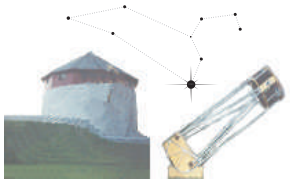
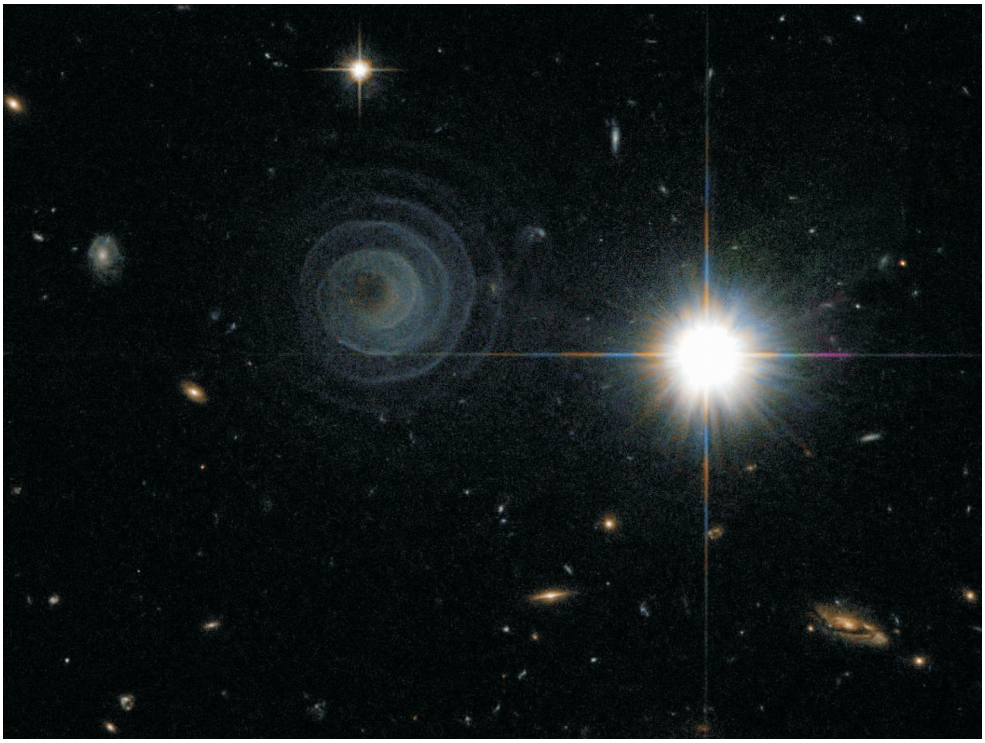
November 2010

Regulus

RASC Kingston Centre





Spiral Extraordinaire

Hubble continues to amaze us with its images. Read the details below.

Image Credit: NASA, ESA, Hubble, R. Sahai (JPL)

Reports & Other Items

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

Spiral Extraordinaire

Scientists have yet to discover what caused the strange spiral structure. Nor do they know why it glows. The glow may be caused by light reflected from nearby stars. As for the spiral itself, current supposition is that this is the result of a star in a binary star system entering the planetary nebula phase, when its outer atmosphere is ejected. Given the expansion rate of the spiral gas, a new layer must appear about every 800 years, a close match to the time it takes for the two stars to orbit each other. The above image was taken in near-infrared light by the Hubble Space Telescope.

Letter to the Editor

I enjoyed "Blast from the Past" in *Regulus*, October 2010 issue. I was a "behind the scene" part of that evening as **Mr. and Mrs. Tombaugh** and **Mr. McNamara** stayed overnight at our house. At that time I had the privilege of hosting the "visiting firemen" for our club.

Later, on a trip to Arizona, we drove to Medallion, then to Las Cruces, to have dinner with the Tombaughs. We came back to their house for a short visit, saw his home observing site, and heard about his work at White Sands. His "puns" were there as well when he told us about the new lighting on his street. When asked by the municipal authorities if he wanted them to skip his place, he said "I'd be "delighted!" We thoroughly enjoyed seeing him again.

I believe one of his famous puns was at the start of his talk when he said "I am known as a 'Pluto-crat.'" What a way to get your attention at a lecture!

Cheers, **Ruth Hicks**.

Continued on next page...

Upcoming Meetings

Friday, November 12, 2010
Annual Meeting 7:30-9:30 p.m.

Friday, December 10, 2010
Members' Night 7:30-9:30 p.m.

Meetings are held at 7:30 p.m. at Stirling Hall Theatre "A" on Bader Lane at Queen's University in Kingston, Ontario. Our meetings are co-sponsored by the Queen's Physics Department and include Astronomy lectures open to the public.★

KAON Public Observing

Saturday, December 19 7:30 p.m.

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

More info at kingston.rasc.ca

In this issue:

War on Light Pollution Lost?

Mark Coady explains the current crisis that has occurred with the impending *Model Lighting Ordinance* in his article on page 4. Be sure to read this!

The RASC's position on this topic appears on page 5.

For those of you who wish to delve deeper, the IDA-IES *Model Lighting Ordinance* can be downloaded from the RASC website at http://rasc.ca/lpa/mlo.pdf

...Reports & Other Items

...continued from front page

XSS-11 Spysat Spied

Kevin Fetter has done it again! This time he was the first to catch a long-lost military satellite flaring up on video. In less than two weeks it was positively identified and re-observed by others. Way to go Kevin! Read the full story at spaceweather.com.

A Match Made in Heaven

Congratulations to former KC member **Brenda Shaw** on her recent marriage to fellow Toronto Centre member **Eric Briggs**.

2010 TD54 Flyby

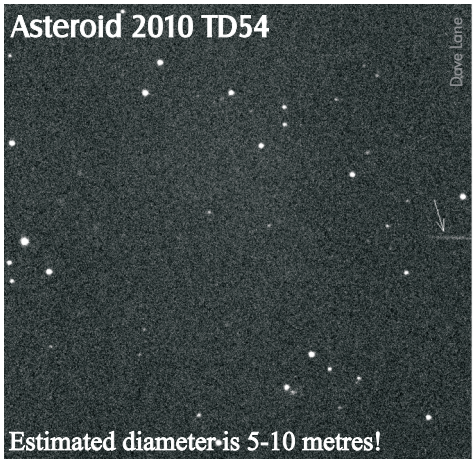
Congratulations to **Dave Lane** for imaging this asteroidal encounter! Dave's report is as follows:

I managed to catch this faint asteroid last night at about 2:42 a.m. Atlantic time (5:42 UT). See the image below, taken with a C14+ST8 camera unfiltered using my automated Abbey Ridge Observatory. The faint streak on the right side marked by the arrow is it. According to the JPL emphemeris, it was 0.0021 AU distant and at magnitude 16.3. This should not be too difficult, but it was moving fast at about 2 arcseconds per second and I was asleep when the image was taken!

I caught it on two other frames 10 and 20 minutes earlier so I know its real. It is also in the right position according to the ephemeris.

Finding and imaging near-earth asteroids can be difficult. You need a very good table of positions for your location (the parallax is huge!), good timing, and some planning, especially if this needs to happen while I was asleep!

As it turns out, my timing was off by about 5 minutes, so rather than getting a series of streaks near the centre, I only caught one in each series near the end. I attempted to get a three hour animation, but that did not work out quite as planned.★



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2009-10 Committee Chairs/Coordinators

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Webmaster:	Walter MacDonald

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

The Fine Print:

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President's Message

Susan Gagnon

November Meeting

AS YOU HAVE BEEN HEARING the November meeting is election night for the Centre. There are four positions to fill. Three of them, Secretary, Librarian, and Editor are currently held by members who are all willing to stand for re-election. This leaves the position of Vice President which has been vacant for a year. In my previous life I was VP and found it rewarding. Coming up with ideas for meetings and then deciding how to present them in an effective manner was a great way to learn more about new topics and the people who are involved in them. This is a unique chance to try on the job for a single year.

After the elections we will have member presentations so drop me an email with your topic and let me know how much time you need and I'll get your name on the list.

October Meeting Report

THE OCTOBER MEETING WAS A WORKSHOP on planetarium software. Presentations were made by:

- **Fred Barrett** (*Cartes du Ciel*),
- **Ken Kingdon** (*Starry Night*), and
- **Doug Angle** (*Desktop Universe*)

The demos were great and it was nice to see something different. I've been a *Starry Night* user for many years and I am very comfortable with it but there are features of the others that are very interesting not to mention the fact that *Cartes du Ciel* is a free download. Can an old dog learn a new program? After a quick break we had a round of observations and general reports and seeing how there was a promise of clear sky we got out just before 21:30 so folks could try to spot Comet Hartley 2 or anything else for that matter.

Saturday KAON…

Brian Hunter, **Ken Kingdon**, and I attended the Queen's Open House on the Saturday following the meeting. I have no idea what the count was but it was busy. **David Hanes** did the warm room talk on observatories of the world. He had to do it twice and I don't think everyone got in. The moons of Jupiter were splendid and over the course of the evening their movements were quite obvious to all, including the emergence of Io from behind the planet. While the linear arrangement of the moons is always quite attractive the ever changing triangle of Ganymede, Callisto and Europa that evening was easily noted by all who came to the eyepiece more than once. They were very interested in seeing something happen! Also, even the smallest scope was able to reveal a minimum of one cloud band. I remained on Jupiter for the evening but I know that Ken and Brian were showing fainter stuff for sure. There were also 2 scopes on the deck operated by Queen's volunteers. All of us had line-ups for most of the night. In December the Centre will get a little help from a past member: **Lori Graham** has volunteered to do the warm room talk on the Moons of the Outer Planets. Thanks to **Hank** for making up the handouts for the public.

Observing at Home...

What is just as great as more clear sky? I say more sky, period! Many

Continues on page 5...

Meeting Report: October 8

Kevin Kell

FRIDAY OCTOBER 8TH, 2010 was a regular meeting of the RASC Kingston Centre. We started with a dinner meet at the Queen's Inn Pub on Brock Street around 5:15 and had Ken, Mark, Mark, Kim & myself. Then it was off to Queen's Campus and Stirling Hall Theatre A for 7 p.m. to set up for the 7:30 p.m. meeting.

Susan ran through the announcements and then we started with the main feature: three members presenting astronomical software displays and reviews.

Fred Barrett, **Doug Angle** and **Ken Kingdon** talked about *Cartes du Ciel*, *Desktop Universe*, *Skyglobe* and *Starry Night* v3. Afterwards we also took quick looks at *Stellarium* v0.10.5 and *Virtual Moon Atlas* v5. A reminder that the free software mentioned is available on our website: kingston.rasc.ca/software

Fifteen people were in attendance on this Thanksgiving long weekend and there were no problems with the building doors being locked up as has sometimes happened in the past.

It was mentioned that the November meeting is the Annual General Meeting and elections. The position of Vice President is still vacant, and the terms are up for the Librarian, Secretary, National Council Rep, and Editor. Next year (November 2011) the positions of President, VP and Treasurer will be up.

We sold out of RASC 2011 calendars at the meeting but there are still a couple out on consignment. We only ordered 20 this year as we have had issues selling them all in past years.

We adjourned early after a break and a few observing reports and everyone headed home to try and observe Comet Hartley 2 a.k.a. 103P/Hartley. Kim & I arrived home around 10 p.m. and were totally clouded out overhead and in the north.★

Has the IDA Sold Its Soul to the Lighting Industry?

Mark Coady

The International Dark Sky Association was formed in 1988 by Dr. David L. Crawford and Dr. Tim Hunter, two professional astronomers, as a grassroots organization designed to promote responsible lighting practices throughout the world and to reclaim our night skies that have been largely lost due to light pollution. Over the following two decades much progress has been made in making the public aware of the damage that unshielded and improperly aimed outdoor lighting can wreak on us and our environment.

Over the past few years the IDA and the Illuminating Engineering Society (IES) have been working together on a *Model Lighting Ordinance* (MLO), a generic bylaw that was hoped to address both the needs of those who need outdoor lighting and those who want a pristine night sky. It was hoped that the input of both lighting engineers and informed and active IDA grassroots members, while various draft documents were being presented, would help mould the eventual document into a type of blueprint for light pollution abatement—one that every municipality in North America could easily implement—and certainly one that would help us all in reclaiming our night skies forever.

Unfortunately, with the release of the second draft of the MLO in June of this year, it appears that the joint task force has largely ignored the input of IDA grassroots members and only listened to lighting industry input. Several submissions made by Canadian IDA members, especially from the RASC Light Pollution Committee (including yours truly) on the first draft of the MLO were never even posted to the MLO Comments section on the IDA website. This seems to be causing a serious rift in the IDA membership and is certainly making the RASC re-think its continued support of the IDA's MLO initiative.

The problem stems mainly from the fact that the lighting industry, represented by the IES, seems to be accepting the *status quo* of improper lighting—at least in our cities and towns. It calls for the establishment of five lighting zones which correspond to going from a city centre out to a pristine countryside: LZ-4—the downtown core; LZ-3—the surrounding suburban landscape; LZ-2—an urban-rural mix; LZ-1—a sparsely populated rural area; and LZ-0—the equivalent of a national or a provincial park.

As it is written, municipalities that adopt the MLO seem to have the option of grandfathering all bad lighting designs in their downtown core—whether that be downtown Toronto or downtown Peterborough.

...it appears that the joint task force has largely ignored the input of IDA grassroots members and only listened to lighting industry input.

Uplighting, glare, and light trespass need not be corrected in these areas. It is almost as if the IDA is throwing in the towel in fighting light pollution in a major city but smaller cities and towns might also be reticent to act due to the lighting zone provisions of the MLO. It is quite possible that a smaller town or city that has the density of zone LZ-3 might classify their locality as zone LZ-4 thinking that they are implementing and enforcing a bylaw that is good for business and the community when what they are actually doing is encouraging the growth of light pollution.

Another major contentious issue is the number of exemptions to the MLO. For one, street lighting is exempt from the MLO. Poorly designed and aimed street lighting accounts for about 30–40% percent of a city's light dome. Government buildings and properties are also exempt which, for a city like Peterborough, means everything from city hall to your local sports field can have their lights glare on forever.

For many years the RASC has used the Town of Richmond Hill in Ontario and the Town of Saanich in British Columbia as examples of municipalities that have done it right with light pollution bylaws. There are even better examples of light pollution bylaws in Canada now. Even the noise bylaws of most of the townships that make up Peterborough County have light pollution abatement clauses in them that are less wordy than the MLO, but easier to understand and properly enforce.

Even Tucson, Arizona—long held up as an example of a city with a wonderful light pollution abatement bylaw and where you can view the Milky Way from the downtown core—is in danger of losing its night sky. With an ever increasing population, the night sky in Tucson is slowly brightening even though it is at a far lower rate than other cities which do not practice light pollution abatement. At some point in the future the observatories atop Kitt Peak and Mount Hopkins may suffer the same fate as those of Mount Wilson near Los Angeles, the Lick Observatory near San Jose, and the David Dunlap Observatory north of Toronto. If the MLO, as written, is adopted across North America then we are definitely worse off than before.

Unless the general IDA membership challenges the draft MLO and IDA leadership, I fear that the true fight for light pollution abatement may suffer a severe setback—one that we amateur astronomers may never recover from. ★

RASC Position Statement on IDA Model Lighting Ordinance

THE NEGATIVE EFFECTS OF LIGHT POLLUTION on the night sky, plant, animal and human health as well as nighttime visibility are well known. For two decades, the Royal Astronomical Society of Canada (RASC) has been an active advocate for light pollution abatement (LPA) and for the use of responsible nighttime lighting.

The International Dark-sky Association Model Lighting Ordinance (IDA-MLO) has been under development for many years and we understand that the second draft of the MLO will be adopted by the IDA and promoted by the Illuminating Engineering Society of North America (IESNA). The RASC has submitted reviews on both the MLO draft documents of the but our concerns were not addressed nor were our recommendations included.

The RASC endorses the use of zones for assessing the current lighting strategies that are used in cities and rural areas. We acknowledge that the Backlight–Uplight–Glare (BUG) system in the MLO is an interesting new initiative with some merit. However, this system seems to be designed for fixture manufacturers rather than for cities as an instrument to reduce light pollution. The Light Pollution Abatement Policy of the RASC recommends the minimum light necessary for a purpose, for only the time required and without direct uplight, glare and light trespass. Merely quantifying these contributors to light pollution in the MLO through the BUG initiative does not address this goal. Instead, the RASC prefers concrete steps towards guiding the reduction in light pollution.

The format of the IDA-MLO does not resemble Canadian municipal bylaws, making it difficult to be interpreted and implemented by municipalities and integrated into their lighting policies. The Proposed MLO requires extensive changes for it to reflect the RASC LPA Policy.

The RASC "Sample Light Pollution Abatement Bylaw" is based on existing Canadian bylaws and has been in existence for almost a decade. With respect to light pollution control it is more comprehensive than the MLO. Rather than endorsing the IDA-MLO, the RASC is revising its existing sample bylaw to lead the current trends in Canadian Cities.

Due to our significant concerns regarding the goals and methods in the IDA-MLO, the RASC does not support nor encourage the use of the MLO in Canada. Furthermore, we will actively dispute attempts to adopt it in any form into municipal codes.

We feel in its current draft, MLO V2 is discordant with our Light Pollution Abatement policy and practise, and as such, reject it as a viable document.★

Editor's Report 2010

Walter MacDonald

NEWSLETTER PRODUCTION CONTINUES in 2010 pretty much as it did in 2009, with the style of the newsletter pretty much settled. In 2009, 10 issues were produced (no July or August issues). In 2010, 11 issues will have been produced (no August issue), but with somewhat fewer pages per issue than in 2009, though the production of a July issue this year helped to even out the annual page totals. A summary of pages produced is shown in the table below.

Production of the January 2011 issue of *Regulus*, which will celebrate the Centre's 50th anniversary, began in October. This is a very exciting project! It is likely that this issue will be 15-20 pages in length, and it is hoped that it will contain contributions from a significant number of Centre members.

Material for *Regulus* is accepted on every day of the year. Several members contributed significant amounts of material to *Regulus*, and this is greatly appreciated. (After all, the editor doesn't want to have to generate all the material for the newsletter!) I won't name them here for fear of missing someone, but looking back through the 2010 issues will make it clear who the contributors were! If you haven't written something for *Regulus*, please consider doing so in 2011.★

...President's Message

...continued from page 3

you know that I have an 8x8 observatory. Many also know that I have a ~6' tube, 10" Dob. How does this work you ask? Much better now thanks to the wheeled dolly that I placed under the base of the scope. It rolls on carpet so that it does not roll well enough to be irritating at the eyepiece. But it rolls well enough to reposition to get lower in the south, west and north. I believe that I have increased my sky by 15 to 20%. The dolly was one that I had made to drag my observing table around as I moved the scope so it is not a perfect fit. Next spring I will make a more suitable one.★

RASC Kingston Centre

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2009	10	10	10	12	10	12	–	–	23	10	10	10	117
2010	6	8	8	8	10	6	10	–	10	10	10	*10*	*96*

Table 1: *Regulus* page production for 2009 and 2010.

Observing Reports: October 2010

Various Members

The last week of September was quite rainy, but finally the weather changed and skies became clear!

Sat/Sun, October 2/3

Kevin Kell: We were out last night putting out the last embers of a big bonfire when Kim suggested opening up the observatory roof. The cloud cover had just blown away and we had a good view of Cassiopeia. We had not yet dark adapted so it wasn't too surprising that in 10x50 binoculars we did not see anything.

In the 20cm Dobsonian with a 26mm 2" eyepiece however, we found it. At 46x it was a fairly large once we spotted it, a little further away from our guide star then we thought.

A reminder that closest approach will be on October 20th, so this would be a good object to follow over the next 3 weeks.

Hank Bartlett: Hank was out and didn't see it in the C9.25. I did notice that there is a difference in where the map on spaceweather.com places it and where *Starry Night* places it. I did not take the binocs out and should have maybe. I'll try again for sure next clear night whenever that is. Congrats to you both.

Sun/Mon, October 3/4

Hank: I hate to be the one to say it BUT right now it is "Hartley" worth looking for! Found it, barely.

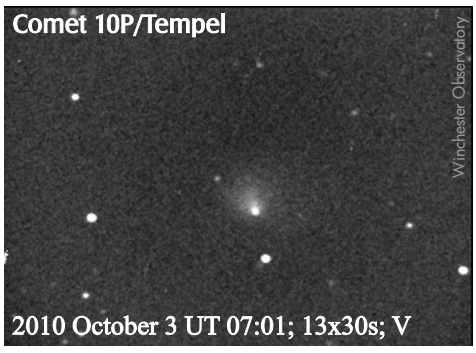
Walter MacDonald: I found it at 22:45 this evening with my C8. It is a large, diffuse thing, and quite easy to see (of course, *I* wasn't using a booze filter!). If this baby brightens a few more mags it will be verging on the spectacular, though the moon will likely put a dent in the show. It's about time we had a decent comet. The good news is, it is not in the southern hemisphere or hugging the horizon! Comet Tempel is sinking

ever lower in the south and gradually fading away.

The transparency seemed to deteriorate a bit as the night wore on and by 4 a.m. there was the odd bit of cloud floating around.

Ken Kingdon: On the evening of Sunday, October 3 I observed Comet 103P/Hartley with my 12.5-inch reflector from my backyard (just within the light-pollution dome of the City of Kingston). My LTM was only 12.5-magnitude. With a wide-field eyepiece, Comet Hartley 2 required no star-hopping, just move slowly in the vicinity and sweep it up. That said, Hartley does have low surface brightness, and it is currently not binocular-visible from an urban site. Comet Hartley 2 is now a fairly large "puffball" in Cassiopeia (my estimate is 4' diameter), and is not likely to be missed with a scope from a city, although it is diffuse.

I previously saw Hartley 2 on Sep.11th from a dark-sky site. Then at distance of 0.18 AU from Earth, of course it looked better compared to Sunday evening (Oct.3) from my backyard in the City. It now has closed its distance from Earth to 0.167 AU, but this small change of



distance is not yet enough to brighten it to, say, an urban binocular level. Nonetheless, its distance will quickly decrease about 27% further in the next 2 weeks...so perhaps it will become more evident.

Hartley 2 should be observed with a scope before October 15, because after the 15th, you can see Hartley 2 only if you wait until after midnight for moonset. Delaying further until its closest approach (0.121 AU) on October 20th requires observing it after a 5 a.m. EDT moonset. I doubt that its record-setting close approach to Earth will improve it much (claimed to be the closest comet to Earth in hundreds of years).

Sweeping at 254x for an ion tail with a Swan Band (SB) comet filter, I could detect a very faint ion tail pointing southward. With an SB comet filter at 180x, it again showed just a hint of a tail. So, yes, it has an optically visible tail, but from a city, currently this tail is only visible with an SB comet filter.

Next a search for a dust tail with a Wratten #12 yellow filter revealed no enhancement. Finally, a search at high power 381x for more contrast details, the only visual improvement was a very tiny nucleus...quite expected with such a diffuse and transparent coma.

Since I got almost no responses to my tests, I have concluded that this comet is feeble! Hartley 2 is not likely to surpass my dark-sky observation of last June's 5.7-magnitude Comet 2009/R1 McNaught, which even low on the horizon was so brilliant white opaque that I could not see through its obvious tail, let alone its coma.

I hope to re-observe Comet Hartley 2 from a magnificent dark-sky site west of Kingston later this week.

Closest Cometary Approaches:
cfa.harvard.edu/iau/lists/ClosestComets.html

...Observing Reports: October 2010

Various Members

Thu/Fri, October 7/8

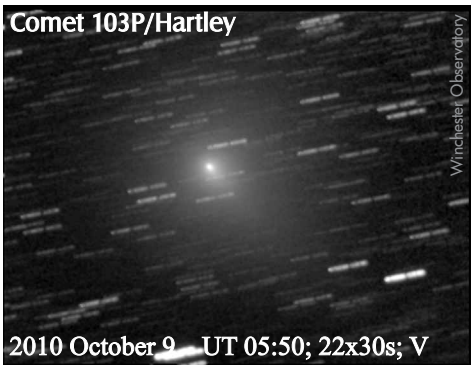
Hank: I was just out behind the family room observing Hartley 2 in the 15x70's and the C80. Although still not impressive it is easy enough to spot when near such as h & χ Persei. I would like to check it out in the C9.25 but the neighbour's tree line is too tall and too close to do that on a work night. Hopefully the sky will stay clear to try on the weekend.

Ken Kingdon: I too was out in my backyard at 1:40 a.m. Friday, October 8th and there was not a single neighbourhood light on. My LVM was about the best it can get here at 5.4-mag. I easily saw Comet 103P/Hartley with my wimpy 8x32 compact binoculars. Hartley 2 was cavorting right within the Double Cluster. Actually, it was bright enough to suggest a new name, the "Triple Cluster." Hartley made an equilateral triangle with the Double Cluster after 2 a.m. It is moving quite fast as it sweeps past Earth.

Fri/Sat, October 8/9

Kevin Fetter: And they had said it would be clear, yeah right! Instead of seeing moving stars, I am seeing rain.

Kim Hay: We got home before 10:00 p.m. last night to view the comet, but the clouds bet us too it. I got up at 1:10 a.m. this morning and through the high cloud, I was able to view Hartley in the 18x70 binos but Hartley was right over head, the steadiness of the binos was not sufficient, so I opened up the observatory and observed the comet with the 8" Dob and 26 mm eyepiece. It has moved very quickly past the Double Cluster and was to the left of it carrying on its trail. The closet star that it was beside was HIP11888. Very round and diffuse , I could see the coma, and then used the 2x barlow and the 26 mm to get more detail, but no more was to be seen.



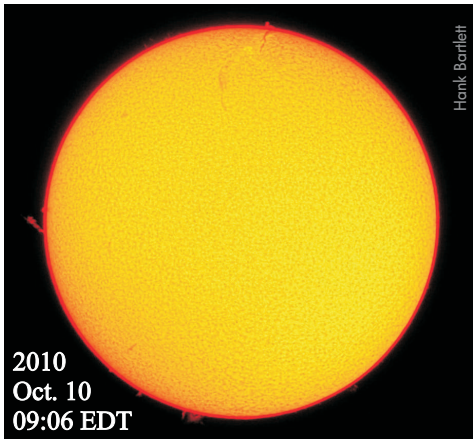
After the comet was dancing with the clouds, I swung over to look at Jupiter. I stayed out till around 2:00 a.m., and then the clouds were in full force again.

Walter: The skies were perfectly clear in Winchester last night. The comet was easily visible in Perseus with 7x50 binocs from the back yard. It was a nice mild night with good transparency. Going up to the dome I imaged the comet from 01:44 to 02:26 EST as it approached transit. Moving at almost 6"/minute I could see the comet jump by one pixel for each 30-second exposure that I took.

Sunday, October 10

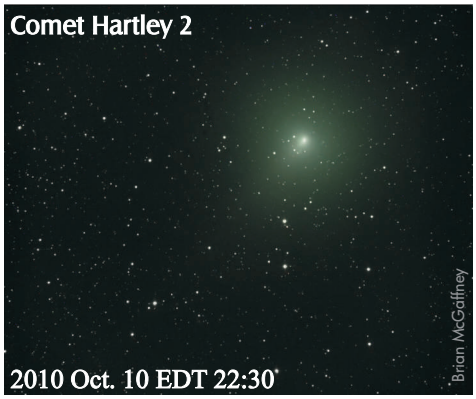
Hank: The sun is looking promising (or is that prominencing) today. This morning image shows some good activity, that which is at the top is at 8 o'clock on the spaceweather.com SDO image from yesterday.

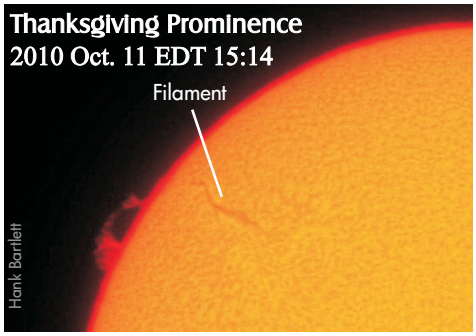
Kevin K: I think this has been the best stretch of observing this year. Four nights in a row, usually in the evening, sometimes in the morning as well, along with a nice comet to track across the skies.



Kim & I went out sunday evening for a couple of hours, testing out a 1¼" 19mm eyepiece. Very nice it was. After picking up comet Hartley 2, we went on to watch Jupiter and its moons, tried out the new canon camera Powershot A495. This was quickly followed up by M31 and M110, M57, M13—all the biggies. We noted a lot of haze up to 10° off the horizon but seeing and transparency were not bad at all.

Brian McGaffney: Comet 103P/Hartley is about 1.5 km across and is moving very fast. This image (below) was taken at about 10:30 last night, but it took me all day to process it as these things are difficult to process due to the speed they move.

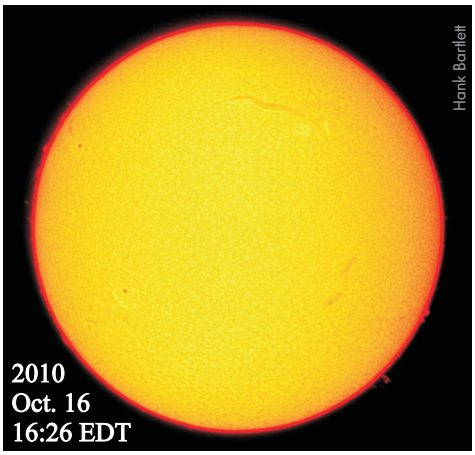




Sat/Sun October 16/17

Hank: I worked hard all afternoon but managed to catch a glimpse of a very active sun at 16:26 EDT.

Kevin K: We went out tonight from 20:00 to 20:30 EDT and could not locate the comet in the bright first



quarter moonlight and light hazy cloud. So we got up at 05:00 Sunday morning to try again after moonset only to be mostly fogged in low level (but not ground level) fog/haze. (This was right after watching the movie "The Mist" by Stephen King last night...scary!

Sun/Mon, October 17/18

Walter: Despite some thin cloud moving about, I was able to see the comet near epsilon Aurigae at 05:30 this morning in 7x50 binoculars.
Hank Bartlett *was out shooting rainbows today and one of his photos appeared on The Weather Network website.*

Mon/Tue, October 18/19

Kevin K: It was actually clear at 4 a.m. this morning...or at least clear enough overhead to show Capella nicely, almost right at zenith. There was cloud all around us with some sizeable light pollution against low clouds from Kingston and Napanee. It was just below 0C and frost was everywhere.

The 10x50 binoculars aimed up at Capella showed Comet Hartley 2 easily. It was fairly large but still low contrast with no discernible core.

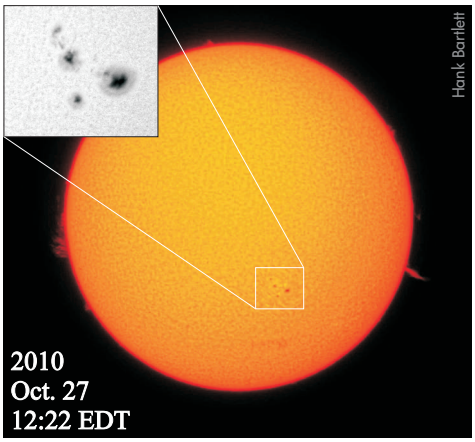
The 20cm Dobsonian was a lot harder to both aim and find the comet, as Dobs do not work well near the zenith at all. After a short time scanning back and forth, we found it and again it was low-contrast and dull. I suspect some of the cloud and haze had started to drift in.

I started a series of three 64 second exposures on tripod with the Canon Powershot A540 and in the end, none of the images showed the comet at all. I took some other images and during the last one popped inside the house for a quick check on ISS passes. In the short minute or two that I was away, the clouds came in with a vengeance. Cassiopeia in the west, and Capella overhead, all were mostly gone.
Oh well, it was better than nothing.
Kevin F: I had a nice clear night, up until around 6 a.m., when the sky clouded up. I observed some flaring and flashing geosats.

This morning, while observing a flashing geosat, a unid sat passed by. It does not match anything, so I need to measure positions and compute an orbit along with others, as I don't want it to get away, as it was easy to see. There is so much stuff up there, and I wouldn't be surprised if it's a piece of space junk, even a rocket whose orbit is decaying.

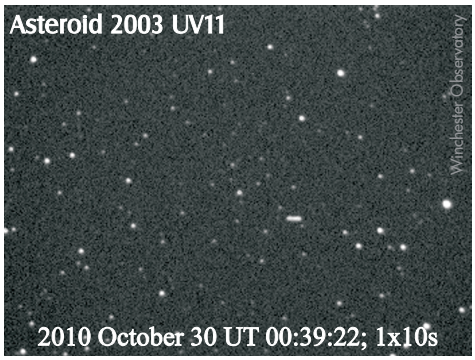
Wednesday, October 27

Hank: Hey all, 1117 is looking great; I actually got out for some H-alpha and white light at lunch today. Too bad there was such wind: the air was not very co-operative and the H-alpha images are taken at slow shutter speeds. There are some awesome prominences! [*It was a beautiful summery day of +18C—Ed.*]

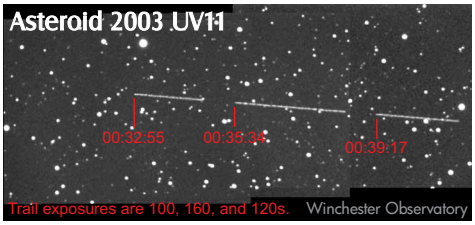


Fri/Sat, October 29/30

Walter: The sky cleared at supper-time and stayed clear long enough for me to image asteroid 2003 UV11 which was whizzing by the Earth this evening at just five times the distance of the Moon. At 595m in diameter it is the smallest extra-terrestrial object I've imaged. It was moving at ~180 arcsec/minute so it was trailed even in the short 10-second exposures I was using.



At first there was no sign of UV11, but a quick web search soon got me the correct coordinates, courtesy of "Tom's Asteroid Flybys." As it turns out, over the next two weeks it will fade from 12th magnitude to 30th, so it was really good that the skies cleared this evening! ★



Blast from the Past: Jeans and Eddington

Dr. A. Vibert Douglas

The following is an outline written by A.V. Douglas (our Centre's founder) in advance of her lecture at the Toronto Centre meeting of 1930 March 18. Thanks to Eric Briggs (Toronto Centre) for finding this and sending it to the editor.

James Hopwood Jeans and Arthur Stanley Eddington are two of the most outstanding men of science of our day and generation.

Both of them were born in England, Jeans in London in 1877 and Eddington in Kendal in 1882. Both became Wranglers in the Cambridge Tripos and were elected to Fellowships in Trinity College after becoming winners of the Smith's Prize. Both men have distinguished themselves in mathematical researchers in physics and astrophysics while Jeans as a cosmologist and Eddington as a Relativist and Philosopher, have won world-wide recognition and profoundly influenced modern thought. Both are Fellows of the Royal Society and are past-presidents of the Royal Astronomical Society.

Jeans lectured in applied mathematics at Cambridge and at Princeton and published his Dynamical Theory of Gases and his Electricity and Magnetism before 1912. The theoretical researches of **Poincaré**, **Roche**, and **Sir George Darwin** captured his interest, with the result that he carried the investigation of the equilibrium forms of rotating bodies a stage further than the earlier workers had done and applied the "pear-shaped fission theory" to the formation of binary stars; the "equatorial emission theory" to the formation of a star, galaxy, or spiral nebula; and he carefully investigated the "tidal disruption theory" of the formation of the Solar System.

Jeans attacked the problem of the age of the stars from three different approaches and concluded that all the evidence pointed to an age of ten million-million years. He has studied and speculated upon the internal physical state of the stars, the source of their radiant energy and the course of evolution both for an individual star and for the Universe as a whole.

Eddington was Chief Assistant at Greenwich for several years prior to 1913 when he was appointed Plumian Professor of Astronomy at Cambridge University. His first well known work was on star streaming. Next came his realization of the important part played by radiation pressure in the equilibrium of a star—this gave for the first time a logical explanation of the observed facts about the small range in values of the masses of the stars as contrasted with the very great range in their luminosities. Since 1916 Eddington has produced one important paper after another dealing with the Internal Constitution of the stars. In 1924 he found a relation between the mass and luminosity of a star which has had far reaching consequences, and over this and other points he has waged almost uninterrupted warefare with his critics Jeans, and more recently **Milne**. As Professor

Eddington has humorously remarked —onlookers will feel sure that some corpse is stretched upon the ground but the disputants will disagree as to whose corpse it is!

Remarkable confirmations were made within the last ten years at Mt. Wilson observatory of predictions that had been made by Eddington from purely theoretical considerations regarding the immense size of stars like Betelgeuse, about 300 times the diameter of the sun; and the very great density of a star like the dwarf companion of Sirius—more than one ton per cubic inch.

As an exponent of the Relativity Theories, Eddington ranks first amongst British writers, but he has also been a contributor to those theories; his "world-building" with mathematical symbols starting from the least possible number of assumptions, and arriving at a map or graph of the universe containing the relations of mass, momentum, stress, gravitation and electromagnetic phenomena places him with **Einstein**, **Weyl** and **De Sitter** as amongst the foremost constructive mathematical thinkers of the age.

As a philosopher, Eddington is Platonic in his insistence upon the

...Blast from the Past

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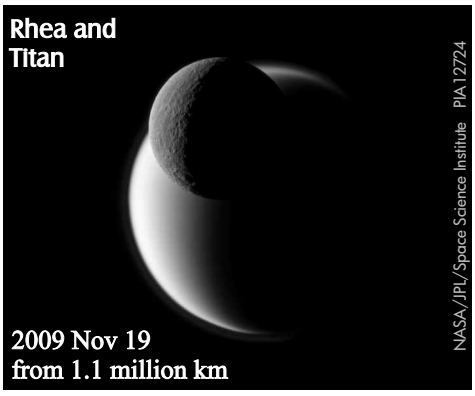
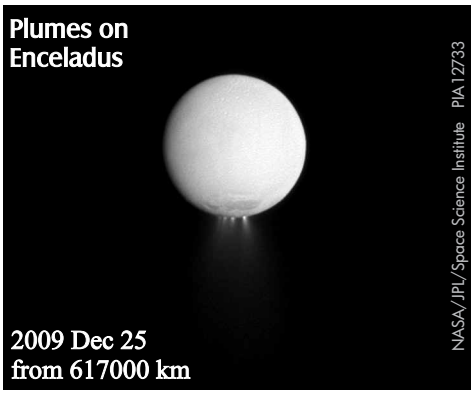
intrinsic part played by mind in the picture of the Universe which man constructs for himself. He stresses the purely symbolic character of the world built up by the measurements of the physicist. The underlying reality is untouched by these methods of approach. Einstein, Weyl, and De Sitter attempt to produce models of the universe, Eddington labels the result of his world-building as merely a map or graph of the actual world. We can put "symbolic" knowledge, the result of physical measurements, into this map, but "intimate" knowledge, the essential contribution of the mind cannot be introduced. With regard to atomicity and the Indeterminacy Principle, he believes that here we are touching the most fundamental aspects of the physical world, in contrast to the laws of conservation of energy, gravitation, and so on—laws which are not primary but are of the nature of identities inevitably true because of the way in which man, as man, sees and interprets the world about him.

Being a Quaker with sincere mystical insight, Eddington lays great stress on the reality of the unseen world. His philosophical approach as a scientific man gazing at the question is through "intimate" knowledge, with its dependence upon Mind, and through man's consciousness of the passage of time —the sense of "becoming"—and consideration of the significance of the word "ought," a word having no meaning as applied to the purely physical world where what an atom or a star does and what it ought to do are always one and the same thing. The essence of Eddington's attitude of mind may be found in these passages from his own writings:–

> "Scientific investigation does not lead to knowledge of the intrinsic nature of things... We are dealing in physics with a symbolic world... The measured numbers which are all that we glean from a physical survey of the world, cannot be the whole world... We all know that there are regions of the human spirit untrammelled by the world of physics... Life would be stunted and narrow if we could feel no significance in the world around us beyond that which can be weighed and measured with the tools of the physicist or described by the metrical symbols of the mathematician... You will understand the true spirit neither of science nor of religion unless seeking is placed in the forefront... Our belief is not that all the knowledge of the universe that we held so enthusiastically will survive in the letter; but a sureness that we are on the road."★

Fred Troyer (Toronto Centre) wrote to Dr. Douglas (in Montréal) on 1930 March 10 to ask for an outline of her upcoming lecture. Interestingly, Dr. Douglas' reply is dated 1930 March 11. Was the Canadian postal system really ever that good?!





KC Website Report

Walter MacDonald

THE WEBSITE CONTINUES on with only modest changes, mostly incremental additions to content as it becomes available:

- New PHP code was written to give detail to the RASC News items that appear on the front page of the website (previously all that appeared were headlines). (Nov 2009)
- A new JRASC Offprints (1913-1979) page was added to the Library section.
- Vector versions of the *Transactions of the Astronomical and Physical Society of Toronto* for 1891, 1892, 1893, and 1900 have been added to the RASC 1890-1905 page.
- Vector versions of the Bulletin for 1991 through 1996 and the prototype issue of *Astronomy Canada* have been added to the Bulletin (1990s) page.
- Meeting notes have been added where I could find them in my own logs for the period 1990-1995.
- Changes in the Members-Only Section:
  - A new page for storing KC correspondence has been added to the Secure section.
  - New pages for Council/AGM Minutes have been added to the Secure section. Material is posted as XHTML, but with links to the original scans in PDF form (where available).

Website usage for the year is given below. Traffic shows a slight downtrend over the year; perhaps this is to be expected given the downtrend in Centre membership and activity.★