May 2010

Regulus

RASC Kingston Centre

The Aurora Borealis Returns!

The Sun has been showing signs of life as it shakes off its extended minimum, so it was only a matter of time before we experienced our first aurora in a long time! On April 5/6 **Kevin Kell** took this 64-second exposure with his digital camera from near Yarker, Ontario. Read more at starlightcascade.ca

Upcoming Meetings

Friday, May 14 2010
Members' Night 7:30-9:30 p.m.

Friday, June 11, 2010
Regular Meeting 7:30-9:30 p.m.
🗣 *Randy Attwood, President, RASC Mississauga Centre*
The Apollo 11 Landing—and How It Nearly Failed

(Summer Break: July-August)

Friday, September 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. ★

More info at kingston.rasc.ca

GK Persei Update

GK has reached magnitude 9½ and shows no signs of stopping (images, page 10)! Unfortunately GK is now very low (and getting lower) in the NW which will make it very difficult to observe over the next few months. Murphy strikes again!

Reports & Other Items

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

Google Goes Galactic

An e-mail on the RASCals list on April 1 alerted us to Google's latest surprise: search times were being reported in various units such as parsecs, centabeats, femtogalactic years, centons, even warp factor numbers. What fun! In case you don't believe this, see the sample screen dump at lower right.

An Asteroid—No, a Comet!

Congratulations to **David & Wendee Levy** and **Tom Glinos** on their recent CCD discovery of 18th magnitude Comet P/2010 E2 (Jarnac) on March 9th! At first it was thought to be an asteroid, but in later images it had a cometary appearance (coma, but no tail). We look forward to many more discoveries by this team.

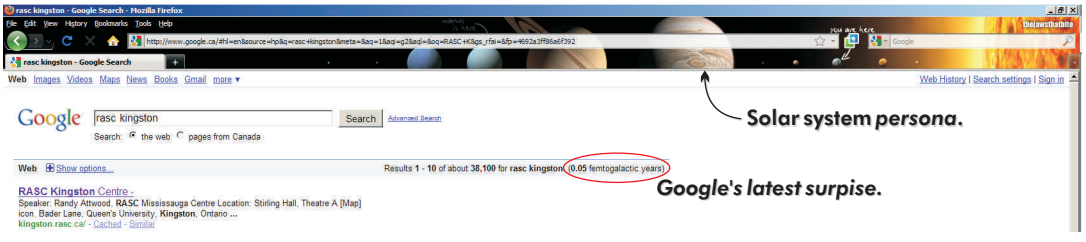
A Comet—No, an Asteroid!

This is old news now, but back in January LINEAR discovered P/2010 A2. At first, it was thought to be a some nice astronomical ones (see sample screen dump below for a solar system one).

Continued on next page...

Firefox Personas

For anyone using Firefox 3, thou-sands of *personas* are available (basically wallpaper for your browser), including



In this issue:

...Reports & Other Items

...continued from front page

comet, but images by Hubble show debris that suggests this may actually be an asteroid that was impacted by another asteroid. This would be the first time an asteroidal collision has been seen. You can see images at:
sai.msu.su/apod/ap100203.html

The Youngest Crescent

Thierry Legault of France has *imaged the new moon* (really, on April 14th at 12:29 UT!) when it was less than 5° from the Sun. This is a significant achievement and quite likely the first time it has ever been done. You can see the picture at:
lpod.wikispaces.com/April+16,+2010

Solar Eclipse History

There is a new page on the RASC website that gathers material on some recent solar eclipses. It is not very extensive right now, but hopefully will be expanded by interested RASC members. The page is located at
rasc.ca/observing/solareclipses/history.shtml

New KC Library Book

In February the KC library received from the Edmonton Centre a copy of *The Meteorites of Alberta* by **Anthony J. Whyte**. This highly acclaimed book is now available on loan to members.

Keep it Simple, Stupid!

UK resident **Robert Harrison** has successfully launched a camera in a box almost to the edge of space using a helium balloon. The pictures from 35km altitude clearly show the curvature of the Earth and look much like pictures taken from the shuttle. This mission, named Icarus, only cost about £500. This is a magnificent accomplishment! You can read all about Mr. Harrison's personal space program at:
robertharrison.org/icarus/wordpress

Astronomy Day 2010

Susan Gagnon reports: Kingston Centre did not plan any Astronomy Day activities this year. If you did something in your neck of the woods, please let us know what it was and how it went!

Queen's and **RMC** put together a solar observing session at Confederation Park downtown and report that the Sun was visible most of the time and many people stopped by.

Nova T Scorpii Turns 150

First observed on 1860 May 21 in M80, the story of T Sco (see *Regulus*, Feb 2010, page 3) is recounted by **Dr. Helen Hogg** in a 1938 *JRASC* article:
articles.adsabs.harvard.edu/full/1938JRASC..32...69S ★

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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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Meeting Report: April 9

Susan Gagnon

WE STARTED THE MEETING with a brief rundown on activities. March was a **KAON** night for the Centre and the weather was not good. I did a quick talk on "A Star of a Different Colour," **Steve** did the greeting and number tally, and **Hank** provided handouts. There were 23 visitors to the warm room and dome. On hand for Queen's were **Stephane**, **Cedric** and **Melanie**. We heard through the grapevine that **Earth Hour** was a great success at the Observatory with line ups down the stairwell.

The **Relay for Life**, Cancer Society fundraiser will be held on June 4th at RMC and anyone who was interested in doing a telescope set up to entertain the walkers was invited to get a contact name from Kim, ASAP. She and Kevin will set up the following weekend in Napanee for their event.

On the National front, the **Chilton Prize** is being awarded to the IYA Committee which includes our Kim! More **GA** venues have been selected for the next few years, Winnipeg 2011 and Edmonton 2012. GAs are always a great time.

We then had a few questions related to National and its activities. Most people in attendance visit the national website; a few purchase from the e-store; few have any experience with the office but were happy with their service; few read any of the national council reports that came out before the [March 27th] meeting.

My efforts to start a riot in protest of the newly advertised Executive Officer job were frustrated. There was 1 vote in favour, 6 declared not enough knowledge of the situation to judge, and 5 were against. There was also a questionnaire that dealt with local issues. Questions were taken from this and will be found on a separate page in this newsletter. Please have a look at the questions and consider sending in your comments. You can e-mail me results or you can print it and mail it in to the Centre PO Box [see page 2 for contact information].

I encouraged people to get together to enjoy the new moon if the weather is good. After a break we had several presentations by members.

Leslie Roberts showed some of his photos from the winter. Once again there were a terrific number of faint objects that many of us will never see! Good photos with sometimes as few as 2 stacked images.

Bob Hilson gave us a blow-by-blow description of his experience with a well known Toronto telescope shop that was not only unhelpful but expensive—a situation that is yet to be resolved 3 months later.

Kevin showed us a couple of photos he snapped of the aurora last week and then gave a rundown of what websites gave him the best (easiest to interpret at a glance) predictions for aurora.

Fred and Doug will work on setting the test parameters to be used on planetarium programs that can be downloaded or purchased. We will compare the programs at a meeting after the summer break so that people can see what the advantages and limitations are. If you would like to test a program email me with the name of the program you will be using and when I get the test parameters I will forward them to you. It would be nice to have 3 or 4 programs tested.★

Susan leads a discussion of the latest developments in the RASC.

Re-entry Observed

Alan Whitman, RASC Okanagan Centre

APRIL 20—WHEN THE SHUTTLE passed north of Penticton between 4:11:11 PDT (appeared out of the shadow) and 4:14:38 (set on the eastern ridge) without anything but a normal orbit, I was of course disappointed.

But as I slowly ambled home from the lakeshore, admiring the summer Milky Way, the ISS appeared seven minutes behind the Shuttle. I put my 7x50 binoculars on the ISS and it was clearly double even at such a low power.

SPACE SHUTTLE DISCOVERY completed its de-orbit burn to slow the shuttle on its descent to landing at 9:08 a.m. EDT, 2 hours, 14 minutes after sunrise. This will be the 129th shuttle landing.

THE SHUTTLE RE-ENTERED on orbit 238 appearing in the west, passing well up in the south as seen from Penticton since it passed slightly south of the American border, and disappearing in the southeast, as a glowing pink point (no size to it) of magnitude –8 to –10. There was no plasma tail visible, perhaps because it was only 12 minutes before sunrise. It seemed to be moving across the sky faster than usual, presumably due to its lower altitude. There was a sonic boom, only audible from outdoors, four minutes after the Shuttle disappeared. Truly a once in a lifetime event, but too bad it didn't happen on the previous orbit when it would have been bright enough to light up the ground.

We had amazingly good luck with the weather in Penticton. The shuttle's path was across clear, transparent sky, despite dense cloud on the satellite image to the south, west, and north from a stalled front.★

For Your Compendium of Esoteric Facts

Walter MacDonald

WHEN WE LOOK BACK on the first half century of the Space Age, there are many great missions and accomplishments. Perhaps the greatest of the robotic missions was that of the two Voyager spacecraft and their "Grand Tour" of the solar system. But did you know that the Voyager 1 mission almost failed? Both Voyagers were launched on Titan-Centaur rockets; the Titan lifts its cargo to low Earth orbit and then the Centaur provides the remaining boost needed for interplanetary flight. Voyager 1's Centaur malfunctioned however, and shut off early. A corrective burn got Voyager 1 back on track—with just 3.4 seconds of fuel left! What a close call! As it turns out, if this particular Centaur rocket had been used with Voyager 2, the Uranus and Neptune encounters would not have been possible! This is another reminder of how thin the line between success and failure is, particularly when it comes to spaceflight.★

Reference: Engineering & Science No. 4: eands.caltech.edu/articles/LXX4/voyagerlayout-web.pdf

Astronomical Anecdote: The Diamond Necklace Eclipse

Walter MacDonald

ECLIPSE CHASING has been a popular facet of Astronomy at least since the 1970s, either because of or in spite of the fact that almost all of the "worthwhile" (i.e. total or annular) eclipses in our lifetime occur far away from our home continent of North America! Three recent exceptions to this are the 1979 total, 1984 annular, and 1994 annular eclipses. Two of these could be viewed in their full glory from within Canada, while the centre line of the 1984 eclipse passed through the US. For this eclipse the Toronto Centre (and in particular our fearless leader **Mike Watson**) organized a low-cost ($175) quickie (2½ day) expedition by bus to the centre line and a glorious 13 seconds of annularity! This was a very special annular eclipse in that it was almost, but not quite, total (99.9% obscuration!). Between 2nd and 3rd contact the irregular limb of the moon would let some sunlight through at various points, hence the nickname of "diamond necklace" for this eclipse.

My preparations began months before the eclipse with the purchase of a new camera and 8" full aperture solar filter. When I bought an Olympus OM-1 (possibly the most popular camera for astrophotography at the time) at a local camera store *sans lens* the staff thought I was crazy! Who buys a camera without a lens? I assured them that my C8 made a very nice 2000mm f/10 lens! Naturally, there were no such reactions when I ordered and took delivery of a solar filter from **John and Susanne Kidner** at Perceptor. He wasn't able to get a Celestron filter, but was able to get the Meade equivalent. I picked it up on February 10th and was able to have my "first" solar session on the 13th. The filter gives a very warm and pleasing orange colour to the Sun. As part of my eclipse preparations, I

took various exposures at prime focus with Kodachrome 25 to determine the proper exposure to use.

Whenever there is a "significant" eclipse, I inevitably find myself paying extra attention to the moon for that entire lunation and this was no exception. On May 15th there was a penumbral lunar eclipse and my good friend **Scott Ramsay** (who was also going on the expedition) and I watched it in earnest around the time of maximum with both binoculars and telescope. My observing log records that the southern portion of the moon was noticeably darker to the naked eye and in binoculars it looked as if the southern part of the moon was immersed in a sooty smog. (Despite its low altitude in Scorpius, it was an easy penumbral eclipse to observe thanks to its large 0.81 penumbral magnitude.)

On Sun/Mon, May 20/21 the two of us were out at Long Sault Conservation Area doing some deep sky and planetary observing between bouts of aurora. Jupiter was very near nu Sagittarii, which made a nice addition to the Galilean moons. Mars and Saturn also put on good shows. Finally, we watched the moon rise shortly before 2 a.m. deep in Capricornus: first as a glow in the east that gradually intensified near the centre, then in binoculars as the first bit of disk climbed above the horizon! I watched for a couple of minutes as the entire orange disk of the moon came out of occultation with the Earth, silhouetted against a distant fencepost. All the while, the big eclipse was getting closer!

FINALLY THE TIME CAME for the expedition to start! On Monday, May 28th our bus left Yorkdale shopping centre in Toronto at 10 p.m. We stopped at the border to clear customs and then again around 7:30 a.m. at a truck stop for a snack. To this day I can still remember the rather unsettling aromatic combo of chocolate doughnut and diesel fuel! It had been hard to sleep on the bus

that night due to all the bouncing around, and it took some effort not to fall out into the aisle as the bus rounded bends in the highway. Did I mention that it had been raining for the whole trip so far? Nevertheless our bus pressed on in its journey. Around 9:30 a.m. eclipse quizzes were given out to everyone on the bus, to be handed in when we reached our destination at Petersburg, Viginia around noon. Scott won first prize in the quiz and a $25 gift certificate from Perceptor, while I tied for third.

After settling in briefly at the Day's Inn, we all had lunch and then headed out for a tour at the local battlefield park. At this point most of us were so sleep deprived we were virtual zombies. We made sure to tell our very knowledgeable and enthusiastic tour guide not to take our rather feeble attentions to his presentation personally! One interesting event in the local military history was the Battle of the Crater. Union soldiers tunneled under a confederate fortification and planted four tons of explosives. It was the largest explosion ever up to that time, and the large crater is still visible today. (Despite this application of brute force, the Union army still lost this battle.) Incidentally, it was still raining all during our tour.

After the battlefied tour, we proceeded to the Holiday Inn where we met up with a group from the AAVSO, including **Janet Mattei** (AAVSO Director) and **Walter Scott Houston**. It was a great gathering and a nice distraction from the miserable weather outside.

Returning to the hotel, we had a banquet of sorts, socialized, and watched how the lightning was lighting up the clouds (did I mention that it was still raining?). We had hopes that the weather might clear up since a high pressure system was slowly coming from the west—but would it arrive in time? The TV weather forecast was watched with great interest that evening, as was the TV interview that **Mike Watson** had done at lunchtime.

WE WERE UP AT 5 A.M. on the morning of May 30th to pack, have breakfast, and check out. Our bus carried us away at 6:30 a.m. to search for clear skies. We hurtled down I-85 and stopped near Greensboro, North Carolina near our back-up site, but it was cloudy here too. One of our members was an airline pilot and he phoned in for an aviation weather forecast. Based on this, the decision was made to press on.

It wasn't long after this that the skies cleared out as we finally met the high pressure system. The bus stopped at a school in Cleveland, North Carolina about 10 minutes after first contact. **Mike Watson** dashed in to ask permission to set up in their yard. Fortunately for us, permission was granted and within 20 minutes we were soon dispersed about the field setting up our equipment under crystal clear blue skies! Yes!

Surprisingly, the school let the students out to watch the eclipse with us. Both my telescope and my #14 welder's glass were in high demand

and the number of students seemed to grow as annularity approached. **Jillian Buriak** took a few looks through my C8 to do some sketches of the eclipse. There was a significant sunspot that we had a nice view of being occulted by the moon. The irregularity of the lunar limb was quite striking against the solar disk! About 10 minutes before annularity I attached the camera to the C8 permanently and worked at trying to keep the sun centered, which was a bit of a challenge at 2000mm focal length with only a compass-assisted daytime polar "alignment." The sky was a strange kind of silvery blue as it was darkened by the progressing eclipse.

Just before annularity a bead or two appeared, and then a whole

Continues on page 9...

Above/right: two views of the observing site.

Observing Reports: April 2010

Various Members

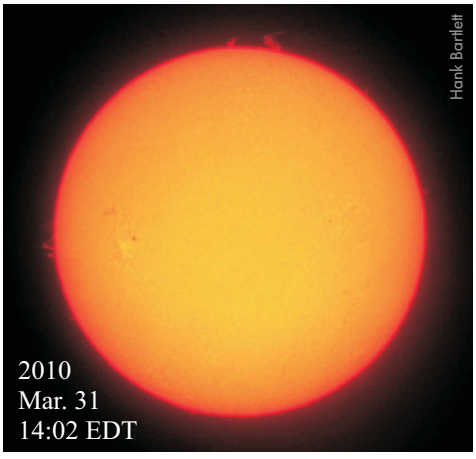
Monday, March 29

Kevin Kell: the clouds parted/ cleared just a short time ago and we were treated to a nice conjunction (OK, maybe 5°) of Venus and Mercury almost due west at 20:00 EDT. The sky was still pretty bright but Mercury did come out after a few minutes or looking. The observers calendar shows this to be the best planet pair all year and they should continue to travel together for this week.

Then it was off to the other side of the house to see the full moon coming up. We used naked eye, 10x50 binoculars and a spotting scope. The spotting scope looks good visually but images taken through it are low resolution and not too great in focus.

Wednesday, March 31

Hank Bartlett: OK this is NOT April fool. I took this image yesterday at lunch. For those of the Easter Bunny persuasion, here he is hopping across the top of the Sun to one of his Easter baskets!



Mon/Tue, April 5/6

Kevin: I popped outside (thanks Kim!) and finally my dim old eyes saw some aurora. So we fired up the Canon on a tripod and got a series of 64 second exposures (see the front cover).

Hank: Just went out and looked and took a few images, nothing in the 'burg!

Kevin: The aurora columns were very short duration, *i.e.* over the course of an exposure, a good column would disappear. There was a lot of shifting from N to NW but nothing over in the NE.

Walter MacDonald: Conditions looked like they were going to hold for a while, so I fired up the dome. After a failed attempt to image Comet C/2009 O2 (Catalina)—which didn't seem to be there—I started a variable star run. 39 CVs were imaged before deteriorating sky conditions finally forced a shutdown at midnight.

Sunday, April 11

Susan Gagnon: Around 2:15 this afternoon I sat down with a drink and decided to try to see the moon. Approximately 30° from the Sun (good) but only 3 days from new I believe (bad).

I did it!—and relocated it several times; I do not know if this is difficult or who would care but it was a fun little test.

I also sat down with StarryNight and managed to put names to all of the objects that I sketched by starhop last week. I searched using the Double Star Atlas but was not sure if I could sort things out because some of the stars in the hop were quite faint but it was OK.

Hank: Hank cares, good for you! Next targets are Venus, Jupiter, Saturn, Mars, Mercury, and then some "other" stars like Sirius, Betelgeuse, Vega, etc...

I did some H-alpha solar today, 2 filaments, 5–6 prominences. There was one prominence that appeared to be spiral in shape. No sunspots though. I would send a pic but my laptop is till in the hospital and I am using Di's mini-laptop.

Walter: Very interesting. Please elaborate on the drink's contribution to these observations. Would this have been possible without the drink? Did you use the drink as a filter? Inquiring minds want to know!

Sun/Mon, April 11/12

Walter: It was cloudy this evening, but skies finally cleared out and an imaging run was started at 22:55. At 00:30 the computer woke me up when it couldn't plate solve the BC UMa field. I restarted the run and it continued successfully without further incident until 04:22 when it ran out of stars. If I had loaded up the back end of the plan with some extra stars there was another 45 minutes or so of sky available (I always image until the end of astronomical twilight). Anyways, 73 CVs is still a nice haul.

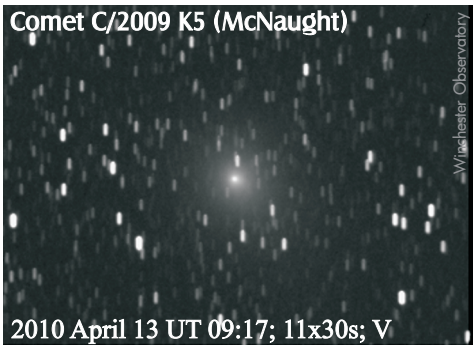
Mon/Tue, April 12/13

Walter: I saw Venus this evening from the dome (naked eye) and tried for Mercury, but it was already involved with a local tree! I'll try again tomorrow a few minutes earlier (and with binoculars just in case). Tonight's run started at 21:11 (a few minutes late starting!) and went all night without incident—just the way I like it. I got up and went out to the dome to watch the spectacular –3.5 mag "Venus-class" ISS/Discovery pass at 04:38. I think that is the best one I've seen yet! It was neat to stand there and watch it while the scope just inches away from me cranked away on variable stars in Delphinus. Looking at the log afterwards, I see it was imaging EP and V Del during the pass.

Coming back in to the control room, I watched the imaging run on the computer and stopped it after it finished the variables in Delphinus (BR Del was the last one). Just in

time too as it was already 05:11 and nautical twilight was due to start at 05:13. I pressed on anyways because I wanted to image Comet C/2009 K5 (McNaught). After 5 minutes of exposure time on the comet, I parked the scope and shut everything down. Normally this is done by script, but I had told it not to since I knew I would be getting up to image the comet (which turned out to be still putting on a very nice show!). Taking a last look from the top of the dome slot at dawn (something of a ritual for me), I could see a bank of cloud stretching very low across the south, which the satellite image confirmed. 191 variables were imaged tonight—a fine haul!

Kevin: Cleark Sky Clock suffers a miss with that cloud system pushing up to Kingston a little bit more than it should and as a result we were totally clouded out for the ISS/Shuttle pass this morning. Too bad.

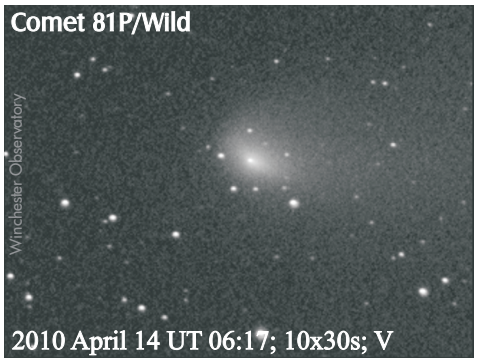


Tue/Wed, April 13/14

Walter: At 20:25 this evening I finally spotted Mercury—first with binoculars, then naked eye—just slightly above a local tree. It was very satisfying to finally get it. I can't remember the last time I observed Mercury!

Tonight's run was again a few minutes late starting (about 20 minutes, at 21:11) and ran without incident once again (just the way I like it!). 73 variables were imaged (mostly CVs but with a few more Miras squeezed in first thing in the evening) before I awoke and stopped the run at 02:07 to image Comet Wild. At 02:26 I restarted the run and another 47 variables were image by the end of astronomical twilight. This included another 15 Miras at dawn which was about half of the remaining dawn Miras that I wanted to cover.

After I restarted the run I had a nice relaxing one hour visual session with my C8 in the backyard before going back to bed. I observed M4 (faint due to local light pollution), M13, W Herculis, T CrB, and a nice aimless cruise through the rich star fields of Cygnus.



Moon Challenge: Wed, April 14

Ken Kingdon: Provided that our weather is good on Wed., Apr.14th, then Kingston is in the best position on Earth to set a new world record for an optical sighting of a new crescent moon. The current record was established by **Mohsen Mirsaeed** in Iran, in the year 2002, at a lunar age of 11 hours and 40 minutes.

Your mission, if you decide to accept it, is to break that record. Locally, Sunset occurs at 7:47pm EDT, and Moonset is at 8:26pm. If the Moon is sighted before 8:09pm, then a new world record will be established right here in the fine City of Kingston. After Sunset, we have 22 minutes to find it, and I have an atomic clock to verify a time record.

The best place to observe locally is the hilltop at Lake Ontario Park, because you are high, the western horizon is completely unobstructed, and the view is mostly across water to minimize seeing effects. I have already seen several very young crescent Moons from this superb location.

I would appreciate some company, and hope that some interested RASC-KC members can be there about 7 p.m. for set-up, some chit-chat, and some info where to look. The Pres. said she'd bring "the drinks."

Kevin: Is this strictly visual or are any observing aids permitted?

Ken: As I mentioned, the 11h40m current record is for an optical sighting, so any instrument that you have is acceptable for a new attempt.

BTW, the unaided visual record belongs to **Stephen James O'Meara** who saw the young crescent with the unaided-eye 15 hours and 32 minutes after new moon in May 1990. But I am not talking about unaided here.

We are good to go for the optical record. The larger the aperture, the better. As I recall, the current record was with giant binoculars, perhaps it was done with 125x30 I think. Any 6-inch to 12-inch scope should blow giant binos away.

Kevin: Kim & I attempted to spot the new moon from home but no luck. Kim was up in the living room (for height) and I was up on the house roof.

From looking at planetarium programs, I was expecting mercury to be about 5° away from Venus and I was going to field hop from Venus to Mercury to two more fields in a line and then down and left a little.

There I am up on the roof in a good wind, a voice data recorder, my atomic watch and a pair of 10x50 binocs.

19:55 EDT nothing. Found Venus, could not find Mercury, could not see the moon.

20:00 nothing. Still found Venus,

Continues on page 9...

Blast from the Past: The Quest For The Young Moon

Leo Enright

Several Kingston Centre members attempted to see last month's very young moon on April 15th and that brought to mind an earlier young moon observation by ***Leo Enright*** *and* ***Denise Sabatini*** *on Friday, March 31, 1995 and recounted in the May-Jun 1995* Regulus.

A fascination with the attempt to observe as young a moon as possible has challenged astronomers and others for many years. About once a year the conditions for such a quest present themselves. It generally happens in the spring when the celestial alignments are most favourable, when the ecliptic, as seen in the western sky at the time of sunset, is most steeply inclined to the horizon. The moon in its monthly orbit is always on, or within five degrees of, the ecliptic in its orbit around the earth, and in the springtime it climbs quickly from night to night so that a thin crescent is then generally noticed by most people much sooner than at other times of the year.

Occasionally in March or early April there is a genuine chance to see what can be called a very young moon. Such conditions prevail if sunset in the local area occurs about 18 to 24 hours after the precise time of new moon. If the new moon is much younger than that, the lunar crescent will probably be too slender see and the moon will probably first appear when it is only a couple of degrees or so above the western horizon when the sun is a few degrees below the horizon. If the moon is much more than 24 hours old, the quest is not as exciting because of the number of observers who have mastered it, and if the moon is thirty hours old or more, the challenge is not rigorous enough to entice many observers who wish to put their observing abilities to a genuine test...

...With binoculars and camera and tripod, Denise and I set out for the observing site that has become my favorite for those occasions when a perfect view of the western horizon is demanded. At the eastern end of Silver Lake a rocky ledge provides an unhindered view to the west across two kilometres of water.

Arriving there at 6:40, nine minutes after sunset we were cautiously pleased to note that the western sky, up to about ten or twelve degrees was very clear, other parts of the northern and high western sky were also clear, but the southern, eastern, and most of the southwestern sky were heavily overcast. It just might be possible, we thought, but we were far from sure, that clear conditions would prevail long enough for us to be successful. As the glow of twilight began to fade, we scanned the west very carefully with our 9x63 and 10x50 binoculars. At 6:55 p.m., Denise shouted, "I have it, just above that tree! It's really thin!" I was scanning an area about two or three degrees south of the field in which she saw it. I soon saw it and was amazed at how thin it was. The horns of the crescent did not seem to form a half-circle, as is usually the case. It was something like a third of a circle. The crescent was five degrees above the horizon. We followed its movement downward and to the right for 20 minutes, until 7:15. At about 7:05, by taking her eyes from the binoculars and concentrating on the right spot, Denise was able to say that she saw the crescent naked-eye "for about three seconds only." I tried but could not be absolutely certain of seeing it in that way, at least, not certain enough to record that I had done so. We agreed that without the binoculars we would not have seen it at all that night. What we both noticed was that during the 20 minutes of observation, the middle section of the crescent seemed to become brighter, as the surrounding twilight faded slightly. At 7:15 the right-hand portion of the crescent went behind a very distant tree, one that to the unaided eye appeared as only a speck on the horizon. By then the moon was only one degree, or less, above the horizon.

When we left the site five minutes later, and walked to the car, it was with a sense that for once Murphy's Law had not prevailed. Numerous stars were starting to appear in the northern sky, and twilight in the west would end in a more than half an hour, but thick clouds still persisted in the east and in the south. Sometimes one does get lucky, and sometimes the weather does cooperate for amateur astronomers who take a chance on making observations such as these.

Later at home on referring to the *Observer's Handbook* I found out that New Moon had occurred at 02:09 UT, and our observation at 23:55 UT meant that we had seen a moon whose age was 21 hours 46 minutes. my personal record had been broken by a couple of hours.

The quest for a very young moon is a genuine challenge, one that requires some planning in addition to cooperation from the forces of nature. If you have the chance, pursue the quest! It is well worth the effort.★

Predicting Crescent Visibility

Writing in the Nov-Dec 1995 *Regulus*, **David Stokes** discusses two criteria developed for predicting young moon visibility: the Moon's altitude versus Sun-Moon azimuth difference and the Sun-Moon altitude difference versus Sun-Moon separation. Interestingly, Leo's and Denise's observations beat both of these measures. It would seem that predicting crescent visibility is as difficult as actually seeing it.★

...Astronomical Anecdote

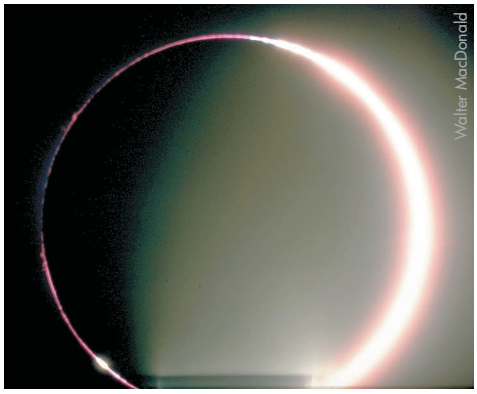
...continued from page 5

bunch appeared! Wow! Finally (about one minute before maximum eclipse) I took the filter off the scope. I put my hand under the camera viewfinder to gauge the intensity of the sunlight, then took a quick look. It was eye-wateringly bright and the annulus looked like the filament of a very bright light bulb. I tried looking up at the eclipse naked eye a few times but found the glare somewhat over-powering. As a result I didn't see any corona or the planet Venus (less than 5° away). I could just make out the right side of the annulus in the C8. With only 13 seconds of annularity I almost missed getting any pictures!

As with any eclipse the 2nd half is hugely anti-climactic, but we were all quite happy with our successful drive to clear skies in the nick of time! Being able to blast down the Interstate for an extra 4½ hours had saved the expedition. How often have we heard that mobility is key in these situations? This was a great demonstration of that. Back in Toronto, a ¾ eclipse was observed in overcast conditions, and expedition members **Ralph Chou** and **Bob May** appeared on the front page of the Toronto Sun.

Only one thing marred this great day, and occurred as I was switching rolls of film in the camera after the eclipse. As it turns out I had not completely rewound the film and then opened the camera. Realizing what had happened I quickly closed the camera. I was sure my precious annularity photos were ruined, but as it turned out my quick reaction, having my back to the sun at the time, and the slowness of the ASA 25 film saved the photos! I only lost one and it was a partial phase which I had lots of. Whew!

There was much celebration on the bus (including the obligatory champagne) as we started home. We stopped somewhere in Pennsylvania



Annularity! Note the nice bead at 8 o'clock.

for supper and then motored on overnight. Our bus delivered us back to Yorkdale in the wee hours and we drove from there back to Oshawa for breakfast. After spending so much of the previous 2½ days on the bus, I still felt like everything was bobbing around even though I was firmly seated in a kitchen chair at Scott's house! (I would have a similar feeling after spending several days on a boat in the Galapagos Islands in 1986, but that is another anecdote!)

So, my first big eclipse expedition—13 seconds of annularity—was a great success! The next solar eclipses for me would be in 1991 and 1994—seemingly far in the future at that time, now even farther in the past. Still, whatever else we do we must keep looking forward and now we are over half way from 1994 to 2024 and our next local total solar eclipse. I can wait; there is lots of Astronomy to be done between now and then! For those that can't wait, travel is always an option.★

KC Members & the 1984 Eclipse

From *Regulus*, July-August 1984:

Hein Van Asperen was clouded out in Virginia; **Martyn McConnell** photographed the eclipse under clear skies; **Terence Dickinson** had more than an hour of clear skies; **Leo Enright** managed a dozen glimpses through small breaks in the cloud.★

...Observing Reports

...continued from page 7

still no Mercury, still no moon.

20:05 ditto

20:10 ditto

20:15: came down from the roof after hearing the neighbours come outside for a hot tub experience. That is all I would need... to be seen up on a roof with binocs! The worst would be thought I am sure. I made my way down quietly and low and I think no harm will come of that.

20:20 or so...finally spot Mercury from inside the living room...about 8° away from Venus!

Recalibrate my field scale and go from Venus to Mercury and two more fields in a straight line and then down and left a bit.. Into the treeline across the way!

Kim Hay: OK, in my defense (for height) I was not climbing up to the roof. However, I did spot Venus at 19:52 inside with the 18x70 binoculars, then naked eye. Now go on Mercury, the moon would have been in the trees and well below our line of sight and horizon. It was back to work for me.

But I do have to say, the most beautiful thing, was the clouds that were present. In the binoculars, they appeared as the gentle rolling clouds and bands that are on Jupiter. The sunlight that was reflecting was creating some beautiful colours of magenta and salmon and made the clouds appeared to be so magical. No picture could have captured the beauty, so it will remain a memory.

Ken: Well, two members of RASC-KC attempted to optically observe the ultra-thin New Moon, age 11h 40m at Kingston. But the approach of the leading edge of a wet-weather system prevented a sighting. Our view was blocked by very low cirrus and even wisps of distant clouds. Also, strong wind made for poor seeing. A rain system had

Continues on next page...

approached a wee bit too close, spoiling our two superb days of perfect weather! Pity.

This was very unfortunate since Kingston had enjoyed 36 hours of perfect astronomy weather—but this fine period began to change a mere three hours before the New Moon event. Previously, I can say that seeing had been good, breezes had been light, and I could see right down to the horizon during those 36 hours (from my light-polluted backyard the previous night, the limiting visual magnitude had been an incredible 5.0 mag). But the final three hours wrecked the lowest sector of the western horizon. Venus and Mercury were nonetheless naked-eye planets.

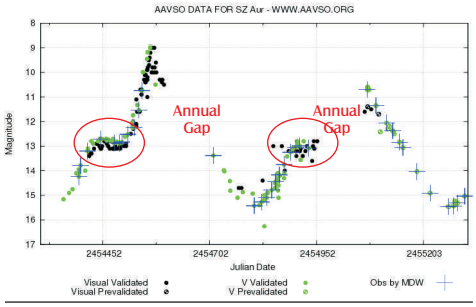
But I am very pleased that **Bill** [**Weir**, RASC Victoria Centre] optically observed the exceptionally young, thin New Moon from Victoria. Well done, Bill.

Walter: I kicked off the evening by observing Venus and Mercury again. The moon would have been behind a local tree so no hope of me seeing it! Tonight's CCD run ran all night, uninterrupted and without incident. 111 variable stars were imaged, included 16 Miras in Cygnus. The run finished about 40 minutes before the end of astronomical twilight, so I guess I should have loaded up the plan so it could have continued into Lacerta. Oh well, next time.

After four clear nights in a row I have quite a backlog of photometry to tackle this weekend!

Mon/Tue, April 19/20

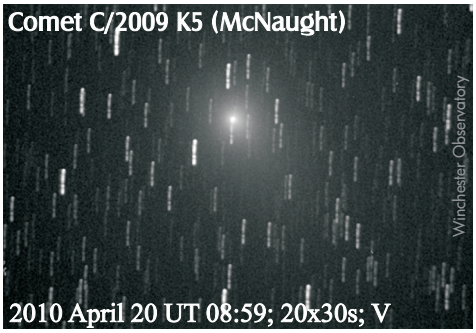
Walter: It was cloudy this evening so all the Astronomy was of the armchair variety. I finished doing photometry on another 163 stars and uploaded that data to the AAVSO. Then while listening to a *Slacker Astronomy* podcast, I used the AAVSO's Light Curve Generator to plot curves on a bunch of the Mira stars that I have been following for the last several years. When I plotted a curve for SZ Aurigae I got quite a surprise—it showed a hump (see the light curve below)! Going to the AAVSO *Long Period Variable Section,* I checked the list of stars that are known to show humps. SZ was not listed; I e-mailed **Frank Schorr** who has taken a special interest in these stars. Within an hour I heard back from him by e-mail, thanking me for finding yet another star to add to the list. Cool! This armchair Astronomy is totally awesome!



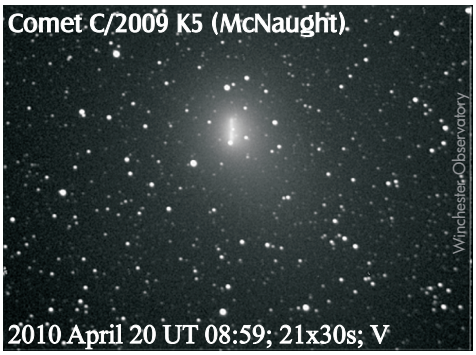
Light curve for SZ Aurigae. Two humps in the light curve are circled in red; observations by Walter (MDW) are highlighted with blue plus-signs. This curve is the result of the combined observations of 32 observers from 11 countries. Annual gaps in the curves—when the variable is too close to the Sun, or too low in the north—are marked.

The skies over Winchester were due to clear out around 2 a.m.; I managed to get up at 4:30 a.m. to image Comet McNaught and the skies had indeed cleared! I made this special effort since it had been reported that this comet's nucleus had split in two. The very first frame showed a double nucleus, but then I realized the second nucleus wasn't fuzzy—it was a background star (lots of these in Cygnus). McNaught was moving so rapidly I could see it jump a bit with each new image that downloaded. The sky is such a dynamic place!

Kevin Fetter: I finally got to see a pass of the space shuttle, darn cloudy skies. That's the problem with where I am located—all that hot air coming from Ottawa, *i.e.* the federal government causes cloudy skies. The shuttle was not very bright due to bad local lighting conditions.



Comet C/2009 K5 (McNaught) on the morning of April 20. Unfortunately, there is no sign of a split nucleus. The image below was aligned on the stars and shows this comet's rapid northerly motion.



Fri/Sat, April 23/24

Walter: I imaged 181 variable stars tonight. GK Persei is brighter! ★