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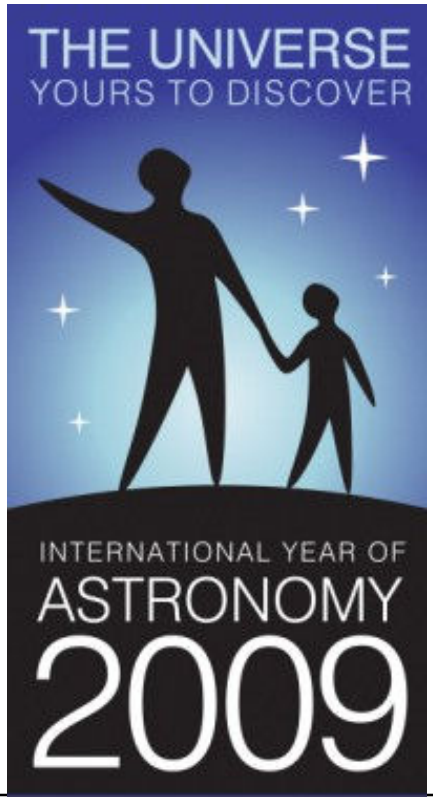

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May, 2009

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Wow, have a lot of things happened over the last month! From emptying out the main building to beginners nights and the Banquet, it was a busy month. We also got permits to do Sidewalk Astronomy at Spencer Smith Park in Burlington.

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.

First, there's the workshops. They're a go! Here's a first draft of the itinerary:

Fall Astronomy Workshops
With RASC at Discovery Landing

Age: 10-99 years (children must register with an adult)
Group size: 30 people

Discover Astronomy:
Did you know that it's the International Year of the Astronomer? Join the Hamilton Centre of the Royal Astronomical Society of Canada for lectures in The Observatory followed by outdoor workshops for all 4 sessions: An Introduction to the Night Sky, Telescopes and More, Eye Spy, and DIY Telescope.
Friday September 25th – October 23rd (excluding October 9th – Thanksgiving)
$35 with telescope kit
$20 without telescope kit

Intro to the Night Sky:
Using the naked eye and binoculars, explore the stars above, not to mention the moon, planets, comets, eclipses, constellations and more. The session begins with a lecture by the Royal Astronomical Society, followed by examining the night sky outdoors.
Friday September 25th, 7.30-9.30pm
$5

Telescopes and More:
Discover what tools you need to join the world of Astronomy. Learn about telescopes and binoculars – what to buy and what to avoid. The session begins with a lecture by the Royal Astronomical Society, followed by an outdoor workshop.
Friday October 2nd, 7.30-9.30pm
$5

Eye Spy:
Learn to use a telescope to locate and identify Jupiter, the Moon, and beyond the Solar System with the Hamilton Centre of the Royal Astronomical Society of Canada. The session begins with a lecture by the Royal Astronomical Society, followed by a telescope workshop outdoors.
Friday October 16th, 7.30-9.30pm
$5

DIY Telescope:
This session includes a build it yourself telescope in celebration of the International Year of Astronomy. Once built, use your telescope to locate craters on the Moon, the rings of Saturn and more! We suggest one telescope per family or group so other members may attend this session but register for the session only.
Friday October 23rd, 7.30-9.30pm

One of the things that has to change is the cost. The Galileo Telescope is expected to cost around $15 US...not $15 Canadian.

So, we'll need a bit of help with this. I'd really like some of the more seasoned members to step forward and help out. Can we count on you?

Another major event at the moment is the main observatory building. As you may have gathered from some of the posting 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. There are a couple of ways that we can try to raise this amount of money. One is to go into major fundraising mode.

There's a problem with that, however. Nobody on the current Board has any idea of how to go about it. So, if you have any experience with this sort of endeavour, we'd love to hear it. You'll have to run this yourself, though...the Board is already handling all it can.

The other way to raise the money is to sell off an asset or two. We have a couple of pieces of equipment that are seldom, if ever, used. We have a 14" Schmidt camera that some people wanted to turn into a giant astrograph by getting a large CCD and correcting lens to flatten out the curved focal surface of a Schmidt camera. We acquired this a few years ago, and I have no idea as to why this particular project went nowhere. These instruments go on the market so infrequently, that it is extremely difficult to gauge how much it is worth. One sold in 2007 for $3,000 to a collector.

There's the CCD camera, which, by current estimates, should fetch about the amount that we need. I think about four people have used this instrument in the last 5 years.

We have some antique telescopes, too, as well as a brass transit scope, none of which have been used, and which nobody has any interest in.

Either way, we'd appreciate some input from you. Actually, we'd love any help that we can get.

Thanks for reading.

Roger Hill
President and Editor

On the front cover:
This is one of my photographs. It shows a very young moon and Mercury on May 6th, 2008. The image was taken with a Canon 10D, with an exposure of 0.8 seconds, through a Williams Optics 80mm f/6 telescope.

The Sky This Month - May

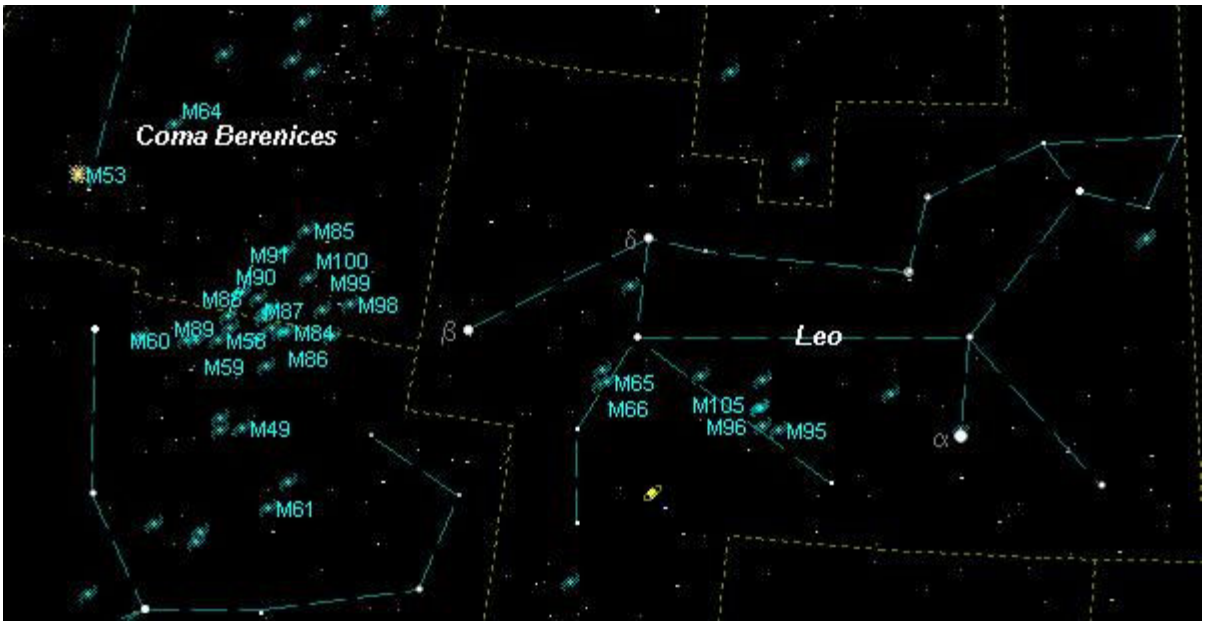
Contributed by Gary Boyle, Ottawa

The Leo/Virgo/Coma Galaxy Fest

If you took part in the Messier Marathon this past March, you no doubt had to negotiate the swarm of galaxies in Virgo, Leo and Coma Berenices. Many of these objects do not reside near reference stars, thus making the hunt even more challenging.

But now that the rush is over and the dust has settled, we have time to search for these and other remote objects. This is also a perfect time of year weather wise. As winter's snows are now a thing of the past, spring nights are quite enjoyable before the hum of mosquitoes drive us indoors..

Before attacking the Virgo Cluster, I like to warm up with a few brighter galaxies in Leo. Even here, nestled in the Lion, galaxies come in groups that fit nicely in wide angle eyepieces. First stop is the trio of M65, M66 and NGC 3628 aka the Leo Triplett. With magnitude brightness of 9.3, 9.0 and 9.5 respectively, NGC 3628 is larger in size; however is a bit dimmer and a little more challenging edge on galaxy to spot. The group is estimated to be 35 million light years (ly) from us.



Now continuing some five and a half degrees south brings to the bright planet Saturn. Its rings are slowly but surely tilting to the ring plane lineup in September of this year. Even though we cannot distinguish the gorgeous rings, we can easily identify the few Saturnian moons. Large scope can spot seven orbiting moons.

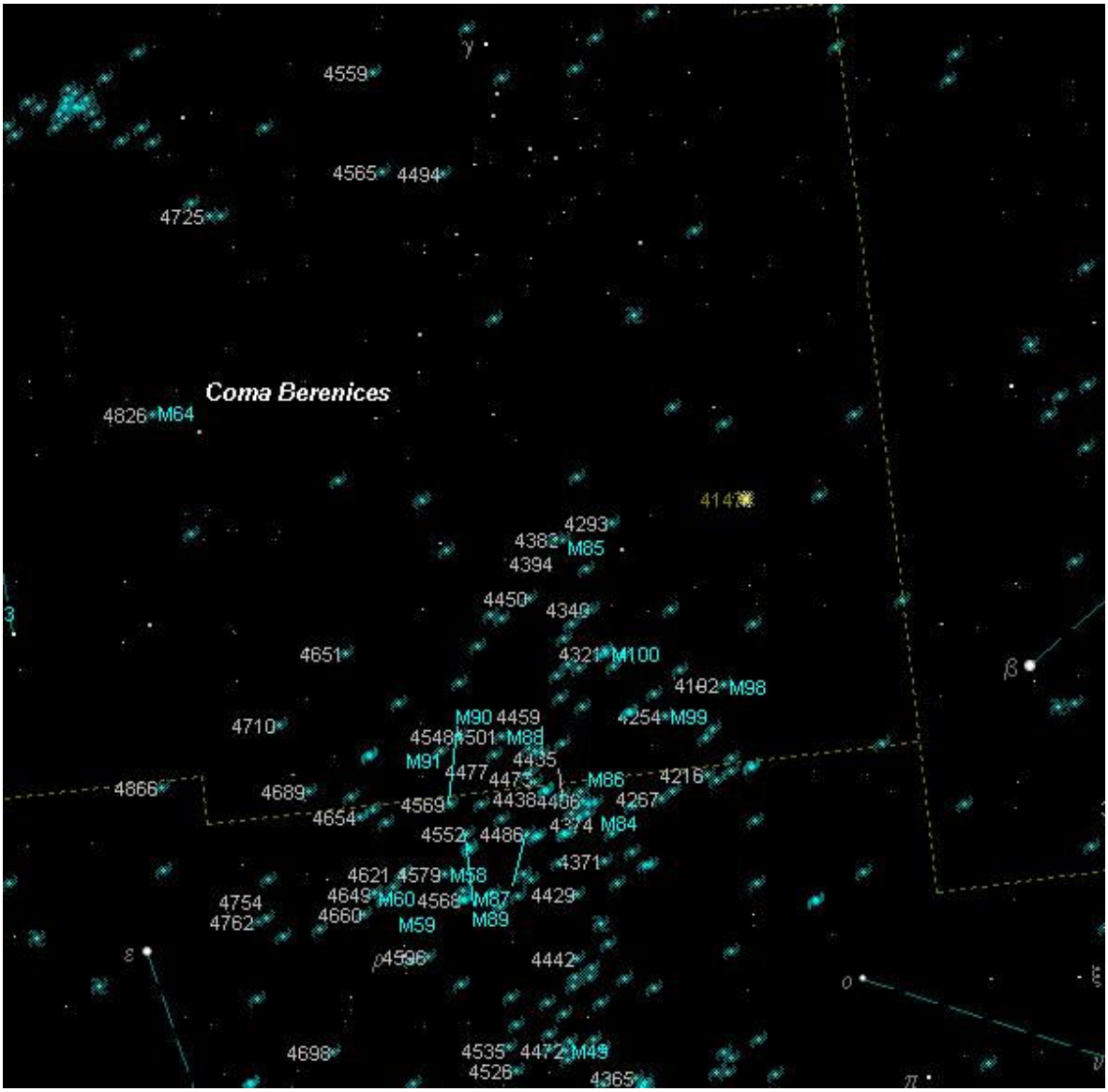
Another interesting galaxy group residing half way between the previously mentioned Leo Trio and Regulus, consists of M95, M96 and M105. M96 is the dominant member and is estimated to be 38 million ly away. M96 does possess one detailed arm. Its counterpart, M95 has a somewhat bar protruding through the core and has nice arm structure.

Now for some hunting in Virgo. First locate Beta Leo otherwise known as Denebola. Now move your scope about six and a half degrees to the east till you pick up a lot of faint fuzzies. You should come across M84. This giant elliptical galaxy lists as 60 million ly from us and is one of the brightest galaxies in the area. M84 also states the end of Markarian's chain of galaxies. This line of remote galaxies is a sight to see. More than a dozen galaxies make up the chain with M84, M86 and M91 being the only Messiers.

While still Virgo the lovely pair of NGC 4567 and NGC 4568 is best referred as The Siamese Twins. As illustrated, they are interacting with each other to form a stunning view. NGC 4567 measure 3.1 arc minutes long and is magnitude 11.3. On the flip side, NGC 4568 is a bit larger and brighter at magnitude 10.9 and measure 4.6 are minutes. The two show detail in their arms.

NGC 4762 is a very interesting edge on galaxy measuring 8.7 by 1.7 arc minutes. What sets this galaxy apart from the rest is its end to end uniform brightness. Galactic brightness is usually concentrated in the middle. A mere 10 arc minutes northwest of 4762 is NGC 4754. Its dimensions are 4.4 by 2.4 arc minutes has a somewhat roundish structure to it. The two make an impressive image.

For a bit of a challenge, might I suggest NGC 4780? Its small at 1.8 by 1.5 arc minutes, its faint at magnitude 14.8 but if you can spot it and image it, your efforts will be rewarded. NGC 4780 has some lovely galactic structure to it.



We us slide across the border and venture into Coma Berenices. M64 is a must see for your observing list. Dubbed the Black Eye or Sleeping Beauty Galaxy, evidence of darker dust is seen in any sized telescope. M64 is 40,000 ly wide and seems to be about 20 million ly from us. This galaxy possesses some fine detail especially when imaged.

For a change of pace, lets us look at something in our Milky Way Galaxy. The only globular cluster residing within this constellation's borders is M53. Discovered by Johann Bode in 1775, this globular is one of the farthest from galactic center. It lies some 60,000 years, almost at our galaxy's edge. It is a bulky object, estimated to be 220 ly in width. At magnitude 7.6 it is fairly bright for its distance.

Mercury just underwent greatest eastern elongation on April 30th but will still be glimpsed low in western skies close to the Pleiades after sunset. Speaking of planets, Saturn is setting around 4 a.m. at the beginning of May. Meanwhile brilliant Jupiter is up in the east around 2:30 a.m. local time while Venus and Mars clear the east horizon around 4:30 a.m.

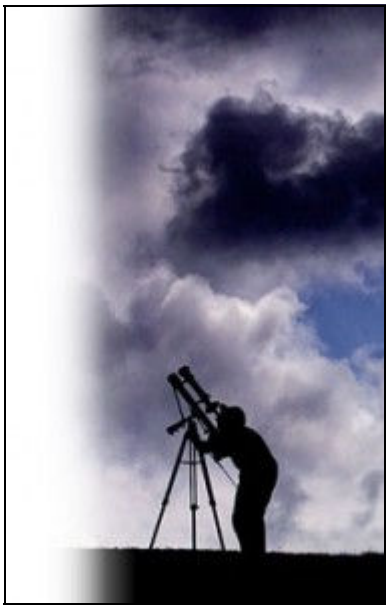
Be sure to check out Jupiter on the morning of the 25th as it will be a mere 24 arc minutes (less than the full moon) south west of Neptune. If you have never taken at the now furthest planet of the solar system, now is the time.

Till next month, clear skies everyone

Gary Boyle

Stargazing Tips from The Onion

The night sky holds countless wonders. Here are some tips to help you make the most of your next stargazing experience:



1. Be in the know about which stars are hot and which are not. Betelgeuse: hot. Rigel: not. Polaris: hot. Pleiades: not.
2. If the evening you choose to take your kids stargazing turns out to be overcast, maintain their interest by announcing that it is an extremely rare "eclipse of everything."
3. Though astronomy is a relatively safe hobby, keep in mind that stars are very, very hot and will burn for millions of years if left unattended.
4. Remember the "ABCs" of learning about constellations: Always Be learning about Constellations.
5. When contemplating the ineffable grandeur of the universe, nothing sets the mood quite like the airy, transcendent synthesizer sounds of Vangelis.
6. Do not gaze directly at white-hot star Kate Hudson. Instead, poke a pinhole in a sheet of paper, and look at Hudson's outline on another sheet of paper.
7. Some may scoff at the hobby of astronomy, but sitting in an empty field in the middle of winter is a great way to see tiny little dots.
8. Name your baby after a constellation. No one has ever thought of that before.
9. Locate the Virgo cluster. Is it still there? Good... you're like the cop of the universe!
10. Remember: Galileo was an astronomer, and they threw his ass in the clink. Exercise caution.
11. There's one star that's incredibly easy to find. You have to wait until the daytime, though.
12. When stargazing in South Florida, be sure to steer clear of territory controlled by Jack Horkheimer.
13. Next time you go stargazing, bring a girl along. Set up in a field far from the city lights and take turns looking through the telescope. Then, when the right moment comes, kiss her. Kiss her! Don't let the opportunity pass you by–it may never come again! Kiss her! Kiss her!

As we do sidewalk astronomy this summer, and show people the Moon, you're going to be asked about the Apollo Moon landings, and whether they actually happened. Particularly so with this year being the 40th anniversary of Apollo 11. So, to help you arm yourself, I thought I'd put in an article from a NASA web site.

The Great Moon Hoax—Dr. Tony Phillips

Moon rocks and common sense prove Apollo astronauts really did visit the Moon.

February 23, 2001 -- Last week my phone rang. It was my mother ... and she was upset.

"Tony!" she exclaimed, "I just came from the coffee shop and there's an [adjective omitted] man down there who says NASA never landed on the Moon. Everyone was talking about it ... I just didn't know what to say!"

That last bit was hard to swallow, I thought. Mom's never at a loss for words.

But even more incredible was the controversy that swirled through her small-town diner and places like it across the country. After a long absence, the "Moon Hoax" was back.

All the buzz about the Moon began on February 15th when Fox television aired a program called Conspiracy Theory: Did We Land on the Moon? Guests on the show argued that NASA technology in the 1960's wasn't up to the task of a real Moon landing. Instead, anxious to win the Space Race any way it could, NASA acted out the Apollo program in movie studios. Neil Armstrong's historic first steps on another world, the rollicking Moon Buggy rides, even Al Shepard's arcing golf shot over Fra Mauro-- it was all a fake!

Fortunately the Soviets didn't think of the gag first. They could have filmed their own fake Moon landings and really embarrassed the free world.

Shows like Conspiracy Theory ought to be as tongue-in-cheek as they sound. Unfortunately, there was an earnest feel to the Fox broadcast, enough to make you wonder if the program's makers might have fallen under their own spell.

According to the show NASA was a blundering movie producer thirty years ago. For example, Conspiracy Theory pundits pointed out a seeming discrepancy in Apollo imagery: Pictures of astronauts transmitted from the Moon don't include stars in the dark lunar sky -- an obvious production error! What happened? Did NASA film-makers forget to turn on the constellations?

Most photographers already know the answer: It's difficult to capture something very bright and something else very dim on the same piece of film -- typical emulsions don't have enough "dynamic range." Astronauts striding across the bright lunar soil in their sunlit spacesuits were literally dazzling. Setting a camera with the proper exposure for a glaring spacesuit would naturally render background stars too faint to see.

Here's another one: Pictures of Apollo astronauts erecting a US flag on the Moon show the flag bending and rippling. How can that be? After all, there's no breeze on the Moon....

Not every waving flag needs a breeze -- at least not in space. When astronauts were planting the flagpole they rotated it back and forth to better penetrate the lunar soil (anyone who's set a blunt tent-post will know how this works). So of course the flag waved! Unfurling a piece of rolled-up cloth with stored angular momentum will naturally result in waves and ripples -- no breeze required!

The Fox documentary went on with plenty more specious points. You can find detailed rebuttals to each of them at BadAstronomy.com and the Moon Hoax web page. (These are independent sites, not sponsored by NASA.)

The best rebuttal to allegations of a "Moon Hoax," however, is common sense. Evidence that the Apollo program really happened is compelling: A dozen astronauts (laden with cameras) walked on the Moon between 1969 and 1972. Nine of them are still alive and can testify to their experience. They didn't return from the Moon empty-handed, either. Just as Columbus carried a few hundred natives back to Spain as evidence of his trip to the New World, Apollo astronauts brought 841 pounds of Moon rock home to Earth.

"Moon rocks are absolutely unique," says Dr. David McKay, Chief Scientist for Planetary Science and Exploration at NASA's Johnson Space Center (JSC). McKay is a member of the group that oversees the Lunar Sample Laboratory Facility at JSC where most of the Moon rocks are stored. "They differ from Earth rocks in many respects," he added.

"For example," explains Dr. Marc Norman, a lunar geologist at the University of Tasmania, "lunar samples have almost no water trapped in their crystal structure, and common substances such as clay minerals that are ubiquitous on Earth are totally absent in Moon rocks."

"We've found particles of fresh glass in Moon rocks that were produced by explosive volcanic activity and by meteorite impacts over 3 billion years ago," added Norman. "The presence of water on Earth rapidly breaks down such volcanic glass in only a few million years. These rocks must have come from the Moon!"

Right: A glass spherule (about 0.6 mm in diameter) produced by a meteorite impact into lunar soil. Features on the surface are glass splashes, welded mineral fragments, and micro craters produced by space weathering processes at the surface of the moon. SEM image by D. S. McKay (NASA Photo S71-48109).

Fortunately not all of the evidence needs a degree in chemistry or geology to appreciate. An average person holding a Moon rock in his or her hand can plainly see that the specimen came from another world.

"Apollo moon rocks are peppered with tiny craters from meteoroid impacts," explains McKay. This could only happen to rocks from a planet with little or no atmosphere... like the Moon.

Meteoroids are nearly-microscopic specks of comet dust that fly through space at speeds often exceeding 50,000 mph -- ten times faster than a speeding bullet. They pack a considerable punch, but they're also extremely fragile. Meteoroids that strike Earth's atmosphere disintegrate in the rarefied air above our stratosphere. (Every now and then on a dark night you can see one -- they're called meteors.) But the Moon doesn't have an atmosphere to protect it. The tiny space bullets can plow directly into Moon rocks, forming miniature and unmistakable craters.

"There are plenty of museums, including the Smithsonian and others, where members of the public can touch and examine rocks from the Moon," says McKay. "You can see the little meteoroid craters for yourself."

Just as meteoroids constantly bombard the Moon so do cosmic rays, and they leave their fingerprints on Moon rocks, too. "There are isotopes in Moon rocks, isotopes we don't normally find on Earth, that were created by nuclear reactions with the highest-energy cosmic rays," says McKay. Earth is spared from such radiation by our protective atmosphere and magnetosphere.

Even if scientists wanted to make something like a Moon rock by, say, bombarding an Earth rock with high energy atomic nuclei, they couldn't. Earth's most powerful particle accelerators can't energize particles to match the most potent cosmic rays, which are themselves accelerated in supernova blastwaves and in the violent cores of galaxies.

Indeed, says McKay, faking a Moon rock well enough to hoodwink an international army of scientists might be more difficult than the Manhattan Project. "It would be easier to just go to the Moon and get one," he quipped.

And therein lies an original idea: Did NASA go to the Moon to collect props for a staged Moon landing? It's an interesting twist on the conspiracy theory that TV producers might consider for their next episode of the Moon Hoax.

"I have here in my office a 10-foot high stack of scientific books full of papers about the Apollo Moon rocks," added McKay. "Researchers in thousands of labs have examined Apollo Moon samples -- not a single paper challenges their origin! And these aren't all NASA employees, either. We've loaned samples to scientists in dozens of countries [who have no reason to cooperate in any hoax]."

Even Dr. Robert Park, Director of the Washington office of the American Physical Society and a noted critic of NASA's human space flight program, agrees with the space agency on this issue. "The body of physical evidence that humans did walk on the Moon is simply overwhelming."

"Fox should stick to making cartoons," agreed Marc Norman. "I'm a big fan of The Simpsons!"

A Sidewalk Astronomy Experience—Tom Field

Wow! If you've never tried sidewalk astronomy, you oughta! Last Saturday I set up in town at the monthly the Denver Astronomical Society's first quarter star party. The moon got a little low (and there were 30 or so telescopes there) so I viewed Albireo. Having an eleven year old go inside and drag his mother out to see the colors was the high point of the evening! People like to see color!! (Hint: after they've seen the stars, tell them you're going to defocus a little to bring out the color. Then do it. It works) Alberio is visible 1 mile from downtown Denver with street lights making it almost daylight. And it's easy to find. I enjoy pointing out to viewers the similarities between the colors they're seeing and the different colors in a candle or campfire. "They're different temperatures..."

The next night, Sunday, having read a little about Dobson (and his merry band of sidewalk astronomers) I screwed up my courage dragged by C8 out to the sidewalk right in front a local ice cream parlor on a busy street. Sure I was blushing and sweating a bit as I set up. "Will anyway come or will I look like a propeller-hat nerd?!" I had a non-stop line of viewers for two hours! Having Rukl's text (mostly the full moon view inside the front cover) to help them navigate and to point out what they were seeing was *very* helpful. Also, coaching them on finding the right viewing position to actually see the image in the eyepiece was occasionally necessary: "Yeh, take your time. Sometimes it can take a minute or so to get your eye positioned right. Try moving away from the eyepiece a little..." [Usually it's only 5 or 10 seconds with the long eye relief LV eyepiece] "Uh, you don't have to touch the eyepiece..."

Often I will help them see things that I believe they'd not otherwise see. "See that smooth area [Serenity]. Well just above it, see those two craters? [Eudoxus & Aristoteles].. Okay, can you see how the left rim of the crater is glowing in the sunrise. See those points of light to the left... etc etc" "Notice the rippling? That's just like the ripples in the air you see over a hot car or above a campfire. The waves of heat in the air above us..." Even a little science: "Now that smooth area is the result of ..."

I debate whether to instruct them on the focus knob, but usually show them by pretending to grab it and rotating my hand (not the knob) a tiny bit, "This is just like focusing binoculars. Turn it just a little, like this until the view isn't blurry." I also watch them as they focus, because some people crank it a half turn or more and I then have to refocus it for them. The sloppiness of the SCT focus is a bother. I don't think JMI's motorized focus (on the drawtube) would be any easier for them, since there is no intuitive feedback from the buttons). A manual drawtube focuser would be best I believe.

Standing by the telescope, people would ask me, "why are you doing this?" I'd suggest they have a look through he eyepiece at the moon, "take a look!" To their totally spontaneous exclamations of "Wow!", "Oooouuuu", "Oh my god", "I can't believe it", "I never knew you could see it so close", "Let me go get my wife..." I'd respond, "I do it because I like hearing people say what you just said!" and we both laugh. There's a real joy in sharing something beautiful, especially if the other has never seen such a thing.

I was surprised how many people expressed an interest, or confessed they had a telescope (often, perhaps a Tasco,) they never used. The kids were wonderful. They'll talk and talk ... with their parents beaming on. It was also a good opportunity to talk about light pollution, solicit new club members, and meet new people.

So, I urge you to try it. You've got to be a little tiny bit of a showman, but not too much. Once you've set up, one or two (if that) "You want to look at the moon?" queries to passers by is all it'll take to get things going. (Next time I'll have a small sign: "Free views of the moon" that I'll hang from the "No Parking sign or the newspaper box I leaned on)

It's not often (in my life, anyway) that I've felt I gave so much so easily. And the joy of giving is wonderful...

Images from our members:
Three images here from Steve Barnes, all taken in Chile.

The Helix Nebula, also known as The Helix or NGC 7293, is a large planetary nebula (PN) located in the constellation of Aquarius. Discovered by Karl Ludwig Harding, probably before 1824, this object is one of the closest to the Earth of all the bright planetary nebulae. The estimated distance is about 215 parsecs or 700 light-years.

It is similar in appearance to the Ring Nebula, whose size, age, and physical characteristics are similar to the Dumbbell Nebula, varying only in its relative proximity and the appearance from the equatorial viewing angle.

The Helix has often been referred to as the Eye of God on the Internet, since about 2003.

The Coal Sack Known pre-historically on the Southern Hemisphere. Observed 1499 by Vincente Yanez Pinzon.

The Coalsack is the most prominent and conspicuous dark nebula in the skies, well visible to the naked eye as a big dark patch in the Milky Way. This object is easily seen in the southern part of the Southern Cross and covers and obscures about 26 square degrees of the sky. It overlaps the borders of Crux so that parts of it are in the constellations Musca and Centaurus.

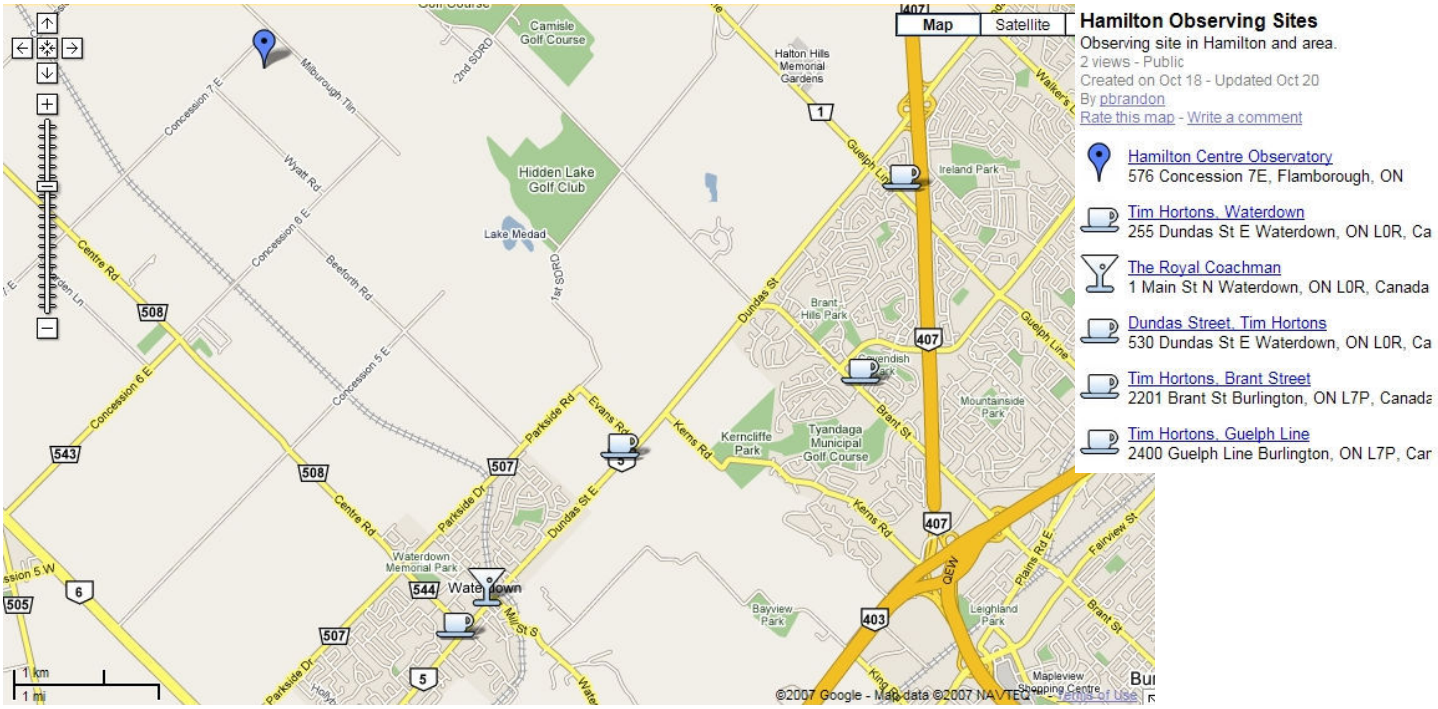
Paranal Observatory is an astronomical observatory located on Cerro Paranal at 2,635 metres. altitude (120 km south of Antofagasta, Chile) and operated by the European Southern Observatory. The Very Large Telescope (VLT) is the largest telescope on Paranal, actually composed of four separate 8.2 m telescopes. In addition the four main telescopes can combine their light to make a fifth instrument, the VLTI, Very Large Telescope Interferometer. Four auxiliary telescopes of 1.8m each are being added to the VLTI to make it available when the main telescopes are being used for other projects. The first two of these were installed in early 2004 and 2005.

What you missed last Month

We've had a string of good talks this year, and April did not disappoint. Dave McCarter came from London to talk about Telescopes. From their humblest origins, including going over the evidence of pre-Galilean astronomical telescope use, to some of the behemoths used today, Dave's talk was amply illustrated. In fact, rather than finishing just before 10pm, we went more than 20 minutes past!

In fact, Dave's talk was so good, I neglected to get a single picture of him!

What are you going to miss in the coming months? Nothing, I hope. We've got Ray Carlberg of the University of Toronto, on the 30m Telescope in May, and the McCallion Planetarium in June.



Website:	**http://www.hamiltonrasc.ca/**	Observatory Phone: (905) 689-0266
E-Mails:		576 Concession 7 East, Flamborough ON
General Inquiries:	hamiltonrasc@hamiltonrasc.ca	N43° 23’ 27” W79° 55’ 20”
President:	president@hamiltonrasc.ca	
Secretary:	secretary@hamiltonrasc.ca	Mailing Address:
Treasurer:	treasurer@hamiltonrasc.ca	Hamilton Centre, RASC
Orbit Editor:	orbit@hamiltonrasc.ca	Box 1223 Waterdown, Ontario
Web master:	webmaster@hamiltonrasc.ca	L0R 2H0

Calendar of Events

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.

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…

Send your best reply to the Hamilton RASCals list at Hamilton@lists.rasc.ca