Regulus

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada –February 2006

Coming up…

RASC Regular Meetings

Queen's University
Stirling Hall Theatre D

Friday February 10
Members Night

March 10
Speaker TBA

Meetings are co-sponsored by Queen's Physics and include astronomy lectures open to the public.

KAON Public Observing

Queen's Observatory
Ellis Hall
Saturday Feb 11 7:30 - 9:30

AstroYak

Friday, February 24 7:00 pm
at the home of Kevin Kell and Kim Hay.

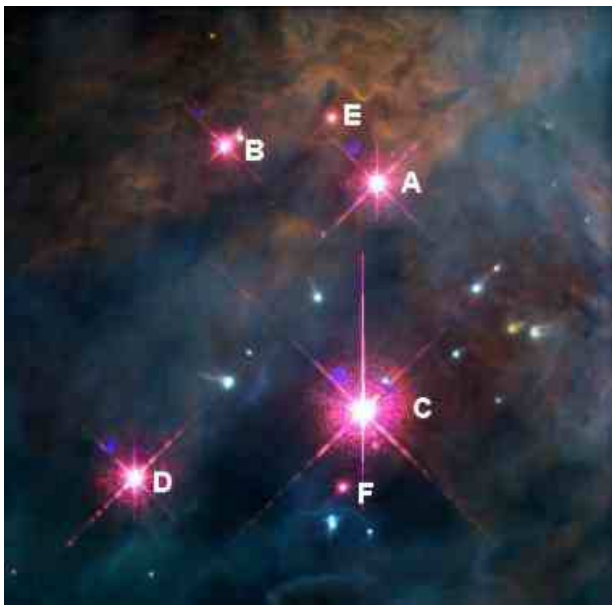
Members Observing

February 18-28 Lemoine Point
Contact Ken Kingdon for notification.

Kingston Centre member Mark Kaye is the recipient of the Fautley award, an award of the Hamilton Centre of the RASC. From http://www.hamiltonrasc.ca/ :
Congratulations Mark on being one of the few to have your name share a place on this award. The Fautley award is given for advancement of astronomy and Mark has certainly done quite a bit to help everyone enjoy astronomy over the years.

Mark is a member of both the Kingston and Hamilton Centres.

Congratulations Mark!



The Trapezium is a group of 4 stars in the middle of M42 - the Orion Nebula. Two other stars are members of the group and provide an additional observing challenge.
See Dave Pianosi's Observing report on the Trapezium on page 3

The scientific theory I like best is that the rings of Saturn are composed entirely of lost airline Luggage.
- Mark Russell

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President's Tid Bits
Kim Hay

February always seems to be a quiet time in the year, sort of the resting period before the explosion of Messier observing. Observing this winter has been a past time that not much of us has done in the local area. The clouds have been in abundance, yet our snow level is very low. This certainly has been a very strange winter season.

However, since March is around the corner and Messier Observing will be at its best with the Virgo Cluster coming into view, it will be a good time to get out and observe. So get your charts, maps and log books ready. We do have a list of members actively working on their Messier List. The number on the right is the number they have to date. Way to go people, keep observing! Perhaps we can get a few more out there to join us? You can check out the Messier & other observing projects at http:// members.kingston.net/rasc/funmem.htm this page has member pictures, members websites and various observing programs. Have fun!!

Hank Bartlett	55
Fred Barrett	50
Laura Gagne	70
Kim Hay	59
Peggy Hurley	55
John Hurley	32

On another note, as webmaster, I would like to remind everyone that the passwords to the Members Only & Executive Only pages will be changing as of February 1st. The passwords are located on the back page for members and executive to make note of.

If you have anything that you would like see added to the RASC-KC webpage, please send me a note at kim (at) starlightcascade.ca

Our second offering of the Observational Astronomy for the Novice starts up January 31. It's not too late to register if you are interested. Call the Centre's info line at 613-377-6029 for more info.

Till next time, clear skies and keep looking up!

Members Observing Schedule 2006
Ken Kingdon

Members observing sessions are intended for RASC-KC members and their guests. This give us a time when we can observe together, without the worries of million candlepower flashlights and other distractions we get at public events.

Most months we will observe at Lemoine Point, and using a floating schedule to observe the first clear night of the observing period.I keep a list of interested people, and will advise people by email the afternoon of the day (earlier if it's more obvious) if it's forecast to be clear. To get on the list, call Ken at 384-5020 or email at kenkingdon (at) hotmail.com

Need equipment? The centre has a number of telescopes and binoculars in the equipment loan program. Contact Kevin Kell to borrow what you need. There is no charge to members.

February
Floating Period: first clear night beginning Saturday, Feb.18 to Tuesday, Feb.28.
Meet: 7pm in the South Parking Lot of Lemoine Point C.A.

March
Floating Period: first clear night beginning Monday, March 20 to Friday, March 30.
Meet: 7pm in the South Parking Lot of Lemoine Point C.A.

Target for Tonight
Susan Gagnon

My best observing sessions are ones that are well planned. At one time "best" would have meant successful location of one or more targets, end of story. Unfortunately in the last few months best also means efficient use of clear sky time, often measured in minutes. To this end I am working out a customized list to provide a framework for observing session planning. If it increases my likelihood of observing and my target capture rate, you should see

more lists in Regulus over the years. Objects will be listed by constellation and taken from well known observing lists which include: ETU (Exploring The Universe), Messier, Finest NGC, David Levy's List of Deep Sky Gems, and the Deep Sky Challenge list. The list can then be used to research the constellation well ahead of time. I like to use Burnham's Celestial Handbook, Omeara's Messier book, and Starry Night to research and select maps.

The 2006 Observers Handbook contains Messier, Finest NGC and the Deep Sky Challenge lists as well as some other interesting sets of objects that you may wish to add to your personalized list such as, Double and Multiple Stars, Variables, and Clusters to name a few. The ETU can be found on the National Website. If you Google the RASC site with "Deep Sky Challenge" you can get the list plus 9 maps in Adobe format. The Levy list of 155 objects is best researched through David's book *Deep Sky Objects: The Best and Brightest From Four Decades of Comet Chasing.* The book actually has over 380 objects but the shorter list compiled by David and Leo avoids duplication of others like Messier and Finest NGC.

Why do I think that this might be useful to anyone else? You are a new observer and you are overwhelmed by the endless lists of cool stuff to try and find so you need a set of mental blinders. Working one constellation at a time is a great way to do this. It is great star hopping practice. If you are working toward a certificate you can see what you need for that list, document it and have it for your records. Some of us have had to go back to objects to repeat them because we cannot find them in our log books. If you are like me you are often limited by light pollution in a suburban location. In this case you can spend 3 hours observing but the constellations available to you are limited. This way you can max out your observing, make note of what you need a better sky for and be ready when better conditions present themselves. I invite others to tackle compiling a list for any constellation using the suggested sources and send them to Regulus. Look for the flaws in this plan and offer modifications that may be helpful.

Orion observing list

ETU: constellation and bright stars, Betelgeuse, Rigel. M42, variable U Orionis.

Messier: M78 Reflection Nebula, M42 Emission Neb., M43 Emission Neb.

Finest NGC: 1788, 1973+, 2022, 2024, 2194,

David Levy's Deep Sky Objects: 95 (NGC1999), 124 (NGC2174), 158 (IC434).

Deep Sky Challenge: HH1, IC434/B33, Sh2-276, Abell 12.

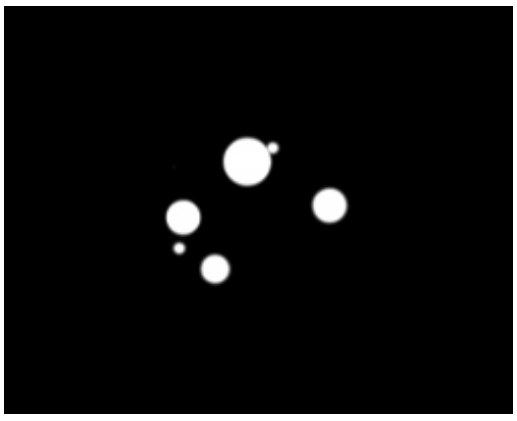
Observing the Trapezium

Dave Pianosi

Well, I finally made it out. First starlight bouncing off my mirrors since May,'05! Pretty embarrassing eh?

On Jan. 3 Ken Kingdon organized the private floating observing session and low and behold…I actually braved the cold and went. The sky was too milky for working on any of my Finest NGClist.(I'm about 55/ 110 done) plus the first quarter moon was setting in a while as well.

I decided to play around and I settled on trying for the 'E' and 'F' stars in the trapezium (aka –Theta Orionis) of Orions belt. They are both 10th mag stars. I dropped my 10mm Speers-WALER and 2X Barlow in my rough and ready 10 Dob so I was pushing 220X. At



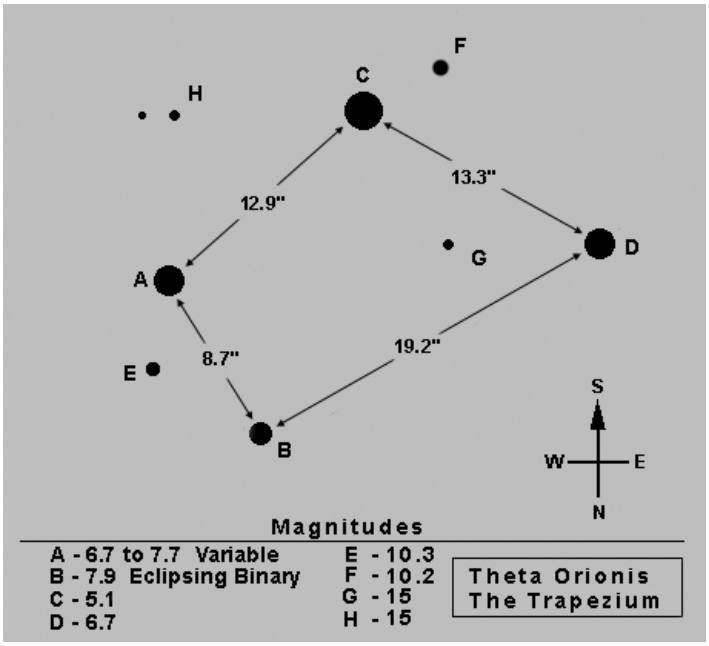
4 stars in the Trapezium are pretty easy. But look for the E and F stars, which aren't as obvious

first there was no hope with Orion only about 30 degrees up. Of course the four stars are easily picked off but there was no clue of the 'E' and 'F' stars. I've

spotted these extra stars of the trapezium in Ken's 12.5" once back in 2002 but I couldn't recall there positions nor did I have a helpful mapping aid, so the neat thing was, I was going at it without any preconceived ideas of where to look.

After eating half of Ken's observing cashews while we warmed up the the van (did I mention it was cold?) we headed out to the night sky again. What a difference an hour makes. The Trapezium now easily gave up the 'E' star. I could immediately make out this dim star next to but clearly away from the other stars. The only problematic one was 'F'.

After another 20 minutes I started to think I was seeing the brightest of the four Trapezium stars becoming oblong or bulging. This irregularity was very repeatable so I knew that I was on to something.
A few more minutes then, there it was. 'F' was not incredibly obvious, ('F' is very dim and very close to the brightest Trapezium star and this combination of proximity and brightness really cause a problem), but



William Struve discovered star E in 1826 with a 9.5 inch refractor, and F was discovered by John Herschel in 1830. Two other 15th magnitude stars (G and H) are also part of the system.

it was obvious enough that I only checked the star positions later on the net as a formality. I basically knew that I grabbed them both. As I mentioned before…I had seen these years ago in Ken's scope but I never feel like 'I've' seen it, unless it was done by me with my own gear.
This is a good challenge and it is definitely easy enough to locate - therefore it is a decent project for folks who don't have pitch black sky and don't have monster scopes.

Neat things about the Trapezium…star 'C' is actually the brightest star in the Trapezium A B C D system? Weird.

January Members Observing

Ken Kingdon

Monday afternoon January 23rd was a superb Spring-like day in the mid-Winter. Warm, calm, clear... plus the Clear Sky Clock forecasted a night that should be perfect. Four of us went to Lemoine Point, but the CSC let us down... cloud banks came and went, before finally killing our session at 9:30pm.

But... for about one hour, we did have a good sky, and as Dave Pianosi said: "The weather was a lot better than being out in the summer mosquito season". I was happy to just get an hour in as it's been so cloudy lately.

Hal Boden and I met at 5:30pm at Burger King, and enjoyed conversing for an hour before heading over. This was a nice way to precede the outing.

At 7:30pm, Comet McNaught (C/2005 E2) was already very low (10 degrees) and could not be found... lost in the approaching distant bank of cloud. Sure enough, that distant cloud bank soon arrived, but we had time to view a few of the standard showpieces such as: M45 Pleiades, Orion Nebula, Andromeda Galaxy, NGC 2169 (the "37" asterism, in Orion). Doug Angle arrived about 8pm, and he had already been home & back to fetch the 24-inch Venor scope. Doug - that was indeed a great effort, especially since you had a very busy schedule that day; thanks very much for trying. But, just then that first wave of clouds arrived, so we elected to not set-up the Venor.

During the cloudy interval, I finally got around to laser-collimating my reflector... which thereafter gave MUCH improved views - better, by far, than my being lazy by just turning the secondary by hand so it

"seemed aligned"!! Yah... - right.

Under clouds again, I went into my "mobile observatory" (a.k.a. a mini-van) for a break in order to plan a star-hopping route to an interesting nebula named IC 2162 which Jan Wisniewski told me about a couple of weeks ago. I got two eyepieces ready and warmed... a low power wide-field for searching and star-hopping, and also my H-Beta nebula filter mounted on another medium-power eyepiece.

Ken sits in his mobile warm room to prepare for observing at Lemoine point

The sky cleared again, and I then star-hopped to the location of nebula IC 2162. After switching to the waiting H-Beta eyepiece (Jan had advised that this filter was necessary to make it appear), I did find something faint there. But in the next couple of minutes, it strangely got fainter and then suddenly disappeared - you guessed it - another cloud bank covered it. This nebula is faint, but it is quite unusual... like 2 round "soap bubbles" beside the named nebula. It is probably best seen with Jan's larger 20-inch aperture (or our 24-inch Venor). Unfortunately, bad timing with the clouds wrecked my attempt to absolutely confirm it with my smaller 12.5-inch reflector.

I had a long list of planned objects, but they will just have to wait. Dave Pianosi and I talked in my "mobile observatory" for another hour, then we packed up and drove home.

I have attached an image of my "mobile observatory". It keeps my charts dry, and prevents wind blowing the pages and my other papers around. It keeps my eyepieces ready and warm in a tray on my dashboard. Everything I need is completely out of the weather and right at hand. I have electrical power for most any use. Most important, I NEVER, NEVER get cold... I do charting, notes, pre-planning, and getting eyepieces prepared while comfortably seated in the van, and then simply roll my "seat" backward, and head straight to the scope for a look.

This was also the first time I used a newly acquired bomber hat (inexpensive from Mark's Workwear)... and it is now on my "essential clothing list". Truth is - with thin multi-layers beneath my outer coat, plus good -100F rated snowmobile boots, and a bomber hat - I was MORE comfortable than a typical night in Summer. Dressed properly, I can honestly say that I prefer Winter observing more than Summer's dewy nights and skitters! And there is a heck of a lot to be seen in Gemini, Orion, Canis Major, Leo, Virgo. Most of the Messier List can be done right now in Winter. So clear nights are precious.

Clear skies... use 'em, or lose 'em!

A Guide to Astronomy

(author unkown)

What we say:

Yes, the premium apo refractors are well worth the money.

What we mean:

(A) My spouse has no idea what I spend on astro gear, or

(B) We have no children in our household.

What we say:

Well, yes, with a little work that Tasco you have can make a decent starter scope.

What we mean:

I feel your pain.

What we say:

I live in a moderately light polluted area.

What we mean:

I'm about ready to go on a rampage and shoot out all the street and flood lights within 10 miles.

What we say:

If you dress properly, cold weather observing is no problem.
What we mean:
I haven't lost any fingers or toes to frostbite yet.

What we say:
This small apo gives the ultimate razor sharp, high contrast views.
What we mean:
I'm not industrious enough to set up a big dob, but this thing sure was expensive - aren't you impressed?

What we say:
Yes, it takes a few minutes to get set up, but the views through this big daddy dob are unbelievable.
What we mean:
This behemoth has finally worn me down. Wanna buy it?

What we say:
I can't quite make out the spiral arms in that galaxy.
What we mean:
Where's the galaxy? My night vision died ten years ago.

Responsible Lighting and Your Home, Part 3

Kevin Kell

You may recall my earlier articles in Regulus about applying the tenets of responsible lighting to your home.

In Part 1 (Regulus - February 2005), we looked at a generic back door lighting situation where there was bad bad lighting. There was too much light, it caused a lot of glare, trespassed onto the neighbours property and was shining up in places that we didn't need it. We corrected that by reducing the wattage and by using full cutoff shielding. In Part 2 (Regulus - January 2006), we looked at over wattage driveway lights, reducing them from 100 watts each to 7 watt compact fluorescent plus filters.

In this article we look at a fairly standard garage motion sensor floodlight. Typically you would drive home at night, the motion sensor lights go on and you would be blinded by your own floodlights and run into the doorframe. Our first step was to replace our older floodlight fixture that had no shielding at all with one that came with a little bit of shielding, enough to work from as a platform to install full cutoff shielding. In addition the new fixture allowed on times of 1, 5 and 20 minutes instead of the old fixture times of 10 and 20 minutes.

The new floodlight fixture was purchased with consideration for its potential for modification.

We determined that 150 watt bulbs were too bright for the purpose of illuminating the garage door entry and for the front door walkway. So we replaced the 150 watt floodlights with 26 watt compact fluorescent floodlight bulbs that gave the equivalent of 90 watts of lights.

Compact fluorescent bulbs would drop the power usage from 300 watts to 50 watts, and still give the desired amount of light.

I cut a template out of cardboard and test fitted it until it made a good full cutoff shield that would block direct line of sight light from being seen from someone

walking or driving up the driveway.

The template was applied to some black plastic material from a Krazy Karpet

Sheet metal screws were used to attach the plastic shield to the fixture partial shield after drilling pilot holes through the metal.

Both shields were attached and some minor adjustments of the light aim and some trimming of the plastic gave us our final product

As seen from a 2 meter tall vantage point, the bulbs are not visible at all yet will light up the garage door entry point and the front door walkway

This is another example of what you can do in your own home to help reduce light pollution and promote responsible lighting.

Clear Skies and Dark Skies!

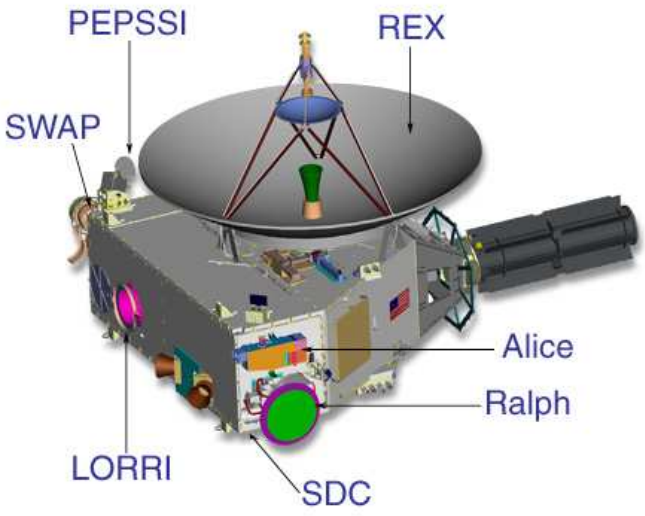
New Horizons: Mission To Pluto, Charon and Beyond

Leo Enright

As I sit down to write this article, it is now exactly 22 minutes since the launch of the man's first spacecraft designed to study the planet Pluto and its satellite Charon, 22 minutes since the launch of the first robotic mission to study the denizens at the very edge of the solar system.

For four decades, since the very beginning of the exploration of the moon and the solar system, there has been a great desire to learn more about what was once called the ninth planet, but what is now sometimes called 'the king of the TNO's' – the Trans-Neptunian Objects that populate the Kuiper Belt well beyond the orbit of the planet Neptune. The culmination of those dreams is the scientific probe, known as 'New Horizons' that shot up into the sky over Cape Canaveral in Florida today, January 19th, 2006. It is a truly amazing feat of technology and one that has been in the planning stages for over 15 years. This craft is about the size of a grand piano and is loaded with very sophisticated and extremely

sensitive instruments. First of all, it is powered by a small amount of plutonium, since solar panels at the distance of Pluto and beyond would not be able to generate sufficient energy even for this small spacecraft to operate. It has instruments to look for magnetic fields and to measure the speed of escape of particles in Pluto's very thin atmosphere. Another instrument will be able to use radio waves to analyze the atmosphere and to measure Pluto's night-side temperature, and another one will use ultraviolet light to determine the precise composition of the atmosphere that is probably composed largely of nitrogen, carbon monoxide and methane, although these gasses probably freeze to the surface when Pluto is near aphelion. Another important device will use infrared measurements to determine surface composition and to make colour maps of the surfaces of both Pluto and Charon. A very high-resolution telescope and camera will be capable of detecting surface features as small as a football field. Another instrument, being put into operation for the first time on a spacecraft, will count and measure dust particles in space throughout the very long journey.



The New Horizons spacecraft, previously know at the Pluto Fast Flyby or Pluto Express is about the size of a grand piano.

A long journey it is indeed, but this craft is going to be traveling very, very fast. As I write these words, now over fifty minutes since the launch, the craft is already a considerable distance on its way to the moon, which it will pass later today, in fact in about 8 hours from now. (Remember the Apollo spacecraft that took astronauts to the moon in 1969, a destination which they reached in 3 days.) In March 2007, the New Horizons spacecraft will pass Jupiter and receive a gravity assist as it emerges from the region of 'the Giant of the Planets', a sling-shot effect that will push its velocity up to over 75,000 kilometres per hour. Then in July 2015, about 9 ½ yeas from now, it will reach the first of its destinations ad will begin the study of Pluto from a distance of only 10,000 km above the surface, that is, from a distance that is 40 times closer to the earth's surface than the moon is. We will probably be inundated with information at that time, in a way that will be similar to what happened in the 1980s with the flood of new information, along with stunning images, at the time of the "flyby's of Saturn and Uranus. It is just possible that we may also learn more about Pluto's second and third moon – objects which were discovered just three months ago. (Yes, Charon is not the sole moon of Pluto. Yes, Pluto had more moons than Planet Earth or Planet Mars!)

Liftoff of the Atlas V carrying NASA's New Horizons spacecraft to a distant date with Pluto! Image credit: NASA/KSC

After that is onward to the Kuiper Belt, a vast, disk-shaped cloud of thousands upon thousands of solid icy bodies extending out to over 7 billion kilometres from the sun and named after Gerard Kuiper, an astronomer who, in the 1950's, predicted their existence, though none of them had yet been discovered. By now we have photographed well over a hundred of them and will likely eventually have names for many more of the thousands that surely exist in the 'deep freeze' at

the edge of the solar system. In fact, just last summer a Trans-Neptunian Object was discovered that is actually considerably larger than Pluto; it is named 2003 UB313. Learning more about these objects is far more important than it may seem to some people, since these objects have remained as they were at the beginning of the solar system, and they represent a frozen record of conditions as they were at the time of the beginning of our sun and its planets, including Planet Earth.

Today's launch of 'New Horizons' is one that I will surely remember for a couple of reasons other than for its importance as a scientific venture, as just stated.

Just as many others did, I was able to watch the countdown on television on the NASA channel. (Probably some Kingston Centre members did exactly the same thing!) However, being at a location about 400 kilometres from the launch site, I was prepared, one minute after the launch, with binoculars and camera, to try to see the speeding spacecraft rising high above Cape Canaveral. Regrettably, clouds up to 20 degrees above my northeastern horizon prevented any such view, although on previous launches from 'the Cape', it has been possible to see the spacecraft for a short while. The other memorable aspect of this event is the fact that our Honorary President, David Levy, who as some of our Centre members may know, was the official biographer of Clyde Tombaugh, Pluto's discoverer, came to Florida for this launch of the 'Mission To Pluto', and I had a chance to have a couple of phone conversations with him, and to make plans for a visit with him. However, because the launch was twice postponed (from January 17 th to 18th and from January 18th to 19th), the planned visit had to be postponed also Nonetheless, it was good to know that David did have the opportunity to see the launch of 'New Horizons – Mission To Pluto and the Kuiper Belt'.

David and I both know that if Clyde Tombaugh were still alive, he too would have been very excited about what happened today, just a few minutes ago. I remember years ago when we were so very fortunate to have Clyde, the discoverer of Pluto, speak to us in Kingston. That night, while talking about one of his favorite topics, he said, in the unique and wonderful way he filled his speech with some of the best (and worst) puns in the English language, "I am a Plutocrat!"

On a day like today, as we await the scientific revelations that we expect in July 2015 and in years between 2016 and 2020, how could any of us not wish also to say, "We look forward to being Plutocrats"? Bon voyage, 'New Horizons'!

Regulus - The Newsletter of 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.

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Post: Doug Angle,
RR#1, Sydenham Ontario Canada
K0H 2T0

2006 Publication Deadlines

For the month	Deadline
February	January 28
March	February 18
April	April 1
May	April 22
June	May 27
July	June 24
August	July 29
September	August 19
October	September 30
November	October 21
December	November 25
January 2007	December 16

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
February and March 2006

By Kim Hay

Calendar also available online at : http://members.kingston.net/rasc/cosmiccalendar.htm

Date & Time	Events		Date & Time	Events
Feb 4 Saturday	**Little Cataraqui Conservation Area** Public Talk 7:00 –9:00 pm with observing- weather permitting		**March 5 Sunday**	**Mars 2.9° to left of Moon , 11 pm.**
Feb 5 Sunday	**First Quarter Moon 1:29**		**March 6 Monday**	**First Quarter Moon 15:16**
Feb 7 Tuesday	Observational Astronomy for the Novice Course 7:00-9:00 pm		**March 7 Tuesday**	Observational Astronomy for the Novice Course 7:00-9:00 pm
Feb 10 Friday	**Regular Meeting** Stirling Hall Theatre D **7:30** p.m. "**Members Night**"		**March 10 Friday**	**Regular Meeting** Stirling Hall Theatre D **7:30** p.m. "**TBA**"
Feb 11 Saturday	**KAON Observing Session**- Ellis Hall Queen's Observatory **7:30-9:30 p.m.** for more information visit http://members.kingston.net/rasc/pubobs.htm		**March 11 Saturday**	**KAON Observing Session**- Ellis Hall Queen's Observatory **7:30-9:30 p.m.** for more information visit **http://members.kingston.net/rasc/pubobs.htm**
Feb 12 Sunday	**Full Moon 23:44**		**March 14 Tuesday**	**Full Moon 18:35 Penumbral Lunar Eclipse, Moon rises during eclipse in most of North America**
Feb 14 Tuesday	Observational Astronomy for the Novice Course 7:00-9:00 pm		**March 17 Friday**	**Spica 0.5° N of Moon best in West of North America**
Feb 15 Wednesday	**Zodiacal Light visible in the West after evening twilight for the next two weeks**		**March 18 Saturday**	**Zodiacal Light visible in the West after evening twilight for next two weeks.**
Feb 16 Thursday	**Mars 2.3° S of the Pleiades 8:00 pm**		**March 20 Monday**	**Spring Equinox 1.26 pm**
Feb 17 Friday	**Venus at greatest brilliancy Moon Occults Spica**		**March 21 Tuesday**	**Observational Astronomy for the Novice Course 7:00-9:00 pm**
Feb 21	Observational Astronomy for the Novice Course 7:00-9:00 pm		**March 22 Wednesday**	**Last Quarter Moon 14:10**
Feb 24 Friday	**Astro Yak** at the home of Kevin Kell & Kim Hay visit http://members.kingston/~rasc/indexsec.htm for directions		**March 25 Saturday**	**Venus at greatest elongation West (47°)**
Feb 27 Monday	**New Moon 19:31**		**March 28 Tuesday**	Observational Astronomy for the Novice Course 7:00-9:00 pm- **Last Class**
Feb 28 Tuesday	Observational Astronomy for the Novice Course 7:00-9:00 pm		**March 29 Wednesday**	**New Moon 5:15 2 shadows on Jupiter in most of NA. 12:53 am**