. His co-author Pete Lawrence is also a highly recognized professional in astronomy and astrophotography and has been a regular presenter on the Sky at Night programme.

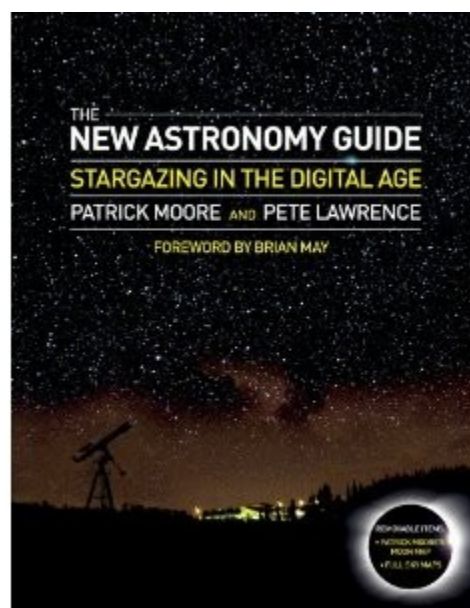
This book is full of interesting tidbits of information and stunning pictures beginning with a general overview of our solar system, information about digital cameras and other digital equipment, choosing and using a telescope and then proceeding with more detailed information with pictures about each of our solar system planets with tips on how to photograph them. A similar detailed overview is given to stars and galaxies with advice on how to photograph them at different times of the season. A clear, usable and complete northern and southern star atlas is included for each month of the year. A very nice feature of the book is the inclusion of a colour pull out of a large constellation map of the northern and southern hemisphere and a similar sized one of a map of the moon that are suitable for framing or just for reference.

An irritating aspect of this book is the white on black background print on every page making it difficult and tiring to read the text, but the ample and stunning pictures more than make up for this deficit. This book is an interesting read and visual extravaganza but not a how to book. As the title suggests it is a guide or a general introduction to the new digital age of interest to the public or the amateur astronomer considering getting into astrophotography, reading this book may push club members over the edge of deciding to get into astrophotography now.

For club members who have a partner who is questioning where all the money is going to, it is a perfect Christmas gift to give them or leave on the coffee table to impress them and hopefully even incite encouragement to keep spending more money on this hobby. The downside of course is that you will have to find a way to delay comparing your new pictures with the ones in the book until you get more proficient at this kind of photography. This book is definitely a try before you buy

This book is now available in our library.

CDN\$ 21.88 & eligible for FREE Super Saver Shipping on orders over CDN\$ 25 at Amazon.CA



Pocket Sky Atlas Challenges for November—John Kulczycki

Sky and Telescope Magazine's "Pocket Sky Atlas" has found a place in the tool kit of many amateur astronomers. The convenient size makes it easy to use at the telescope without requiring a separate chart table. For urban astronomers, the charts are sufficient for the brighter stars visible under urban skies; the charts offer enough detail for star hops with telescopes or binoculars. When taking advantage of a dark sky location, the details of the charts allow for hours of wanderings per page depending on the size of the telescope and the skill of the operator.

These challenge objects are indexed to the star chart pages containing those objects. The idea is to have fun and perhaps expand your observing past the "usual suspects" that can be found because of past experiences. Seeing conditions may not allow finding these objects every night, but they should be visible at some point during the month.

Frost and dew: along with cold, they are our observing companions during these longer nights. While some can stand the cold better than others, most of us can bundle up enough to grab binoculars and steal some time under the stars. If you venture out to your backyard, tell someone, just in case: few situations are as frustrating as being locked out in the cold night by a spouse who later claims to have had no idea you were outside. Dress warm and bring some food and a hot drink. Wandering any distance also requires a blanket/sleeping bag and a back-up plan.

As for those who travel any distance to a dark sky site, it is a good time to review and replenish your cold weather gear and supplies for observing. It's also a good time to have your vehicle's battery tested to insure there are no chilling surprises when you turn the key to get home after a long night in the cold. If you can, observe with an observing buddy; if this is not possible, let someone know where you are going and check in with that person when you get back. Make sure your cell phone is charged up at all times.

Happy Hunting!

Naked Eye:

- Matar (Eta Pegasii) page 72.
RA 22h 43m Dec +30° 13'
- Alpheratz (Alpha Andromedae) page 74.
RA 00h 08m Dec +29° 05'
- Equuleus (Constellation—The Pony) page 75.
RA 21 h Dec +10°
- Sadalsuud, (Beta Aquarii—double star) page 75.
RA 21h 31m Dec -05° 34'

Small Scopes and binoculars:

- M36 (Open cluster, Auriga), page 12
RA 5h 36m Dec 34° 08'
- M37 (Open cluster, Auriga), page 12
RA 5h 52m Dec+32° 33'
- M38 (open cluster, Auriga), Page 12.
RA 5h 28m Dec +35° 51'
- M15 (Globular cluster, Pegasus), Page 75.
RA 21h 30m Dec +12° 10'
- M2 (Globular cluster, Aquarius), Page 77.
RA 21h 33m Dec -00° 49'

Larger Scopes:

- IC 2149 (Planetary Nebula, Auriga), Page 12.
RA 05h 56m Dec +46° 06'
- AG Pegasi (Variable star, Pegasus), Page 75.
RA 21h 51m, Dec+12° 38'
- NGC 7606 (Galaxy, Pegasus, Page 76.
RA 23h 19m Dec -08° 29'
- NGC 7009 (Planetary nebula, Aquarius), Page 77.
RA 21h 04m Dec -11° 21'

Bonus objects:

- NGC 1778 (Open cluster, Auriga), Page 12.
RA 05h 08m Dec +37° 01'
- NGC 1444 (Open cluster, Perseus), Page 13.
RA 03h 49m Dec +52° 39'
- NGC 7331 (Galaxy, Perseus), Page 72.
RA 03h 49m Dec +52° 39'
- NGC 7686 (Open cluster, Andromeda), Page 72.
RA 23h 30m Dec +49° 08'
- NGC 7160 (Open cluster, Cepheus), Page 73.
RA 21h 53m Dec +62° 36'
- NGC 7448 (Galaxy, Pegasus), Page 74.
RA 23h 00m Dec +15° 59'

Endeavour comes home by Stuart Atkinson

I must admit, sitting at my PC's dusty screen
I followed Endeavour's final journey
With mixed feelings, opposing voices
Whispering in my ears as she was steered
Slowly through LA's crazy maze
Of Sun-bleached roads and streets,
Wings passing over the sawdust-haloed stumps
Of once-great trees,
Watched by crowds of starry-eyed Angelenos
And Moon-faced space enthusiasts
In their favourite, faded NASA tees
And KSC-bought astronaut shades.

Part of me marvelled at the bizarre sight,
Delighted to see the famous spacecraft
Welcomed to her final resting place
With such fanfare. What a relief there'd be
No shameful end of days for her;
No Buran abandonment, no exile in a pauper's grave
Of dust and rust, but a gloriously-lit
Throne room of her own, worshipped
From all sides, lights reflecting off her
Windows, tiles and tyres as lines
Of acolytes - desperate to see a real
Spaceship celebrity - file past,
iPhone cameras flashing, shaking their heads
In disbelief as they finally see
Just how big she was, how beautifully
Her wings swept back, how black
Her Apollo capsule-sized engines were...
Remembering how they'd watched her
Rise from pad into the poster paint blue
Sky, climbing twin pillars of roaring
Dragonfyre to soar among the stars,
Ignoring the pleading of gravity
To sing "Look at me, I'm free, free..!"

...but, whispering in my other ear another voice,
Sad, aggrieved, unable to believe
How, after years of condemning her as
"Death with Wings", of writing and saying terrible things
About her and the cost of her flights
Fawning crowds now fall at her feet,
Furiously Tweeting declarations of undying love
For her as she passes the end of their street,
Crying out "We miss you!" as she rolls
In slow motion around the corner
And finally slides out of sight...

And in the back of my mind now a third voice,
Less kind, angry at the sight of her being dragged
Through the city like some captured, exotic beast,
Paraded for the baying crowds like Kong,
Pulled along by invisible chains, a snow white meteorite
Banished from the sky and sentenced to exile on Earth;
Not "A Heroine Come Home" at all,
But an engineered angel fallen from heaven
And thrown into an air-conditioned, floodlit cell,
Surely a spacecraft's idea of Hell
After a lifetime of bathing in starlight,
Of feeling the icy kiss of Earthlight
On her bare shoulder as she rolled, pitched
And yawed above the bored, envious Earth...

One day I'll cross the ocean to see her myself;
Pad pilgrim-softly through the Museum's
Corridors and halls to stand before her and,
At least in my mind, fall to my knees.
Then those voices will whisper in my ears again,
Unheard by anyone else standing there
Clutching their cameras and bulging gift shop bags.
One will say "Thank you, for all that you were,"
The other will say "I'm sorry..."



What you missed in October...!

Report from Roger Hill

October was our Annual General meeting.

Each of the Board members gave a report on their activities.

A motion was made, seconded and approved to accept each report. As is usually the case, the Treasurers Report saw the most discussion,

Roger Hill offered what to expect as far as by-law changes go in 2013.

Roger Hill was asked by Andy Blanchard to run the election. Roger explained that a Board of Directors as the Hamilton Centre has it is a very good democracy. The membership elects a series of people to sit on the Board. The assembled Board members then divvy up the positions among them. Rather than voting for a President, where the skills of a losing candidate are lost, this is not the case among a Board such as ours. Roger stated that our by-laws require that each individual member be approved if a member requests a secret ballot. Otherwise, a show of hands was sufficient. Roger asked if anyone wanted a secret ballot. No-one did. Roger asked for a motion to approve that a show of hands was sufficient to approve the full slate of candidates. A motion was made, seconded and approved to that effect. A motion was then made to accept the full slate of candidates, which was also made, seconded and then approved.

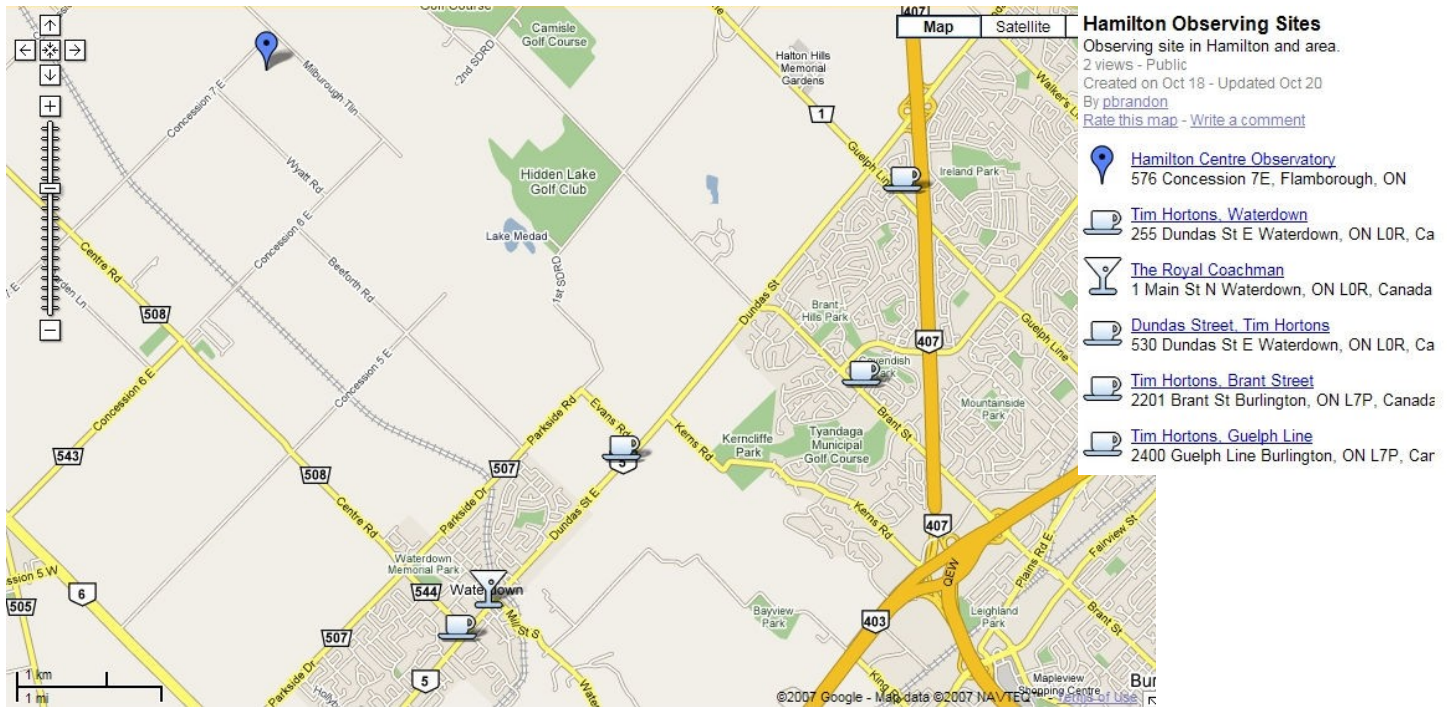
Thus, the following people were elected to the Board of Directors:

Gary Bennett, Andrew Blanchard, Jason Blane, Gary Colwell, Will Gray, Roger Hill, Mark Pickett and Joe Pipitone.

The other election had to do with our National Representative. The by-laws of the national society require the Hamilton Centre membership at large, rather than the Board, to decide on who should represent the views and interests of the Hamilton Centre at the National level. Mark Pickett had expressed a desire to be our National Rep, and the membership approved him in that position.

The first meeting of the Board of Directors saw:

President:	Andy Blanchard
Vice President	Gary Bennett
Treasurer	Will Gray
Recorder	Joe Pipitone
Outreach:	Gary Colwell
Observatory	Jason Blane
National Rep	Mark Pickett
Orbit Editor	Roger Hill



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November, 2012 Calendar of Events

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			01 • 7:30pm» Public Monthly Meeting Featuring Don Pullen	02	03	04
05	06 ☾	07	08 • 7:30pm» RASC Board Meeting	09	10	11
12	13 ●	14	15	16	17	18
19	20 ☽	21 • 7:30pm» Star Gazing at the Observatory	22 • 7:30pm» Free Public Astrophotography Lessons	23	24	25
26	27	28 ●	29	30		

Front image is the telescope at the London Centres new Observatory at Fingal Conservation area. The telescope is a Celestron C9.25 on an Astrophysics AP1200 mount. Other images provided by Colin Haig and Roger Hill.