Regulus

The Newsletter of the Royal Astronomical Society of Canada – Kingston Centre — 2008 February

Coming up…

RASC-KC Meetings

Stirling Hall Theatre ***"A",*** Baader Lane, Queen's University Kingston, Ontario.
Friday 8 February 7:30-9:30 pm
Friday 14 March 7:30-9:30 pm
Meetings are co-sponsored by Queen's Physics and include astronomy lectures open to the public.

KAON Public Observing:

Queen's Observatory Ellis Hall, 4th floor from 7:30 pm to 9:30 pm
Saturday 9 February 7:30-9:30 pm
Saturday 8 March 7:30-9:30 pm

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On 31 January 2008 before 7 a.m., I saw the above conjunction of Jupiter and Venus in the southeast prior to sunrise. Kevin Kell

At right, an image of a sun column (or pillar) that we came across on the way home on January 15th, right at sunset. When the air is cold and the Sun is rising or setting, falling ice crystals can reflect sunlight and create an unusual column of light.
Kevin Kell

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President's Notes

Greetings Centre Members! Winter is always a little depressing. I was leafing through my logbook and the entries are few and far between. I've tried cold weather observing and boy... is it cold.

I find that winter is the time to explore other resources and interests. One example is the Thursday night AAVSO chat room. We had a good time chatting with folks from around Canada and the U.S., some of whom are local Centre members, others we have met at General Assemblies in the past. Then again maybe this is just me showing my generational age in cluing in as to why "kids" love instant messaging.

IYA2009 is coming up sooner than you may realize. Higher level groups don't seem to be progressing very well or very fast, so it looks like if we want to participate in the Public Outreach event of International Year of Astronomy, it will be locally generated ideas and plans.

As of today, there is still no new news on the 2008 General Assembly, scheduled to be held at York University in Toronto. There will be opportunities to car pool if you are interested in going up for the day or two days. We will know more once the details flesh out a bit more with regard to speakers and schedules.

Don't forget that the last total lunar eclipse in our area for the next few years will be on Wednesday evening, February 20th. There are no organized events, but rather a campaign to distribute handouts that will encourage people to observe this long duration event from their own backyards. Total Lunar Eclipses are nice that way in that they do not require dark skies, but almost always require a warm place to rest up and washrooms nearby!

The space shuttle Atlantis (STS-122) is scheduled for lift off on Thursday, February 7th, at 2:45 p.m.EST. With high speed Internet, you can watch at NASA TV http://www.nasa.gov/multimedia/nasatv/

Kevin Kell, RASC-Kingston Centre President

Chairs: Equipment Loan Program, OAFTN, Observatory

Participation in Members Nights

by Susan Gagnon

Over the next year we will have several meetings devoted to member presentations. I would like to encourage more members to take part in these nights with a 15 to 20 minute talk, with a 5 to 10 minute discussion. It may be a topic that you have a firm grasp of, or something that you need some help with filling in the blanks.

There are plenty of possible topics to choose from, a favourite variable star, or a brief biography of a historical figure; the list is endless. Do not get hung up on high tech presentation techniques if they prevent you from having time to do your research or if the black-board will do. Please consider participating in a meeting if you have never done one of these before. I believe that our membership is a rich resource that we need to tap into.

Regular Meeting January 11, 2008

by Susan Gagnon

We opened at 19:30 EST with a small crowd and began with introductions for those board members in the audience.

Announcements: last KAON session - Kevin Kell talked about Mars with 47 people in attendance; next KAON session Saturday February 09. Website updates including almost all past Regulus newsletters, meeting notes and more by Walter MacDonald. Observing Certificate program webpage updated, check it out. Deadline for Regulus submissions February 1st.

Kevin introduced our speaker for the evening, Kingston Centre member Doug Angle, and his topic: Relativity, Black Holes and The Nature of Dark Matter.

Doug began his talk with the bizarre history of the search for the Luminiferous Ether. Mental and mathematical contortions employed in an attempt to prove its existence are enough to make you tear your hair.

For a quarter century, scientists labored to marry conflicting characteristics. It was to be a solid a million times more rigid than steel yet offering no resistance to the planets as they moved through it.

From the first interferometer experiments in 1881 by Michelson, through the refinements carried out during his partnership with Morley in 1887, empirical evidence to validate its existence proved unattainable.

These failures inspired more complex theories and mathematical constructs culminating in 1895 with the equations of Hendrik Antoon Lorentz, a Dutch physicist. His work seemed to accurately describe:

a) the speed of light as an absolute maximum;
b) the relationship between mass and velocity.

1905, enter Albert Einstein. He added relativity to the mix and showed that observers themselves must be part of the equation. Ether was originally introduced to provide an absolute reference point which could, in the end, not exist. Absolute rest, absolute motion, absolute space and absolute time were eliminated as the scientific world moved beyond Newton.

The interferometer experiments are a testament to Michelson and Morley's dedication to the scientific method. The equations of Lorentz proved to be identical to Einstein's. This seems to echo the success centuries before, of epicycles modeling the solar system to keep Earth at the centre, very accurate at predicting planet locations but for all the wrong reasons.

At this point Doug asks us if dark matter will go the way of ether. Is it getting too exotic to be true? Will Occam's Razor come to our aid?

You can't talk about relativity and dark matter without getting to black holes, time dilation, frozen time and event horizons.

Doug managed to keep the scary math to a minimum and that was appreciated by many of us. A brief discussion followed including relativity and how causal events are exempt.

After a quick break, Kevin showed a sample of one of four parts of the *Stargazers* TV series from BBC. This will eventually be available from our Library, along with the series from last month. The meeting wrapped up with sparse observing reports. We look forward to the new solar cycle. At 9:30 we adjourned to Wendy's.

Winchester Observatory -- 2007 Report, by Walter MacDonald

Somehow Astronomy just keeps getting better each year -- though I keep wondering each year how I can possibly top the previous year! So it was in 2007. Although there were fewer nights of imaging and observing this year (84 vs. 94 in calendar year 2006), variable star observations reached a new peak with 5,231 observations. There were many exciting events that made 2007 a banner year: Despite a breakdown in the dome electronics and another in the observatory computer, almost no nights were lost. The "Live Session" page was perfected and became quite popular. I caught DW Cancrii in its first-ever observed outburst. My variable star imaging list was more than doubled, to over 500 stars. My workhorse 10" f/6.3 LX-200 was rebuilt by Dr. Clay in Arkansas. Last but not least, of course, was my discovery of supernova SN2007cf as part of the Puckett team. Now that I think of it, how will 2008 possibly be able to top all of this?

2007 got off to a most auspicious start with the grand spectacle of Comet McNaught (C/2006 P1). Despite its small elongation, its great brightness and lovely tail more than made up for that. Getting good weather to see it was difficult, but after several dusk and dawn attempts I was successful. On January 10/11, I was finally able to observe McNaught in binoculars and then with only the naked eye around 5pm. There was a brutal northwest wind from which I had no shelter from my vantage point atop "Mount Winchester". After half an hour I was totally frozen, and ambled home again to warm up. It was definitely worth the suffering though!

Also in January the "Live Session" page was attracting so many simultaneous viewers than I had to devise a way to host it on my website rather than directly on the observatory computer (which is limited to 10 connections). Fortunately I was able to do this without too much trouble and now many people can watch at the same time. The Live Session page was enhanced to detect USB lockups on the observatory computer and alert me when they occur. Fortunately these are extremely rare, but can result in the loss of a night if they go unnoticed -- and a clear sky is a terrible thing to waste! So far, it has successfully alerted me to one USB lockup. (Thankfully, there have been none since then.)

The third big event of January was the outburst of DW Cancrii (see **Regulus**, February 2007). As I slept on Jan 24/25 the observatory imaged DW, which happened to be so bright that it saturated the CCD. Later, as I was pondering how DW could possibly be doing this sort of thing, Tim Crawford happened by the AAVSO Chat Room and asked why DW was so bright at 13th magnitude -- this was one night after my observation. Normally DW varies from magnitude 15 to 17½, but I had caught it at 11th (or possibly brighter!). Since DW has never been observed in outburst, I never knew it could get so bright -- which is too bad. If I had known it was going to do something this spectacular, I would have had the computer set to wake me up! Then I could have done continuous all-night imaging on it to see how it was varying minute-by-minute (so-called “time series” observations, as Tim had done the next night). Now we know better and have the excitement of keeping a very close watch on DW to see if we can catch it in the act again. It could be many years before we do!

—Part 2 of this 3-part series continues next month

On a Sunday, I Saw a Sundog

This is an image of a sundog seen in the southwest from Kingston near Princess and Sir John A MacDonald on 20 January 2008. The sun is 22 degrees off to the right. Sundogs, extra-images of the Sun are created by falling ice-crystals in the Earth's atmosphere. As water freezes in the atmosphere, small, flat, six-sided, ice crystals are formed. As these crystals flutter to the ground, much time is spent with their faces flat, parallel to the ground. An observer may pass through the same plane as many of the falling ice crystals near sunrise or sunset. During this alignment, each crystal acts as a miniature lens, refracting sunlight into our view and creating parhelia, a technical term for sundogs. —Kevin Kell

Slooh'ing Among the Stars, by Kevin Kell

At the December 14th, 2007 meeting of the RASC-KC, we demonstrated the remote telescope system called Slooh. You buy a membership, reserve a 5 minute time slot on the telescope up to a week in advance, monitor online the exposure in real time and capture an image at the end.

From the www.slooh.com website:

"A SLOOH membership buys access to live space missions, broadcast in real time to your computer from our telescopes in the Canary Islands. Most missions are five to ten minutes in length. Using LightMachine, SLOOH's patented instant imaging technology, each mission presents a live view of that mission's designated space object. This view improves in quality during the mission as our telescopes gather more light. Our observatory aims multiple different telescopes at the subject, which allows you to zoom from a huge expanse of sky all the way to a close up view. Through our user interface, you can capture photographs during the mission and save them in your mission log book. During the mission, our SLOOH Audio narrators will illuminate the history, mythology and context of the mission target."

We targeted Mars that Friday night and took three images, located here:
http://www.slooh.com/data/teide/fivedegree/2007/12/14/20071214_200034_3237.jpg
http://www.slooh.com/data/teide/fivedegree/2007/12/14/20071214_200115_5484.jpg
http://www.slooh.com/data/teide/deepsky/2007/12/14/20071214_200206_4855.jpg

The first two were medium angle (5 degree) views, taken about 37 and 82 seconds into the 300 second exposure. The last image (figure 1) was taken about 128 seconds into the exposure using the high magnification view.

Some notes on this whole system:

* Guest memberships are $20 US for 200 minutes
* A one year subscription costs $100 US with unlimited time (there are reservation restrictions however).
* Whenever you are looking "over the shoulder" of someone else's observing run, you are charged minutes! Watch out for this!
* When you have booked a run, you must be there live at that time to click on the "Capture" image button, else there will be NO IMAGES captured at all (I thought they would automatically do that!).
* A hint: purchase a gift membership to try it out, but log on during the Daytime Hours in the Canary Islands (UT Time) so that you can learn the software without being charged (if it is daytime there, they don't charge minutes for looking at the main live control panel).

There are two domes that swap off each night, with one that you are eligible to book time on.

Dome 1 - Optimized for Deep Sky observation
  * A 14-inch diameter Schmidt Cassegrain Telescope, with a 2100mm focal length
  * A 34mm diameter refractor, with a 135mm focal length

Dome 2 - Optimized for Planetary observation
  * A 14-inch diameter Schmidt Cassegrain Telescope, with a 3910mm focal length
  * An 85mm diameter APO refractor telescope, with a 480mm focal length

* A monochrome all-sky camera with a fisheye field of view of 175 degrees The CCD cameras have up to 3 megapixels.

Overall the Mars image was not much to write home about. Not enough magnification, no real surface detail. Deep sky objects and Kingston/Queen's related asteroids are my next targets to try out.

The good news is they are developing facilities in Chile and Australia. It looks like the Chilean facility is up and running and undergoing engineering tests. This means that in the near future, you can potentially image in real time 24 hours/day. Great for those hunting for dynamic events (supernova, cataclysmic variables, etc).

Photos of Faraway Places

The following three images on this page were derived by me during this last month from a remote telescope site at the Canary Islands in the Atlantic Ocean owned and operated by Slooh, Inc.

Use of the telescopes are restricted to members. Weather and technical problems are factors to be contended with, as well.

However, these few pictures may hold some promise of things to come.

—Joseph Benderavage, Newsletter Editor

ORION NEBULA

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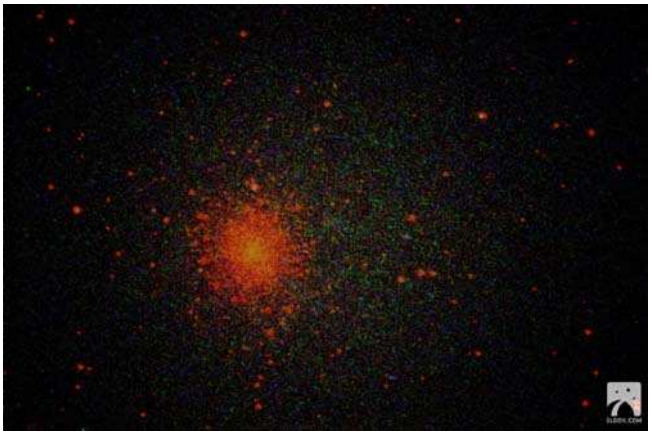
KAON Report January 12, 2008

by Susan Gagnon

The evening started very cloudy and for a change RASC members go to hear Terry's talk on Helen Sawyer- Hogg. A highlight of the talk was the discussion afterward when a man in the audience said that the impression that Dr Hogg was a pleasant kind woman was completely true. He had been a student of hers in the 50's in an introductory Astronomy class. One night the class was taken on a tour of the DDO and then 30 some students were invited to the Hogg home not far away in Richmond Hill where they were kindly received by the couple.

In the last 30 to 40 minutes of the open house there was a miraculous clearing of the sky. Although there were 43 visitors that night all but 4 had left when we set up the equipment. With 4 members of the public, the Fitz, and 2 sets of binoculars, we were pretty busy with a whirlwind tour of the sky. We were able to point out the Pleiades, Orion Nebula, Mars, M36, M35, M79, the Hyades, various constellations and the crescent moon. Thanks to volunteers, Kim, Kevin, and Steve for RASC and to Tusi, Jonathan and Terry for Queen's. It was also great to see new members. Ian and a woman who I have only seen in the dark, please let me know your name if you are out there! That's the way it is with this hobby. We are making new friends all the time we just don't know who they are!



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Help Wanted! By Kevin Kell

Back in the fall of 2007 I made mention of the Educational Presentations Collection we maintain at

http://130.15.144.99/rasc/Secure/presentations/

along with a list of ideas of presentations that are needed. There are several examples up already and they can be very simple as seen by:

meteorites-rasckc.ppt

Please take a look at it and see if you would like to take a stab at creating an MS PowerPoint presentation (15-20 minutes duration) of some of the following ideas:

The Planet Venus: historical, visual, spacecraft, future
The Planet Mars: historical, visual, images, spacecraft, future
The Planet Jupiter: historical, visual, images, spacecraft, future
The Planet Saturn: historical, visual, images, spacecraft, future
Sol: solar observing safety, tools, records, ALPO, animated sketches,
Comets: historical comets of the last x years, photographic summary, orbital path summary, where to find info on them (star charts, etc)
Fireballs: what are they, why we look for them, what to do if you see one, etc.
Uranus & Neptune are back for observing.
"Sagittarius, Observing the Galactic Core Region"
Occultations: what are asteroid occultations all about?
The MOON: how it moves, surface highlights, etc
ETU Certificate Program
Messier Certificate Program
Finest NGC Certificate Program

If the Gear Fitz....

Here are new accessories for the Fitzgerald 20cm Dobsonian telescope, currently stationed at the Queen's University Ellis Hall Observatory, dedicated to the KAON (Kingston Astronomy Outreach Network) Open Houses every month.

There is a Meade Moon filter (3 stop), a Meade x2 Barlow lens and a 15mm Plossl eyepiece. These will enable more options when viewing the moon (normally a popular target) and maybe even allow for some better planetary viewing (Jupiter and Sautrn) under good conditions.

Kevin Kell, RASC-Kingston Centre President

GLOBE at Night

Join the World-Wide Hunt for Stars
During GLOBE at Night February 25 - March 8, 2008
www.globe.gov/globeatnight

Can You See the Stars?

Join thousands of other students and families around the globe hunting for stars during the third annual GLOBE at Night event! Take part in this international event to observe the nighttime sky and learn more about light pollution around the world.

Participation is open to anyone who lives or works in one of the 110 GLOBE countries listed on: www.globe.gov/globeatnight/countries.html

WHEN: February 25 - March 8, 2008

WHAT: International Star-Hunting Party

GLOBE at Night is a hands-on learning event extending beyond the traditional classroom and school day involving teachers, students and their families. By locating and observing the constellation Orion in the night sky, students from around the world will learn how the lights in their community contribute to light pollution. This event is useful for teaching about the impact of artificial lighting on local environments and in raising awareness about the ongoing loss of people's ability to study or simply enjoy the night sky in many parts of the world.

HOW: Five Easy Star-Hunting Steps

Complete instructions are freely available at www.globe.gov/globeatnight

1) Find your latitude and longitude (optional). Latitude and Longitude can be determined when reporting observations on web site
2) Find Orion by going outside an hour after sunset (approximately between 7-10 pm local time).
3) Match your nighttime sky to one of our magnitude charts.
4) Report your observation on our Website.
5) Compare your observation to thousands around the world.

During the March 2007 event, 8,491 observations were reported from over 60 countries including data from 49 U.S. states, almost double the number of observations sent to us in 2006. Help us exceed these numbers in 2008!

Let's get out and observe the night sky – February 25 - March 8, 2008!

For more information visit www.globe.gov/globeatnight
or send email to globeatnight@globe.gov

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The Royal Astronomical Society of Canada—Kingston Centre

Newsletter Submission Info:

I can take most common formats, although I prefer plain text. Pictures should be sent as image files in attachments separate from the articles. Please avoid the use of capitals, asterisks etc for formatting, as I use the publishing software's formats for this kind of emphasis.
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2008 Publication Deadlines

For the month	**(Deadline)**
March	(February 22)
April	(March 28)

Subscriptions: Members of the Kingston Centre receive Regulus as a benefit of membership. Advertisements are free to members of the Centre. Commercial advertising is $20/quarter, $40/half page, $100/ full page and should be in electronic format. Contributions are more than welcome. Submitted material may be edited for brevity or clarity.

I've Seen the Light! Hallelujah!

Here is an image of the Queen's University Mac-Corry underground parking lot during construction, with newly mounted floodlights on the construction crane.

We haven't had a chance to view these at night and do not know how much of an impact they will have on the KAON session coming up on Saturday February 9th. The dome of the Observatory can be seen to the left of the crane.

—Kevin Kell

Target for Tonight, by Susan Gagnon

Over the last 2 years I have submitted observing lists grouped by constellation under this title. During this time there have been typos and omissions that I would like to correct. Instead of reprinting them in Regulus, Walter has agreed to put them on the website where they can be selected by season and printed out as needed.

Over the next month I will begin to review the constellations and start sending them to Walter. I hope that they can be useful as a starting point for planning observing sessions and help those of you who have the intention of completing lists eligible for certificates. Keeping track of what you have observed can be a job. In place of these lists I hope to find things to submit which are relevant to small scopes under less than optimal conditions.

Kingston Cosmic & Events Calendar, **February—March 2008,** by Joseph Benderavage

FEBRUARY 2008

Date Events Time

01 - ***Venus*** 0.6° N Of ***Jupiter*** (32° W), 7:00; Antares 0.6° N. of crescent Moon, 13:00.
04 - ***Jupiter*** 4° N of Moon; 1:00; ***Venus*** 4° N. of Moon, 7:00
06 - New Moon 22:44; Mercury in inferior conjunction 13:00
08 - **Regular Meeting** Stirling Hall "A" 7:30-9:30 pm. Members Night
09 - ***KAON*** Observing Session, Ellis Hall Queen's Observatory 7:30-9:30 pm. Tara Parkins, "Irregular Galaxies: Outcasts of the Extragalactic Zoo."
13 - First Quarter Moon 22:33
14 - Moon 1.2° N of Pleiades (M45), 8:00
16 - ***Mars*** 1.6° S of Moon, 3:00
19 - Moon 0.3° N of Beehive (M44), 3.00
20 - Regulus 0.7° N of Moon, 19:00; Full Moon**, Total Lunar Eclipse**, **22:30**
21 - ***Saturn*** 3° N of Moon 7:00
23 - **Zodiacal Light** visible in N lat. for next 2 weeks after evening twilight
24 - ***Saturn*** at opposition, 5:00
25 - ***Mercury*** 1.3° N of ***Venus*** (27° W), 21:00
28 - Antares 0.6° N of Moon, 21:00; Last Quarter Moon, 21:18

PLANETS for February: ***Mercury*** very low in ESE in morning twilight, in second half of month; ***Venus*** is very low in SE in morning twilight; ***Mars****:* high in SE after dark, sets in NW near 4:00; ***Jupiter****:* very low in SE in morning twilight; ***Saturn****:* rises in ENE in evening twilight, low in W at dawn.

MARCH 2008

01 - ***Jupiter*** 4 deg N of Moon at 20:00; ***Mercury*** at descending node.
03 - ***Mercury*** at greatest elongation W at 6:00 (27 deg);
05 - Crescent moon near ***Venus*** and ***Mercury,*** visible in morning twilight, best in W of N. America; Neptune 0.2 deg N of Moon at 17:00
07 - New Moon at 12:14; Double shadow transit on ***Jupiter*** at 10:05
08 - ***KAON*** Observing, Ellis Hall Queen's Observatory 7:30-9:30 pm. Spkr: Kyall Lake, "Black Holes,etc"
08 - ***Neptune*** 0.6 deg to left of ***Venus*** visible in morning twilight; ***Uranus*** in conjunction with the Sun at 15:00; ***Mercury*** 0.9 deg S of ***Neptune*** (27 deg W) at 21:00
09 - Daylight saving time begins 2 a.m.;
10 - ***Mars*** 1.7 deg N of M35 at 13:00; Moon at perigee (366298 km) at 18:00
14 - **Regular Meeting** Stirling Hall "A" 7:30-9:30 pm. Spkr: Dr Joseph.Buckley, RMC, "Radarsat 2."
14 - Moon in first quarter at 6:46; Moon 1.2 deg N of ***Mars*** 11 p.m.
17 - Moon 0.3 deg N of Beehive (M44) 10:00
19 - Moon 1.1 deg SW of Regulus, best in W of N. America 3:00; ***Saturn*** 3 deg N of Moon 11:00
20 - Spring Equinox, 1:49 a.m.
21 - Full Moon 14:40
23 - ***Mercury*** 1.0 deg S of ***Venus*** (21 deg W) at 6:00 , visible with difficulty in morning twilight only in S of N.America; Zodiacal Light readily visible in N lat W after evening twilight for next two weeks;
27 - Moon 1.1 deg S of Antares, best in W of N. America, 5 a.m.; ***Mercury*** 1.7 deg S of Uranus (19 deg E) at 5 a.m.
28 - ***Venus*** 0.7 deg S of ***Uranus*** (19 deg W) at 13:00
29 - Last Quarter at 17:47; Double shadow transit on Jupiter 00:22
30 - ***Jupiter*** 3 deg N of Moon at 13:00, visible at mag. -2.1 in daylight

PLANETS for March: ***Mercury*** low in ESE in morning twilight first week of month; ***Venus*** low in ESE in morning twilight early in month; ***Mars*** high in SW after dark, sets in NW by 4 a.m.; ***Jupiter*** rises in ESE three hours before dawn, very low in SE at dawn; ***Saturn*** in ESE after dark, very low in W at dawn.

RASC *Observer's Handbook 2008* contains more info & is available from http://www.store.rasc.ca/