March 2009

Regulus

RASC Kingston Centre

The SLOOH Mission Interface

SLOOH.com offers great opportunities for virtual observing—from both hemispheres. Read all about it starting on page 8.

The Galileo Project: Music of the Spheres

Special Concert, 8p.m. on Thursday, March 5th at Grant Hall, Queen's University

From the Tafelmusik website: "*The Galileo Project: Music of the Spheres* is **Tafelmusik**'s contribution to the International Year of Astronomy, marking 2009 as the 400th anniversary of Galileo's development and use of the astronomical telescope. We have created an event which uses music, words and images to explore the artistic, cultural and scientific world in which 17th- and 18th-century astronomers lived and did their work. We have chosen these [pieces of music] because they speak profoundly and eloquently of what lies at the heart of the **International Year of Astronomy**—a celebration of the wonders of the cosmos and the achievements of the human spirit."★

Web Link: http://www.tafelmusik.org/concerts/galileo.htm

In this issue:

Upcoming Meetings

Thursday, March 5, 2008

Concert at Grant Hall (info below left).

Friday, March 13, 2008

7:30-9:30 p.m.

The One Metre Initiative: A New Major Observatory in Canada

Speaker: Frank Roy, Elektra Observatories.

Friday, April 10, 2009

7:30-9:30 p.m.

The Search for Dark Matter: A New Role for Sudbury Neutrino Observatory

Speaker: Dr. Wolfgang Rau, Queen's University

Meetings are held at Stirling Hall Theatre "A" on Bader Lane at Queen's University in Kingston, Ontario. Our meetings are co-sponsored by the Queen's Physics Department and include astronomy lectures open to the public.★

KAON Public Observing

Saturday, March 14

7:30-9:30 p.m.

- **IYA 100 Hours of Astronomy**
- **Saturn**

Speaker: Terry Bridges

Saturday, April 11

7:30-9:30 p.m.

Observing the Moon

Speaker: Fred Barrett

KAON (Kingston Astronomy Outreach Network) sessions are held at Queen's Observatory on the 4th floor of Ellis Hall.★

Other Events

March 16-28	**Globe at Night**
March 28	**Earth Hour**
April 4 or 5	**Solar Observing**
April 4	**Public Observing**

See kingston.rasc.ca for more information on these events.

A Daily Podcast for '09!

What is the 365 Days of Astronomy podcast?

The 365 Days of Astronomy Podcast is a project that will publish one podcast per day, 5 to 10 minutes in duration, for all 365 days of 2009. The podcast will be made available through an RSS feed. The podcast episodes will be written, recorded and produced by people around the world. Each day will have a specific topic or theme based on a daily calendar of astronomical events, themes and ideas created by the IYA.

Although all the episodes will have a common intro and outtro that ties into the overall theme, each episode will be completely different.

[*Remember that you do not need an iPod to listen to a podcast! All you need is your computer and an internet connection.*
The AAVSO will be producing one of the podcasts each month.—Ed.]

RASC-KC Board of Directors

President:	Kevin Kell
Vice President:	Susan Gagnon
Secretary:	Steve Hart
Treasurer:	Kim Hay
Librarian:	David Maguire
Editor:	Walter MacDonald
National Council Rep:	*vacant*

2008-09 Committee Chairs/Coordinators

Astronomy Day:	Kim Hay
Amateur Telescope Makers:	*vacant*
Awards:	Kevin Kell
Banquet:	*vacant*
Education:	*vacant*
Equipment Loan:	Kevin Kell
Fall 'N' Stars:	*vacant*
KAON:	Susan Gagnon
OAFTN Instructors:	*vacant*
Observing:	*vacant*
Publicity:	*vacant*
Relay for Life:	*vacant*
Responsible Lighting:	Kim Hay
Webmaster:	Walter MacDonald

Regulus Needs You!

Items of interest from members—full articles, or even just a couple of paragraphs are always welcome. Deadlines for each issue are the last day of the month. Send items to:

walter2 (at) starlightccd (dot) com

or:

Walter MacDonald
PO Box 142
Winchester ON K0C 2K0

The Fine Print:
Members of the Kingston Centre receive *Regulus* as a benefit of membership. Non-commercial **advertisements** are free to members of the Centre. Paid commercial advertising is also welcome and should be in electronic format.

Submitted material may be edited for brevity or clarity. © 2008, all rights reserved. Permission is granted to other publications of a similar nature to print material from *Regulus* provided that credit is given to the author and to *Regulus*. We would appreciate you letting us know if you do use material published in *Regulus*.★

RASC Kingston Centre
PO Box 1793
Kingston ON K7L 5J6

E-mail:
kingston@rasc.ca

Infoline:
613-377-6029

Website:
kingston.rasc.ca

Some Wisdom from Lamplighter

Father Lucien Kemble

This is an e-mail posting made by Father Lucien Kemble in the 1990s on the RASCals e-mail list. Just this year some members were reminiscing about him (now 10 years after his death) and about this post in particular, so by popular demand, here it is in print for all to enjoy.

Hi, all you good people:

I hope at least some of you are getting in some good observing sessions. In Flatland it is quite mild, hovering slightly below zero, with no snow for some time. But lots of fog and, rather unusual for here, a lot of freezing mist and hoar frost from the dampness. No ice storm, thank God.

But some unusual, very subtle effects that I haven't noticed in years. Yesterday evening I had to drive to say Mass at a small town, Southy, NE of here [ironically north of Regina]—about 45 minutes' drive. The Sun was not visible, the sky a milky white-out, with visibility in the damp fog about 1 km or less. Now those of you who have never driven prairie roads and highways may not know that one can go sometimes for dozens of kilometres in a straight line with only the black pavement ahead in a sea of ditch and field of pure white, with the occasional farm and clumps of bushes.

In such a situation, as last evening, by careful observation I was able to see at the end of the tapering, vanishing point road ahead a very subtle darkening of the foggy sky just above the road. This darkening was, like the strip of road, a very diffuse fan of only slightly darker fog. Yesterday it was readily visible on direct vision. Most of the time it takes a lot of indirect vision, moving the eye, etc. It was a kind of inverted, very suffuse, mirror image of the tapering road. Pondering on this years ago I came to realize that the ditch and fields were reflecting their snow-covered whiteness up into the fog. The highway, free of snow and quite black, was not reflecting and so made the fog dark. A very nice effect.

Now what has this got to do with amateur astronomy observing? A lot. For one thing my experiences with the phenomenon have made me appreciate, especially yesterday, the subtle, the beautiful, the unexpected. [The experience will remain long after I will have forgotten the congregation, the good singing, my sermon, etc.] And this has found marvelous application at the telescope in helping detect faint wisps and clouds, and nebulosity, e.g. that surrounding the difficult Horsehead, etc.

"...are we beginning to lose the small, the unobtrusive, the simple things?"

I wonder at this point just how much our magazines and their wham-bang presentation in startling color contrasts are responsible for us losing sight of the common, often unnoticed things. If one is totally captivated by the WOW, explosions, blasts, etc., as depicted on the covers and pages of *S&T*, *Astronomy*, *Discover* and others, and the constant assault to the senses on TV, one will find the rest rather banal and boring. It would seem that the big sin today is in being "BORED." I once read a review of a new book on astronomy in which the reviewer remarked that the illustrations were black and white photographs of the same "old, tired, boring" galaxies. Indeed! I pity the reviewer. Have any of you been bored with the real sky, whose objects are, effectively only in black and white? I'll tell you one thing—I'm beginning to find the SPLASH stuff a crashing bore.

I make a plug for the subtle, the wonder in little things: the almost imperceptible glow of a small 14th mag galaxy; the tendrils and clouds of dark and light in so many of the Messiers: the shades of gray in fog; the 'non-reflectivity' of highway fog; shades of gray on the lunar surface; bands on Jupiter, etc.; the subtleties of a Bach fugue; and on and on. Granted, computer-enhanced, false-color pictures of astronomical objects are necessary, and more power and encouragement to their practitioners. But are we beginning to lose the small, the unobtrusive, the simple things? A kid at my telescope [one of the TV bored generation] once remarked on seeing the tiny image of Saturn, "Is that all?"

I am reminded here of the Old Testament prophet who sought God in the huge, the majestic, the mighty —of storm and wind and fire and tempest [in other words, the spectacular]. And you know where he finally felt the presence of God? In the wafting across his cheek of a gentle breeze as he stepped out of his cave. Or something to that effect—I never was good at remembering book, chapter, and verse.

Me? Well I grew up a simple, curious kid on a simple farm with simple delights and have never lost the capacity to SEE along the whole gamut [or spectrum] of beauty.

Clear skies, y'all, or even foggy, boring ones as long as they are new experiences in the wonderful. ★

—Lamplighter

Blast from the Past: A Visit to Chamberlin Observatory

Katharine E. Vale

From the *Transactions of the Astronomical and Physical Society of Toronto* for 1894:

Miss **Katharine E. Vale**, an associate member, who had recently removed to Davenport, Iowa, had been requested to favour the Society with any items of interest pertaining to the advancement of science in her locality. Miss Vale had forwarded the following account of a visit to

THE CHAMBERLIN OBSERVATORY,

which was received and read :—

Picture courtesy Darrell Dodge, Denver Astronomical Society, http://www.denverastrosociety.org

Chamberlin Observatory, part of the University of Denver, as it appears in recent years. This dome houses a 20-inch refractor. Note the transit room at right.

The Chamberlin Observatory has just been erected, by the munificence of one of the citizens of Denver, the Hon. **H. B. Chamberlin**, and has cost, altogether, nearly $60,000. It is a beautiful building, replete with all the wonderful and delicate mechanism that modern science requires, or can suggest, situated in the University Park, on a piece of ground fourteen acres in extent, on which no trees are to be planted that might obstruct the view. Four blocks away is the University College Campus, and Iliff School of Theology. Although Denver is built in the midst of a plain, formerly a vast prairie, seventeen miles from the foot-hills of the Rocky Mountains, still it is 5,196 feet above sea level (the altitude of many of the Alps in Switzerland); consequently the air is exceedingly pure and clear, and observation remarkably good. University Park is on a higher level than Denver; the ground rises gently into a rounded hill, upon the highest point of which the Observatory is built; it is more than four miles from town, and a longer distance from the large smelting works, so that the smoke of the city interferes very little with observation. The main building is sixty-five feet long, fifty feet deep, lighted throughout by electricity and heated with steam, built of red sandstone from the Archalow quarries, and very ornate in appearance; it is crowned by an iron dome, the apex of which is more than fifty feet from the ground. The principal room is, of course, the spacious Dome room; the wiligs contain the Transit room, Library, Computing room, Director's office, Clock room, etc.; in addition are the Janitor's quarters, Photographic room, Store room, etc. Besides the large Observatory, close by is a smaller building, called the "Students' Observatory," in which is a very good six-inch equatorial refractor, made in Dublin, and a two-inch transit instrument; these are wholly for the use of the University students in mathematical astronomy, who will be allowed to use the large telescope when they have fully learnt the use of the smaller one. The *outside* appearance of the great telescope, with all its array of shining wheels and circles, is chaste and beautiful; the large steel tube, over twenty-five feet long, is painted or enameled pure white, while the fittings shine like burnished gold; the twenty-inch object glass, finished by **Alvan Clark**, is a very fine lens, and most accurate in its work. We looked at object after object, each one more beautiful than the last,—ε Lyrae was perfectly separated, and the Ring Nebula beautifully defined. The great cluster in Hercules was so distinct, it seemed as if I could count the stars, and so plainly defined, shewing beautifully the star-fish arrangement of the principal stars. The object glass is arranged for celestial photography by reversing the outside lens. **Mr. Saegmuller**, of Washington, D.C., is the maker of the mounting, which is of the highest order of mechanical excellence. It is astonishing how easily the great bulky thing is moved about,

Continues on page 5...

Blast from the Past

...continued from page 4.

—rapidly, noiselessly,—and objects so quickly and easily found. All this heavy machinery is poised most accurately and solidly upon a 320-ton pedestal of the toughest Colorado sandstone, and anchored to it by steel bolts nine feet long, three inches in diameter, while the pedestal itself rests upon the bed rock.

I cannot speak too highly of the kindness and courtesy of the Director, **Dr. Howe**, and his assistants, in showing me everything that laid within their power the evening I went there. It is by far the finest telescope in the West, excepting, of course, the great Lick telescope, and I shall always look back with delight at the exquisite pleasure I felt on observing the beauty of the Heavens in one of the most beautiful of modern telescopes.

The Observatory is easily reached by electric car from Denver, and Dr. Howe kindly gives up two evenings a week to visitors, for he desires to make the telescope a factor in the educational life of the people of Denver, not only by original research done with it, but also by the direct instruction, and astronomical enlightenment, which will come to those who choose to avail themselves of the opportunity of using the instrument. Dr. Howe is most accurate in his methods, and patiently describes everything to the smallest detail, so that "he who runs may read," and the most ignorant cannot fail to learn much of that most beautiful and noble of sciences, Modern Astronomy.★

Chamberlin Observatory's Big 'Scope

The 20-inch f/15 Alvan Clark-George Saegmuller refractor's optical tube is 28 feet long and its eyepiece end can be over 12 feet above the floor!★

Meeting Report: 2009 February 13

Kevin Kell

On February's Friday the 13th, the Kingston Centre met in Stirling Hall Theatre A at Queen's University. Twenty people turned out to hear **Dr. Gregg Wade** from the Royal Military College speak on "Large Programs at the Canada-France-Hawaii Telescope." There are four of these long-term, multi-hour projects, including one of his own.

A new International Dark Skies display was up "How Light Affects the Night" along with three new IDA brochures. Additional handouts on **Comet Lulin** were available.

Upcoming events were announced, including: KAON (Saturday, February 14th), Astronomy Day (Saturday, May 2), and the Globe at Night project (2009 March 16-28). There were a few observing reports on Comet Lulin and solar events. One new youth member signed up.★

KAON Report: 2009 February 14

Kevin Kell

It was a happy Valentine's Day KAON public observing session on Saturday, February 14th with our own **Susan Gagnon** as the guest speaker with a 20 minute talk on "How Has Galileo's Scope Evolved?" We had 65 guests attending and all got a piece of Galileo's 445th birthday cake. **Steve Hart, Susan Gagnon, Kim Hay** and myself were there along with a couple of Centre Members who dropped in. **James** and **Carla** were there too.

Bernie's new cable routing helped keep the data projector cables out of the way and out of trouble. The west facing room arrangement does seem to be working better as well.

Sky conditions were mostly overcast, permitting only a few looks at Venus and The Great Nebula in Orion (M42) through the centre's 20cm Fitzgerald dobsonian (now with new labels on the scope that are NOT printed in Black and Red!) and the Queen's Questar scope. The QUOD (observing deck) was clear of snow and ice and it was not too cold—maybe -5C or so. The 40cm McGirr scope was also looking at Venus and something in Orion.

As part of IYA we handed out: Astrocards (Nebula), Star Finders, Comet Lulin Handouts, What's Up and Starchart handouts, and more!

A new International Dark Skies display was set up, with three new brochures from IDA along with the new Centre Display from last month.

The Light Pollution study poster from 2005 was removed from display in the 4th floor hallway outside the warm room and will be stored until needed next.★

Web Links

Wikipedia provides a nice overview of this observatory's history: http://en.wikipedia.org/wiki/Chamberlin_Observatory

Wikimapia provides an aerial view of the observatory using Google Earth imagery in your browser: http://wikimapia.org/2858718/Chamberlin-Observatory, or http://wikimapia.org/#lat=39.676042&lon=-104.952945&z=17&v=2 (full screen view)

The **Denver Astronomical Society** has a page on the observatory with informative links: http://www.denverastrosociety.org/chamberlin.html

More Observing Reports from Latitude 26 Degrees

Leo Enright

Following Comet Lulin And 50 'Galileo Moments'

Since my report in the last issue of *Regulus* regarding my winter observing program at latitude 26°, I have continued to have generally very good weather for numerous observations, both in the evening and in the early morning. My observing log shows 16½ pages completed since January 12th, the date at the end of my last reported observing period. From then until the conclusion of my observing session early this morning, February 17th, there have been 36 days over which I have had the following numbers of observing sessions:

Evening/Night: 30,
Early Morning: 24,
Solar Observing Sessions: 1

Being able to have Florida weather good enough for 30 observing sessions out of 36 available dates (83%) is certainly far beyond what I was traditionally able to count on in Ontario in late January and early February.

I wish to review a few of the highlights of the past 36 days. First would have to be my eight morning observations of **Comet Lulin** (C/2007 N3) high in the eastern sky in the hour before the beginning of morning astronomical twilight. Right from the beginning it was very easy to find with the superb optics of the Canon 18x50 IS binoculars (as mentioned in my previous article), and it has been easy to follow as it has brightened somewhat and marched through the constellations Libra and Virgo. On the morning of February 4th, the first of my eight observations, was when the comet was about half-way between the star **Nu Librae** and the star Zubenelgenubi (Alpha Librae), and it appeared "round and fuzzy" at magnitude 7.0, with almost no elongation or hint of a tail in the binoculars. Over the next 5 consecutive mornings, I continued to observe it as it marched westward. On February 6th, it was only ⅓ degree from **Zubenelgenubi**, and by February 8th, it was 2° northwest of the star **5 Librae**. On February 9th, which was my 6th consecutive morning observation, I estimated it at magnitude 6.8, a modest, but definite increase in brightness. My 7th observation was on the morning of February 11th when it appeared only ¼ degree from the star **Lambda Virginis**. Advancing moonlight from a fullish Moon and several mornings with unusual weather in the form of dense

Comet Lulin on 2009 Feb 23 at 00:19:51 UT. This SLOOH.com image was taken with the Teide2 Wide Field system (90mm f/5.6 apo refractor). Sky rating was 4.0/5.

fog intervened, and as a result, my 8th observation of Lulin did not occur until this morning when it was about 2º southeast of the star **Theta Virginis**, and my estimate of its brightness was at magnitude 6.2. It is approaching, if not at, the point when it becomes visible to the unaided eye under a dark and moonless sky. [I miss the challenge of seeing it naked-eye from a rural Ontario observing site; even with a bit of further brightening, such may not be possible from here—with the amount of ambient light in the area.] This has proven to be a very unusual comet indeed! Of all the comets I have seen, its path is one of the strangest—with an orbit almost exactly parallel to, and extremely close to, the ecliptic, yet moving in the opposite direction to all the planets. Like many others, I await the spectacle of its passage by the planet **Saturn** and the star **Regulus**, the lucida of the constellation Leo—two events that will likely have already occurred by the time you read these words. The **Moon-Pleiades** conjunction on February 3rd–4th was of special interest, since it reminded me that I should have arranged with fellow observers from Ontario for simultaneous "lunar parallax drawings." If only those Ontarians had had as good weather as I had, we might have 'pulled it off in style.' My weather was fabulous and the binocular view was surreal. For me in Florida, the stars **Celaeno** and **Maia** were a "miss" by about ⅛ to ¼ degree, whereas the *SkyNews* diagram (see the Jan/Feb issue, page 25.) clearly shows observers in Toronto would have observed these stars being occulted. However, that evening between 3:00 and 3:30 UT, I enjoyed a beautiful view of the 8-day old **Moon** flirting with the **Seven Sisters**.

My next highlight was an observation made this morning over an hour after my observation of **Comet Lulin**. Sunrise here was to be at 7:01 a.m. EST, and by beginning to observe just above the eastern horizon at 6:30 a.m., I hoped to be able to see the very close conjunction of **Jupiter and Mars**. I observed from then until 6:40 a.m. in the growing twilight, and again, thanks to the superb optics of the binoculars, I saw it easily. Jupiter was seen as a disk and about 6½ degrees above the horizon, with Mars just to its right and down slightly. (The *Astronom-*

Continues on page 10...

New Home Found for RASC HQ

Based on notes from Dave Lane & Craig Levine

The Executive and Property Committees have found a new location for the national office of the RASC. On Friday, February 13, a three-year lease was signed and sealed by both parties. Possession is March 1. The new office space is 703 square feet, and the rent of $1300/month includes utilities.

The search strategy was to look in areas to the west of the current HQ location since rents are generally lower yet with good public transit connections. Federal law requires a bylaw change to move a corporation's head office to a different city, so moving HQ out of the City of Toronto was not an option at the present time.

The new office is in "Islington Village," a small, modern 3-floor office building (with elevators). This building is mainly ground-level retail, with offices on the other floors. It is close to the subway, to bus routes, and to Pearson Airport. There is also ample parking. The landlord will be doing some minor alterations before we move in, as well as new carpet and paint.

The new home for RASC HQ is unit 203 in this building at 4920 Dundas Street West, Etobicoke.

At the current time, it appears that interest income on the proceeds from the sale of the Dupont Street property will be sufficient to cover the rent.★

Upcoming Events for IYA 2009

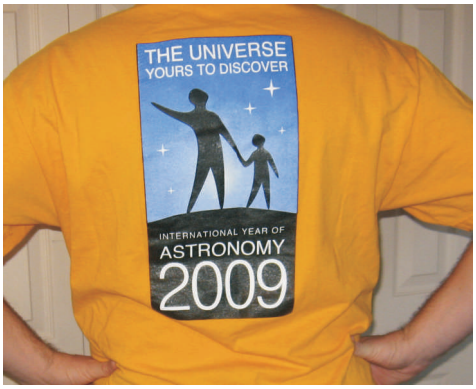
Kim Hay

Upcoming IYA events for the Kingston area, which include a partnership with the Queen's University Physics Department and the Royal Military College, will be the March KAON session, featuring **Terry Bridges** who will be speaking on the 100 Hours of Astronomy.

Kingston has signed on board with events lined up over the April 2-5 2009 time frame with daytime solar observing at Confederation Park and Flora MacDonald Basin (www.cityofkingston.ca), across from the City Hall on Saturday, April 4, 2009 from 1:00-4:00 pm. Later that night we will be at the observatory, Ellis Hall, Queen's University from 9:00-10:30 pm (new summer hours) doing observing on the deck, tours of the McGirr telescope and answering astronomy questions.

For more information about the 100 Hours of Astronomy Project, visit www.100hoursofastronomy.org.

IYA T-Shirt: front (above) & back (right).



We will also be holding our KAON session the next weekend Saturday April 9th at the Queen's Observatory, summer times 9:00-10:30 pm.

If you wish to come out and help at one of the events, please contact us by e-mail: Kingston (at) rasc (dot) ca Volunteers now can wear a volunteer IYA T-shirt purchased by the centre for helping out at events. These are a bright yellow, so we are noticed. They are also available for purchase by special order from **Stephane Courteau** at a cost of $20.00 each. Send your order request into the address above, preferred colour and size.

For info on local events, visit: www.kingstoniya.ca★

IYA T-Shirts Available!

Susan Gagnon

Did you order a fabulously attractive IYA T-shirt from Stephan Courteau at the January meeting? I have 4 shirts that were not picked up at the February meeting. I will bring them to the March meeting. The price is $20 and if you need to contact me to pick them up at some other time, e-mail me on the regular Kingston chat list or at sdgagnon (at) kos (dot) net. I can relay your payment to Stephan as well.★

Virtual Observing: Then and Now

Walter MacDonald

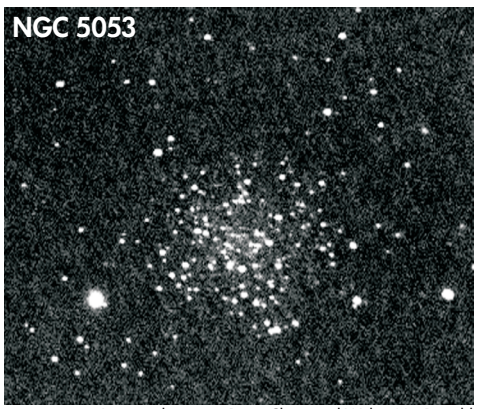
Part 1: 1994
How the Pioneers Did It...

At approximately midnight on Tues/Wed March 8/9, 1994, I embarked on an absolutely electrifying 5-hour observing session. Location: inside Doug Clapp's kitchen at his house in Scarborough. Your confusion at this point is understandable. Let me explain...

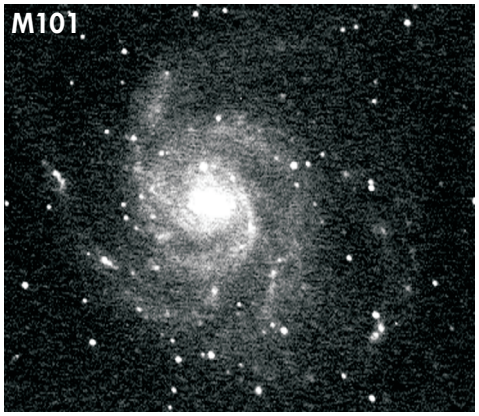
On Doug's kitchen table sat his 486 computer. Stretching across the kitchen floor were two 150' telephone cables. These continued through the back door and out into his back yard to their adjacent termini: one at an SBIG ST6 CCD camera, one at a 10" f/6.3 LX200 telescope. With the 'scope polar aligned and CCD camera just mounted, we headed inside to warmer climes.

Now oblivious of even the existence of the 'scope and camera, we seated ourselves in front of the computer. A pair of programs from Software Bisque for controlling the 'scope and camera were running under Windows. An ST6 program from SBIG was running in a DOS session under Windows. This program is used first, as we set the ST6 cooler to keep the CCD at -50C. We flip to the SkyPro planetarium program. It shows a 100° area around Leo. A circular yellow marker surrounds Denebola—this is where the 'scope is pointing. Using the mouse, we click on Arcturus. A box pops up and we click on the button labelled "Slew to." The yellow marker moves rapidly to the new location. We flip to SkyPro CCD and take a picture. Moments later, our 57k baud connection with the CCD starts pouring data onto the screen: a picture of Arcturus appears. Our stellar quarry is not quite centered, so we pop up a virtual hand paddle on the screen. Pushing the "West" and "North" buttons a couple of times and taking a couple more pictures, we get Arcturus centered. Pressing a button, the 'scope is now perfectly synchronized with the sky. Objects we dial in subsequently will be almost dead center. Of course, what we had at this point was a centered doughnut. So, popping up the focus control window, we quickly achieve pinpoint focus—by the numbers. No guesswork here!

Are we having fun yet? You bet! And now the really mind-blowing fun begins! But wait—the kettle is boiling, so Doug has to fix a cup of tea. OK, now we're set... We point at M53 on the star map and slew the 'scope to it. Of course, all we see is the circular yellow marker moving on the screen; all we hear is the hum of the hard drives. But somewhere outside, immersed in a cold winter's night, an LX200 was spinning 'round, its noisy motors wailing away. We take a 20-second image. The software automatically takes both a dark and a light frame and adds them together for us before showing the final result in phosphorescent glory. Wow! A beautiful globular cluster sits before us—but perhaps a shorter exposure would be better! We take a variety of exposures before moving on.



Images, this page: Doug Clapp and Walter MacDonald



Next we visit nearby NGC 5053, the large, faint "companion" to M53. Its faintness causes us to flip over to the ST6 program for a Track and Accumulate (or "Track & Acc" for short). The camera sends us an image. We pick a guide star. Then, following our instructions, it takes eight 15-second exposures and adds them together, perfectly aligned. Very nice! Now on to the Black Eye Galaxy, M64. We easily image its famous obscuring feature. Then NGC 4725, a 10th magnitude galaxy in Coma, shows off its nice structure for our camera.

It's hard to believe only a couple of hours has passed. Already, we have many images stored away on disk! But Doug will have to get up early later this morning, so he lies down on the living room couch nearby to get some sleep, and leaves me alone with the computer. I have to get up early later too, but this was much too exciting an experience to possibly get any sleep tonight!

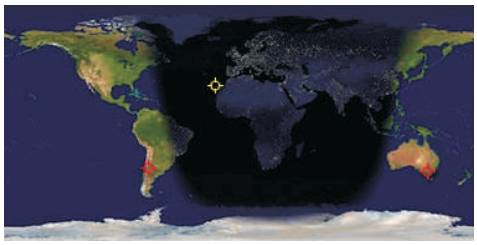
I happily image away for the next 2½ hours: NGC4565 (with dust lane, of course); a concentrated group of galaxies in Coma (easily a dozen show up thanks to a 5-minute Track & Acc); M13, M92, and NGC 6229 (the globulars of Hercules); a couple of fields near the variable W Herculis; M56 (the globular in Lyra);

M57 (the central star was obvious in 20 seconds!).

Finally, Doug got up to see what I was doing. I showed him an image of M27 I had just taken. It was barely visible on the image due to a bright background. Doug looked out the back door and called me over. Outside, only two stars were visible in a sky covered entirely by cloud! The things you miss with indoor observing! Oh well.

We wrapped up the session at 5 a.m. with an image of the Double Double in Lyra (through cloud) and perused our collection of images from the past few hours. We did a little image processing on a couple of them, including the application of some "maximum entropy" using the *Hidden Image* program [a forerunner of the current-day MaxIm DL software—Ed.]. Finally, I went home to catch a couple hours sleep.

Is this real observing? Staying indoors (in this case, with literally all the comforts of home) and observing in this way is a very different experience. You are completely cut off from the sky. Direct observation is replaced by sensor, encoder, and CCD outputs. Would *virtual observing* be an appropriate term? Whatever it's called, this type of observing is here now in a big way, and will only grow in popularity as the cost of doing it continues to drop.



The SLOOH website provides this handy realtime day/night view of the Earth with markers showing the location of the observatories.

It is incredibly fun, and there is something to be said for being inside—away from the numbing cold of winter or the mosquito swarms of summer. Perhaps "real" observing is best reserved for those 2 or 3 nights a year when the outdoor nighttime conditions here in southern Ontario allow for comfortable observing. Hmmmmm...

Part 2: 2009
Putting the "ooh" in Slooh!

At approximately 5 p.m., in the midst of the cloudy gloom of a late afternoon in February 2009, I embarked on an absolutely electrifying 8-hour observing session. Location: the living room of my house in Winchester. Your confusion at this point is understandable. Let me explain...

On my lap sat my dual-core laptop. Stretching across the house was a stream of radio waves. After reaching the wireless router, these signals continued on through the telephone wires, exiting the house and heading out onto the Internet to their terminus: the SLOOH.com server. Without even leaving my chair, I log in to the SLOOH website and check the weather conditions at the SLOOH observatory at Mount Teide in the Canary Islands: the sky is clear!

Are we having fun yet? You bet! And now the really mind-blowing fun begins! But wait—my cup of water in the microwave is boiling, so I have to fix a cup of hot chocolate. OK, now I'm set... The website announces that NGC 2244 (the Rosette Nebula!) is the next object to be imaged. Of course, all I see is the information about the object on my screen; all I hear is the hum of the hard drive. But somewhere a quarter

A stack of 7 images under skies of 2 to 4/5.

of the way around the world, immersed in a cold winter's night, a telescope was spinning 'round, its motors wailing away—with a click of the mouse I can even hear this on the audio feed from inside the observatory!

With no equipment or software of my own (save my laptop and web browser) I start snapping pictures of celestial objects. I can take pictures (using the "Mission Interface" shown on the front cover) with the all-sky camera, wide-field scope, or high-mag scope. These pictures show up in my own personal storage space on the SLOOH server, and I can download and play with them on my own computer any time I want. (You'll be seeing some of these in *Regulus*, of course!)

Every five minutes the scope slews (or should that be sloohs?) to a new object. For each object, the pictures are initially monochrome, but colour soon follows. On the website I can see the full schedule of objects the telescope will be visiting tonight. I can make as many as six reservations up to a week in advance if I have specific targets that I would like to see imaged. Visits to Comet Lulin seem to be scheduled every hour—very nice! All the pointing and focusing are taken care of automatically.

Occasionally there may be an

Continues on page 10...

Virtual Observing: Then and Now

...continued from page 9.

equipment problem, but the system operators soon fix these—how great is that? (During a session, pop-up messages keep me in the loop about any hardware, software, or weather problems, or any interesting SLOOH-related news.) My collection of pictures continues to grow! I'll have great fun stacking them later. For now, acquisition is the name of the game.

It's hard to believe only a few hours have passed. Already, I have many images stored away on disk! Around 7 p.m., I check the earth day/night map and see that it is finally getting dark in Chile. The SLOOH website shows it is clear there. Now the action heats up! I spend my evening hours alternating between the Teide and Chile telescopes, madly snapping pictures of objects in both the northern and southern hemispheres. Wow, this is great!

Suddenly, there is music playing on my computer. Where is that coming from? Of course: it is the 9 p.m. SLOOHRadio webcast! Soon, a couple of commentators start talking about all things astronomical. I log in to the chat room and find a couple of dozen people already logged in. The commentators watch the chat room as they do their thing, and even answer questions posed by the people logged in there. People here seem to be very courteous. Questions are asked and answered. It is a good and welcoming environment. What a neat system! And all the while, we keep visiting more objects...

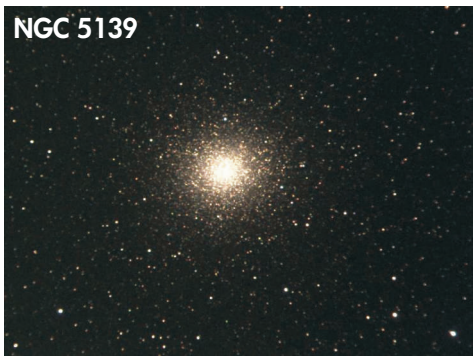
Soon the SLOOHRadio webcast ends and I leave the chat room. I fire up my TV set and continue do other (non-SLOOH) stuff on the computer while I continue to

SLOOH.com observatories:

Top: dual domes at Mt. Teide, Tenerife, in the Canary Islands.

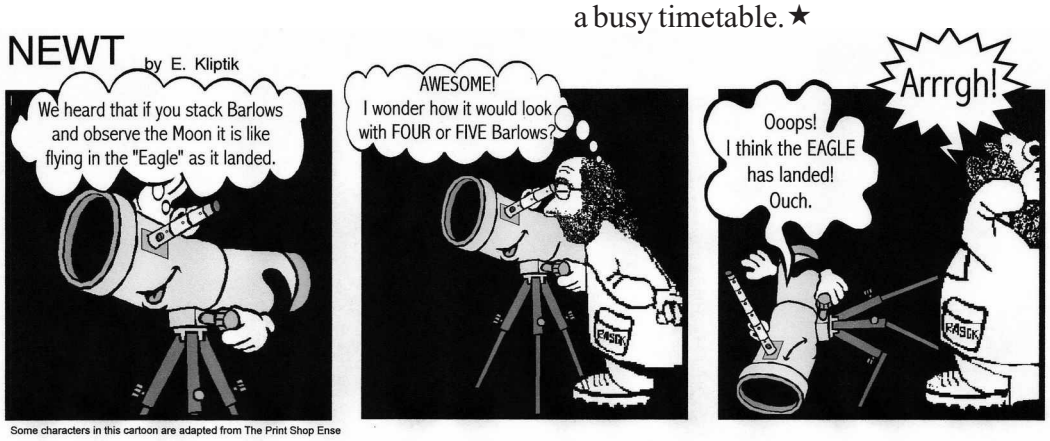
Bottom: solo dome at La Dehesa, Chile.

All images: SLOOH.com



snap more images. Finally, at 1 a.m., I am exhausted. But I want to stay up all night with SLOOH! Oh well. There will be other nights and, barring some galactic or universal catastrophe, all these deep sky objects will still be there, I tell myself as I head upstairs. As I fall asleep, I dream of the upcoming debut of SLOOH's Australian telescope and the possibilities of 24/7 imaging!

At US $50 for one year of unlimited use, SLOOH is unbelievably great value. Truly, imaging for the masses has arrived—and it has never been more fun! ★



More Observing...

...continued from page 6.

ical Companion states that the closest approach was just a short while before and the two were only 0.56° apart!). In the mornings to come, I hope to continue to watch them and to be able to see **Mercury** join them for an interesting trio.

My **solar observing** session was at a special event on Saturday February 14th—Art In The Park, an event at which arts and crafts organizations display their wares in a city park in the city of Naples. Over the past 4 months the local astronomy club has been part of the event, using it as an outreach to the public and a chance for public solar observing. As I had done for the past two months, I "manned a PST," a hydrogen-alpha solar telescope very similar to the one I own. Many members of the public were appreciative of the chance to see the **Sun**, and some of them may even have seen one or two of the two prominences that were visible, though they were, indeed, a bit challenging for those who had never before observed the sun in this way. I had "50 Galileo Moments" with members of the public having a chance to see the sun much more safely and much more clearly than **Galileo** saw it 400 years ago.

Observing from Latitude 26 Degrees continues to be enjoyable and productive and something that offers a busy timetable. ★