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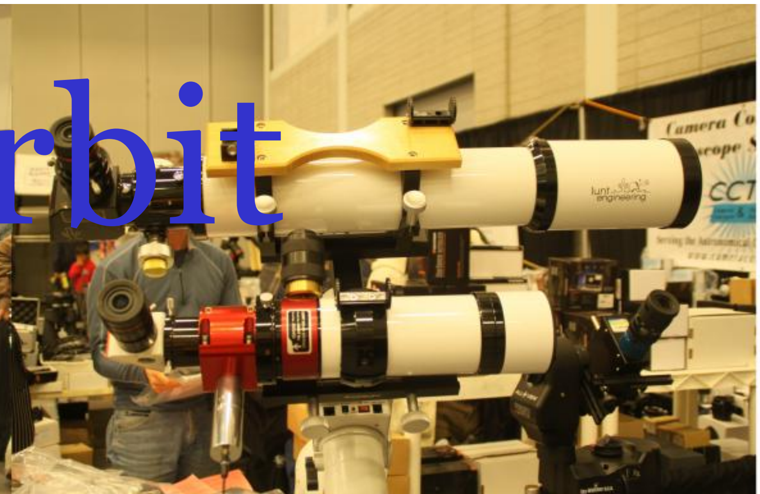

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Roger Hill, Editor

Wow! What a weekend AstroCATS was! I had a great time, from the couple of talks I attended (there were two I was NOT going to miss, and they didn't disappoint), the talk I gave, the people I met for the first time, and some of the "old guard" of the Centre, it was a very memorable time.

Highlights? You want highlights?

Okay. How about those incredible scopes that Hercules from Quebec brought along? This was a company I'd never heard of before, but they sure had jaws dropping all over the place with their gorgeous telescopes. I'd love to hear from anyone who's had a look through one. Of course, putting a 500mm f3.5 on a Mathis mount was bound to attract attention, which it certainly did. The OTA alone for the 500mm diameter scope is worth about $26,000, and I think if we were buying the Trillium scope now, rather than a decade ago, we might not be looking for a Ritchey-Chretien!

Another highlight for me was seeing the solar spectrum in all it's glory through the Shelyak Lhires Light spectroscope that Stephen Ramsden brought with him. In all the years that I've looked through all sorts of instruments at all sorts of objects on the sky, there are a handful of times that REALLY stand out. Things like total solar eclipses, Venus transits, first viewing Saturn, M51 through a 36" scope in Texas, even using just a standard eyeball in Chile. Well, the view of the solar spectrum was, for me, on that list. I'm not going to claim that it should be the same for everyone, but after a lifetime in amateur astronomy, I have a pretty good idea of what I'm going to see through an eyepiece, and the times when I'm caught completely off-guard are few and far between. Frankly, I was just blown away! It was in many ways, reminiscent of seeing Saturn for the first time...I just wanted to yell to everyone "HAVE YOU SEEN THIS?" Now, I'm not going to run out and plunk down $1,300 for one of these units, and I can't see any use for one other than for public outreach, and even then the vast majority of people who'd look through it would just say "cool" and wouldn't get it, but the solar spectrum, in all it's fine-lined glory, was still one of the coolest things I've ever seen in astronomy.

As for the talks, I've always wanted to hear Damian Peach. Having seen his incredible work over the years, and read some articles he's written, I was eager to hear him talk. I didn't see all of the question and answer session, though, since I had to duck out and give a talk of my own.

The other session I was able to attend was by Ed Jones, and perhaps you have to be a bit of a telescope fanatic to really get the most out of Ed's talk, but I was very intrigued. Ed is a member of a group of people who seem to be disappearing: he's a telescope designer/maker. He loves to play around with assorted mirrors and lenses, to see what he can come up with. In this respect, he designed, and built, an unobstructed reflector design. He called it a CHiefspeigler, a bit of a play on a Catadioptric Herschellian schiefspiegler, often just shortened to Chief. The big attraction to this design is it's APO-like performance with large apertures. For instance, he has a design for a 12.5" model with off-the-shelf optical components. There are very few of us that could ever consider owning an 8" Apo—I don't think you'd get much (if any) change from $20,000, so to consider owning a 12.5" instrument that offers the same performance is very tempting.

Another thing that I really enjoyed was chatting with people that were active in the Hamilton Centre in previous decades. It was great to see Peter Ashenhurst, Bob Speck and Barry Sherman, for instance. I had a slide show going on at the Hamilton Centre booth that went through dozens of photographs from the history of the Centre from 1908 until the present day. A fair number of them had to do with the building of the observatory, which Peter and Bob were very much involved in. It's a shame there wasn't a beer tent, because I would have loved to have spent a few hours quaffing an ale or two and shooting the … breeze.

I did have some money to spend this year, but nothing really struck me as something that I HAD TO HAVE, and so I dithered, bouncing from booth to booth. Eventually, I settled on a 0.75x focal reducer from the incredible Rock Mallin. He's bringing in some RC's from GSO in China that are optimized for his MallinCams. The focal reducer works with them, and also with the more traditionally designed Astronomics AT6RC that I have. I haven't had a chance to test it out yet, though. I may also see if I can use it with the Centre's 16" RC.

(Cont'd next page)

I have been playing around with the PST (Personal Solar Telescope) that I picked up last year. I found a Meade Barlow lens in my astronomy “junk bin” that I’d completely forgotten about. The lens unscrewed from the bottom of the extension tube, and when I dropped it in the eyepiece fitting of the PST, it allowed the focal plane to extend far enough that I could use my DSLR with it.

All I’ve done so far is some “proof of concept” sort of pictures, but the results look promising. Perhaps I’ll have something to show at the September Members night.

Another May event was the new meteor shower called the Camelopardalids, named because the radiant for this shower is in the constellation of Camelopardalis. There were high hopes earlier in the year that this shower might turn into a storm, but the closer we got to the event, the more the estimates were downgraded.

A few of us gathered at the observatory on the evening of May 23rd and with cameras aimed at the sky, awaited the shower.

Well, nothing much was seen. I tried using a Rokinon 8mm fish-eye I’d recently bought from a guy in Quebec, but I had trouble getting it focussed. I put it on top of the 16”, using a Losmandy to Vixen dovetail adapter I’d made, and aimed it roughly North. I had hoped to make a movie of the night, but it didn’t work as well as I’d hoped. I had some difficulty with the intervalometer, mostly because I was trying to program the thing when it was sat on top of the 16”, rather than in my hands and then put the camera on top of the ‘scope. By the way, who put the dew heater controller onto the Losmandy dovetail? Gluing the Velcro “loop” portion onto the dovetail makes it a lot more difficult to use the plate in the way it was designed for.

I did see a couple of sporadics, and Colin saw two Camlopardalids, but the highlight of the evening was actually a lovely pass of the ISS. It came out of the Earths Shadow (just as I’d given up for the night, as it was getting light) which was behind a cloud and it passed out of view well into the eastern trees. It was a very nice pass, and Colin managed to get a good picture of it using his 8-16mm zoom. All in all, it was a nice cool evening, no mosquitos and pleasant company. Bob Prociuk and I had the 16” out, and looked at all sorts of things like M51, M57, M13, and others. We had a look at Mars and Saturn, but they were low enough down, and the seeing was not the best. The big scope behaved itself, though, putting the objects that we wanted to view into the eyepiece. It was a pleasure to use.

The other thing that has happened with Centre was the last NOVA session last night. I’d taken Session 8 from last year and removed lots of content as it was fairly technical (I liked it, but it was hardly for “new Observers). Ed Mizzi had seen the material from the session I gave last year and sent me a long list of things that were wrong with it.. So, I chopped all sorts out of the presentation and then preceded it with the talk I gave at AstroCATS: How High is the Sky. Part 1 went quite well, but the section about the life-cycle of stars was not good (again). It looks like I didn’t much cut the talk, as butcher it. For the next sessions we do, next year, I’m going to completely re-do session 8. I’ve tried twice now, and failed miserably both times, at trying to get across some of the concepts of stellar evolution and the Hertzsprung-Russell diagram. I’ll have to get together with the excellent Ed and see what we can come with. Perhaps I can get in touch with some of the other Centres and see how they approach the same material. That is, after all, one of the many advantages of belonging to the RASC rather than a strictly local group.

Despite this, and the rather large amount of work it is to put on the NOVA course, I have really enjoyed doing it. Of course, the contributions of Mark Pickett and Ed Mizzi have been pivotal, and I really noticed their absence during the final session. One of the attendees mentioned this, too.

So that’s that! We have a banquet coming up on Saturday, June 21st that will be a good, time, too.

Enjoy your summer, and see you in September or at the Observatory.

Roger

A Star-Gazing Palace's Hazy Future—Dennis Overbye

James Lick, a piano manufacturer and land baron in 19th-century California, wanted to build himself a pyramid, but a friend persuaded him to leave his money to science. And so it came to be that Lick was buried under a telescope on Mount Hamilton, 30 miles south of San Francisco.

It was there that the University of California, fueled by his $700,000 bequest, founded Lick Observatory, the first of the great mountaintop outposts that would make California the center of 20th-century astronomy.

But this is the 21st century. Last year the university served notice that it planned to spin off Lick in order to concentrate its resources on bigger telescopes in Hawaii, including a $1.2 billion the Thirty-Meter Telescope that is to be built by an international collaboration by the end of the decade. It has launched Lick on a "glide path" to self-sufficiency by 2018.

There has been no peace in the California heavens since. The plan, part of a general retrenchment and budget flattening, has set off something like a civil war among California astronomers — "brother against brother," in the words of Alex Filippenko of the University of California, Berkeley. They fear the move could lead to the closing of the venerable observatory, a valuable research and educational tool for students and faculty, and undermine the university's longtime leadership in astronomy. "Other astronomers are quaking in their boots," Dr. Filippenko said.

Telescopes at Lick, they point out, played a major role in the discovery of dark energy, which resulted in a Nobel Prize in 2011, and the existence of planets around other stars. Lick astronomers also led the development of adaptive optics, a technique that allows earth-based telescopes to make pictures as sharp as the Hubble Space Telescope's by compensating for the atmospheric turbulence that makes stars twinkle. It's the place where university astronomers, including students, can go to get large blocks of telescope time for long-term projects.

"We get prizes. We're world famous," Sandra Faber, an astronomy professor at Cal's Santa Cruz campus, said — through clenched teeth, because she is interim director of the University of California Observatories. "The university wants to build big telescopes but doesn't have any clue about how to invest in the infrastructure that would make them a success."

In February, nine members of the California congressional delegation wrote to the university's president, the former Homeland Security Secretary Janet Napolitano, urging her to reconsider. A Save Lick Observatory campaign, led by Dr. Filippenko, is trying to raise money and plead the observatory's case.

In response, Ms. Napolitano wrote that the university did not plan to close Lick "at this time." A new budget adopted this spring included money for a part-time "development officer" on the Santa Cruz campus to raise outside money for the observatory. But it is not clear what will happen if not enough is raised.

"We sit across the table from these people and don't get an answer," Dr. Faber said.

In some ways, Lick's situation is emblematic of research institutions' struggle to balance promising futures with glorious pasts in an era of diminished expectations. Thirty years ago the Carnegie Institution gave up running another California observatory, Mount Wilson, in Pasadena, where the expansion of the universe had been discovered, to free money to build big new telescopes in Chile. (The private Mount Wilson Institute now operates the observatory.) And the National Science Foundation is pondering giving up its telescopes at Kitt Peak National Observatory in Arizona.

Lick's problems have been caused, in part, by the politics of a university with 10 campuses and three national laboratories.

The University of California Observatories, which include Lick and two laboratories at Santa Cruz and U.C.L.A., are part of the Office of the President, which is funded by an assessment levied on the individual campuses. Dr. Faber said that relations with the administration started to go sour with the appointment of Steven Beckwith as the university's vice president for research and graduate studies in 2008, and an ensuing issue of who would pay for observatory faculty and staff raises.

Dr. Beckwith, a former director of the Space Telescope Science Institute in Baltimore, declared that the president's office, which had covered them in the past, was no longer obligated to do so. The observatories were suddenly struggling financially. As of last fall, their debt had grown to $2.6 million. (Dr. Beckwith was not made available for an interview.)

"It's only gotten worse since then," Dr. Faber said.

Dr. Beckwith began a series of reviews of California's astronomy program, including a survey led by Geoffrey W. Marcy, of Berkeley, asking his fellow university astrophysicists about their priorities.

Of 255 faculty members contacted, 91 filled out the survey. They gave first priority to building the Thirty-Meter Telescope and second to operating the twin 10-meter Keck telescopes in Hawaii, which California built and operates with the California Institute of Technology. Their third priority was the laboratories that build instruments for those telescopes.

Lick came in fourth, ahead of things like new computing and radio astronomy facilities, according to the report, which noted, "The return per dollar spent on Lick Observatory is widely considered to be an extraordinarily good value." California's provost, Aimée Dorr, summarized the results this way, however: "The predominant advice of astronomers and outsiders was we should be looking at Lick as a place we could save money."

The university's overall budget is about $24 billion. But the squeeze is on; the state's contribution has fallen by almost $1 billion in the last 20 years. Moreover, the university is committed to raising $50 million as part of its share of the Thirty-Meter Telescope. Lick Observatory costs the president's office about $1.3 million a year.

"We're fighting over scraps here," Dr. Faber said. For several years the observatories had been held to a budget with no more spending, which has taken its toll. Under the new budget, Dr. Faber said, she would have to lay off a third of the observatories' staff, or eight people, this summer, wounding the labs' ability to produce instruments for the Thirty-Meter Telescope. "If you are getting the impression that our management is contradictory and ineffective, that would be correct," she said.

Dr. Marcy, who supports the plan to wean Lick Observatory from university funding, said it was sad but necessary. It was unrealistic, he added, to expect that astronomy would get a pass in hard times.

"We should be thankful," he said. "People doing stem cells and so forth, they're scrambling, too.

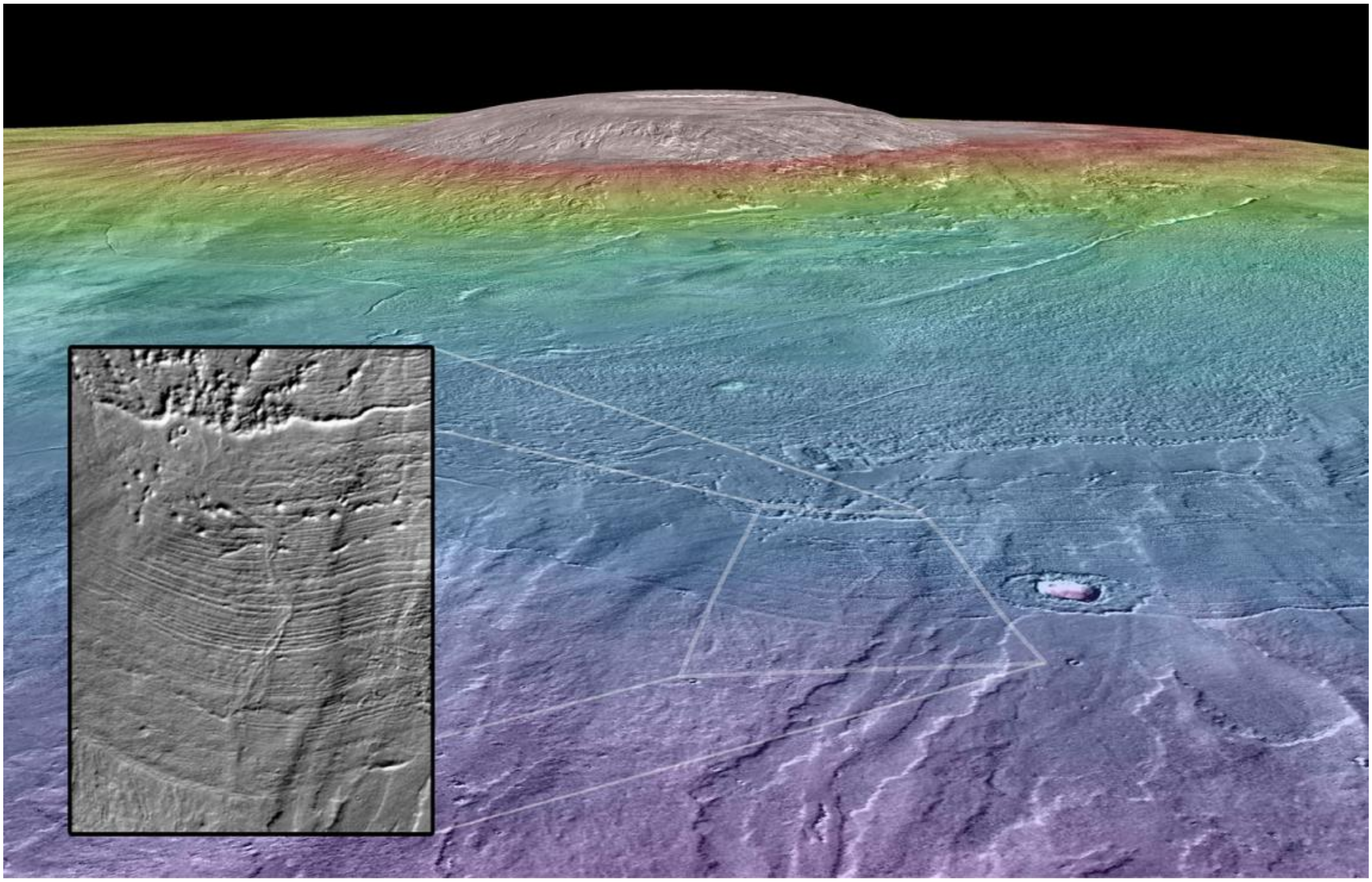
"If you want Lick Observatory, you've got to go out and pay for it," he continued, adding that he was already raising money and would go to the administration if private contributions came up short.

Dr. Filippenko said, however, that potential donors had been discouraged by the prospect of Lick losing university money. Dr. Dorr, saying she was trying to tone down the dialogue, called that remark unhelpful. "The posture that he's taken is that the sky is falling," she said. "He could present a more positive picture."

Nobody, she said, knows exactly what "self-sufficiency" means — selling telescope time, raising an endowment or holding annual fund-raising drives like those on public radio. "If we can't find the money," she said, "the honest answer is we don't know. There was never an intention to close Lick. It was never, 'Get other funds or it will be closed.' "

If astronomers want to keep Lick in the fold, she said, they can — by staying within the budget.

And she added, "We have found that the best faculty are very entrepreneurial."



Could a Mars Volcano Be an Oasis for Life?

PROVIDENCE, R.I. [Brown University] — The slopes of a giant Martian volcano, once covered in glacial ice, may have been home to one of the most recent habitable environments yet found on the Red Planet, according to new research led by Brown University geologists.

Nearly twice as tall as Mount Everest, Arsia Mons is the third tallest volcano on Mars and one of the largest mountains in the solar system. This new analysis of the landforms surrounding Arsia Mons shows that eruptions along the volcano's northwest flank happened at the same time that a glacier covered the region around 210 million years ago. The heat from those eruptions would have melted massive amounts of ice to form englacial lakes — bodies of water that form within glaciers like liquid bubbles in a half-frozen ice cube.

The ice-covered lakes of Arsia Mons would have held hundreds of cubic kilometers of meltwater, according to calculations by Kat Scanlon, a graduate student at Brown who led the work. And where there's water, there's the possibility of a habitable environment.

"This is interesting because it's a way to get a lot of liquid water very recently on Mars," Scanlon said.

While 210 million years ago might not sound terribly recent, the Arsia Mons site is much younger than the habitable environments turned up by Curiosity and other Mars rovers. Those sites are all likely older than 2.5 billion years. The fact that the Arsia Mons site is relatively young makes it an interesting target for possible future exploration.

Even in the frigid conditions of Mars, that much ice-covered water would have remained liquid for a substantial period of time. Scanlon's back-of-the-envelope calculation suggests the lakes could have persisted or hundreds or even a few thousand years.

That may have been long enough for the lakes to be colonized by microbial life forms, if in fact such creatures ever inhabited Mars.

"There's been a lot of work on Earth — though not as much as we would like — on the types of microbes that live in these englacial lakes," Scanlon said. "They've been studied mainly as an analog to [Jupiter's moon] Europa, where you've got an entire planet that's an ice covered lake."

In light of this research, it seems possible that those same kinds of environs existed on Mars at this site in the relatively recent past.

There's also possibility, Head points out, that some of that glacial ice may still be there. "Remnant craters and ridges strongly suggest that some of the glacial ice remains buried below rock and soil debris," he said. "That's interesting from a scientific point of view because it likely preserves in tiny bubbles a record of the atmosphere of Mars hundreds of millions of years ago. But an existing ice deposit might also be an exploitable water source for future human exploration."

"If signs of past life are ever found at those older sites, then Arsia Mons would be the next place I would want to go," Scanlon said.

A paper describing Scanlon's work is published in the journal Icarus.

Scientists have speculated since the 1970s that the northwest flank of Arsia Mons may once have been covered by glacial ice. That view got a big boost in 2003 when Brown geologist Jim Head and Boston University's David Marchant showed that terrain around Arsia Mons looks strikingly similar to landforms left by receding glaciers in the Dry Valleys of Antarctica. Parallel ridges toward the bottom of the mountain appear to be drop moraines — piles of rubble deposited at the edges of a receding glacier. An assemblage of small hills in the region also appears to be debris left behind by slowly flowing glacial ice.

The glacier idea got another boost with recently developed climate models for Mars that take into account changes in the planet's axis tilt. The models suggested that during periods of increased tilt, ice now found at the poles would have migrated toward the equator. That would make Mars's giant mid-latitude mountains — Ascraeus Mons, Pavonis Mons and Arsia Mons — prime locations for glaciation around 210 million years ago.

Working with Head, Marchant, and Lionel Wilson from the Lancaster Environmental Centre in the U.K., Scanlon looked for evidence that hot volcanic lava may have flowed in the region the same time that the glacier was present. She found plenty.

Using data from NASA's Mars Reconnaissance Orbiter, Scanlon found pillow lava formations, similar to those that form on Earth when lava erupts at the bottom of an ocean. She also found the kinds of ridges and mounds that form on Earth when a lava flow is constrained by glacial ice. The pressure of the ice sheet constrains the lava flow, and glacial meltwater chills the erupting lava into fragments of volcanic glass, forming mounds and ridges with steep sides and flat tops. The analysis also turned up evidence of a river formed in a jökulhlaup, a massive flood that occurs when water trapped in a glacier breaks free.

Based on the sizes of the formations, Scanlon could estimate how much lava would have interacted with the glacier. Using basic thermodynamics, she could then calculate how much meltwater that lava would produce. She found that two of the deposits would have created lakes containing around 40 cubic kilometers of water each. That's almost a third of the volume of Lake Tahoe in each lake. Another of the formations would have created around 20 cubic kilometers of water.

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The Hottest Planet in the Solar System

By Dr. Ethan Siegel

When you think about the four rocky planets in our Solar System—Mercury, Venus, Earth and Mars—you probably think about them in that exact order: sorted by their distance from the Sun. It wouldn't surprise you all that much to learn that the surface of Mercury reaches daytime temperatures of up to 800 °F (430 °C), while the surface of Mars never gets hotter than 70 °F (20 °C) during summer at the equator. On both of these worlds, however, temperatures plummet rapidly during the night; Mercury reaches lows of -280 °F (-173 °C) while Mars, despite having a day comparable to Earth's in length, will have a summer's night at the equator freeze to temperatures of -100 °F (-73 °C).

Those temperature extremes from day-to-night don't happen so severely here on Earth, thanks to our atmosphere that's some 140 times thicker than that of Mars. Our average surface temperature is 57 °F (14 °C), and day-to-night temperature swings are only tens of degrees. But if our world were completely airless, like Mercury, we'd have day-to-night temperature swings that were *hundreds* of degrees. Additionally, our average surface temperature would be significantly colder, at around 0 °F (-18 °C), as our atmosphere functions like a blanket: trapping a portion of the heat radiated by our planet and making the entire atmosphere more uniform in temperature.

But it's the *second* planet from the Sun -- Venus -- that puts the rest of the rocky planets' atmospheres to shame. With an atmosphere **93 times as thick as Earth's**, made up almost entirely of carbon dioxide, Venus is the ultimate planetary greenhouse, letting sunlight in but hanging onto that heat with incredible effectiveness. Despite being nearly twice as far away from the Sun as Mercury, and hence only receiving 29% the sunlight-per-unit-area, the surface of Venus is a toasty 864 °F (462 °C), with *no difference* between day-and-night temperatures! Even though Venus takes hundreds of Earth days to rotate, its winds circumnavigate the entire planet every four days (with speeds of 220 mph / 360 kph), making day-and-night temperature differences irrelevant.

Catch the hottest planet in our Solar System all spring-and-summer long in the pre-dawn skies, as it waxes towards its full phase, moving away from the Earth and towards the opposite side of the Sun, which it will finally slip behind in November. A little atmospheric greenhouse effect seems to be exactly what we need here on Earth, but as much as Venus? No thanks!

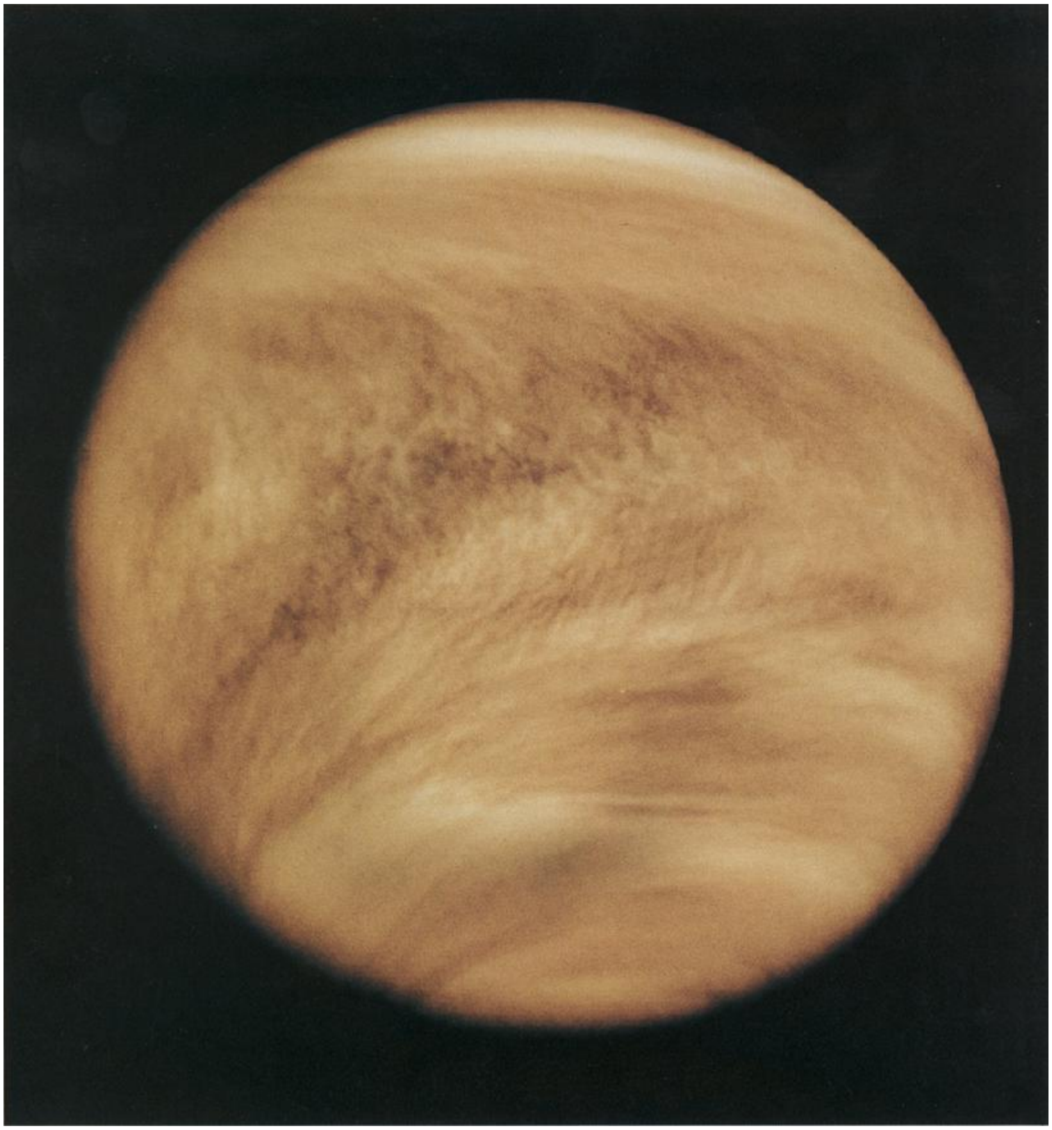


Image credit: NASA's Pioneer Venus Orbiter image of Venus's upper-atmosphere clouds as seen in the ultraviolet, 1979.

Seeing Way Up From PEARL—Eric Steinbring, National Research Council

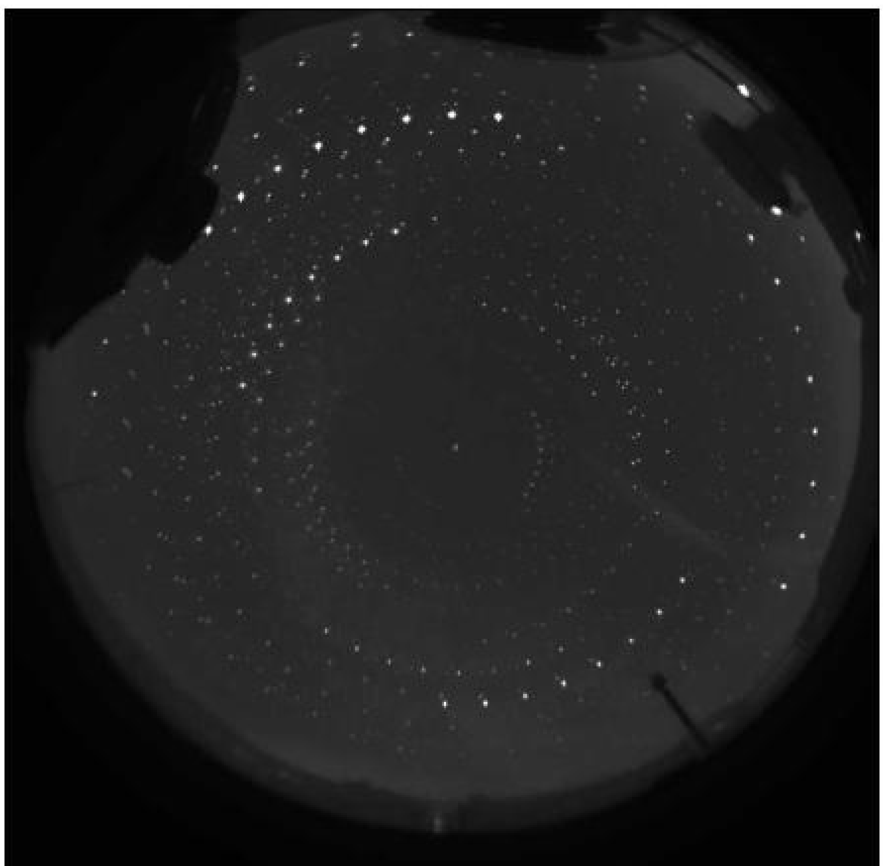
Everyone knows that winters in the polar regions are dark, with an extended nighttime that lasts for months. Not surprisingly then, astronomers are excited by the promise of these special times for uninterrupted observations, for example, while watching distant planets pass in front of their parent stars, or patiently waiting to see supernovae explosions in far off galaxies. However, this is only possible if the sky is clear, not just dark. Astronomers also have to consider how turbulent the atmosphere is to allow sharp images with a telescope, and, just as important, the accessibility of the site. This last factor has been a major reason why polar sites have only relatively recently been the focus of major development for astronomy.

It had long been realized that very little water vapour remained in the atmosphere at the poles in winter simply because it is so cold. This combination of conditions is particularly good for revealing the cosmos in the thermal infrared and at submillimetre wavelengths too, because there the water vapour signal can easily block everything else. It plays a lesser role in the optical – the familiar night sky we see with our eyes – but low water vapour also means no thick clouds.

A further attractive property of the High Arctic winter is that it usually experiences a low-level atmospheric inversion - a layer of warmer air above the colder ground layer. Under these conditions, contrary to normal experience, the temperature increases as you go higher in elevation. At Eureka we often see increases of 10ºC to 20ºC between the weather station at sea-level and the PEARL RidgeLab at 600m. This “traps” the cold air near the surface, keeping clouds below the RidgeLab and suppressing atmospheric turbulence. Turbulence causes fluctuations in the index of refraction of air, making blurry star images – what astronomers call bad “seeing” (and is what makes the stars “twinkle”). It is one of the reasons why professional astronomical telescopes are usually located on the tops of high mountains. So a High Arctic mountain might provide great site for astronomy at a lower elevation than needed elsewhere.

In 2006, a group of astronomers at Canadian universities and the National Research Council, began actively searching for a location for an Arctic astronomical observatory. Of great interest were the most northern mountains in the eastern Arctic archipelago, many of which have summits between 1000 and 2000m that project above the thermal inversion into the free atmosphere, The highest is Barbeau Peak (82ºN, 2616 m) on Ellesmere Island, almost as high as Cerro Pachon, Chile (2715 m). Pachon is the southern site of the forefront 8-m aperture Gemini telescopes, of which Canada is a partner. Its northern twin is on Mauna Kea, Hawaii (4213 m).

Based on remote sensing data, attention was narrowed to three remote mountain locations along the northwestern shore of Ellesmere Island, as well as PEARL. The obvious advantages of PEARL are its easy access and existing infrastructure. Also, there are already many atmospheric instruments in operation that helped characterize the good cloud-free conditions, although these are apparently are not quite as good as the higher, remote sites.



Time lapse image taken by the PEARL All-Sky Imager, showing how stars move through the sky near the North Pole. Image courtesy of W.E. Ward.

As a first step in investigating the seeing, two Sonic Detection and Ranging systems (SODAR) and a lunar scintillometer, the Arctic Turbulence Profiler (ATP), were installed in 2009 at the PEARL RidgeLab. These autonomous instruments are designed to measure turbulence profiles within the lowest levels of the atmosphere but they are not sensitive to turbulence at higher altitudes.

The only way to really understand the benefits of the higher latitude and altitude locations was to go there too. Access to these was via small planes and helicopters, and took place in the summers of 2007 through 2011. Compact fully robotic instrumentation called Ukpik (after the Inuktitut name for the snowy owl) was developed and deployed to measure sky-brightness and cloud cover as well as the practicality of operating compact – but very precise - optical astronomical instruments there, a feasibility study that concluded in 2012.

Meanwhile, PEARL provided the possibility of employing specialized telescopes called DIMMs (Differential Image Motion Monitors) for standardized measurements of seeing, which were deployed beginning in 2011 on the rooftop observing platform of the RidgeLab. Preliminary data from these indicate that the mountains of northwest coast of Ellesmere Island have astronomical seeing conditions are among the world class sites of Chile and Hawaii. Moreover, it has been established that building and operating equipment in the challenging environment of the Arctic is indeed possible. The Ellesmere Island sites, including PEARL, are also comparable to sites being developed on the Antarctic glacial plateau, but with the advantage of offering rock foundations, summer resupply by sea and year-round air access via commercial operators.

It will be essential to fully characterize the astronomical properties of several Ellesmere Island sites and their operational feasibility before undertaking any major astronomical development. While a great deal of preliminary work has been done very successfully at PEARL, the mountain sites require remote operations and partly for that reason are only partially characterized. PEARL is an invaluable resource for commissioning equipment and is itself suitable for a range of astronomical observations. More study is needed before any final decision can be made as to the best location for a Canadian High Arctic astronomical observatory site, but already it is known that a location near PEARL can offer many of the advantages afforded by some of the highest mountain sites elsewhere – with of course the benefit of its long, dark night.

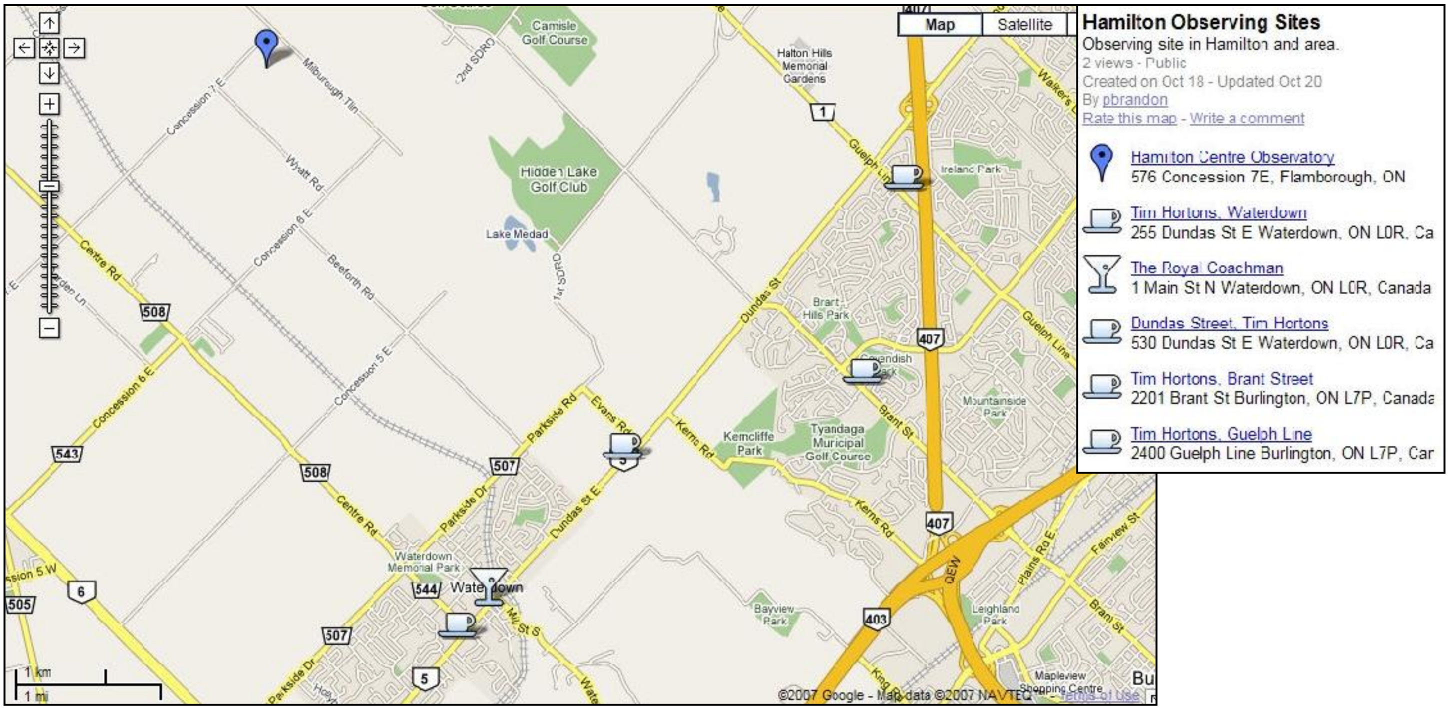
DIMM installed on roof of the PEARL RidgeLab.
Photo by P.F. Fogal.

What you missed last month—The May, 2014 meeting:

There were a couple of good things from this meeting. The first was Glenn Kukkola, who talked about The Night Sky for beginners. In some ways, the Hamilton Centre does not do a great job of catering to people who are new to the hobby (with exceptions like sidewalk astronomy and NOVA), and so it was refreshing to see the main talk given over to this important topic. Glenn doesn't disappoint, either. Perhaps it's his time behind a pulpit that makes him so engaging, but what he had to say was both informative and engaging.

The other was Dave Dev, who talked about a very cheap controller for your anti-dew strips.

Afterwards, there was the usual gastronomy at the Royal Coachman: great wings, excellent fish and chips, and if you like a good curry then the Curry and Chips is not to be missed!



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Mark Pickett, Outreach Director / National Council
Shawn Preston, IT Director
Dave Surette, Secretary
Andy Blanchard, Past President / AstroCATS Co-Chairman

Calendar for June, 2014

Mon	Tue	Wed	Thu	Fri	Sat	Sun
						01
02	03	04	05 • 8pm» Public Monthly Meeting	06	07	08
09	10	11 • 7:30pm» Star Gazing at the Observatory	12 • 8pm» RASC Board Meeting	13	14	15
16	17	18 • CANCELLED - Scouts Night at the Observatory	19	20	21 • 6pm» RASC Hamilton Centre Annual Banquet	22
23	24	25	26 • 8pm» Henry's Astrophotography Night	27	28	29
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