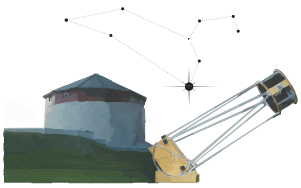
September 2011

Regulus

RASC Kingston Centre



Aurora!

Hank Bartlett snapped this picture from Newburgh at 23:19 EDT on August 5th. As solar maximum grows nearer, we should be seeing auroral activity more often.

Upcoming Meetings

Saturday, September 10, 2011

Regular Meeting	7:30 p.m.
KAON	9:00 p.m.

Saturday, October 8, 2011

KAON	7:30 p.m.

Meetings are held in Room 324 at Ellis Hall on University Avenue at Queen's University in Kingston, Ontario. Our meetings are co-sponsored by the Queen's Physics Department and are open to the public.

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

Saturday, October 22, 2011

Regular Meeting[1]	2:00 p.m.
KC Banquet[2] ★	5:30 p.m.

[1] This meeting will be held in the Wilson Room of the Kingston Public Library's central branch, 130 Johnson Street.

[2] For more info on the banquet, see page 12.

Reports & Other Items

From Kingston Centre, the RASC, and Beyond...

New Meeting Days/Times/Places

Please note our new meeting day (Saturday), times, and locations as listed in the top right corner of this page.

50th Anniversary Banquet

Be sure to get your tickets for our October 22nd celebration at the Four Points Sheraton's Gibraltar Room. See page 12 for details.

Centre Elections November 12th

Yes it is that time again: time for you, the membership, to choose a portion of your executive! This year the open positions are: President, Vice-President, and Treasurer.

Elections will be held at the November 12th Annual General Meeting at 6 p.m. in Ellis Hall Room 324, Queen's University Campus.

Run, nominate, vote, participate, it's all good!

Our guest speaker for this meeting will be **Doug Angle** on the topic "Astronomy in New Mexico."

COSMOS II

Some 30 years after the original series aired (see *Regulus*, December 1980, page 1) the making of a sequel to COSMOS is underway, though it is far from clear if this is good news given the involvement of Fox TV and **Seth MacFarlane**. Still, the involvement of **Ann Druyan**, **Steven Soter**, and **Neil Tyson** would seem to bode well for the project. Here's hoping it can live up to the very high standard set by the original.

More RASC History Online

The minutes of the Toronto Astronomical Club for 1868-69 can now be read online. These meeting reports include observing sessions (including a solar eclipse) and make for very interesting reading. Go to members.rasc.ca (or rasc.ca after the new website launches this fall) and use the menus: Programs > National Archives > Pre-1940 > Minutes 1868-99.

Astronomical Cars

From a recent thread on the RASCals list: Aries, Astra, Astro, Comet, Europa, Mercury, Meteor, Nova, Orion, Saturn, Subaru, Vega. Somone in Edmonton has an Eclipse with license plate "OFDASUN" (see also *Regulus*, Sep-Oct 1991, p. 8).★

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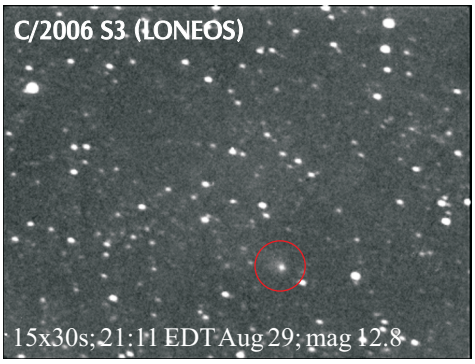
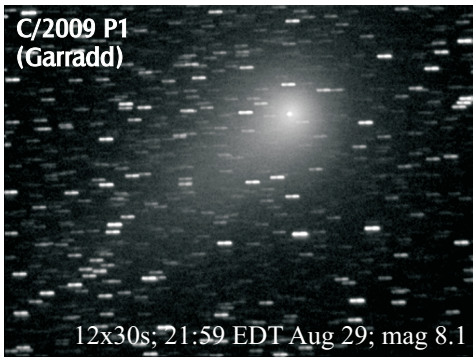
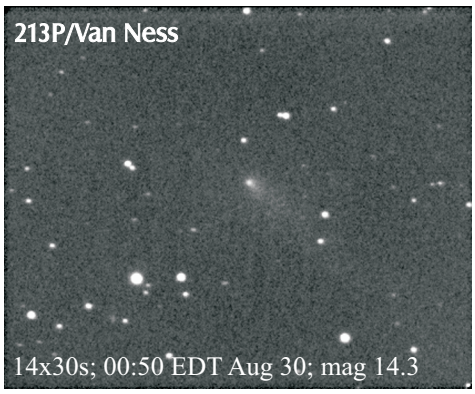
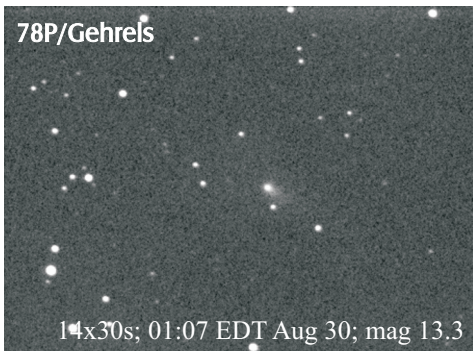
Current Comets—And A Meteor

Walter MacDonald



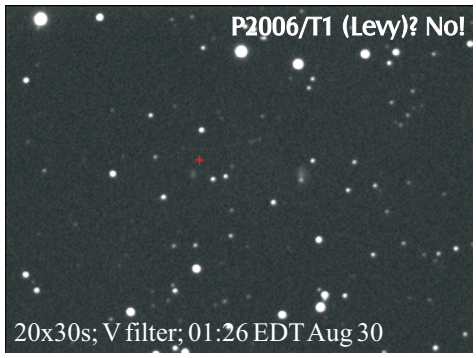






Comet images: Winchester Observatory. All images are V filtered. All magnitudes from ECU.

Kevin Kell reports this meteor was definitely more impressive in real life than in this image.



Apparently Comet Levy (position shown in red) is much fainter than the mag 13.7 ECU says. The galaxies in the image are (l to r): PGC 777 (mag 17.2) and 760 (mag 16.6). Stars are visible in this image down to 18.3.

Regulus Needs You!

ITEMS OF INTEREST FROM MEMBERS—full articles, or even just a couple of paragraphs are always welcome. Items are gratefully accepted on each and every day of the year! Send items to:

walter2 (at)
starlightccd (dot) com

or:

Walter MacDonald
PO Box 142
Winchester ON K0C 2K0

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FL&A Science Fair 2011

Susan Gagnon, Henry Ngo, Emma McLean

In April, at the Frontenac, Lennox and Addington Science Fair the *Leo Enright Memorial Award* was given to Emma McLean. The judging was done by one of the Queen's Astro group master's student, Henry Ngo. Below is Henry's report and a copy of Emma's report. The Kingston Centre is very appreciative of Henry's efforts on our behalf.

Emma McLean's project, "Gyrating Gryos" received the *Leo Enright Memorial Award* at the FLASF this year. Her project was a study of both the history of the gyroscope and its applications in the world. We were particularly interested in her study of the use of a gyroscope for navigation on board satellites. Her project also displayed some gyroscopes that she had built, with help from her father.

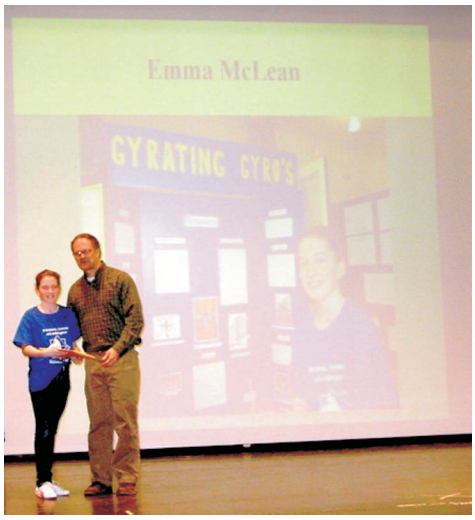
Gyrating Gyros

Have you ever wondered, "What is a gyroscope, and how does it work?" Well, this is a project that answers these questions. At the start of this project, I barely knew anything about the gyroscope except that it is a fun toy that has many interesting features. I wanted to discover and research, not only the general information about gyroscopes, but also to find out its history, its past and present uses and more. The questions that I ask are, "What is a gyroscope, and what is its purpose in the world?"

Did you know that the gyroscope has many different features? Even in space, the gyroscope is able to stay aligned with the sun. This is because the gyroscope can stay in a fixed position; in other words, the gimbal can stay in a fixed position, but the rotor will continue spinning and follow the sun across the sky. One of the altitude control devices used in space is the control momentum gyroscope (CMG).

In the past, Gyroscopes were commonly used for toys and games. Nowadays, they have many functions. You may not believe it, but one place that the gyroscope is found today is in the new iPhone 4. In the iPhone, the gyroscope is used for gaming.

The gyroscope has an interesting history. It has been around since the 18th century when an English scientist, by the name of **Serson**, thought that a spinning top could be used as a guide at sea. Sadly, his suggestion resulted in the death of many sailors. In 1810, another scientist, **Johann Bohenburger**, used a ball instead of the modern day wheel in his own personally-made gyroscope. This was another large step forward for the gyroscope. **Leon Foucault** built his own gyroscope and gave it its name, while studying the earth's rotation. Over the years, the gyroscope has generated a great deal of history and this will continue into the future.



Emma McLean receives the *Leo Enright Memorial Award* for her project "Gyrating Gyros."

The gyroscope is an amazing invention from the 18th century. It will continue to be not only a fun toy, but, into the future, we will continue to find new and improved uses for this amazing object.

Welcome to the world of gyroscopes! ★

Volunteers Needed for October 22nd Meeting

Susan Gagnon

In October we will attempt to answer the age old Astronomy question, "what kind of telescope should I get my child/spouse/friend/granny/self for Christmas?" We need a variety of scopes and some signage to go with them. If you would like to display a scope, please let me know the details of what you are bringing so we do not have a lot of repetition. Please create an info sheet or sign giving some basic details and find a couple of sources of prices for a comparable scope. Describe how you use it, planetary, deep-sky, suburbs or dark site, etc., and include anything that shows what the limitations or advantages of the instrument are. It would be nice to have several people doing 10-minute presentations such as:

- A short blurb on solar observing and safety. Everyone else may consider bringing a solar filter that fits their scope if they have one.
- Describe the basic differences between Dob, Schmidt/Cass/Maksutov, and refractors.
- Discuss eyepieces and magnification. Focus on 2–3 basic eyepieces to get started, barlow, lunar filter, or any other basics.
- Easily obtained charts and starter books.

The remainder can be a tour of the scopes with each person hosting their own little session for all. We are scheduled to be there between 2 and 4 and we will have some refreshments. We can begin set up at 12:30 and finishing at 4 gives us time to get our stuff out before closing.

Please consider participating. It could be a great deal of fun if we have a lot of members out. ★

Observing Reports: July–August

Various Members

MON/TUE, JULY 25/26

Kevin Fetter: The sky got clear just long enough to see a nice bright mag 4 star (κ Tauri) re-appear from behind the Moon. It popped back into view at 8:08:14.150 UTC:

kfetter.com/occult/kaptau1.wmv

And you thought I only did sat observing, well that's right. Since the Moon is in orbit around the Earth, then it's a satellite. ☺

SAT/SUN, JULY 30/31

Susan Gagnon: I got out last night to spot Pluto. Once again I will make the pledge to note its movements over the months left to observe it. If anyone is interested, it is in a nice little starfield that is easy to spot. Just east of M24 there is a little bracket formation of stars with Pluto lying on the outside; the magnitude of Pluto nicely matches the bracket stars...to my eye anyway. (The bracket formation opens toward M24 and a <5 mag star that lies between.)

Hank Bartlett *comments*: Personally its demotion was a good thing: I never would have found it and that would have left my planetary observing incomplete. PLUTO, I know you are out there, I believe in you without even seeing you! Kinda reminds one of blind faith doesn't it? Oh well.

Mark Kaye: I finally got around to observing Pluto, bringing my planet total to nine. Then the next day, the IAU demoted Pluto to dwarf status. It is still a planet, so you really need to observe all the dwarf planets to fill your quota.

Kim Hay *replies*: Thanks for the note Susan. I had great intentions last night to get out and observe around 3:00 a.m., then next thing I knew after I hit the head to pillow it was 5:40 a.m. ☹ I think we should try the Douglas Telescope for Pluto—it worked before.

SUN/MON, JULY 31/AUGUST 1

Kim: I got up at 3:00 a.m. and went out for an hour to observe. Very interesting, it was extremely clear to start, and there were lightning flashes from over the lake, which was very strange; at times they would light up the whole sky. It was very warm, and the mosquitos did not take too long to find me.

I opened up the observatory and was treated to a fine time of looking at Jupiter and its four moons in this arrangement:

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x     x          x              O
                 x
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I was looking through the 8" dob, with a 2" 26mm eyepiece. As the hour went on, Io and Europa got closer together. (Moons listed from left to right: Ganymede, Callisto, Io, Europa).

I observed M31, M100, the Double Cluster in Perseus, the Beehive, the Pleiades, several Perseid meteors and a few sporadics, and several satellites went by. One flashing satellite at 07:25 UT moved from NW to SE.

The skies transparency started to go and it got even muggier. The dew was starting to form and my glasses and telescope finder were fogging up.

Later that day, **Kim** *imaged the Sun in Ha, including AR1263, AR1261, AR1260 and AR1265. She is still having major issues in getting the Sun centred into the camera, but reports that it's coming along.*

Hank *added some encouragement:* Don't give up on it, you're getting there. It is just a matter of finding that sweet spot of where and how to hold the particular camera and at what zoom level.

Susan: I was up at about 4 a.m. and I think I saw the space station. Very bright and very slooooooooow, moving W to NE.

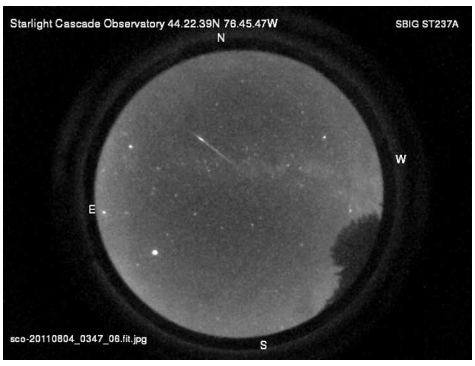
While I did not get back to observing over the weekend I did get some work done on the observatory. This spring a squirrel discovered that my anti-bird device is nothing more than foam. He then proceeded to make all of the large pieces of foam, smaller, highly uniform in size I may say, bits and scatter them about the yard and all inside the observatory. I had noticed the carpet I had installed was getting bunched up under Trigger's new set of wheels (the squirrel had chewed the carpet a bit too).

It was time to take action. I took everything out including the carpet. I swept out the foam bits, and trimmed the carpet to fit better, and put some well-placed duct tape on it. I also adjusted the scope dolly wheels a bit. That was a Sunday afternoon job and it was a warm one. I should have many happy sessions now.

Later in the season I will put wood in the places that were plugged with foam. The foam was a lazy solution and it lasted five years so that is pretty good.

WED/THU, AUGUST 3/4

Kevin Kell: Early this morning at around 03:47, this great Perseid meteor went overhead (see below).



Too bad we were still sleeping, but the camera wasn't...in fact it was even working! So get yourselves outside when you can...because the meteors are a'comin!

Fri/Sat, August 5/6

Kim: Here is an image of the aurora in Yarker. There is green, and a hint of red; of course more clouds are coming in, but I did get some great pictures of Sagittarius, the Big Dipper, Cassiopeia, and lots of airplanes.

I did see a –8 Iridium flare, and lots of other strange lights. I thought I had seen the ISS in the north, and got an image, but Kevin says it was not that, so maybe a plane. We both saw a plane that brightened right up, then went normal again...very strange.

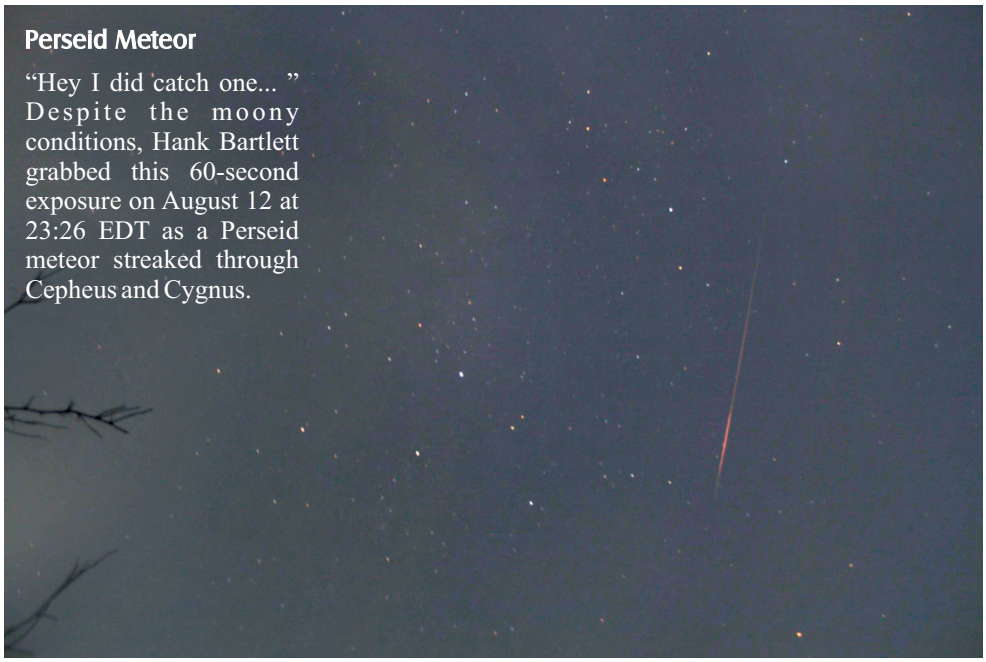
Susan: I thought I saw something shimmering in and out of sight as the clouds were gathering. I sat out to see some meteors but it was quite cloudy in Amherstview by the time these photos were taken out your way.

Fri/Sat, August 12/13

Kevin K: We had zero luck in observing the Perseid meteor shower last night. There was more than enough cloud to have the moon totally light it up and obscure everything. Bummer.

Kim: I was not impressed. I had the charts, the tape recorder, the chair all set. Since the peak was to come between 3–5 a.m., I thought I would catch a little sleep and had the alarm set for 3:00 a.m. It was cloudy and hazy when I went to bed; at 3:00 a.m. it was totally clouded over, so back too sleep. By 5:00 a.m. I saw some brightening in the east, but it was still too cloudy. By 6:00 a.m. I was up and it was still cloudy.

Yesterday on the Sun there were three areas of faculae, and one new group forming in the NE hemisphere... But we did catch something on the Radio Jove system around 15:20 UT, and we are now trying to track it down.



Hank: I took 74 exposures, most being 25 sec to 1 min, and a few longer ones. I saw 5 Persieds, a couple as bright as Jupiter, and one especially nice one with a blue/purple glow around it. If any one of these had occurred when the shutter was open or the camera was pointed in 'that' direction I would share them with you. I had to work this morning so I packed it in by 1 a.m. Oh well, maybe tonight there will be that one meteor that tracks right across the sky in front of my open shutter and I capture that one fantastic image!

Mark Coady: I was on my deck, overlooking Fife's Bay (off of Chemong Lake), which perfectly faces Perseus as it rises. I was there till midnight but there wasn't much to see as the moon reflecting off the water helped bleach the sky even more. I did have a radio tuned to various quiet FM channels and did notice several brief zaps of signals bouncing off of the ionized trails.

Mon/Tue, August 22/23

Walter: The sky was unexpectedly clear, so I grabbed a quick visual session with the C8 from 23:00 to 24:00 (ending just before moonrise). The temperature was a comfortable +13C—so there were only a couple of mosquitos about. Comet Garradd (mag 8.2) was easy to find and see with a bright core. It is nicely diffuse, but not big. Since I was in the neighbourhood I took a peek at M27. Then I went on to M15, M2, Neptune, and NGC 7331. It is very cool to think that Neptune is now in the same spot in the sky as when it was discovered just one Neptunian year ago! Kind of connects one to history.

I couldn't find NGC 7479 (maybe too faint?) and NGC 7009

was already behind a tree so I'll have to try those another night.

TUE/WED, AUGUST 23/24

Walter: I watched for ISS / Progress. The sky was broken overcast, but I was able to catch the final minute of the ISS pass thanks to thinner cloud in the NE. ISS was like a very bright, mobile variable star as it faded in and out several times. No sign of Progress. Strangely, CSC is calling for clear skies but bad transparency tonight. Well, it's not clear but the transparency is definitely bad, so is CSC right after all?

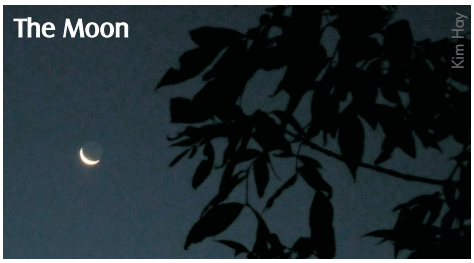
Hank *replies*: Same sky here in the burg; ISS was ok but mag –1.3 doesn't look bright compared to the –3 passes nowadays.

Hmm...a comet, I like comets, I may have to go look for this one if it is mag. 8.

A newbie lives north of the village and he has been trying to bag Neptune without success. He inherited a scope from his uncle, a former RASC Kingston member (I will have to check whom). I have been coaching him at arm's length, not directly getting involved. The best thing I have done so far is getting him to replace the finder with a Telrad. He has found the star field but not the planet, I told him to look for something that is an orb rather than a pinpoint of light. I haven't seen him in a week so maybe he found it.

THU/FRI, AUGUST 25/26

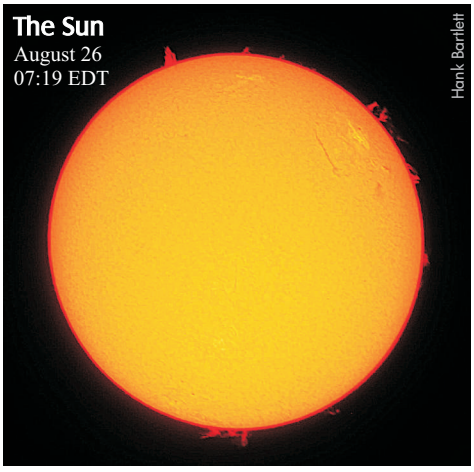
Walter: CSC says it is crystal clear right now, and yet most of the sky is covered in cloud and the satellite loop does not look good. Still, there was a big hole in the N-NE so once again I saw ISS flickering as it mapped the cloud distribution and then as a nice bright –1.6 beacon for the final couple minutes of its pass.



Kim: Now that is getting cooler and the moon rising in the a.m., I took this shot (above) of the waning moon this morning at 05:45.

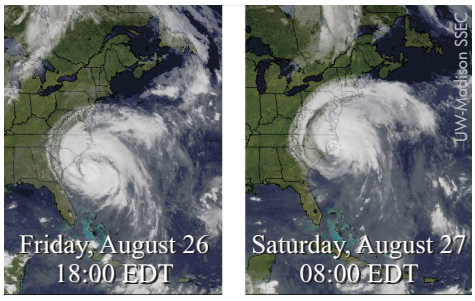
Hank *replies*: Yes it is a beautiful day. I was surprised around 5 how high Orion is; it is the same every year but it is always a sight that means change is coming. I am just waiting for the sun to break the village horizon and check out the Hα.

A little later **Hank** *reports*: Just checked out the Hα and it is awesome: 8 good proms and some active regions and filaments. No time to send a pic right now, gotta get to work.



A DOUBLE FEATURE!
FRI/SAT, AUGUST 26/27

With hurricane Irene moving north and affecting our skies starting on Saturday (as **Kevin K** *warned us), and with perfect conditions in the forecast the stage was set for a double feature: SN2011fe in M101 (visually observable!) and magnitude 8.2 C/2009 P1 (Comet Garradd) paired up with open cluster M71.*

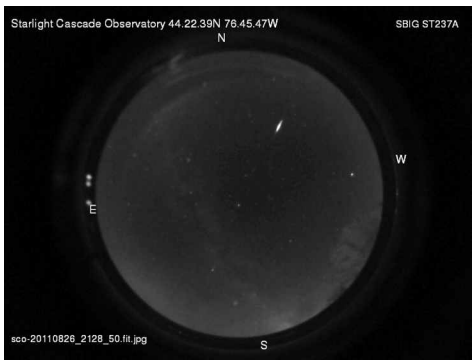


Kevin K: Kim, ever intrepid astronomer, got me outside when I was ready to pack it in for the day and am I ever glad we went outside.

Skies were clear after 21:00 EDT with a little haze in the west and no bugs. There was some neighbour lighting, but what can you do?

We rolled open the roof (I can still hear the *BANG* of the roof flying off and landing elsewhere 8 years ago in a storm!) and Kim started to setup *Starbuck*, the 20cm Dobsonian to hunt for Comet Garradd. We saw the 21:23 pass of ISS in the north, completely by accident, and watched it disappearing into the shadow.

It was about 21:28 EDT and I was looking elsewhere when a flashbulb of light went off. I have trained myself not to stand not moving in shock and incredulity but rather to turn my head up at the speed of whiplash and managed to catch the last bits of what I am estimating a –10 meteor. –10 only because it was so much brighter than Jupiter or Venus but less than a full moon. Direction was SSE to NNW and I saw it over the bowl of the Big Dipper, mostly overhead but closer to 60° altitude. It appeared white in colour (due to

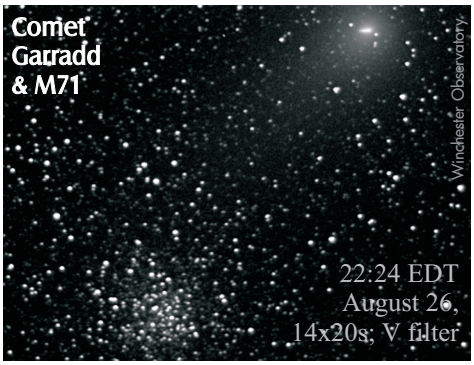


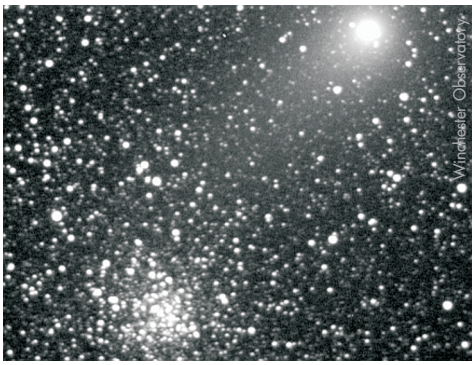
brightness no doubt), spreading across perhaps 20° with no lasting trail, and appeared to be coming from the Vega Summer triangle area. Wow.

A little later Kim got Comet Garradd in the scope right next to M71. One of these days we will get some photographic ability hooked up. It was great. We watched it for about an hour trying to see it move. I did not see any detectable motion but I had a rough time trying to remember where it was the last time I looked five minutes back.

At 22:09 EDT we had a nice –1 Iridium flare, again completely by accident.

I packed it in but Kim stayed up comet watching some more...oh, did I mention the all-sky camera got the meteor? ☺

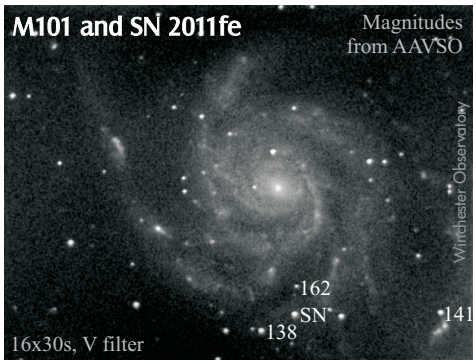




Walter: After getting the scope focused, then synching with the sky (I had to look through the finder and centre Altair to get started), and finally tweaking the focuser setup so the software would autofocus, I was off to a bit of a late start. (Turns out I had disconnected the focuser's temperature probe at some point and the software was not happy with its absence!)

Anyways I imaged the comet and M71—they barely fit in the frame! The motion of the comet was almost entirely in RA (as shown in the left image). Since the comet was quite elongated, I took some images of it without M71 so I could get all of it in the frame.

Since M101 was getting low (only 35° up), I quickly moved on and got some images of SN2011fe. With a quick reference to an AAVSO chart, I noted that the supernova was brighter than the 13.8 magnitude comparison star, so it was now comfortably within the visual range of an 8" scope!

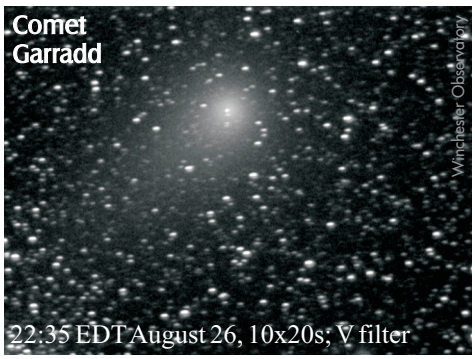


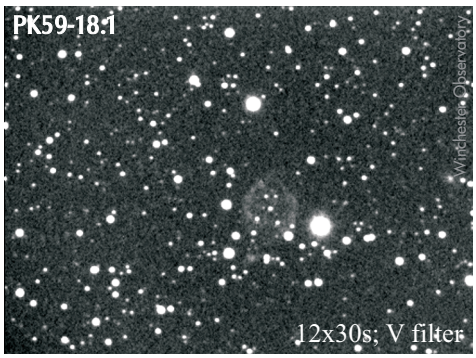
I was still really tired so I decided to image a few more objects before going outside for a quick visual session. A couple of highlights are a faint planetary nebula and two geo sats (images below).

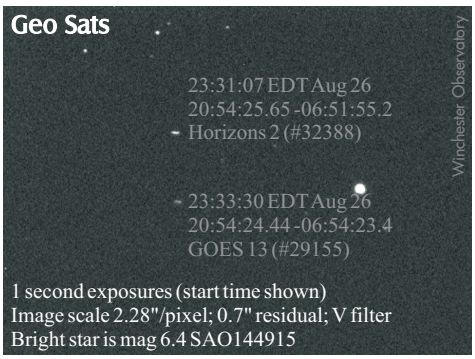
The planetary nebula was 13.8 magnitude PK59-18.1 in Delphinus. I discovered this object in ECU and because it was 2.2x2.0' in size (not arcsec, like so many planetaries!) I decided to have a go at imaging it. The visual description indicates it is extremely faint in a 13" scope and that a UHC filter helps. The two brightest stars in the image are 8th magnitude so the field at least should be easy to locate for visual observers.

In my CCD travels I happened to stop at a nice 6.4 magnitude star in order to focus. Imagine my surprise when I saw something moving! No sooner had one moved out of the field than another moved in! **Kevin Fetter** was able to identify them for me. I really must try observing some of these visually one night...

Going outside I tried to observe M101 and the supernova visually, but my late start came back to haunt me as it was only 30° up and the transparency was not very good down there. In fact the night was fairly dewy and the transparency had deteriorated noticeably by 1 a.m. The comet and M71 were absolutely gorgeous, making a nice equilateral triangle with 9 Sagittae (which formed a line with 7.9 and 8.5 mag stars). The neighbours two doors down were having a bonfire, but at least the neighbours directly behind





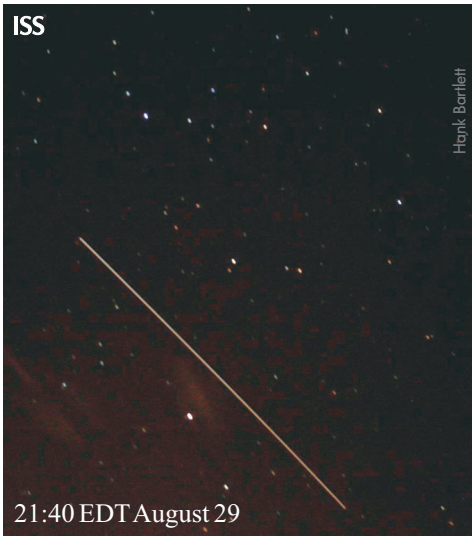


(south) of me were not. After observing several more objects, I was too tired to stay up any longer, so that ended the session.

Kevin F: There is a geo sat, called FLTSATCOM 3 which is flashing brightly sometime between 7 and 8h UTC. I observed it giving mag 5 flashes at around 7:17 UTC this morning (August 27). Its catalog number is 11669.

MON/TUE, AUGUST 29/30

Hank: Well I find it hard to believe, Hank just came in from an observing session. It all began with the attached 60sec ISS image and a nice night. After it went by I imaged Sagitta to see if Garradd would show up in a 1600ISO 1-minute untracked shot; ya there it was right next to "Paul's" ship coming in for a buzz. Ok I need some equipment and I thought I would try my binocular luck and find the comet. Surprisingly it was not hard to find at all.



The view peaked my curiosity for a look in a bigger instrument (the 9.25). After finding the key to the observatory (which hasn't been open all summer) and then finding out I had the wrong key I tried another and Bingo! However the doors were sealed shut by time and humidity, so I used a little going POSTAL to pry them open. Hmmm, company: there are at least 3 yellow jacket nests in there attached to the roof—not a good thing to try in the dark.

Well I guess it is time to break out the spare; back to the house I headed and opened my travelling case and pulled out the C-80, stripped the SM60 off the mount and headed out. Bingo, there it was, brighter and more condensed than I thought; hmm check the finder: dumb ass, that's the Dumbell, dumbell. Ok re-align and bingo there it is: dimmer more diffuse but a nice comet just the same. I spent 20 minutes with a few different eyepieces and found the 32mm with the 2.5x Barlow to be about the best view.

Next I skipped around by the M47 to visit an old friend and into the house to write this e-mail. Well now the dog wanted out and when we went out what did I notice? Jupiter is up. I am going to have to take the scope back out for a peek, of course, and then I gotta get to bed (good thing the pension cheques came today not tomorrow).

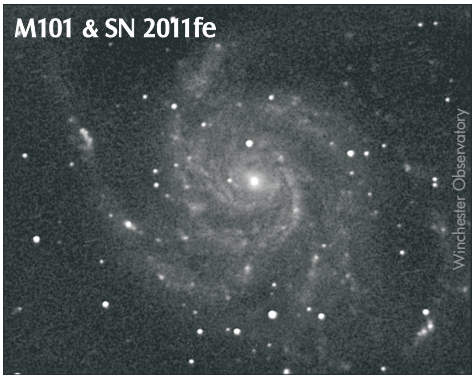
Outside
Outside
Outside

Ok, Jupiter and 4 pretty maids all in a row, how long has it been since we have spied each other??? Of course I could not ignore Andromeda, our neighbour galaxy. You know this IS fun and it has been tooo long. Oh well, I must go to bed just the same, goodnight all.

Susan *replies*: Congrats Hank! I was out as well. What a nice comet, as you say easy to find. My *Project Pluto* continues.

Even if there is just a slim chance that I will get out to observe, I find the best five minutes I can invest is an afternoon bug/critter patrol and roof roll. If I do that then I am at the eyepiece in 5 to 10 minutes.

Walter: I was really tired, so no visual observing tonight. I did fire up the CCD and image SN2011fe and some comets (see page 2 of this issue). The supernova is now 11th magnitude so it's easily in visual range of a modest telescope! My only failure tonight was trying to image Comet Levy (see page 2).



TUE/WED, AUGUST 30/31

Hank: What a nice pass tonight, I have not imaged before as the ISS was dimming out—it makes an interesting exposure.

I got the wasps out of the observatory; maybe I will try to image Comet Garradd later.

Mark Kaye *reported a fireball going southeast*.

Kevin K: Kim & I were outside observing for the 3rd time in 4 days and it is awesome. We were waiting for the 21:55 –8 Iridium flare and caught it on camera & tripod but it did not appear on the all-sky camera (it must have been downloading between images); we did see the bright meteor right after the flare and caught it on the all-sky camera as well (see page 2).★

Blast from the Past: With the Stars

Dr. Helen S. Hogg

Megaton Bombs Puny Alongside Meteor Hits

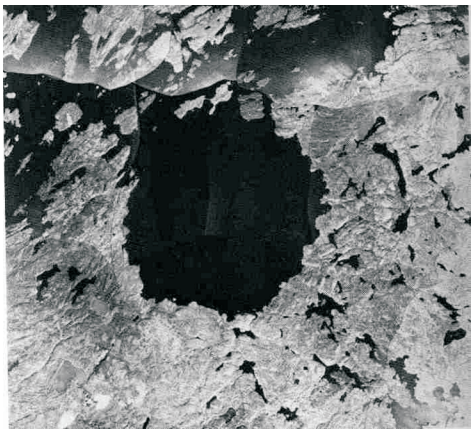
Ever since the Soviet Union resumed the testing of nuclear weapons, our newspapers have contained reports of the number of megatons of explosive force of the latest test explosions. It is interesting to compare these figures with some just published by Dr. **M. J. S. Innes** of the Dominion Observatory, Ottawa, pertaining to great meteroite hits on the earth's surface. These are direct hits on the earth from meteorites large enough to cause craters. Canada is foremost among the countries of the world in its search for the great hits of past ages.

Among craters of probable meteoric origins located by the Dominion Observatory search under Dr. **C. S. Beals**, three are being intensively studied. These are the Brent crater in Algonquin Park, the Holleford crater just north of Kingston, and the Deep Bay in Reindeer lake, Sask. These are almost certainly of meteoric origin.

Gravity anomaly studies and diamond drilling carried out on the Brent and the Holleford have yielded valuable information about the formation of such craters. For example, the depth and total amount of shattered material (known as *breccia*) is in numerical relation to the diameter of the rim.

7½ Miles Across

The largest of these craters is that of Deep Bay, whose diameter is 40,000 feet, or 7.57 miles. Dr. Innes has just published the results of a gravity anomaly survey of this crater which show it to be similar to the other two more thoroughly investigated. Diamond drilling is under way in Deep Bay. The floor of the crater is expected to be about 2,100 feet below the surface of the bay.

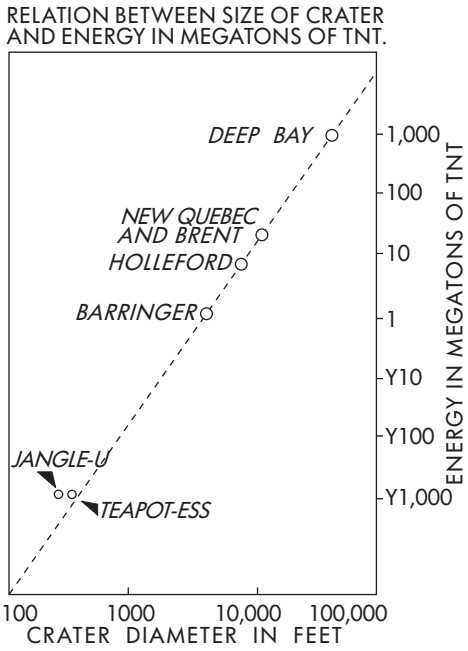


Deep Bay Crater ESA Photo

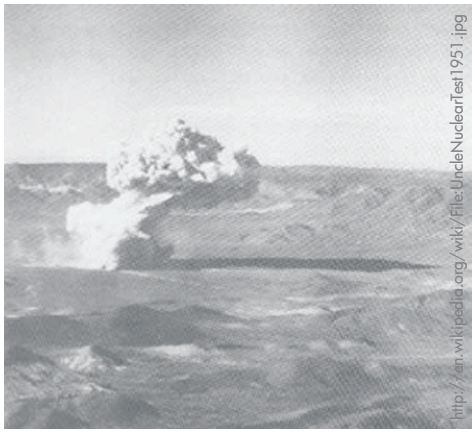
From previous results on the two smaller craters, Dr. **J. A. Rottenberg** has shown that in granitic rocks, the depth of rupture due to meteoritic explosion is about equal to one-third of the diameter of the resulting crater. Drilling results at the Brent crater confirmed this, and also showed that the volume of broken rock is several times greater than the volume of the sedimentary rock which has since filled in the crater.

The ages of these craters are at least 70 million years for Deep Bay, and 700 million for Brent and Holleford.

Energy Involved



Dr. Innes is able to reach some conclusions regarding the energy invovled in these meteorite hits. This is expressed in the equivalent of megatons of TNT—that is, millions of tons. The accompanying diagram represents in a simplified way the general trend of estimates of energy compared with the size of the crater. The smaller craters, Teapot-Ess, 335 feet diameter, and Jangle-U, 250 feet, are man-made explosion craters.



November 1951: The 1.2 kiloton sub-surface Buster-Jangle Uncle nuclear test.

Of all the meteorite craters so far investigated, the Deep Bay is the one which required the most energy to produce. The probable energy involved has values which range from a couple of hundred megatons up to more than 1,000 megatons of TNT energy, computed on various assumptions.

* * *

Dr. R. H. Garstang of the Mill Hill Observatory, University of London, Eng., will address the opening meeting of the Royal Astronomical Society of Canada, Toronto centre, next Friday evening. His talk on "The Gaseous Nebulae", at 8 p.m., in the Wallberg building, University of Toronto, is open to the public.★

This column was originally published in the Toronto Daily Star for Saturday, October 7, 1961 and is reprinted here with the permission of Dr. Hogg's family.

Charleston Lake Star Gaze 2011

Kevin Kell

We just returned (early) from Charleston Lake Provincial Park, from a couple of days of camping and from attending **Terence Dickinson's** 26th(!) event on Saturday, August 20.

It was nice to have it on a Saturday this year, as in past years it had been all over the weekdays and made it that much more difficult to attend if one had to work the next morning.

The forecast on Saturday morning was for SUN and 29 degrees. Mid-afternoon the lightning, thunder and rains appeared. Good thing we had already come back off the lake canoeing for several hours.

It stopped long enough for dinner and Terence's talk from 8:30–9:30 p.m. but the clouds did not go away. The star gazing portion after the talk was a no-go and we headed back to camp, and around midnight the skies opened up again with rain and lightning and thunder. This continued off and on for most of the night so at daybreak we broke camp and headed home.

Terence gave a good show again, involving the young kids in the almost capacity crowd. The talk was aimed at nature, light pollution and some basic questions of scale.

Charleston Lake in general is in a good dark-sky area but still there are more trees than ever, limiting the available horizon. The **Friends of Charleston Lake** are now involved in funding more interpretive programming, including Terence's talk.★

International Observe the Moon Night

Kim Hay

The International Observe the Moon Night (InOMN) is just one way that outreach efforts started as part of the International Year of Astronomy in 2009 are continuing. This year InOMN is being held on October 8th when the moon will be four days past first quarter.

Members of the Canadian Lunar Research Network at the University of Western Ontario (website: http://clrn.uwo.ca/) are part of the international organising committee for this event.

The InOMN website, at observethemoonnight.org, has many interesting educational projects that students can do, or if you just want to observe the moon and record your event you can do this as well. There is also a *2011 Lunar Calendar* that can be downloaded for your use.

The InOMN has a facebook page that you can follow and see the many countries in the world that are running events. It is one way that the world can get outside and observe the same object, and so feel united in our observations.

The RASC's *Isabel K. Williamson Lunar Observing Certificate* program can be used as part of your observing event. This program has a 60-page document which gives an overview of the program, has challenge features, lunar surface drawings, and has the observer learn the phases of the moon for the different features of what the moon has. It is always best to do your homework before trying this observing program. A good moon Atlas, such as the Antonin Rükl or a good lunar program, such as *Virtual Moon Atlas* will help you understand the moon's features.

There is also the Astronomical League's *Lunar Club Observing List*, which contains 100 lunar features for you to explore.

Starlight Cascade Observatory

You can observe the Moon by naked eye, binocular, or telescope if you want to take images or sketches of the moon. Though the Moon can make the night sky lose some of its darkness for dark sky observing, it is still a very interesting object to study, and it is fun to learn its composition and history.

There are e-mail lists that can help you learn more about the Moon, such as the ALPO Lunar Observer's list on Yahoo! or the *Shallow Sky* list. The ALPO Lunar section also has a newsletter, *The Lunar Observer*, that can be downloaded at:
http://moon.scopesandscapes.com/tlo.pdf.

These are just a few. Do a Google search and you will find many more. Also remember to use your RASC *Observer's Handbook* to learn about the moon.

Whether you using a telescope or binoculars, there are a lot of resources out there to help you take your time observing the Moon: taking in the beauty of the rilles or the crater walls, discovering the Werner X feature, or just getting lost in the mass of beautiful craters.

Go out on October 8th and be part of the International Observe the Moon Night!★

You are invited to the

Royal Astronomical Society of Canada
Kingston Centre

50th Anniversary Celebrations
1961-2011
at the
Four Points Sheraton—Gibraltar Room
Saturday October 22, 2011

Guest Speaker:
Patrice Scattolin, Centre Francophone de Montréal
"Space Exploration from the Ground Up: With Reality and Fiction"

Buffet Dinner:
Soup from the Chef's Kettle
European Rolls & Butter
Garden Salad with Assorted Toppings
Canadian Cheese Board
Assorted Pickles, European Sliced Salami
Potato, seasonal Vegetables
Two Deli Salads
Two Entrées
Fresh Seasonal Fruit
Chef's Choice of Desert
Assorted Soft Drinks, Coffee & Decaf Coffee and Assorted Teas.

There will be a cash bar.
Cocktails at 5:30 p.m.
Dinner at 6:00 p.m.

Tickets:
Kingston Centre Members $25.00 per person
Non-Members $40.00 per person.

Make cheques payable to: RASC Kingston Centre
c/o Kim Hay, 76 Colebrook Rd.
RR1 Yarker, Ontario K0K 3N0
Receipts available upon request. E-mail confirmations will be sent.

For information visit http://kingston.rasc.ca or call 613-377-6028

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Please list names of all attendees.

Names:

Address:

Number of tickets: ☐ **Amount enclosed: $** ☐

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