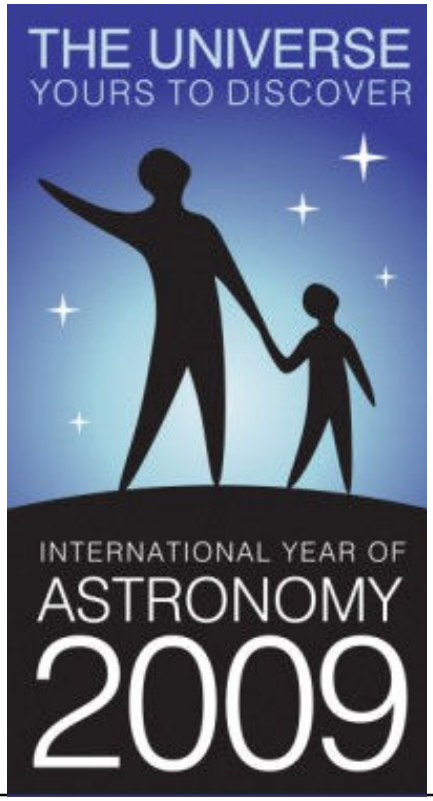


Orbit

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

Volume 41, Issue 6

April, 2009

Issue Number 6, April, 2009

So we did actually have a Messier Marathon of sorts at the Observatory. I published charts and images of all 110 objects (except for M40) on the web site and we had a few people show up on March 27th. I had difficulty getting the 16" going, though, and as I couldn't find the owners manual (gotta print one off and leave it in the desk) for the Paramount, I never was able to get it going. The problem, I think, was that the Dec and RA balance knobs were too tight. At least, that's what is says in the manual on Page 34. Anyway, I'll bring a hard copy to the Observatory and put a copy of the PDF on the desktop. Although we were fighting clouds all night until 11pm, Gary did get into double digits with his Messier list, and considering the conditions, it not surprising that so few people turned out.

Anyway, March turned out to be a great month for the Centre. We had a very successful Beginner/Astrophotography night, when a number of people took their first astrophoto. We had a great speaker in Mike Fich, we confirmed our Banquet for May (and the speaker), our visit to the Planetarium for June, we will be doing some workshops in Burlington at the Discovery Centre in the Fall, and we'll be doing some sidewalk astronomy there, too.

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.

Let me talk about a few of them.

First of all, the workshops. Last week, I got an email from a delightful woman called Catherine Pausler who is the Program Director for The Waterfront at Downtown Burlington. She said that they are in the middle of planning their Fall 2009 programming and would like to include a series of astronomy workshops for families. Since it is the International Year of Astronomy we feel this would be a great fit for Discovery Landing.

After a few emails back and forth, we both felt that it was time we met. Also, I was intrigued at what the waterfront looked like now that all the construction had been done. We used to do a lot of Sidewalk Astronomy there several years ago, but we stopped when the construction started.

I had a delightful time chatting with Ms. Pausler, trying to get an idea of the sorts of things she saw as what her target audience would like. I explained that the difficulty was that astronomy lends itself more to lectures, particularly inside. We both thought it would be ideal if we spent an hour doing classroom stuff, and the second hour doing observing. Particularly so because it might not be dark enough if we did it the other way around. The main issue was that of setting up telescopes and then leaving them alone for the first part of the evening. We needed some place that is secure, or with very controlled access. We looked at the breezeway between the restaurant and the Discovery Landing, but the flooring is the fake plastic wood, and will bounce like mad if we put telescopes on it while people are walking around. In truth, we haven't sorted that one out yet. If the reflecting pool has been drained, then that area is cordoned off, and if the lights are off too, then it may suffice.

What we have roughly decided on is a series of four lectures/workshops, with the following themes:

Introductory visual astronomy	Naked eye and binocular: The Moon, stars, planets, comets, eclipses, constellations, etc.
Hardware	Telescopes, binoculars, what to buy, what to avoid.
Using your telescope	Jupiter, the Moon, Beyond the Solar System.
Photography	Recording what you see, revealing what you can't: an introduction to astrophotography.

Finally, there would be a night at the Centres observatory with the 16", although this may depend on the number of registrants. Too many, and we may have to do 2 nights!

The last one might be replaced with building a telescope. There's a move afoot to provide cheap ($20) telescopes that you can assemble yourself, and give a better view than Galileo had 400 years ago. There is a prototype, but the RASC IYA committee is unable to tell us the cost, how to order, delivery time, etc. so we're a bit hesitant to put that in until we know more. We may have to save that for a Winter set of workshops in 2010.

One of the other we discussed was Sidewalk Astronomy. Gary Colwell has put together an ambitious list of events for April, May and June. Mark Pickett offered to help out all he could. Mark did a lot of sidewalk astronomy for the Toronto Centre a few years ago, and is desperate to get back into it (news to me...and most welcome it was, too). Ms. Pausler said that we'd need a permit if we were going to do Sidewalk Astronomy in the Park, but she'd be very happy to help us get it.

We both saw Sidewalk Astronomy as an ideal way to promote the workshops, particularly as the brochure won't be out until August. I promised her that we'd have something more concrete that good wishes in a few days, and I sent off the proposal earlier today. It includes the four workshops, and six sidewalk astronomy events on 6 Fridays from May to September: May 1st, May 29th, June 26th, July 31st, August 28th and September 25th.

I've already had a chat to a number of people who used to do the Sidewalk Astronomy events in Burlington several years ago, and they're eager to do so again. If you've never done one of these nights, I'd urge you to come out to see what they're all about, they are a lot of fun.

We'll be in the exact same location as last time, at the far west end of Spencer Smith Park in Burlington. There is parking there, but you have to pay for it now. Bring some loonies and toonies with you...I'm hoping to get the parking waived for us, but there's no guarantee. Oh, and bring a telescope. If your scope is tall, bring a kitchen type of stepladder so the kids can have a look through, too. If you need electricity, you'd better bring that, too. Plan to show up with about enough time so you're ready to go at sunset, or perhaps a bit before. We've chosen the dates so that there's a nice Moon in the sky that's visible before the Sun goes down.

Let's see...what else? Oh, yes...the Banquet. Our speaker will be Ivan Semeniuk. Ivan is a long time friend of the Hamilton Centre, and is a fantastic speaker. No matter whether you're an astronomer or not, Ivan's talks are always informative, fascinating, and well presented. My wife is not an astronomer in the least. However, when she found out that Ivan would be our after dinner speaker, she said that she'd love to come along. So, bring your spouse or highly significant other. The menu looks good (see last months orbit), and I'm sure that I can guarantee a great evening out. So, mark down Saturday, May 2nd, and join us at The Grand Chalet in Milton (http://www.thegrandchalet.ca/).

As I noted last month, our June meeting will be at the William J. McCallion Planetarium at McMaster University. Since this facility only holds 35 people, we expect that it won't hold all the people who'd like to attend. As a consequence, we'll be distributing the tickets for the Planetarium event to the people who show up at the Banquet. If there are any tickets left over, we'll distribute them at the May meeting. We want to ensure that the people who regularly show up to our events and meetings have the greatest chance of being able to attend this special night.

Hmm...There'll be some work going on at the Observatory in the next month or two, as we get ready for the summer and beyond. Keep an eye open for announcements from Andy Blanchard, and if he calls you looking for some help...please volunteer. Andy has a great track record of just getting things done. In particular, the new floor in the Chilton Building is a joy to use, and the people who installed it had a great time doing so.

While I remember, we've recently added a KWIQ Guider to the 16". The software now needs to be set up (need ASCOM to work with The Sky software), but when it does, I expect that we'll be able to take quite long exposures even at prime focus, or long series of shorter exposures.
Roger Hill
President and Editor

On the front cover:
Bob Johnson of the Saskatoon Centre caught this fine image of a double halo around the Sun on December 17: "I was in my car pulled to the side of the road, and as I was taking pics of the halo and upper tangent arc, a secondary 46-degree formed; then before my eyes, the circumzenithal arc, only lasting a few minutes." (Taken with a Canon 40D and Tokina 10-17mm fisheye lens.)

The Sky This Month - April

Contributed by Gary Boyle, Ottawa

The Bear and the Dog

With spring now upon us, nature is joyfully coming out of hibernation. Warmer weather settles in as animals such as the bear awaken from their winter slumber. Just like its shaggy hair cousin, the great celestial bear is up and about in northern skies. Even though it is circumpolar meaning it never sets, the Big Dipper in nicely overhead all night long.

Mighty Ursa Majoris is the third largest in area and is well placed overhead with its seven prominent stars taking on the form of a kitchen pot or a farmer's plough (in the United Kingdom). Other than the constellation of Orion The Hunter, Ursa Major is the most recognizable constellation in the heavens.

The suns that make up Ursa Major are located from 78 to 123 light-years (ly) from us. These stars are slowly moving through space but not all in the same direction. In fact the Dipper shape can to be only 50,000 years ago. As time goes on, the pointer star – Dubhe will move to the front of the group. A great test for sky transparency is to visually split the double star or Alcor (the small rider) and Mizar (the horse) with the naked eye.

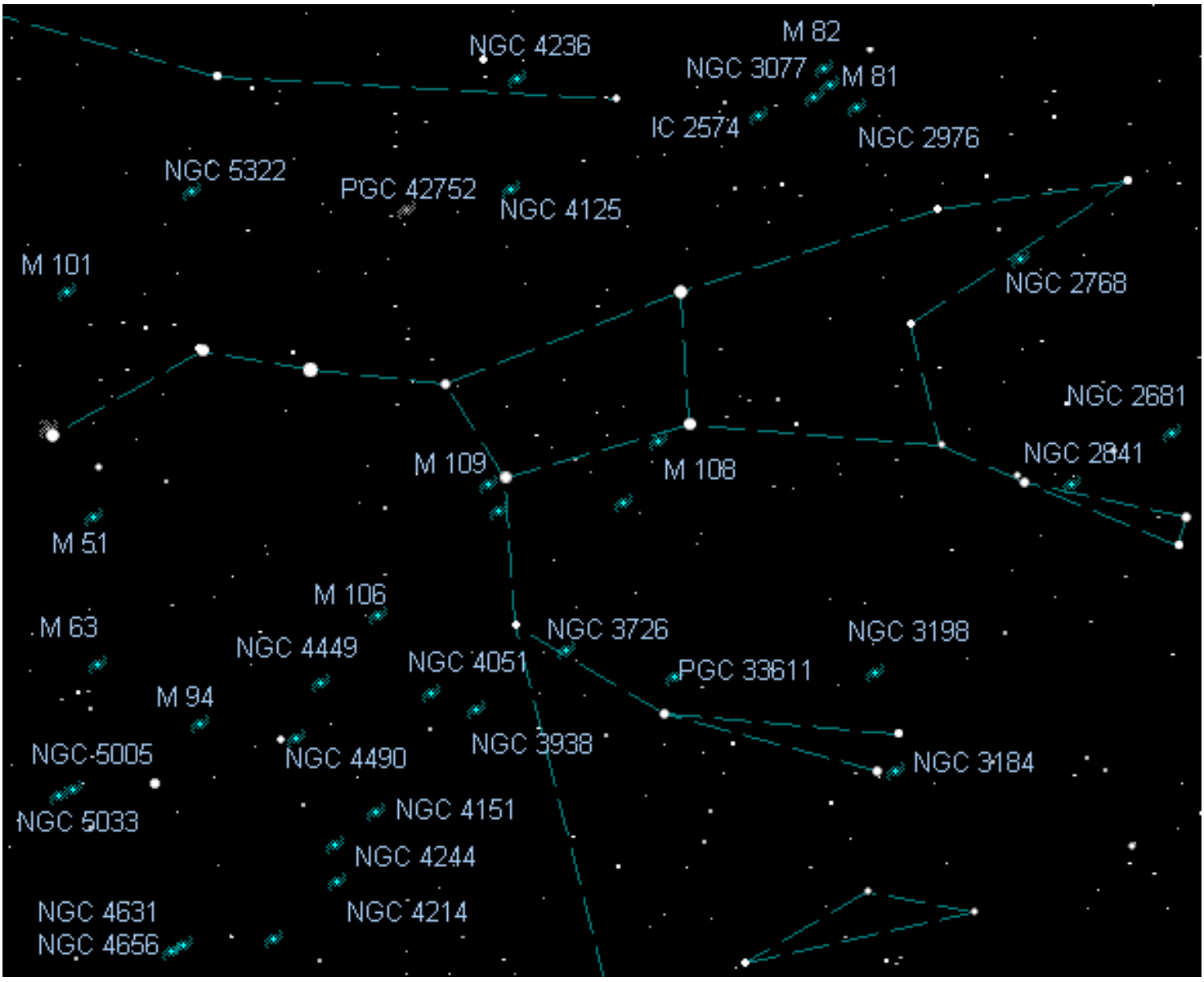
Within the confines of the constellations of Ursa Major, Canes Venatici, Coma Berenices and ending at Virgo, many bright Messier and NGC objects are at your disposal. This month we will look at the first two constellations. For example M106 is a lovely spiral galaxy with bright knots. At magnitude 8.3, it is one of the brightest galactic examples of Messier's collection. M106 is about 25 million ly away.

What night wouldn't be complete without visiting M51 dubbed the Whirlpool Galaxy? I use this magnitude 8.4 face-on structure as a guide to sky transparency. What appears to be a connection to M51 the galaxy NGC 5195 is merely a line of sight object and not physically connection. At 37 million ly away, a large scope will still show good detail in M51's pancake of stars and nebulae.

NGC 4051 is another semi face-on galaxy located an estimated 54 million ly in space. At almost 11th magnitude, most scopes should pick it up from dark locations away from light pollution. A greatest view of two galaxies in the same low power field of view has to go to M81 and M82. Both glow at about 8.5 magnitude and reside 12 million ly and 11 million ly respectively.

M109 is a third of a degree from the bright second magnitude star named Phecda – the lower left star of the Dipper's bowl. To view this 55 million ly elongated galaxy you will have to keep the star out of the field of view. It is a bit of a challenge as the galaxy is 11th magnitude.

Keeping on the lines of elongated galaxies, we have NGC 5033. It possesses very long but faint wispy arms with at bright core. In this 37 million ly object is considered a Seyfert galaxy as it has a few candidates located in the nucleus which vary in brightness. Before leaving the great bear, you must stop by the Pinwheel Galaxy. Catalogued as M101, this galaxy reveals its majestic arm structure in large scopes and photos. This 27 million ly galaxy also goes by NGC 5457 and has other NGC numbers assigned to its knotty arms



Notable April Fools Stunts involving Astronomy and Space Science:

Google Copernicus Center (2004)

Google announced that they were accepting applications for positions at Copernicus Center, their new "lunar hosting and research center." Applicants, Google noted, must be "capable of surviving with limited access to such modern conveniences as soy low-fat lattes, The Sopranos and a steady supply of oxygen." Google went on to say that the facility, set to open in Spring 2007, would house 35 engineers, 27,000 low cost Web servers, two massage therapists and a sushi chef.

First Kazakh Woman In Space (2001)

Novoye Pokoleniye, a Kazakh newspaper, reported on Friday, March 30 that Dariga Nazarbayeva, the daughter of President Nursultan Nazarbayev, would become the first Kazakh woman to fly into space. Accompanying her would be her one-year-old daughter who was receiving special training to become the world's first child astronaut. Nazarbayeva was already something of a Kazakh celebrity because of her presidency of Khabar TV. Her mission in space would be to launch a new satellite TV channel, Khabar-3, which would transmit to "the most remote areas of the world where the Kazakh diaspora lives: in the USA, Mongolia, France, New Zealand and so on." The paper also reported that only Kazakh cuisine would be served on the flight. In addition, "The research programme also envisages making several feminine space experiments such as wet cleaning in zero-gravity conditions, cleaning of portholes in open space, nail-varnishing and hair-dyeing in a vacuum. The time of narrow specialist-orientated research is gone and the epoch of space exploration for everyday-life purposes is coming. So, who else, if not a woman and housewife, is to make laboratory experiments here?"

Life Discovered on Jupiter (1996)

The internet-based service America Online grew rapidly throughout the 1990s, demonstrating the power of the internet to serve as a new basis for mass communication. By 1996 it had gained five million subscribers, all of whom were greeted with a news flash that read, "Government source reveals signs of life on Jupiter," when they logged onto the service on April 1. This headline was backed up by statements from a planetary biologist and an assertion by Ted Leonsis, AOL's president, that his company was in possession of documents that proved the government was hiding the existence of life on the massive planet. The story quickly generated over 1300 messages on AOL, and hundreds of people called the Jet Propulsion Laboratory in Pasadena, California trying to obtain more details about the discovery. When it turned out to be a prank, many questioned whether the service had risked losing its credibility by perpetrating such a stunt, but AOL dismissed these concerns. A spokeswoman for the company later explained that the hoax had been intended as a tribute to Orson Welles' 1938 halloween broadcast of the "War of the Worlds."

Space Shuttle Lands in San Diego (1993)

Dave Rickards, a deejay at KGB-FM in San Diego, announced that the space shuttle Discovery had been diverted from Edwards Air Force Base and would land instead at Montgomery Field in a few hours (at 8:30 am). Montgomery Field is a small military airport located in the middle of a residential area just outside of San Diego. Thousands of commuters immediately headed towards the supposed landing site, causing enormous traffic jams that lasted for almost an hour. Police eventually had to be called in to clear the traffic. People arrived at the military airport armed with cameras, camcorders, and even folding chairs, ready to witness the landing. Reportedly the crowd swelled to over 1,000 people. Of course, the shuttle never landed. In fact, the Montgomery Field airport would have been far too small for the shuttle to even consider landing there. Moreover, there wasn't even a shuttle in orbit at the time. The police were not amused by the prank. They announced that they would be billing the radio station for the cost of forcing officers to direct the traffic. In its defense, the radio station said, "It was a joke. We're sorry, but it was April Fools. We're just trying to have some fun." The prank was actually not original. A Belgian newspaper had perpetrated the identical hoax on its readers in 1992. However, the San Diego hoax fooled far more people than its Belgian predecessor.

Planetary Alignment Decreases Gravity (1976)

British astronomer Patrick Moore announced on BBC Radio 2 that at exactly 9:47 a.m. the planet Pluto would pass behind the planet Jupiter, and that this alignment of the planets would result in a stronger gravitational pull from Jupiter, counteracting the Earth's own gravity and making people momentarily weigh less. He told listeners that they could experience this phenomenon for themselves by jumping in the air at 9:47. If they did so, he said, they would experience a strange floating sensation. When 9:47 a.m. arrived, BBC2 began to receive hundreds of calls from listeners who claimed that they had felt the sensation. One woman claimed that she had been seated around a table with eleven friends, and that all of them, including the table, had begun to float around the room. Another caller complained that she had risen from the ground so rapidly that she had hit her head on the ceiling.

Soviets Land in Kankakee (1969)

The Daily Journal, based in Kankakee, Illinois, reported that a Soviet space capsule had landed just outside of the city. Apparently the cosmonauts had seriously miscalculated their trajectory during reentry. The Soviet government was said to be keeping its silence about the capsule. An accompanying photograph showed a space capsule with a hammer and sickle displayed on its side. The article said that one of the cosmonauts was named Lirpa Loof, who had been missing for over a year. Many people drove to the supposed site of the landing to see the capsule.

Artificial Satellites Around Mars (1959)

An April Fool's joke by an amateur American astronomer was apparently taken seriously by a highly regarded Soviet scientist. Walter Scott Houston, professor of English at Kansas State College and editor of the Great Plains Observer, the monthly newsletter of the Great Plains Astronomical Society, included an article in the April edition that made the following claim:

Just last week Dr. Arthur Hayall of the University of the Sierras reports that the moons of Mars are actually artificial satellites... They are truly space stations in the most elaborate sense of the word... even though the race that flung them so magnificently into orbit may be dead and gone, they still orbit as the greatest monument to intelligent accomplishment yet known to mankind.

Houston later explained that he chose the story because it was "so ludicrous it would not need to be labeled a gag." Both Dr. Hayall and the University of the Sierras were fictitious.

But soon after, the same theory was advanced by a Soviet scientist, Dr. Iosip Shklovsky, in an interview with Komsomol Pravda, a Communist youth league publication. American scientists were baffled by Shklovsky's assertion since there was no indication he was joking. Dr. Gerald Kuiper of the Yerkes Observatory was quoted as saying, "He is much too brilliant to believe such nonsense." [Jefferson City Post-Tribune, May 4, 1959.]

World To End Tomorrow (1940)

On March 31, 1940 Philadelphia radio station KYW broadcast the following message:

Your worst fears that the world will end are confirmed by astronomers of Franklin Institute, Philadelphia. Scientists predict that the world will end at 3 P.M. Eastern Standard Time tomorrow. This is no April Fool joke. Confirmation can be obtained from Wagner Schlesinger, director of the Fels Planetarium of this city.

The announcement came after a radio program by Jack Benny that had been devoted to a discussion of how the world might end. The program had mentioned the name of Orson Welles, who had been responsible for the notorious War of the Worlds Panic Broadcast of 1938. The public reaction to KYW's announcement was dramatic. Newspapers, police stations and the city's information bureau received hundreds of calls from frightened citizens.

KYW later issued an apology and an explanation. The announcement was, of course, false, but the station denied responsibility for it. It said that it had received the announcement from William Castellini, press agent for the Franklin Institute and had read it in good faith, believing it to be genuine. However, Castellini had intended it as a publicity stunt to publicize an April 1st lecture at the planetarium titled "How Will the World End?" Castellini later explained that he came up with the idea for the stunt after hearing Benny's program and thinking it a good chance to get some publicity for the planetarium. He claimed, in his own defense, that he had told "some of the people" at the radio station about the announcement and "thought they would know it was a stunt." Soon afterwards, the Franklin Institute dismissed Castellini.
[Oakland Tribune, Apr 1, 1940; The Washington Post, Apr 2, 1940.]

Terry Trees, an American based RASC member recently wrote:

Since retiring from my computer networking job on January 31, I have been doing some substitute teaching. I'm averaging 3 days a week. That ain't bad. This part-time stuff is a lot easier than it was full-time in the late 60s and early 70s.

Today, while teaching an astronomy lesson to 8th graders I showed the class an aerial photo of Meteor Crater. The classes all were impressed by the size and depth of the crater.

However, one of the morning students asked, "What's the scale here?"

I said, "See the curvy black line, that's a road. The small white rectangle is the Visitor's Center."

A second kid then exclaimed, "WOW! That thing just missed the Visitor's Center!"

Andy's at it again…

A couple of years ago, Andy Blanchard decided that the floor of the Chilton Building needed re-doing. It hadn't been touched since it was built over 20 years ago, and just consisted of gravel covered by some very ragged old astro-turf type material. Considering that we wanted to move the 16" RC and Paramount in there, it hardly seemed fitting.

So, summoning his rather considerable powers of persuasion, and a remarkable aptitude for organization, he set about replacing the floor with a concrete one.

So, now he's at it again. This time, he's tackling a roof. The roof on the Powis Building to be precise. Here's what he says:

I hope this winter has provided you with many great nights of observing. It is now time to replace the roof on the Powis Building. As many of you know a couple of years ago I helped the club in putting a floor in the observatory, with the assistance of many of the clubs members.

This April, the roof project will begin with the cleaning out of all material, pictures, books and equipment from the Powis building. Step two will be the removal of the roof. Step three the construction of the new roof, and finally the last step of returning the items to the Powis Building.

As in the past I was hoping to receive the assistance of everyone. The first work party to clean out the building will take place Monday April 13, and Wednesday April 15th. These nights will be strictly moving nights. We will need temporary homes for some of the items, but most everything will be stored in the Butler Building or Observatory.

So please send me an e-mail confirming what night or nights you can work, and if you can't make it please most definitely send me an e-mail that you can't help out.

Ablanchard at cogeco.ca

As in the past the local libations are on me, and the good times are up to you.

Thank-you

Andy Blanchard

Bad Astronomy Blog, by Phil Plaitt

In April, I was asked to give a short speech to a group of local students who participated in a science fair. I wasn't sure what to say to them, until I saw a newscast the night before the fair. The story was some typically inaccurate fluff piece giving antiscience bone-heads "equal time" with science, as if any ridiculous theory should have equal time against the truth. I sat down with a pad of paper and a pencil and scribbled down this speech. I gave it almost exactly as I wrote it.

I know a place where the Sun never sets. It's a mountain, and it's on the Moon. It sticks up so high that even as the Moon spins, it's in perpetual daylight. Radiation from the Sun pours down on there day and night, 24 hours a day — well, the Moon's day is actually about 4 weeks long, so the sunlight pours down there 708 hours a day.

I know a place where the Sun never shines. It's at the bottom of the ocean. A crack in the crust there exudes nasty chemicals and heats the water to the boiling point. This would kill a human instantly, but there are creatures there, bacteria, that thrive. They eat the sulfur from the vent, and excrete sulfuric acid.

I know a place where the temperature is 15 million degrees, and the pressure would crush you to a microscopic dot. That place is the core of the Sun.

I know a place where the magnetic fields would rip you apart, atom by atom: the surface of a neutron star, a magnetar.

I know a place where life began billions of years ago. That place is here, the Earth.

I know these places because I'm a scientist.

Science is a way of finding things out. It's a way of testing what's real. It's what Richard Feynman called "A way of not fooling ourselves."

No astrologer ever predicted the existence of Uranus, Neptune, or Pluto. No modern astrologer had a clue about Sedna, a ball of ice half the size of Pluto that orbits even farther out. No astrologer predicted the more than 150 planets now known to orbit other suns.

But scientists did.

No psychic, despite their claims, has ever helped the police solve a crime. But forensic scientists have, all the time.

It wasn't someone who practices homeopathy who found a cure for smallpox, or polio. Scientists did, medical scientists.

No creationist ever cracked the genetic code. Chemists did. Molecular biologists did.

They used physics. They used math. They used chemistry, biology, astronomy, engineering.

They used science.

These are all the things you discovered doing your projects. All the things that brought you here today.

Computers? Cell phones? Rockets to Saturn, probes to the ocean floor, PSP, gamecubes, gameboys, X-boxes? All by scientists.

Those places I talked about before? You can get to know them too. You can experience the wonder of seeing them for the first time, the thrill of discovery, the incredible, visceral feeling of doing something no one has ever done before, seen things no one has seen before, know something no one else has ever known.

No crystal balls, no tarot cards, no horoscopes. Just you, your brain, and your ability to think.

Welcome to science. You're gonna like it here.

RASC Hamilton Centre Annual Banquet!

Come celebrate Astronomy Day (May 2nd) with everyone at The Grand Chalet in Milton.
Tickets this year are only **$40** per person.

The meal will be served buffet style and includes all of the following:

Hot Hors d'oeuvres upon arrival

Fresh Baked Breads and Butter

Fresh Mixed Greens with Assorted Dressings

Cheese Ravioli with an Aurora Blush Sauce

Chicken Parmigiana

Baby Beef Roast

Market Fresh Vegetables & Roasted Parisienne Potatoes

Assorted French/Italian Pastries & Fresh Fruit Platter

Pop & Juices

Coffee, Tea & Espresso

For restaurant details please see the Grand Chalet's website: www.thegrandchalet.ca

Something else from Andy...

If anyone is interested in attending NEAF and NEAIC, I am driving down on Wed afternoon the 15th, and returning the evening of the 18th. I have room for 3 passengers, and I have a room I am willing to share with one person. I attended last years conference and all I can say is its the largest astronomy retailer gathering in North American. Two days of astro-imaging seminars and classes and then NEAF, aisle after aisle of every possible astronomy gadget and scope.

Basically lots of fun.
http://www.rocklandastronomy.com/NEAIC/

http://www.rocklandastronomy.com/neaf.htm

Thank-you

Andy Blanchard

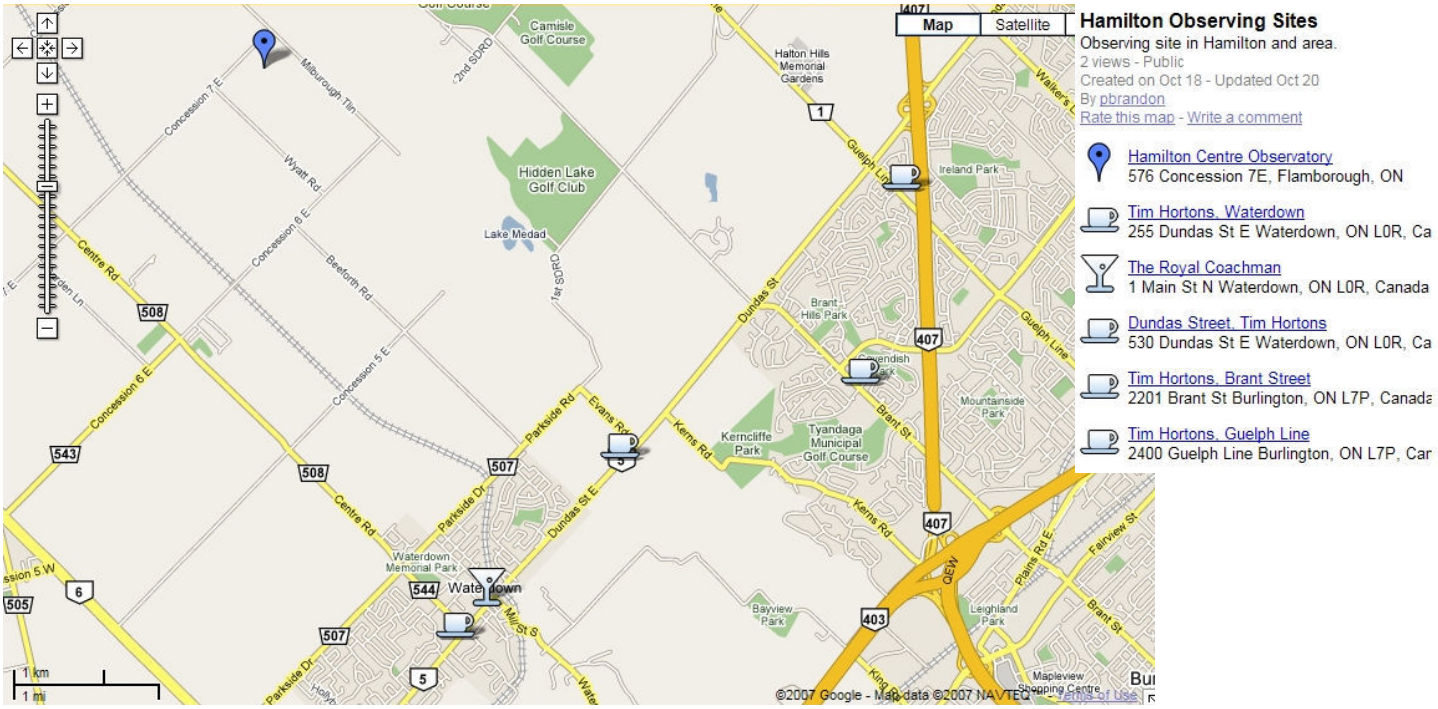
What you missed last Month

You missed another good one! Mike Fich of the University of Waterloo came and shared his passion for Far Infrared and Sub Millimetre Astronomy.

As a member of the RASC for ~38 years he is always pleased to give talks about the stuff he does, and his talk did not disappoint. He focused more on instruments rather than science, and gave overviews of a number of things he's working on, including the Herschel mission, which has the largest mirror ever built for a space telescope—3.5 metres across. He is the Canadian Project Leader in an instrument called SCUBA-2, a sub-millimeter camera for the JCMT, the Canadian co-Lead for the Cornell-Caltech Atacama Telescope (CCAT), a proposed very large sub-millimeter wavelength telescope to be built in northern Chile; the Canadian Lead for a proposed Far-Infrared Interferometer (FIRI) in space; the Canadian point-of-contact for the "under-development" project at NASA known as SPIRIT; and also the chair of the Canadian Space Agency Discipline Working Group in Far-Infrared Astronomy.

It's an exhausting list, and his recollections of past instruments were fascinating. As was a quick view of the sorts of instruments pending, proposed, and possible. Tantalizingly, he kept saying things like "But that would be an entire talk all by itself". We may just have to have him back next year!

What are you going to miss in the coming months? Nothing, I hope. We've got Dave McCarter from the London Centre coming in April, Ray Carlberg of the University of Toronto, on the 30m Telescope in May, and the McCallion Planetarium in June. In addition to our Banquet on May 2nd. It's going to be a busy spring!



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Calendar of Events

April

Thursday April 2nd: Dave McCarter, London Centre on The Telescope. Location: Steam Museum
Thursday April 9th Board Meeting Email for location
Monday April 13, and Wednesday April 15th Observatory clean out—see Page 8
Thursday April 16th Beginners night at the Observatory
Thursday April 23 Astrophotography night at the Observatory

May

Sidewalk Astronomy Location to be announced
Saturday May 2nd: Annual Banquet - Ivan Semeniuk! at the Grand Chalet in Milton $40 per person.
Thursday May 7th: Ray Carlberg - U of T, The 30 metre Telescope. at the Steam Museum
Thursday May 14th Board Meeting Email for location
Thursday May 21st Astrophotography/Beginners night at the Observatory
Friday May 29th Sidewalk Astronomy. Location: Spencer Smith Park, Burlington.

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.

Sidewalk Astronomy nights at Spencer Smith Park:
Friday May 1, Friday May 29th, Friday, June 26, Friday July 31, Friday August 28 and Friday September 25th