Regulus

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada – July 2005

Coming up…

RASC Regular Meetings

Queen's University
Stirling Hall Theatre D

Friday July 8, 2005 at 7:30 pm
Richard Schmude – "Photoelectric Photometry of Jupiter"

Friday August 12
Members BBQ at Mark Kaye's

KAON Public Observing

Queen's Observatory
Ellis Hall
Saturday July 9 9:00 – 11:00
Saturday Aug 13 9:00 – 11:00

AstroYak

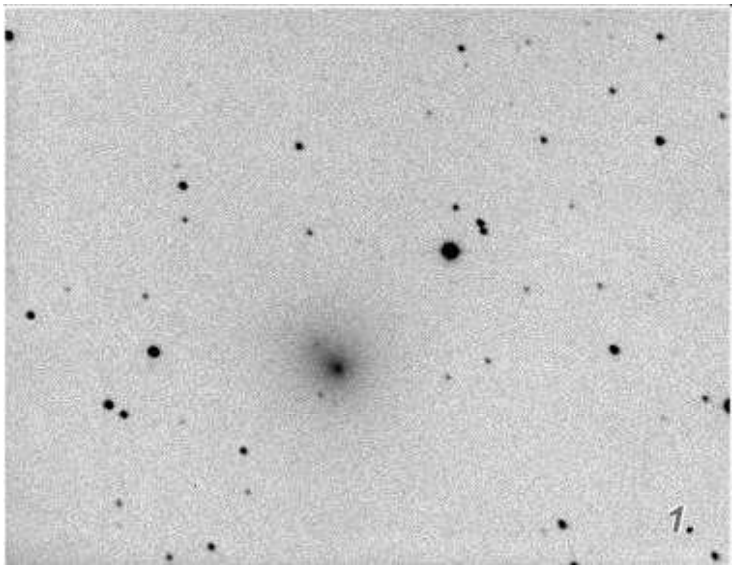
Friday July 22 7:00 pm
Friday August 26 7:00 pm
at the home of Kevin Kell and Kim Hay,

Members Observing

Tour of Holleford Crater with Leo Enright July 16

Sky is the Limit Festival

City Park, Kingston
Saturday July 9 8:00 to 4:00



Comet c/2005 Linear K2. 30 second exposure 23:34 UT. Photo by David Strange, Worth Hill Observatory, U.K. Read about David Levy's observation of this comet on page 2.

Fundraisers walking a the Relay for Life at RMC. Read about our participation in this event on page 6.

Kingston Centre of the Royal Astronomical Society of Canada
Box 1793 Kingston Ontario K7L 5J6
http://www.rasc.ca/kingston
infoline: 613-377-6029
email: kingston@rasc.ca

President's Tid Bits

By Kim Hay

Summer is here, and so are the mosquitoes so take the gallon of bug repellant to your favourite observing site. If your not sure were to go observing, there are several Star Parties throughout the summer, and the fall.
Visit
http://www.telusplanet.net/public/fenertyb/sp_list.htm for a local star party near you.

Don't forget to also check out the Kingston Centre website for our upcoming events.

Though the nights may be shorter, and the twilight lingers a bit longer, take a minute to enjoy your surroundings this summer. It may not be the best time to observe due to the late astronomical twilight, but it is a good time to watch the constellations appear and learn them one by one. Have your eyes adjust to the nightime slowly, and see how faint of a magnitude your eyes can detect. This is a good test.

There will be several summer meteor showers, which are best seen after midnight. Remember the Persieds in August, a summer time favorite, relax in a comfortable lounge chair and wrap yourself up in a blanket or sleeping bag to keep warm, yes it does get cool in the August mornings. Look east and watch Perseus rise. Perhpas take a chance at counting the meteors you see and take note on how they looked, what colour they were, was there a tail? Just take your time to enjoy the summertime, for as you look in the morning skies you will see the winter constellations appear, and we can look forward to darker and longer nights. We don't always need binoculars or telescopes to enjoy the skies.

Have a safe and happy summer.

Beaten Again By The Robot!!

By Leo Enright

The frustrations of a twenty-first century comet hunter! Even for one of the greatest comet hunters in human history!! What happened last Sunday night (June 12th) illustrates this point very well. That night our Honorary President, David Levy, was at his Arizona home, hunting comets with his 10-inch telescope. He independently discovered a comet, but unknown to him at the time, it had already been discovered by the LINEAR robotic search program operated from a telescope in New Mexico. This comet is known as C/2005 K2 (LINEAR).

This comet is also an amazingly interesting object. In the last two weeks it has suddenly brightened from magnitude 12 to magnitude 9, most likely because of the fact that it has split into two parts, exposing material in its nucleus to solar radiation and causing an enormous increase in the gas and dust output from the nucleus. Such a sudden output makes

the comet much more reflective of sunlight; in fact, it instantly causes a dramatic increase in brightness. That is what has happened with C/2005 K2. In fact, images taken by various amateur astronomers (who have enjoyed better observing conditions than I have had in the past several days!) have shown conclusively that there is a "secondary" comet right beside the "main nucleus" of the comet. Is this not a reminder of what we saw in 1994 with the most famous comet of the past century, namely, Comet Shoemaker-Levy 9?

When David first saw the object in his telescope at 40 power, he did not recognize what he was looking at. His words were: "At 40 power, the object looked decidedly non-cometary. It was unusually elongated; it appeared more like an amorphous, low-surface-brightness galaxy than a comet, and that's what had me fooled initially."

It is hard to believe that this comet is the 158th comet found by the LINEAR robotic search program. Equally amazing is the fact that when the comet was discovered less than a month ago, on May 19th, it was at an extremely faint 19th magnitude!!

C/2005 K2 is now in the constellation Lynx and about thirty degrees above the northwestern horizon at the end of twilight, but by the time that this information reaches your mailbox, it will have slipped much further south on the celestial sphere and no longer be easily visible in the western evening sky. At the moment, of course, I do not know if our weather conditions will allow me, or other Kingston Centre observers, to see this unusually interesting comet, but I hope that they do. Obviously, I wish to see this "split comet" (even if the fact that it is split is not evident in my telescope), but I wish to see also a comet that was independently discovered by my great friend David Levy (even if I know also that he will never get any credit for his effort). I have already sent him a congratulatory note. Here and now I want to offer again my congratulations to him on behalf of all the members of the Kingston Centre.

To See Or Not To See ?

Stephen Gagne

How to Find What The Weather Network Won't Tell You.

Taking a look at today's weather report, one is likely to see something like: "Partially cloudy with a high of 20". Yet for an astronomer, something more along the lines of:
"Moderate winds out of the South East, very little if any fog, clouds covering much of the sky, temperature of 20 degrees with a very slim chance of precipitation and a vertical view unobstructed by anything but the clouds." would prove of much greater use. Often, observing sessions will be planned or cancelled based on what the "Five Day Forecast" claims the weather will be like. Yet this is nothing more than an educated guess since weather can only be predicted with any degree of accuracy over a 24 hour period.
Pilots have access to a multitude of

valuable weather resources two of which are METARs and TAFs.

A "METAR" is a Routine Weather Report issued by NAVCANADA at least once every hour. It contains everything from wind speed and direction to the types of clouds covering the sky. In order to show changes in weather, the two previous METARs are usually also shown. A more detailed comparison will clearly illustrate the advantages of the METAR over the standard Weather Network report.

	Weather Network Report	**METAR**
Cloud Cover	Brief description of cloud cover with vague terms such as "partially cloudy"	Gives which fraction of the sky is covered, in Oktas or eighths.
Visibility	Unless fog is significant, won't usually be reported	Gives a measurement of visibility in statute miles. Also gives a vertical visibility report when smoke is present
Temperature	Temperature is given	Gives temperature and dewpoint which can be used to determine the chance of precipitation or dewing of optics

The only drawback of the METAR however is the fact that it is written in a format that is not easily understandable.

METAR CYGK 131800Z 12010KT 15SM FEW120 BKN250 12/M06 A3031 RMK AC2CI3 OB TAKEN +15 SLP267=

At first glance, this does not look like much, however, when one understands the code, a great many things can be read in it.

The same report translated into English reads:
Routine Weather Report for Kingston (CYGK is the callsign for Kingston Airport, most airports have four letter callsigns, these can usually be found on Google)

- Taken on the 13th day of the month at 18:00 Zulu (GMT) 3:00 PM local time
- Wind from 120 degrees at 10 knots (Moderate winds from the South East)
- Visiblity of 15 Statute Miles (No fog)
- Few clouds at 12000 feet
- Broken clouds at 25000 feet (5/8 of the sky is covered in clouds)
- Visiblity of 15 Statute Miles (No fog)
- Broken clouds at 25000 feet (5/8 of the sky is covered in clouds)
- Few clouds at 12000 feet

- 12 degrees with a dewpoint of –6 degrees (Very Small chance of precipitation)

- Remarks Altocumulus clouds in 2 oktas Cirrus clouds in 3 oktas (Because Cirrus type clouds are predominant, the Moon may still be observable)

While a METAR provides current conditions, a TAF or Terminal Area Forecast provides an accurate prediction over weather changes for up to 24 hours. It uses the basic format of the METAR. The major advantage of the TAF over the Weather Network is that it provides time intervals where conditions are expected to change and is updated at least four times a day.

TAF GYGK 132255Z 132318 18040kt 1/2SM +SNBLSN OVC 010 FM0206Z 18050G80KT 1/4SM TEMPO 0506Z 18080KT RMK NXT FCST BY 140900Z

The English translation reads:

- Forecast for Kingston airport
- Issued on the 13th at 2318 Zulu(GMT)
- Valid for 2300 to 1800
- Wind for 180 degrees at 40 knots (Heavy winds from the South)
- ½ Mile visibility (Very poor visibility)
- Heavy Blowing Snow
- Overcast at 1000 feet
- FM indicates an interval from X to Y - From 0200 to 0600
- Winds from 180 degrees at 50 knots gusting to 80 knots
- Visibilty of ¼ Mile
- TEMPO is an indication of weather at a specific time.
- Temporarily - Winds from 180 degrees at 80 knots.

Where to find them:
http://www.flightplanning.navcanada.ca/
Or Google METAR CYGK
[additional weather resource for astronomers may be found at www.cleardarksky.com – ed.]

KAON Report

Kevin Kell

We held a Kingston Astronomy Outreach Network public observing session at the Ellis Hall Observatory on Saturday June 11th, 2005. Volunteers included: Brian Hunter, Susan Gagnon, David Maguire, Norm Welbanks, Hank Bartlett, Kim Hay, Kevin Kell, Terry Bridges, Melissa Reuters, Pascal (?) for the two hour session starting at 21:00 and running to 23:00 EDT

We experimented with a Physics department data projector and laptop showing websites and it worked far, far better than the large projection TV for text and computer use. We also showed a DVD short movie from PBS.

The turnout of guests was about 40-48. Many stayed around for quite some time and one to the very bitter end. A relatively low turnout, at least for our expectations.

Cancer Society Relay for Life

Kim Hay

If you have never been to the Relay for Life, as a participant or as "Entertainer" then it is something to really think about doing. There must have been close to 1000 people there all over, tents set up for the night, and all done up with a theme. The walking event ran from 7:00 pm on Friday June 3 till 7:00 pm on Saturday at RMC. We stayed until 12:30.

Throughout the night we had over 100 people stop by for the 4 hours we were scheduled to be there. One participant came over who had been a Toronto Centre member in the 60's but was an undergrad at Queen's, worked at the NRC in Ottawa, and in Algonquin Park- can you tell he was in Radio Astronomy.

Even with all the stray light and light pollution from Kingston, the seeing was not too bad but there was high haze in the atmosphere. We observed Jupiter, Saturn, Arcturus, Alberio, M57, M51, M3 and I am sure there were a few more clusters Ken had his scope on. There were some satellites, stray meteors, and a –7 Iridium flare too.

People were just amazed that the bright spot they saw in the sky, then in the telescope was Jupiter. They could see the bands on the planet. They were amazed at the rings on Saturn. Once they looked through the scope, they wanted to know where in the sky we were looking, so they could remember and tell people.

The event raised $197,260 for cancer research . It felt good knowing we had helped to entertain those who were doing this great walk for others and Cancer Research. I would like to see the Kingston Centre become involved with this as an entertainer and perhaps even have our own team to help out this wonderful cause.

Members Observing Dates

Ken Kingdon

July - Daytime tour to Holleford Meteor Crater - one of Canada's major impact craters, and right in our backyard.
Leader: Leo Enright (xxx-xxxx)
Date: Saturday, July 16.
Raindate: Next day (Sunday, July 17th).
Meet: at 2pm in Hartington, which is on Hwy 38 exactly 4 km north of Harrowsmith.
Apres tour: join us for dinner at a restaurant in Harrowsmith.
Apres dinner: if skies are clear, meet at Ken Kingdon's for Lunar highlights, which will be exceptionally good this weekend.

August - Observing at Camden Lake

It's a busy month, so we will simply have a single night at Camden Lake, on the clearest of either: **Friday August 5**, or, **Saturday August 6th**.
Time: plan to arrive on-site between 7 - 8PM. Mosquitos should be finished - but "the wise" will bring repellant anyway.
Directions to the Camden Lake Wildlife

Area: From the Hwy. 401 (exit #599) at Odessa, drive north all the way (20 minutes) on County Road #6. Proceed through Yarker, and Colebrook (ignore the Centennial Park Road) to the hamlet of Moscow. Another 1 km north of Moscow brings you to **Card Road**. Turn left (west) onto Card Road and stay on it for 3 km to its western terminus in the big parking lot just past the farm bldgs. You can setup scopes on the grassy portion of the parking lot along the north side.

September - Labour Day Weekend trip to Nirvana

This is the best accessible observing site in Eastern North America - and right in our backyard.
Dates: the long weekend from Friday Sep. 2 to Monday Sep.5.
Directions: from Hwy 401 at Napanee, drive north 1-hour on Hwy 41 to civic #19213, which is about 10 minutes past Bon Echo Prov. Park. Turn east (right) onto the gravel road called the Irving Lake Airstrip Road. The road is not well marked. After a bridge look for an obvious "Y" in the road. Take the right branch up a small grade, proceed 100 meters onto the abandoned runway, then drive 400 m to its southern end. Park and set-up on the west side off the abandoned airstrip.

$E= mc^2$

Dieter Brueckner

It might be natural to assume that an article with this title would be about Albert Einstein or relativity theory, especially in this year, the 100th anniversary of Einstein's prolific publishing year of 1905.

Locally, however, the title has another significance: It refers to the Enrichment Mini-Course Program offered each year by the Enrichment Studies Unit at Queen's University. This program affords gifted high school students the opportunity to come to Queen's for a week of study, and to experience university life in many of its other aspects. This May some 50 different courses were offered in topics as diverse as automobile design, cryptography, and the psychology of criminal behaviour.

Astronomy has been no slouch in this program, and has for the past few years been represented by a course entitled Expanding the Universe. This year it was for the first time team-taught, a format that turned out really well, and allowed the pacing of the delivery and the breadth of the course content to be improved. Instructors were the formidable duo of Terry Bridges and Dieter Brueckner, graciously supported in many ways by members of the Queen's community, the Kingston Centre of the RASC, the Limestone District School Board, and the community at large.

We began with the annual re-assembly of the four telescopes that Stargazer Steve in Sudbury custom-made for the course when Dieter Brueckner first taught it in 2000. They are reversible versions of his earlier kits that can be taken apart and re-

built many times. We have three 4¼-inch and one 6-inch scope. After 9 cycles they are still going strong.

The telescopes form the foundation of a core goal of these courses – that students come away with enough of a grounding in observational understanding and experience that they could continue to pursue this interest on their own. This year, although restricted by scheduling constraints to only two nights of observing, we were blessed with better weather than usual.

We held a first night of observing at Ellis Hall, enjoying views of Jupiter, Saturn, and Praesepe, as well as a number of May constellations and stars. RASCal Hank Bartlett returned for an encore engagement, bringing his telescope, and sharing his knowledge and enthusiasm with the many students who came to savour the night sky. The evening, also open to students from outside our course, was well attended and greatly enjoyed by all.

Our second night of observing formed part of the centrepiece of our course, the field trip to the Holleford Crater and the Gould Lake Conservation Area. The tour of the crater, led every year with great dedication by Leo Enright, is followed by a cookout, campfire, and observing at Gould Lake. Although clouds swept through at regular intervals, this year's students did not allow themselves to get discouraged. They banded together in small groups to see what they could find and took great pleasure in their celestial discoveries. For most students this field trip was the high point of the course.

We of course had many classroom activities as well as several guest speakers. Aksel Hallin talked to us about neutrinos and SNO; Dick Henriksen graciously agreed at short notice to field questions on relativity, black holes, and astrophysics; Stephane Courteau gave us a grand tour of the Universe and shared with us the pleasure of being a professional astronomer; and Leo Enright gave us a view into the world of amateur astronomy.

In class we investigated image formation with lens systems and learned how to find our way around the sky with star maps, handbooks, and planispheres. We also examined laboratory and stellar spectra, worked on-line with Starry Night and galaxy images, and reviewed some of the problems associated with SETI.

Outside the classroom we had the great pleasure of breaking in Dave Hanes' new Sun Spotter and the Queen's Observatory's new Coronado solar telescope. The Sun Spotter is a simple device for projecting images of the sun onto a small screen, excellent for following sunspots. The Coronado telescope blew us all away with the amazing images, in H-alpha, of prominences. Wow! Our students also visited the Miller Museum in the Geology Department, where Mark Badham spoke to them about the Earth's history and showed them the Museum's collection of meteorites.

The course owes a great debt to the Kingston Centre and its members that goes back to its beginnings. As I write I once again become aware how huge a contribution this is. The course's structure around the assembling of the telescopes owes its genesis to Christine Kulyk, who first suggested Stargazer Steve telescopes. When I was searching for a way to fund the purchase of the telescope kits, the Kingston Centre sprang into the breach by offering a loan to cover their purchase until we could come up with alternate funding. Many members of the Centre have volunteered their time at star nights and have engaged our students, and the executive have been generous with the loan of the Centre's slide collection and the donation of brochures, magazines, handbooks, and surplus astronomical items that we could pass on. Hank Bartlett has wowed us with his expertise in finding Venus in the daylight sky, and each year Terry Dickinson generously donates the current issue of SkyNews in sufficient quantities to allow each student to have a copy. I am always amazed and touched by this generosity of time and support and extend my deepest thanks and appreciation. I feel it is a special example of the close relationship that continues to exist between amateurs and professionals in astronomy and that is one of its hallmarks. The feedback forms from this year's students suggest once again that all these efforts have been greatly appreciated, and that the course was a success.

Fall n Stars

Kevin Kell

Fall n Stars is our annual star party hosted with the RASC Belleville centre. This year the event will be Sept 30 to Oct 2, and we will be at the Vanderwater Conservation Area once again.
We will have observing sessions both Friday and Saturday, along with speakers, swap table and several other events. Registration forms will be available at the regular meeting starting in July, and on-line soon.

The Kingston Centre of the RASC

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.
E-mail: angle (at) personainternet (dot) com
Post: Doug Angle,
xxxx xxxxxx Rd.
RR#1, Sydenham Ontario Canada
K0H 2T0
Deadline for the August issue is **July 22**

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.

Kingston Cosmic & Events Calendar

by Kim Hay

For more information, refer to the RASC 2005 Calendar, or the RASC 2005 Observers Handbook, available from Kevin Kell, or from National Office. Also see http://www.rasc.ca/kingston

Date	Events
July 1 Friday	**Canada Day**
July 3 Sunday	**Venus 0.4° of Beehive Cluster (M44) Mercury near by –10:00 pm**
July 4 Monday	Deep Impact spaceship will reach its target - Comet Tempel 1
July 6 Wednesday	**New Moon 8:02**
July 8 Thursday	**Crescent Moon near Venus and Mercury Mercury at greatest elongation E (26°)**
July 8	**Regular Meeting** Stirling Hall Theatre D **7:30** p.m. **Richard Schmude Photoelectric photometry of Jupiter "** www.rasc.ca/kingston/: ''
July 9 Saturday	**Sky is the Limit Festival setup 8:00 am runs until 4:00 pm**
July 9 Saturday	**KAON Observing Session**- Ellis Hall Queen's Observatory **9:00-11:00 p.m.** for more information visit http://members.kingston.net/rasc/pubobs.htm
July 14 Thursday	**First Quarter Moon 11:20**
July 16 Saturday	**Daytime tour to Holleford Meteor Crater - one of Canada's finest IMPACT CRATERS more information at www.rasc.ca/Kingston**
July 21 Thursday	**Full Moon-Largest Full Moon of 2005**
July 22 Friday	**Astro Yak** at the home of Kevin Kell & Kim Hay visit http://members.kingston/~rasc/indexsec.htm for directions
July 27 Wednesday	*Last Quarter Moon 23:19*
July 27 Wednesday	**S. δ-Aquarid Meteor Peak at 9:00 pm**
July 30 Saturday	**Mount Kobau Star Party, Osoyoos, BC www.mksp.ca (through August 7)**
August 4-7 Thurs-Sunday	**Starfest, Mount Forest ON www.nyaa-starfest.com**
August 4-7 Thurs-Sunday	**Saskatchewan Star Party, Cypress Hills, SK. duke.usask.ca/~ges125/rasc**
August 4 Thursday	**Farthest Lunar Apogee of 2005 & New Moon 23:05**
August 5-6 (Friday-Saturday)	**Stellefane Convention, Springfield, VT, www.stellfane.com**
August 8 Monday	**Venus 1.0 ° to left of Moon best SW of North America Neptune at opposition**
August 12 Friday	**Persied meteor Peak 1:00 pm.**
August 12 Friday	**First Quarter Moon 22:38**
August 12 Friday	**Markfest- BBQ on Loughborough Lake see the web for directions in the members only section http://members.kingston.net/rasc/securemenu.htm**
August 13 Saturday	**KAON Observing Session**- Ellis Hall Queen's Observatory **9:00-11:00 p.m.**
August 19 Friday	**Full Moon 13:53**
August 23 Tuesday	**Mercury at greatest elongation W (18 °)**
August 26 Friday	**Astro Yak** at the home of Kevin Kell & Kim Hay visit http://members.kingston/~rasc/indexsec.htm for directions
August 26 Friday	**Last Quarter Moon 11:18 Moon 1.0 ° S of the Pleiades 3 am**
August 31 Wednesday	**Uranus at opposition**

For all other Star Parties for the Summer and Fall Season visit
http://www.telusplanet.net/public/fenertyb/sp_list.htm