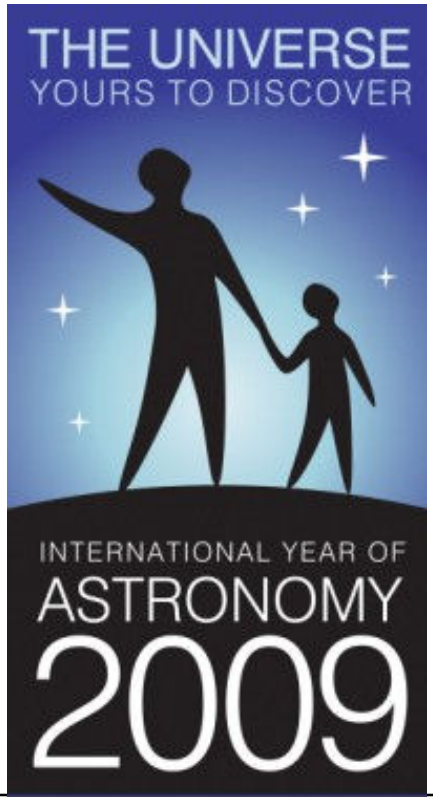


Orbit

The Official Publication of the Hamilton Centre of the Royal Astronomical Society of Canada

Volume 41, Issue 8

June, 2009

Issue Number 8, June, 2009

We had another busy month in May, but it could have been a lot busier. We had our Banquet, our usual meeting, some work done at the Observatory, and I managed to spend a very pleasant night with Les in the Chilton building, checking out some of the new astro-gear he's recently purchased. It would have been busier still, but TWO sidewalk astronomy nights at Spencer Smith Park in Burlington were rained out.

The upcoming month looks to be good, too, and we have some things we'll be doing throughout the summer. Stay Tuned!

There's a lot going on in the next while, just look at the calendar of events on the last page. Hopefully, you'll find something to your liking there (If you don't...let me know, and we'll see what we can do about providing it).

Let me talk about a few of them.

A major event at the moment is the main observatory building. As you may have gathered from some of the postings on the Hamilton RASCals list a fair bit of work has been done on the building. It has now been gutted, everything has been taken out, and it has been stripped to the studs. The only things left are the studs, the joists, a vapour barrier and the fiberglas insulation. What it needs is a new roof. Andy has been driving this project.

Much of the labour has now been done, but the problem is that we need about $8,000 to finish the job. It was this figure that drove the Board to go before the membership at the May meeting, and get an idea of what people thought we should do to proceed. The consensus was that the SBIG STL-11000M CCD camera should be sold while it still has some value.

The camera was bought about 5 years ago, before the astronomy world moved en masse to digital SLRs. There was lots of interest in using the camera, and there were a few training sessions held on it. It never saw much use, though. Steve Barnes took it to Starfest after we increased our insurance, and I took it to the Texas Star Party (where it was never used due to the atrocious weather).

So there was a fair bit of open and frank discussion at the beginning of the meeting, where everyone had a chance to express their feelings, ask questions, offer suggestions, and in the end, the consensus reached by the assembled members was that the CCD camera could be sold.

We also were going to do some clean-up at the site, too, but Andy found a company that would haul our junk away for just a bit more than a dumpster would have cost for a day. This was too irresistible, so we took them up on it. They did a reasonable job, but there are still some shingles that they left behind (or so I've been told). The grass is getting a bit long, too, so it'd be appreciated if someone could find the time to cut it.

The night I spent at the observatory with Les was a very pleasant one, too. He's recently bought a number of items, including a Celestron 11" and a carbon fibre tube to go with it. With a lovely clear night, he set up in the Chilton building, and started figuring out how everything went together. It took a bit of time to get polar aligned, as neither of us really knew how to use a polar scope, and although they seem very simple in principle, the actuality is a bit different. Considering the angle you have to crane your neck at to see through the thing, it was a wonder it was any use at all. Still, after a few attempts, Les got it figured out.

In the meantime, I was using my Canon XSi on the clubs 16", and the autoguider. I took a number of images of M51, using the new autoguider, of varying exposures, and since I was using auto-dark frame subtraction, each exposure was doubled in length. A 10 minute exposure took just over 20 minutes to take. Still, I was fairly happy with the results, although they were a tad over-exposed. I should have limited myself to 5 minutes, instead. Anyway, to give you an idea of what is possible, the front page image this month is a single 10 minute exposure at ISO 800, at prime focus using the 16".

At last months meeting, I also took delivery of a CG-5 mount. Les had picked one up in Texas when we were there two years ago, and I've thought for a while that it would be ideal for a number of purposes. The biggest one is that when I go to friends cottages, I won't have to take my 12" SCT, tripod, wedge, and assorted power supplies, eyepieces, and the like out of my observatory. If I want to take images of the night sky, I'll just take the much smaller and lighter mount, along with a telephoto lens or two.

One of the things that Les and I are planning to do is to turn these things into GOTO mounts. A few years ago Meade sold retro-fit kits that you could attach to some of their mounts to make them GOTO. It turned out that you could take this kit, add some mounting brackets, play around with some software settings, and turn virtually any German Equatorial Mount into a GOTO. The EQ5 family of mounts were particularly well suited for this, as they were very well made, solid and reliable.

The kits have long since disappeared from the market, but the telescopes they were attached to have not. Meade also sold a number of telescopes with the kit pre-installed. When one of these scopes shows up on the open market, there's a fair bit of activity around them, as people like Les and I buy them, just to get the motors and hand controllers! After I'd bought my mount last month, I found a guy (or it may have been that Les told me about him) who was selling the entire telescope, for a very good price. When I asked about it, the price doubled, but when I mentioned that I only wanted the motors and the controller (and I told him why), then he let me have the retro-fit kit for the original price. Saved me shipping, too, as the parts I wanted are much lighter than the mount and the 4.5" scope he was actually selling.

So, now I'm waiting for the stuff to get across the border.

Another good reason for this new GOTO mount, is that my son will be able to use it when we go to Manitoulin in August. With the learning difficulties he suffers from, star-hopping is extremely difficult for him, and he much prefers the ability to have a computer push my LX200GPS around. Now, I'll be able to put either my ETX-90, or my Williams Optics ZenithStar 80 on the mount and he can cruise the night sky 'til his heart's content, or 1am (whichever comes first), when I'll use it to do wide field astrophotography.

I might even follow Gary Colwells lead at least part way, and modify my Canon 10D so that the North American Nebula, and the area from Cassiopeia down to Sagittarius, show all those hydrogen-alpha clouds in their glory.

Regardless, having an extra GOTO mount will certainly allow me to be a bit more versatile, and not break my back every time, because I have to take a couple of hundred pounds of equipment out of my observatory, and then put it all back in again, later!

Thanks for reading.

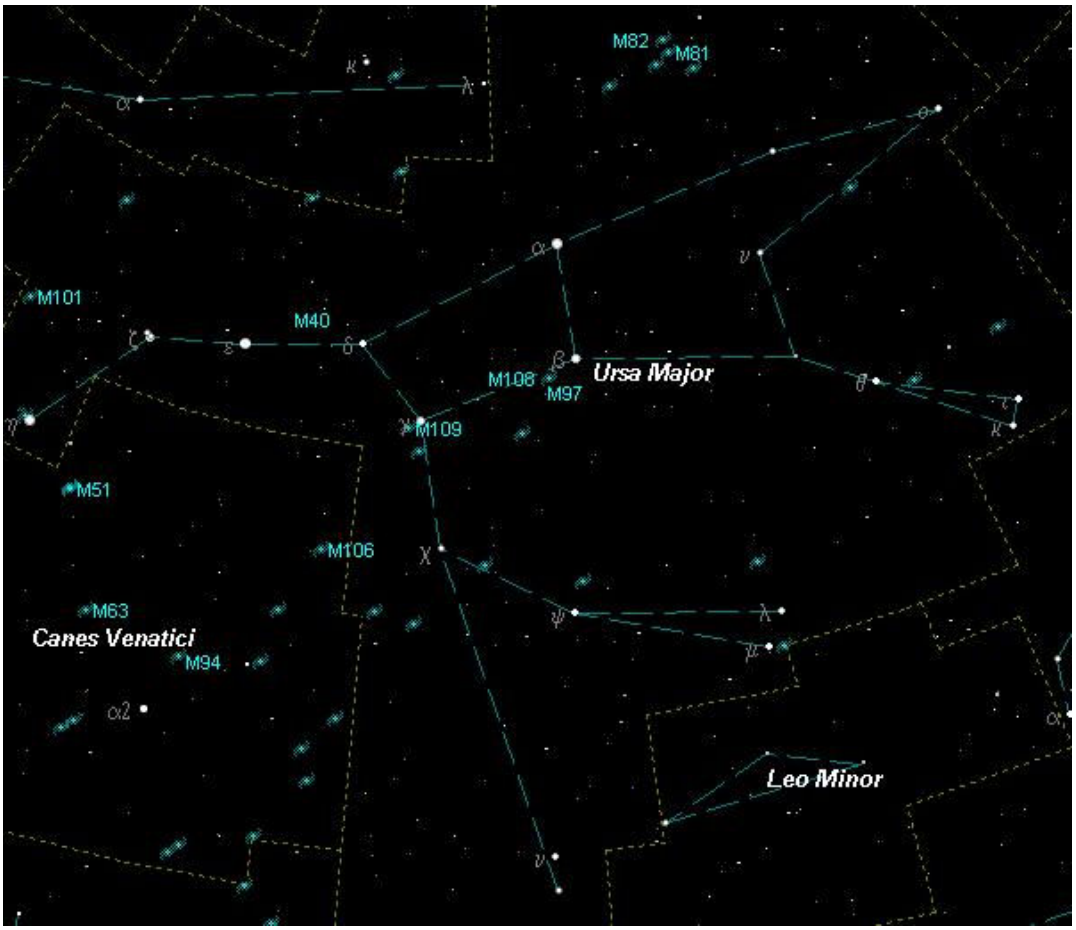
Roger Hill
President and Editor

The Sky This Month - June

Contributed by Gary Boyle, Ottawa

The Big Bear

If you were to ask anyone to name a constellation in the sky, ninety-nine percent of the time that person would say the Big Dipper or the Big Bear. And why not? Referred by astronomers as Ursa Major or Ursa Majoris, the Big Dipper is the first star pattern we studied in school and is by far the most recognized celestial group. It also helps that Ursa Major is a circumpolar constellation and can be seen somewhere about the northern horizon throughout the year. As you move down in latitude, your chances of seeing it all year round diminish. Distances to these main seven stars of the asterism range from 78 to 123 light years (ly).



Ursa Major is a handy stepping stone when trying to locate the North Star – Polaris in the Little Dipper. You simply take the two pointer stars named Merak at magnitude 2.4 and second magnitude Dubhe located opposite the tail and draw an imaginary line through these two stars till you reach your target. Ursa Major is ranked third and takes up 1,280 square degrees of celestial real estate.

Last month I wrote about the treasure of galaxies from Virgo, Leo and Coma Berenices. Ursa Major is the end of this fog of galaxies. An amazing 558 NGC objects live within these borders.

The Big Bear is also home to no less than seven Messier objects (M81, M82, M97, M101, M108 and M109. However M40 with is an erroneous entry as it consists of only two stars. Modern astronomers have identified eight stars within the Dipper's boundaries with known planets orbiting them.

So why does the Bear sport such a long tail. Legend has it the Hera, the wife of mighty Zeus, turned Callisto a suspected mistress of Zeus into the bear. Just as Callisto was to be killed by hunters; Zeus grabbed her by the tail and swung her up to the safety of the sky, thus stretching the tail. The sky is filled with many mythological stories such as this.

Locate the middle star in the handle, where it bends. What you see with the unaided eye if the sky is transparent, are two stars. Bright Mizar and fainter Alcor – dubbed the horse and rider respectively. Splitting these without a telescope or binoculars is a good indication on how dark and transparent the sky is. Mizar is actually a double in itself with Mizar 'A' being magnitude 2.27 and Mizar 'B' at 3.95.

The two best Messiers in Ursa Major and a favourite at star parties are M81 and M82 (illustrated above). A stellar view in wide angle telescopes, these distant but different galaxies appear in the same field of view. M81 is wide and is an estimated twelve million light years away and is also known as Bode's Galaxy. At magnitude 7.89, it is brighter than M82's magnitude 9.2.

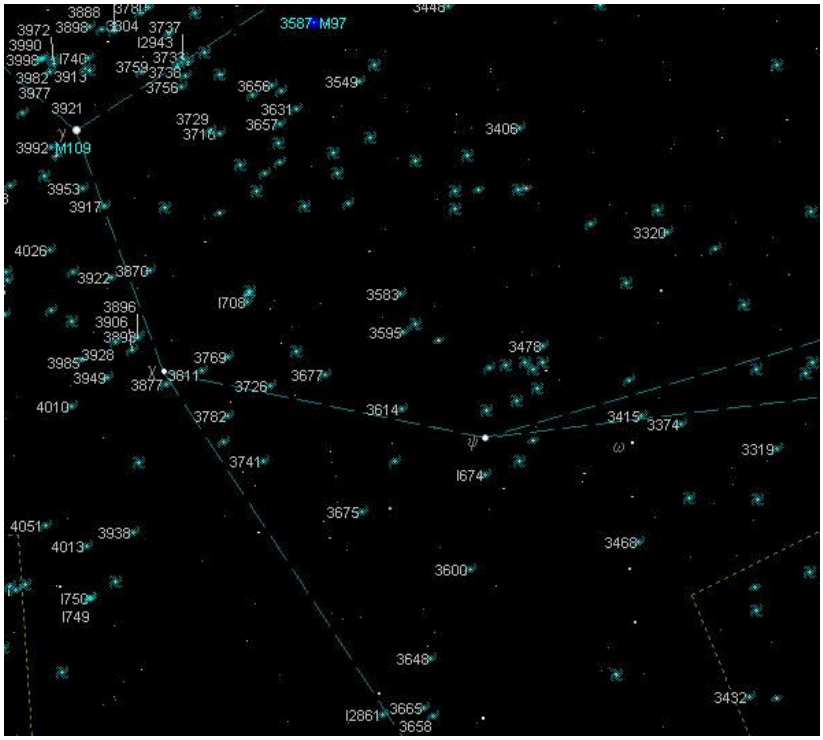
M82 is commonly referred as the Cigar Galaxy and is a star burst galaxy measuring five times the length of ours or five hundred

thousand light years long. It appears that stars are being born some 10 times faster in M82 than in our Milky Way Galaxy. This is one interesting object.

Moving down the bowl of the Dipper to Merak we find M108 about 1.3 arc minutes west of the star. M108 is a 10th magnitude edge on galaxy when sport a bit of detail in its arms. Measuring 8 X 1 arc minutes, M108 is estimated to lie some forty-five million light years from us. Surprisingly, this galaxy does not have the usual nucleus that bulges from its galactic center. Instead, the hub of the galaxy remains the same thickness as the rest of M108.

Next we come to the illusive Owl nebula, aka M97 and this one is a bit of a challenge to pick up in small scopes. At magnitude 9.9, it should be easy to find this planetary nebula but its magnitude value can be deceiving. The light is dispersed flat over 3.4 by 3.3 arc minute size and therefore diluted. Astronomers believe the initial star died 6,000 years ago. Over time, an escaping shell of star stuff formed the now bubble formation. The Owl lays 2,600 ly from us.

A truly delicious dish of challenging galaxies for astrophotographers would be NGC 2857 and company. At close to 15th magnitude, this spiral galaxy appears face-on thus shows exquisite arm structure as if it were a drawing. It is small and far – only measuring 2.4 X 2.2 arc minutes and resides 220 million light years away. A mere six arc minutes away is NGC 2856 and just past that is NGC 2854 both of which are in the magnitude 13.5 range.



M101 is another large, well detailed face-on galaxy. At 22 arc minutes, it takes up two-thirds the area of the full moon. Being some 26 million light years – it still has a decent size. M101 if fairly bright at magnitude 7.8. To locate M101, first locate Alcor/Mizar in the handle. Now follow the chain of four stars, moving in the same direction as the tail but not along it. You should see it now. In the past 100 years, M101 has seen no less than three supernovas. The events were seen in 1909, 1951 and lastly in 1970.

Saturn is still riding high in the sky under Leo. As we inch closer to September's plane crossing, you can still see a bit of ring detail but that is harder to see as the weeks go on. We can track the moons of the planet as they swing around.

And speaking of plane crossing, Jupiter's moons are putting on a great show for the time being. Close to every six years, Jupiter's plane points to us so its moons lines up with Earth. On a few occasions, one moon will pass in front or occult the other. I witnessed a few of these rare alignments and they are spectacular and occur quickly. Here is a list of events. At the beginning of June, Jupiter is up in the ESE around 2:30 a.m. local time and just after midnight this time next month. Also look for Neptune scooping northwest of Jupiter.

The full Strawberry Moon will occur on June 7th so plan your observing run accordingly. As a side note, now that the Hubble Space Telescope has a new lease on life with state of the art parts, the door to the wonderful world of astronomy will only open wider. Stay tuned for more dazzling images from above.

The summer solstice will occur on June 21st at 1:45 a.m. eastern time. Solstice means 'Sun stands still'. This marks the highest point the Sun appears on the ecliptic in summer as well as the lowest point in winter as seen from the Northern Hemisphere. The Southern Hemisphere will ring in their winter solstice. From this moment till December, our days get a bit shorter and the nights get a tad longer.

Till next month, clear skies everyone.

Gary Boyle

I/R Camera Modification to the Canon XSi

Have you ever wished you did something, for a moment wished you hadn't, then were glad you did? Well that is the story of my CanonXSi conversion experience. This conversion isn't for the squeamish, but it can be done by a "novice"… just be prepared for the "for a moment wish you hadn't" feeling.

Last year I purchased a brand spankin' new Canon XSi….recommended by Roger Hill. It was an excellent purchase decision. I began taking pictures with it using its "live view" capabilities for focusing and was amazed at the pics I could get. However, I did notice when taking pictures of, lets say…..the Horsehead Nebula, I wasn't getting the brilliant reds I see in every picture of it. I was then told of a conversion that a lot of astrophotographers were having done to their cameras to improve the sensitivity of the camera toward the red end of the spectrum. I was at first very interested, then became disenchanted by the idea when I discovered it was $450.00 to have done.

Then I had an 'Eureka' moment! I could save money by doing it myself….(A brainstorm that isn't for the faint of heart for sure). The filter itself is about $125.00…and labour was free….GREAT DEAL!!! I have a good friend and fellow astronomer Gary Bennett who is amazing with things 'electronic'…so I asked him if he would be interested in helping me with the conversion….and without hesitation he said yes! (I think he wanted to see me squirm through the process like he did when he converted his camera….lol..)

Ok….what is the conversion you ask?

The "Wished you did something" part……

I wanted to be able to photograph things like the California Nebula, the Rosette and The North American Nebulas for instance that have a lot of reds in them…but suffering from "Glenn Kukkola Syndrome" that is…."Why buy something for a higher price when you can do it by yourself for less"….lol, " I had to explore ways of doing it myself. The first thing to realize was that I was going to completely void the warranty on my camera by doing this…but considering the results…I gingerly made the decision to go ahead…

Deep inside the camera is a small 1.5cm x 2.5cm I/R cut filter that is placed in front of the CCD chip. This is the wee beastie that prevents you from getting all the reds you want in your exposures….the conversion is to remove this filter and replace it with a Baader Infrared filter…..sounds easy eh?.....well, it would be except you need to do major electronic "surgery" to get at it...have nerves of steel….and a very good magnifying glass system to see the darned stuff you have to get out of the way!
Now on a scale of 1-10 in the "electronic wizardry" department….I am at best a 0.5!!...that is where Gary Bennett comes in!....

We found an excellent article on step by step instructions on how to do the conversion (close to 40 pages long)….almost like paint by numbers….and it took the "guesswork" out of the equation….we planned our strategy…..and began…..(this is where the sweat glands kick in!)

Here is an interesting thought…..

Canon Xsi…….	$800.00
Baader Filter……...	$125.00
Tools and accessories……..	$20.00

Watching 2 men ply, pry, disconnect,
tape, wipe, sweat, wipe some more…
sweat even more……

cast the odd "muted expletive"……. Priceless!

…and we hadn't even got the back of the camera off yet!!!!!!

The "Wish I Hadn't" part…..

The instant I got the back off the camera…"Warranty and all to the Wind"…..I knew I was in deeper than I had originally thought ….a feeling like jumping into the ocean to hunt for crabs at the bottom and discovering you were in 30 fathoms of water!!!!.....good thing Gary B was there….
…man….there were parts smaller than nose hairs on an amoeba!...there were connectors and cables all over the place… and teenie tiny screws that if you sneezed they would fly off into oblivion (TIP 1 - not a good idea to sneeze when working on electronics)…

So for the next hour e followed each instruction step by step…and finally got to the filter. Now came the daunting task of removing the filter without destroying anything….collateral damage is a good possibility at this stage….
After what seemed like eons, we finally pried off the I/R cut filter, cleaned things up….and installed the Infrared filter….then began the reverse painstaking task of reassembling the camera.
The whole process took almost 2.5 hours…and by this time I was thinking that $450.00 to avoid all this sweating and shredded nerves might have been worth it….but then I wouldn't have bragging rights to be able to say I did the conversion myself!...(albeit I contributed less than half to the overall process).

Now the moment of truth…..switch the camera on…and VIOLA!.....nuttin'!!!!!……
No beep, No flashing light…not even a faint whirr or buzz….absolutely……. nuttin'!!!!!!!

Have you ever just wanted to roll over and cry your eyes out?
That moment had arrived……it wasn't so much that the camera didn't work…but the idea of retracing our steps, disassemble the darned thing again to try to figure out what we didn't do right…that was worth crying over…

After 2 more hours of ply, pry, disconnect, tape, wipe, sweat, wipe some more…sweat even more……cast the odd "muted expletive……it still didn't work….

Ok….UNCLE…. UNCLE!.....I admitted defeat…..well almost…..it was time for the "professionals" to look at it before I do anything else to my beloved XSi….so I took it into Sun Camera for them to have a look….

A few days later…..the "DIAGNOSIS"…..somehow we did everything right, except deep inside the camera we had unwittingly disconnected one of the ribbon connectors in an area we couldn't see…..they hooked it back up and WOO HOO!!!!!!!!!!...$125.00 later….my camera was ready!!!!!!

The "Glad I did" part…..

After breathing a HUGE sigh of relief, it was time to put the camera to the test…..and here are the results…

The "Glad I did" part…..

After breathing a HUGE sigh of relief, it was time to put the camera to the test…..and here are the results…

Unmodified Pic

I/R Modified

Unmodified

Modified

Lets Have Some REDS!!!!!W

as it worth it?.....YOU BET!!!!!!

By Gary Colwell

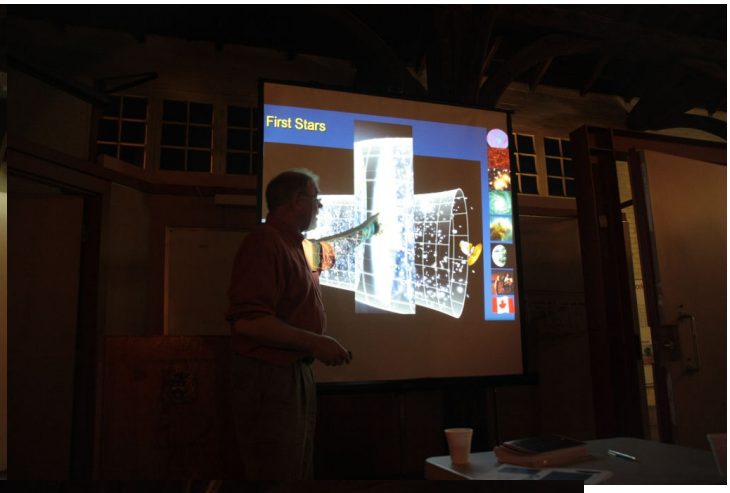
What you missed last Month

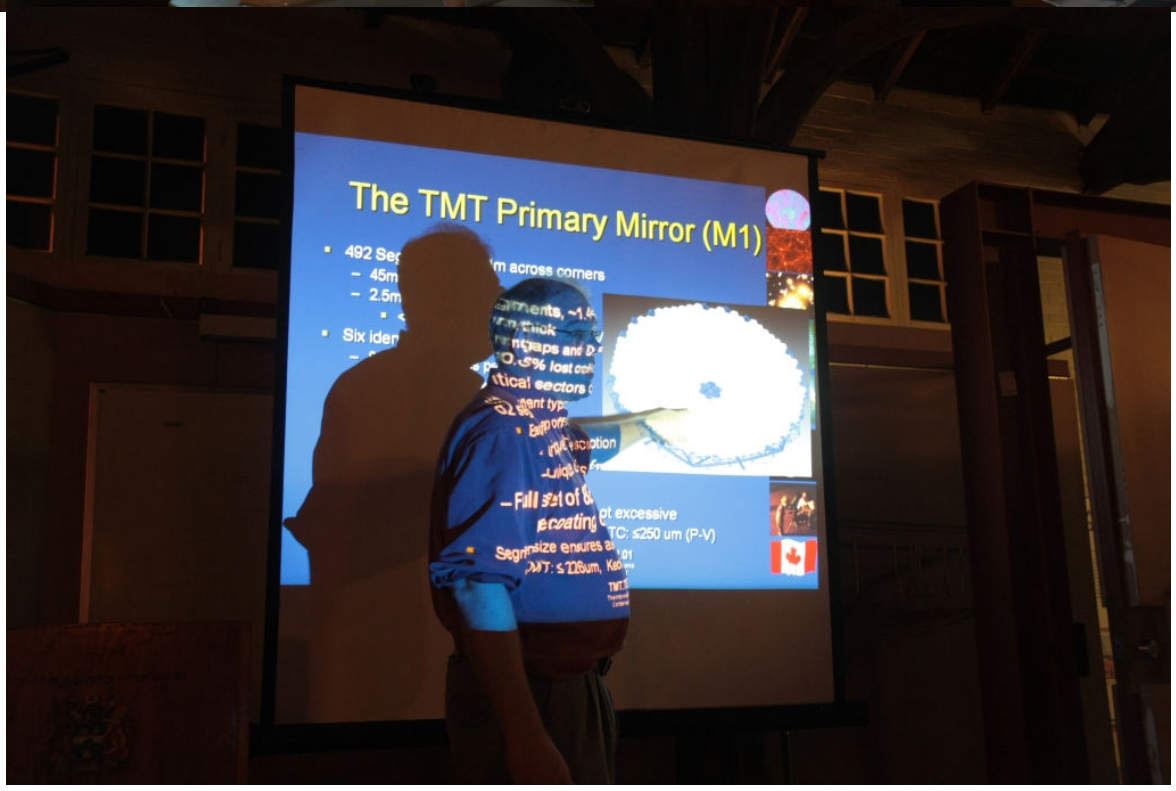
Ray Carlberg continued the string of great speakers we've had in the last few months. Talking about the 30 metre telescope project, this scope is 6 times the size of the venerable 200" Hale telescope at Palomar. In fact, my telescope has a 2 inch finder on it, and a 12" primary. It seems bizarre to think that the 200" is just a finder for this behemoth.

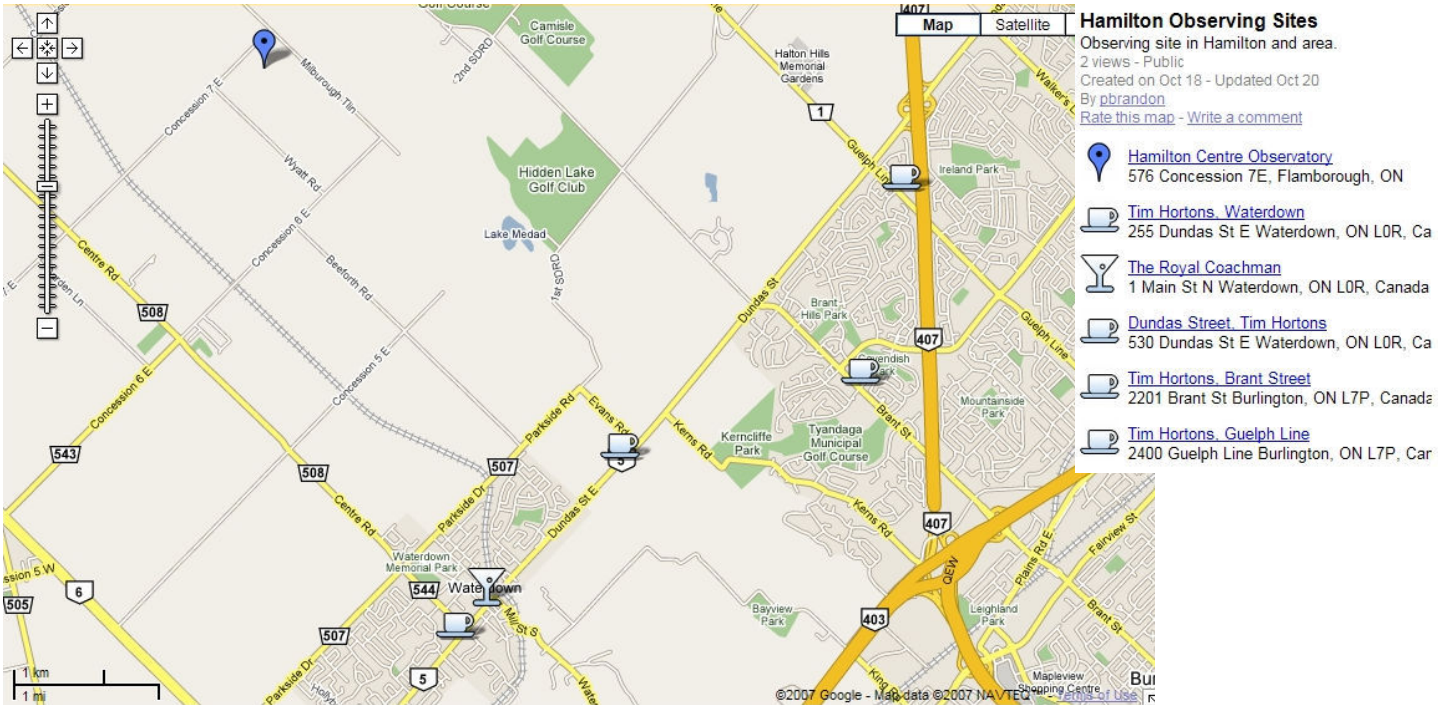
Alas, I couldn't get Ray to give me an idea of where he thinks the scope will go. I'm hoping it will go in Chile, but I suspect that the smart money will be on Hawaii.

What are you going to miss in the coming months? Nothing, I hope. We've got the McCallion Planetarium in June, we'll probably have a Members night in September, and I'll try to find a local speaker for after the October Annual meeting. Stay tuned!

And, if you attend another astronomy club and hear a great speaker, let me know...not everybody is able to make it to Mississauga, Kitchener, London, or StarFest!







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Calendar of Events

June

Thursday June 4th: Special Event At the William J. McCallion Planetarium.
Thursday, June 11th Board Meeting Email for location.
Thursday, June 18th Observers night At the Observatory
Friday, June 26th Sidewalk Astronomy. Location: Spencer Smith Park, Burlington.

The top 5 things said to a Sidewalk Astronomer are...

5. "Do you ever use this to look in windows?"
4. "Look, it's moving!!"
3. "That's really a slide, right?"
2. "How much did this cost?"

And the Number One thing said to a sidewalk Astronomer is…
"Can you see the flag the astronauts left on the moon?"