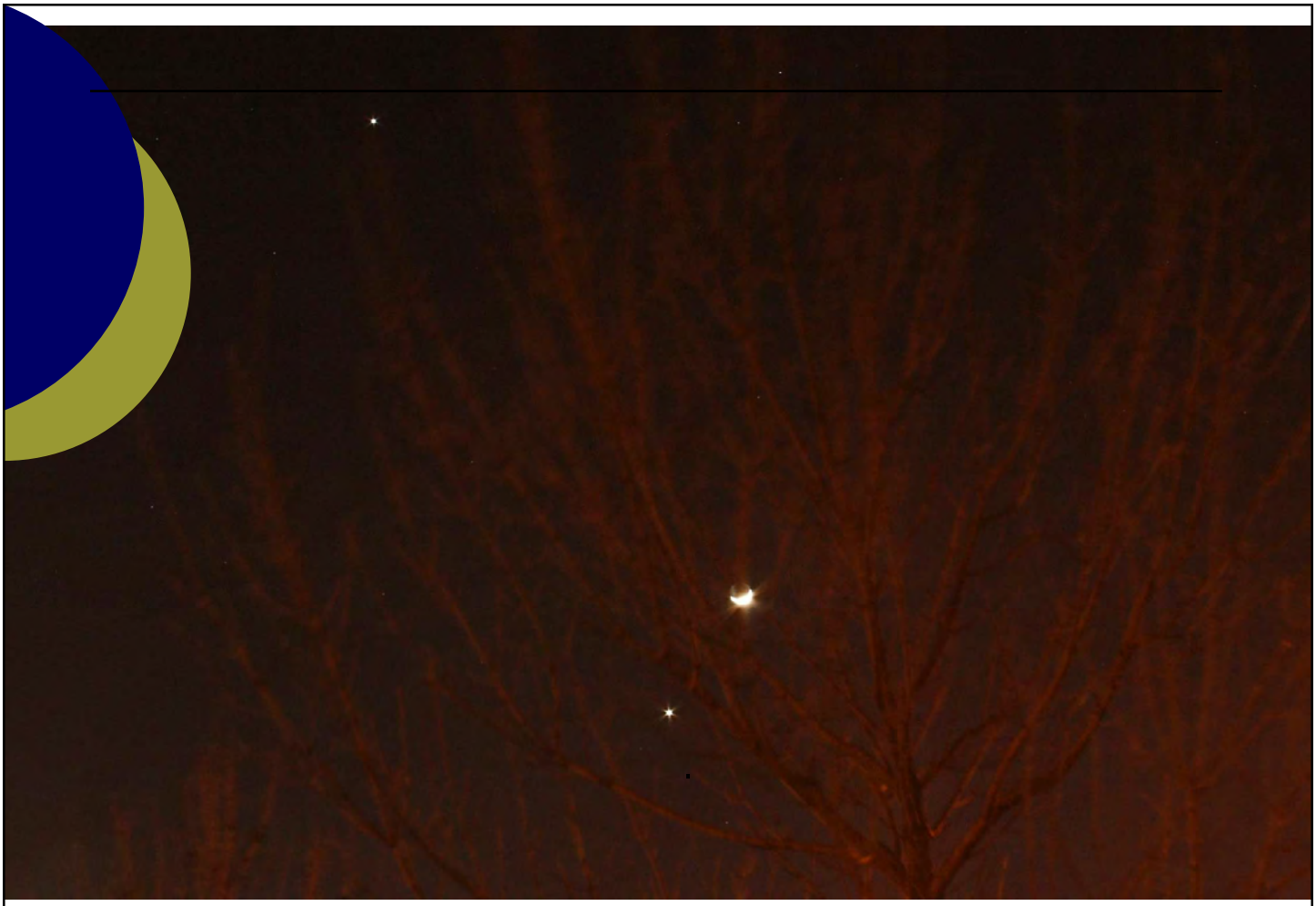

ORBIT

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Issue Number 5, March, 2012
Roger Hill, Editor

It's been many years since I saw John Percy give a talk to the Hamilton Centre, but he was in fine form in February.

With the schedule that I have, there have been very few nights when I can actually do any observing. Which is a shame, really, because it would be nice to go outside and spend some time under clear skies without freezing solid in a few minutes. It would also be good because I've rejigged the computers in my observatory.

With the departure of my daughter to teachers college at the University of Wollongong in Australia, she left behind her old laptop since we'd bought her something a bit more up to date. After backing up the old system, I re-installed the operating system, drivers and software that I might need.

The good thing about this new(er) machine is that it has a 500 gig hard drive, an enlarged battery, and a couple of gigs of memory. It also has a smaller screen so the battery lasts a long time, and it's fairly light, so it's also going to be ideal to take on the road.

The thing that gave me my biggest problem was getting the QHY5 autoguider to talk to PHD, the autoguiding software. I got it to work by installing the ASCOM drivers and software.

A couple of months ago, I'd chopped off the eyepiece end of my 8x50 finder and put a 2" to 1.25" adapter there instead. This holds the autoguider perfectly, and allows me to take the autoguider off to close the roof. The problem was that the finder bracket on my 6" Ritchey-Chretien uses a slightly different base. I was chatting with Gary Colwell, when I had a House moment, and knew exactly what I needed to do. I took the base down to the bandsaw and enlarged the slot in it slightly. Voila...the finder/autoguider now will fit on both my 12" LX200GPS and my 6" Ritchey Chretien.

With the lighter, lower power laptop, the 6" RC and my Meade modified EQ5 mount, it looks like I should be able to travel to dark sites without totally stripping my observatory.

So...on to other things. There's some good reports on the Swap meet coming up, including the name. Go read Andy Blanchard's Presidents Report for this month. There's some exciting things going with communications within the Centre, too. Gary Bennett is setting up a forum for the Centre, including a members-only area. This has been tried twice before, but the third times the charm, and perhaps the other times we jumped the gun somewhat and tried to be more cutting-edge than the membership was really ready for. Then again, since this style of communication has some huge advantages over standard email, perhaps the "aging white males" (according to John Percy) who tend to make up RASC Centres should take a little time to check out the new site and get acquainted with it. Now, it may turn out that the membership still don't use it (stranger things have happened), but it shouldn't be from ignorance.

Membership is continuing to rise, and I met two guys from Milton at the last meeting that are either new members, or were auditing us to see whether they should join or not. Both called Dave, if I remember correctly (a less sure thing these days than it used to be), so if you get a chance to meet them, introduce yourself...a couple of good guys!

By the time you read this, I'll be back down in the Caribbean. I'm spending ten days in St. Thomas in the US Virgin Islands. I'm hoping to do some tripod based astrophotography and I'm taking my 16x70 binoculars with me...should be fun!

Until next month,

Roger Hill

.Presidents Message—Andy Blanchard

Wow, February is almost over and what a month we had! At our general meeting we hosted a most enjoyable speaker, John Percy. We also had an informal discussion about the June banquet and swap meet. Thank-you for all of your ideas and suggestions, as that gave the committee a lot of material to work with. In case you have not heard, the name we decided on was chosen at a meeting of the committee; "AstroCasm" (Astro Canadian Astronomy Swap Meet). The name had a ring to it that resonated with everyone present. We have been busy designing, creating, planning and basically putting the big and little picture plans in place.

As you may recall, the club voted to have a year-end banquet this June. The tickets are $50 per person and that includes your entrance to AstroCasm, whether or not you attend the Swap Meet. I have included the menu for dinner below, and I am sure you will agree this will be one spectacular feast.

Hot Hors D'oeuvres
Seafood Canapé Selections
Assorted Canapé Selections
Vegetarian Canapé Selections
Carved Prime Rib au Jus with Yorkshire pudding
Shrimp Stir Fry
Roasted Potato
Fresh Vegetables
Assorted Deserts

I am going to guess that the combination of a speaker like Terrence Dickinson and an all you can eat buffet dinner, passing up on such a fun night will be very difficult. The comminications committee has even created a dedicated website for this event (www.astrocasm.com). Tickets for the dinner and the swap meet can even be purchased on-line! We expect swap tables and baquet tickets to sell-out early, so don't be disappointed, book your tickets now!

On a sad note, one of our board members, Gary Colwell, was in the hospital in Feb. with an undiagnosed illness. He is home convalescing, but he is on doctor's orders to rest and recover. I am sure he would welcome your emails, notes and calls. As a person speaking from experience, being home in bed is not a picnic and distractions are most appreciated.
I am also looking forward to seeing you all at the McMaster Planetarium on Thursday March 1st. We have two shows, so check your ticket for the time of your performance. I understand there are still some tickets for sale, so please log on, buy some tickets and take a friend.

Andy Blanchard
905-465-2031H
905-847-7777B

Armchair Astronomy Night #2—Ed Mizzi

Our centre hosted its second Armchair Astronomy night on Tuesday, Feb. 7 and, once again, it was an interesting and fun evening. However, because the sky was clear, we decided to cut the discussion short and get to the 16" ASAP. Our topic was Exoplanets and we debated the pros and cons of spending time, money and resources on looking for Earth-like planets. In the end, most people agreed that, since the candidates discovered to date are so, so far away that by the time we are able to reach them, the Earth may not exist and/or any life on those planets would have dried up by then. We also agreed that the money could be better spent on projects closer to home, both within our solar system and on the Earth itself. After we finished our discussion we were treated to spectacular views of Jupiter, M42 and several other Messier objects, by our 16" observatory scope! If you wish to suggest a topic of discussion please forward that to both Andy Blanchard (President) and Gary Bennett (Communications Officer).

Thanks to those in attendance on Feb. 7, including Andy, Gary B., Ed, Bert. We encourage other members to participate in these stressless, enlightening discussions.

Report from the Board: Communications—Gary Bennett

With the switch to our own local web hosting service in January, the Communications Committee has been busy! And we think you'll be excited with what we have accomplished.

In particular, we now have a new website that was created in preparation for the June 9 Banquet and Swap Meet. Time will tell, but we have BIG plans for this event and we hope that it will grow even bigger in the future. Check it out!

www.astrocasm.com

Last Month we announced that we are working on a new Bulletin Board/Forum and it's nearly ready for action. What is a Bulletin Board/Forum? It's an internet "chat room" where members can ask questions, start a discussion, post photos to share, conduct a "poll", post items for sale in the "Classified" section, and a host of other things. In a word, it's FUN! Some of you are familiar with our Yahoo Group which is also considered a Bulletin Board. But our new Bulletin Board has quite a few advantages. In particular, discussion topics are better organized into topic categories making it much easier to find topics that interest you. Moderators will add new Categories when new topics are determined to be popular. And you even get to pick how you want it to look. It's called a "Board Style" (some call it "a skin") and you will have several to choose from. There will also be a "Members Only" section where access is restricted to current RASC Hamilton Members.

Thanks go out to member Ken Owen who is helping make the Bulletin Board a reality. There are still a few "housekeeping chores" to complete but I do invite you to take a peak:
www.forum.hamiltonrasc.ca

When the Bulletin Board is "ready for prime-time" we will contact you and invite you to login and have some fun!

February, 2012 Public Astronomy Night

On February 15, residents from the Golden Horseshoe area were invited to attend our February Public Night. Although the turnout was less than anticipated, those who attended had a fulfilling night. Andy and I were at the Observatory by 7:15 and, after waiting 30 minutes, we decided to get the 16" fired up and Andy offered to give me my first lesson on Astro-Photography with the new, and improved, scope, along with my Canon DSLR. We were, however, excited and happy to be interrupted by two visitors, new member Connor Lorenz and his dad, Dean. Connor brought along his brand new Orion 8" Dob so we were able to help him with some tricks of the trade. All four of us were treated to clear skies and spectacular views of Jupiter, M42, M81, M82 and other Messier objects, using both Connor's scope and the 16". We look forward to next month's Public Night and we encourage all to join us and please, bring a friend.

Ed Mizzi, Secretary of the Board

The Hidden Power of Sea Salt, Revealed By Dauna Coulter

Last year, when NASA launched the Aquarius/SAC-D satellite carrying the first sensor for measuring sea salt from space, scientists expected the measurements to have unparalleled sensitivity. Yet the fine details it's revealing about ocean saltiness are surprising even the Aquarius team.

"We have just four months of data, but we're already seeing very rich detail in surface salinity patterns," says principal investigator Gary Lagerloef of Earth & Space Research in Seattle. "We're finding that Aquarius can monitor even small scale changes such as specific river outflow and its influence on the ocean."

Using one of the most sensitive microwave radiometers ever built, Aquarius can sense as little as 0.2 parts salt to 1,000 parts water. That's about like a dash of salt in a gallon jug of water.

"You wouldn't even taste it," says Lagerloef. "Yet Aquarius can detect that amount from 408 miles above the Earth. And it's working even better than expected."

Salinity is critical because it changes the density of surface seawater, and density controls the ocean currents that move heat around our planet. A good example is the Gulf Stream, which carries heat to higher latitudes and moderates the climate.

"When variations in density divert ocean currents, weather patterns like temperature and rainfall are affected. In turn, precipitation and evaporation, and fresh water from river outflow and melt ice determine salinity. It's an intricately connected cycle."

The atmosphere is the ocean's partner. The freshwater exchange between the atmosphere and the ocean dominates the global water cycle. Seventy-eight percent of global rainfall occurs over the ocean, and 85 percent of global evaporation is from the ocean. An accurate picture of the ocean's salinity will help scientists better understand the profound ocean/atmosphere coupling that determines climate variability.

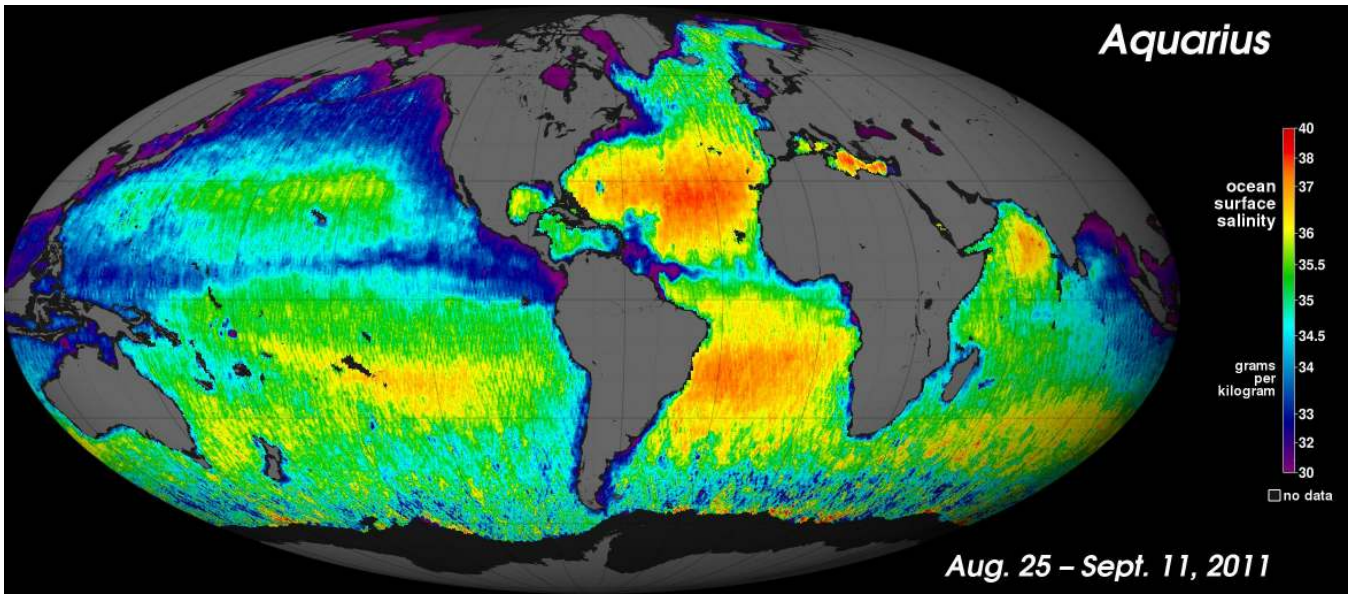
"Ocean salinity has been changing," says Lagerloef. "Decades of data from ships and buoys tell us so. Some ocean regions are seeing an increase in salinity, which means more fresh water is being lost through evaporation. Other areas are getting more rainfall and therefore lower salinity. We don't know why. We just know something fundamental is going on in the water cycle."

With Aquarius's comprehensive look at global salinity, scientists will have more clues to put it all together. Aquarius has collected as many sea surface salinity measurements in the first few months as the entire 125-year historical record from ships and buoys.

"By this time next year, we'll have met two of our goals: a new global map of annual average salinity and a better understanding of the seasonal cycles that determine climate."

Stay tuned for the salty results.

Read more about the Aquarius mission at aquarius.nasa.gov.
Other NASA oceanography missions are Jason-1 (studying ocean surface topography), Jason-2 (follow-on to Jason-1), Jason-3 (follow-on to Jason-2, planned for launch in 2014), and Seawinds on the QuikSCAT satellite (measures wind speeds over the entire ocean). The GRACE mission (Gravity Recovery and Climate Experiment), among its other gravitational field studies, monitors fresh water supplies underground. All these missions, including Aquarius, are sponsors of a fun and educational ocean game for kids called "Go with the Flow" at spaceplace.nasa.gov/ocean-currents.
This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



The Vixen Polarie by Colin Haig

Last night, Feb 25th, the howling winds blew the clouds away, revealing a thin crescent moon in Pisces, with bright Venus shimmering below, and Jupiter reigning higher in the sky.

Photos were taken with Canon Rebel XSi, 18-55 lens at 41mm, ISO800, 30 seconds, mounted on a Vixen Polarie - the new star tracker - attached to a tripod in my front yard here in Milton.

One image (See below—Ed.) has a bonus moon - caused by reflection in the UV filter on the front of the lens. The difference between the reflected thin crescent and the overexposed real image with earthshine is quite fun.

I am trying to imagine an impossible solar system that would make this image possible.

In the darker image (See front cover—Ed.), shot at f/16, stars are visible to about Mag 5.6 or so. The brighter f/8 image has stars down to mag 8 or dimmer. In both cases, light pollution is making the tree visible.

The Vixen Polarie looks like a big white SLR, but where the lens would be, you screw on a ball mount, and 2AA batteries and its stepper motor drives it around at different rates. I used the Lunar tracking rate for these shots, and stars aren't noticeably trailed. More info here:
http://www.vixenoptics.com/mounts/polarie.html

Hopefully folks enjoy any clear nights we get!

How to break all the rules and still get good results!

OK…how many times have we heard that in order to get good….nay….great…astropics, you have to have a set up that is perfectly polar aligned, t-pointed, v-curved, plate solved and supercalifragilisticexpialidoshished…..etc….I am here to say…..that is true….but not necessary to get great astropics.
I know that I am treading on thin ice here, but I am a bit of a rebel astrophotographer as you all know, and I believe in spending the time *imaging* rather than *setting up.*
Living here in Southern Ontario, we all know that clear skies are a rarity rather than the rule of thumb…and by the time you discount clear nights that have a moon in them, you are left with precious few nights left to image. Although the aforementioned processes are great if you have plenty of time to set them up…or have a permanent observatory….by the time you do it, you have perilously few hours left to actually image.
So….how do I do it? Well… let's start off with the basic tools you will need…but not necessarily in this order!...lol.

Telescope….one that is capable of hooking up a camera to…Any DSLR will do but I will use my Canon XSi as a reference point.
Equatorial mount with an "autoguider" port - essential to correct for a not-so-perfect- polar alignment and pinpoint tracking for longer image acquisition
Autoguider i.e Starshoot autoguider, QHY5 autoguider or any CCD camera that has autoguiding capabilities.
Image capture software – I use Images Plus – capture software and focusing software all- in- one.
Focusing software – or a means to focus the camera in low light conditions i.e. Bahtinov Mask
Autoguiding software – PHD is excellent and free!
Computer
A <u>reliable</u> power source

That's about it…..now on how to set everything up.
It is not so important as to what capture software you use or feel comfortable with or what scope you use..…all I want to do here is inform you on how to get imaging as quick as possible….I have found that once I have set my scope up….it takes about 20 minutes till I am up and imaging….
OK… let's go… I am assuming that everything is set up ready to go…level tripod and pointing in the general direction of north with the correct "angle" or "altitude" set on your equatorial mount.

Step 1 – Align Autoguiding scope and telescope

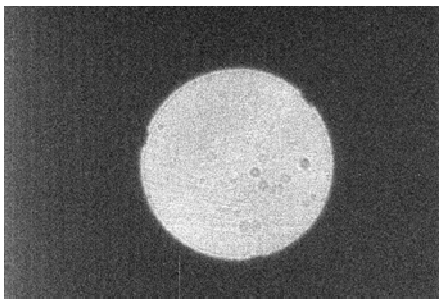
Align the autoguider scope with the telescope image…..this saves a lot of time when it comes to polar aligning and finding your object to image….use a low powered eyepiece when doing this…center a bright star in the scope and align the autoguider so that the star is centered in it.… do this when it is dark enough to do so…

Step 2 - Polar align

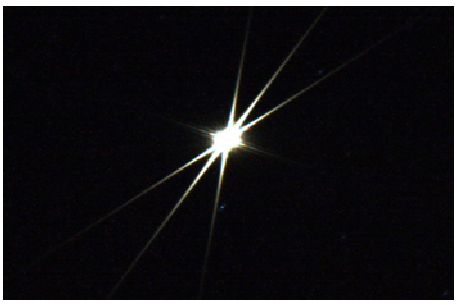
The second thing you need to do is polar align your scope….you don't need a perfect alignment here….if you have a scope with a hand controller and a GOTO….the closer you can polar align the better, but a perfect alignment is not essential.
Most GOTO scopes have the ability to let you " sync" on stars to assist with polar alignment, but as you will see… if you use the autoguider image to assist you with the alignment, it will allow you to center the star you are trying to align on much faster.
Ok but what if I don't have a GOTO….easy…. point the scope in the area that you want to image and use the autoguider image to assist you.

Step 3 – Initial Focus! - Remove diagonal and eyepiece - insert your camera

This is perhaps the most critical aspect to the whole process – FOCUS! …no use having a perfectly aligned and tracking setup…if the image is blurry….doesn't matter. To do this use a "bright" star to initially focus on and center it in the autoguider screen….The reason for this is that if your 'drawtube" and camera are not positioned correctly or "near focus" to start with (since you focused on a star using an eyepiece initially), it is easier to see a huge out of focus bright star than a dimmer one. I try for stars like Vega, Betelgeuse, Capella….stars like that. Once you have rough focused on these stars it is easier to fine focus on the dimmer ones before you start imaging. By focusing at this point it also saves on trying to find your "object" to image later on.
To focus, either by Bahtinov mask or some other method of focusing….take the time to get a good focus. I use Images plus to focus and what I do is simply adjust the focus until I get the "lowest" number on the focusing scale and use that. I sometimes take a lot of focusing images to get the "perfect" focus…but this is where I spend most of my time prior to imaging. (Primitive V-Curve…lol)



Out of focus bright star



Focused star image using a Bahtinov mask

Step 4 – Select imaging target

For beginning astrophotographers, choose objects that are big and bright….no use trying to image Barnards Galaxy or some faint NGC object because you will just frustrate yourself. M42 – the Great Nebula, M31 The Andromeda Galaxy or globular clusters are a good start….globulars are really good for testing your focus too!
Let's say you are going to start with M42…..easy to find and great to image. The biggest problem with a non precision alignment and non GOTO scope is getting the image centered in the camera frame…..well this is easy if you use your autoguider and camera.

1. Center the object in the autoguider image first
2. Take a 5 second image of the object with your camera. (ISO 800 in JPG format – to reduce processing time of image) Note: if the image is not situated in the frame the way you want it , now is the time to adjust the camera angle to get the positioning of the object that you want in the frame)
3. If the image is not centered, move the telescope in one direction and take another 5 second image
4. Check to see if this moved the object any closer to center.
5. Repeat until image is centered the way you want it. (Primitive plate solving….lol.)
6. Once positioned the way you want it – activate the "guiding" button on PHD and begin tracking.
7.

Select Object

Move Scope

Adjust to Centre

Step 5 – Fine Focus
Now that everything is set up the way you want it , REFOCUS!....because if you moved the camera to "frame" your image, chances are the focus has been affected. Follow the steps above for focusing except this time choose a dimmer star to focus on….as long as when you focus you can see the difference.

Step 6 – Start Imaging
Remember!

1. Reset camera to RAW format ISO 800 for best results imaging
2. Start Imaging!!!!!!.....thats It! (leave those other "finikities" standing in the proverbial dust while you image away!)

Here are two of my latest images using this technique. The first is the California Nebula, and the Second is the Andromeda Galaxy.

Camera and telescope: - Lots!
Clear sky to image in: Perfect
Not having to: T-point, plate solve. V – curve - Priceless!!

Happy Astro-Imaging!!!

Gary Colwell

The Guide, by Stuart Atkinson

Somesol a so-tired tour guide
Will lead vacationing families
To this place one final time,
Their faces beaming behind gold-plated visors -
Some sun-starved and pale,
Betraying their Martian birth;
Others Terra-tanned and dappled
With sweat, clearly not yet used
To the confines and cloying heat of a p-suit -
All clutching cameras as they climb
The Shoemaker spine of Cape York
To stand huffing and puffing by Greeley Haven.

Ever patient, the Guide will smile,
Describing for the millionth time how,
A hundred years before, brave Opportunity -
Left alone on Mars after Spirit's death-by-quicksand
In Husband Hill's dark shadow, half a world away
Rested her weary wheels on these very stones,
Before rolling creakily away, continuing her epic
Quest for Clays beneath Ares' butterscotch sky…

Fighting to be heard above the herds of screaming
Children; trying to stop their parents prodding
And poking at the ancient sites; shooing wooing teens
Away from Tisdale 2 as they try to etch their names
Into its aircraft carrier deck, she'll count to ten,
Again and again and again, until it's finally time
To lead her party off the hill back down into Endeavour Town,
Its modules shining white as a pile of broken bones
On the crater floor below…

As the footsore sightseers scatter in search of bars
Or the comfort of their beds, instead
The Guide will turn and head right back up to the Cape,
Striding past the gaping pit of Odyssey;
Skirting the sepia standing stones of Stoughton
Until she arrives back at Greeley's rocky slope
And sits down with a heartfelt sigh, blissfully alone, at last,
Drinking in the landscape through a besotted lover's eyes.

Behind her – the setting Sun, a ball of blue ice
Falling, leaf-slow, through the lavender alien sky;
In front – the Faraway Hills, hump-backed mountains
Marking Endeavour's eastern side, their peaks painted
A dozen Picasso shades of orange, ginger and gold,
All afire with Martian Alpenglow,
Their cratered slopes and bases already deep in shadow;
And beyond her booted feet, cast on the crater's floor
By the fading Sun – her own silhouette surrounded by
A faerie-light halo: The Glory of Mars, right there for all to see.

Sitting there, with Earth shining o'er her shoulder,
A firefly fluttering blue and green above Victoria's
Distant Capes she'll know that there's no other place,
On any world waltzing around any of the Milky Way's
Cream-stirred-into-coffee Catherine wheel of stars,
She'd rather be, at the end of this, her final day.

What you missed in February...!

On Feb. 2, we held our second monthly meeting of 2012. Our president, Andy Blanchard, began with a warm welcome to everyone, including our speaker and new members. He gave a short review of our activities in January. Andy reminded everyone of our visit to the McMaster Planetarium in March and that tickets were still available. He also encouraged everyone to purchase tickets, when available, to out June Swap Meet and banquet, as well as volunteering to help with the Swap Meet.

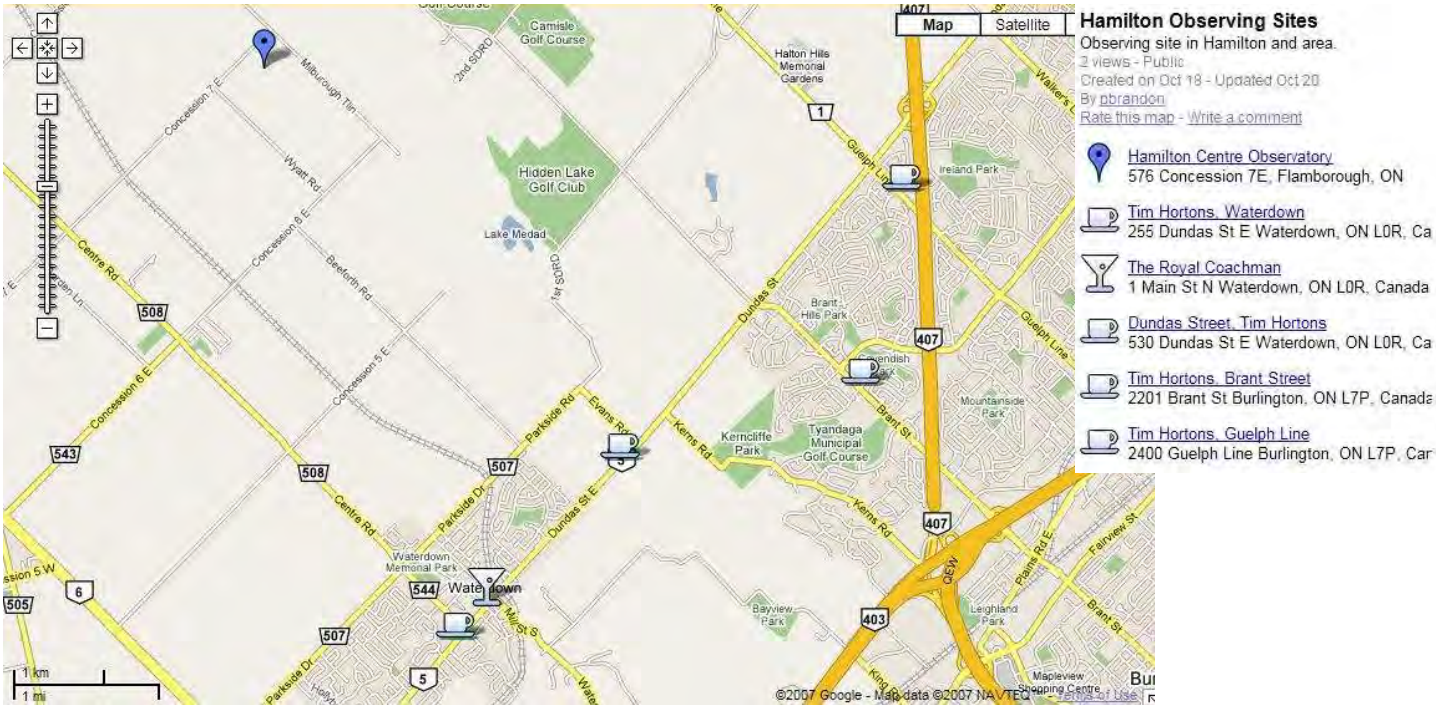
Will Gray, our treasurer, orchestrated another raffle and trivia question contest. The winner of the raffle received a RASC toque and the winner of the trivia won a Milky Way Bar donated by Nancy and Dana Barton! Both prizes were graciously presented by Will's assistant, his daughter Michelle, who is our youngest ever regular attendee.

As usual, the highlight of the evening was our speaker, John R. Percy, PhD, Professor Emeritus: Astronomy & Astrophysics at the U of T. His topic was “One World, One Sky: The Astronomy of Many Cultures” (Discover the history of astronomy and humanity’s relationship with the night sky). Dr. Percy not only intrigued us with his statements but displayed his ability to talk to all levels of expertise among those present. It quickly became obvious why he is and has been one of the leading experts in developing curriculum for schools in Canada and around the world. He provided us with a web link (see below) that has a plethora of educational materials for everyone.

Thanks again to member Dana Barton and her Mom for providing treats. Also, thanks to the members and guests who attended and helped make the evening the success that it was.

Dr. Percy’s web materials: http://www.astro.utoronto.ca/~percy/EPOindex.htm

Ed Mizzi, Secretary of the Board



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Calendar for March, 2012

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week 10	27 [Add]	28 [Add]	29 [Add]	1 [Add] 7p Monthly Meeting - McCallion Planetarium	2 [Add] 6:30p CANCELLED - Sidewalk Astronomy	3 [Add] 6:30p Mars Madness	4 [Add]
Week 11	5 [Add]	6 [Add]	7 [Add]	8 [Add] 8p Board of Directors Meeting	9 [Add]	10 [Add]	11 [Add]
Week 12	12 [Add]	13 [Add] 7:30p Armchair Astronomy	14 [Add]	15 [Add]	16 [Add]	17 [Add]	18 [Add]
Week 13	19 [Add]	20 [Add]	21 [Add] 7:30p Public Night	22 [Add]	23 [Add]	24 [Add]	25 [Add] 6p Orbit Deadline 6p Orbit Deadline
Week 14	26 [Add]	27 [Add]	28 [Add]	29 [Add]	30 [Add]	31 [Add]	1 [Add]