

# Event Horizon



Volume 19, Number 8  
June 2012

## From The Editor

This is the last issue of the newsletter until September and I think there is more than enough inside to keep you entertained for the summer!

Bob Christmas offers us a look at what the southern skies of the Mayan Riviera have to offer. While back in Ontario, Don Pullen describes his experience of the May 20th partial solar eclipse.

John Gauvreau's *The Sky This Month* outlines some of the summer's tempting celestial targets.

Tips for viewing the June 5th Transit of Venus are offered by yours truly.

All that plus a summary of our May meeting, a crossword, a cartoon and lots of photos from the aforementioned solar eclipse!

My best wishes for a safe and clear summer!

Ann Tekatch  
Editor@amateurastronomy.org



## Chair's Report by Bob Christmas

We're only five months into 2012, and, already, what a year it has been for astronomy activity. Venus and Jupiter did their mutual dance in the western sky, with the Moon passing right by both of them --- twice! Mars is prominent in Leo, and Saturn has parked itself beside the bright star Spica in Virgo. The "Supermoon", the perigee full Moon, lit up the sky on May 5. Then there was the annular Solar Eclipse on May 20, a cookie-bite of which was visible from Hamilton, as all these awesome images from HAA members attest!

And this parade of astronomical shows in 2012 is still far from over. On June 5, Venus will pass directly between us and the Sun (and therefore transit across of disk of the Sun) for the first time in 8 years, and for the last time until 2117. And don't forget, later this year, in mid-August, the annual Perseids meteor shower will be happening, and, this year, the peak of the Perseids will be close to the New Moon date.

The HAA has been very active over the past several weeks, with Astronomy Day in late April, ATM telescope-making workshops, the imaging clinic, cosmology discussions and book club discussions. But, alas, our *The Sky This Season* had to be (Continued on [page 2](#))

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## Chair's Report (continued)

postponed yet again due to cloudy weather. We hope to reschedule it some time in the fall. Better luck next time!

I'd like to thank everybody inside and outside of Council who put in their volunteer time to work tirelessly to help put on the many activities the HAA provides for its privileged members and for the public, and you all know who you are; the list of names is just too long to mention! Thanks also, to all of you who voluntarily bring in a donation for area food banks when you come to our meetings. About 1000 pounds of food has been donated to the Salvation Army Food Drive since we started accepting food donations just over a year ago! Finally, thanks to all you HAA members for making astronomy the rewarding and satisfying hobby that it is. There are reasons why the HAA is the largest independent astronomy club in Canada!

Summer is just around the corner, and star parties are close at hand everywhere. And the HAA still has a couple of summer public activities planned.

On July 28, we will have a public night at McQuesten Park in Hamilton, and, of course, on August 11, we will have our Perseids Meteor Shower public night at Binbrook Conservation Area. As always, keep checking our website for more details on these and other HAA activities.

Also, members, keep your eye on your e-mail, in case there's club announcements about spontaneous sidewalk astronomy nights, club stargazing nights at Binbrook C.A., etc.

In the meantime, let's keep our fingers crossed for sunny weather on Tuesday, June 5, for the Venus Transit! First contact of Venus starts at 6:09pm EDT. Then we've got over two hours of transit-watching until the sun sets.

Clear Skies, and for June 5, Sunny Skies!

Bob Christmas



## May Treasurer's Report by Steve Germann

(Unaudited)

Opening Balance:	\$7703.93
Revenue:	\$166
Expenses:	\$200
Closing Balance:	\$7669.93

Major Revenue included 50/50 \$66; Memberships \$100

Major Expenses included Annual Donation to Binbrook Conservation Area (Niagara Peninsula Conservation Authority) \$100; Annual Donation to the International Dark Sky Fund \$50, and Annual Donation to the Clear Sky Chart \$50

**Masthead Photo Credit:** "Super Moon" taken by Don Pullen from the beach at Turkey Point. Image was taken with a Canon 40D connected prime focus to his 100mm f/5 achromat telescope (as a 500mm telephoto).



## Local Circumstances and Observing Tips for the June 5<sup>th</sup> Transit of Venus

by Ann Tekatch

Unless there are some pretty major breakthroughs in medicine or we won the genetic lottery, none of us will be around the next time that Venus passes in front of the Sun. If you don't want to experience this rare astronomical event in front of a computer screen or the television, here are some tips to help you make the most of it.

### How to view:

1. Through a proper solar filter on telescope or binoculars
2. Using the eclipse glasses generously provided by Rob Cockcroft at our last meeting
3. Through #13 or #14 welder's glass. You can affix the glass to a cardboard box and wear it like a helmet or attach the glass to a handheld cardboard frame to block stray sunlight from getting into your eyes.
4. By projecting an image of the sun through an unfiltered telescope or binocular onto a white piece of cardboard or stiff paper. **MAKE SURE YOU COVER THE TELESCOPE'S FINDERSCOPE. DO NOT LOOK AT THE SUN THROUGH THE SCOPE OR BINOCULARS FOR ANY REASON. IT IS ALSO IMPERATIVE THAT YOU DO NOT LEAVE THE UNFILTERED TELESCOPE/BINOCULARS UNATTENDED AT ANY TIME IN CASE SOMEONE ATTEMPTS TO LOOK THROUGH THEM.** You can determine when the sun is in the scope or binoculars by watching their shadow on the ground. When the shadow of the scope/binoculars is at its smallest, you are pointed directly at the sun. An excellent video explaining how to do this with binoculars can be seen here:  
<http://youtu.be/7Q925aYJMKU>
5. By projecting an image of the sun through a pinhole. Instructions can be found at:  
<http://www.exploratorium.edu/eclipse/card.html>
6. Check out local opportunities to watch the transit at:  
<http://www.physics.mcmaster.ca/planetarium/>  
<http://www.hamiltonrasc.ca/venus/index.html>

### Where to view:

The transit begins at 6:04 p.m. EDT and will continue long after the sun sets for us at 8:55. If you want to watch as much of the transit as possible, you will need the best western horizon you can find. One with no obstructions.

### When to view:

The transit officially begins when the edge of Venus touches the edge of the sun which will occur at approximately 6:04 p.m. in Hamilton. As Venus moves in front of the Sun, it will appear as a black notch and then slowly move across the Sun's disk over the next few hours.

### Weather Prospects:

Past experience viewing rare astronomical events makes me cynical about weather forecasts! The main reason there are no official club events scheduled for the Transit of Venus, is that people want to be free to travel should clouds threaten. Monitor the weather forecast, watch Environment Canada's satellite images:

[http://www.weatheroffice.gc.ca/satellite/animateweb\\_e.html?imagetype=satellite&imagenname=goes\\_ecan\\_vvi\\_m .....jpg&nbimages=1&clf=1](http://www.weatheroffice.gc.ca/satellite/animateweb_e.html?imagetype=satellite&imagenname=goes_ecan_vvi_m .....jpg&nbimages=1&clf=1) and be prepared to travel wherever the clear skies are.

Finally, don't forget to send me your best image for the next issue of Event Horizon!

Good luck and clear skies.



Several months ago, when my best friend Andy and his fiancée Cheryl floated the idea of making their upcoming nuptials a “destination wedding” somewhere in the Caribbean, either Cuba, or the Dominican Republic, or Mexico, I have to admit, I was a little apprehensive, mainly because of how expensive this was going to be, especially given that Andy and I were both unemployed at the time. But as the time drew closer, I was starting to look forward to this. I later learned that the trip was a definite “go”, it was set for the last full week of April 2012, it was time to start preparing, and that the chosen destination was Mexico, the Maya Riviera on the Yucatan coast to be more exact.

I was fully aware that the Yucatan is famous for its Maya ruins, and, above the southern horizon, the Southern Cross is at its highest point in the evening Yucatan sky in late April. But I had to keep reminding myself that this was a *wedding* trip, not an astronomy trip, not a Maya archaeology trip. That said, I made sure, in addition to my wedding uniform and my digital SLR camera, that I packed a fixed tripod, my laptop and my pocket sky atlas.

### Day 1

Flying out of Hamilton airport, arrival at Cancun airport 4 hours later was early Saturday evening, April 21, 2012, as the sun was setting. After clearing customs and security, it was onto our bus for the ride south to our resort 9 km north of Playa del Carmen. Heading south-south-west on the bus, I could see Venus in the west as the sky got darker, then I could see Sirius. I tried looking for the southern star Canopus, but the front of the bus was in the way. After settling into our rooms, I spent almost two hours wandering all over the vast resort looking for the others in our group. I finally found Andy, and we went down by the beach. While we were there “casing” the place, I looked to the due south, and I noticed the bright lights of Cozumel in the distance, as well as 2 bright stars just above there. These were Alpha Centauri (Rigel Kent) and Beta Centauri (Hadar). Then I noticed 3 bright stars to their right, then a fourth dimmer star to THEIR right. I said, “OMG! There it is! The Southern Cross!” I didn’t have my camera with me at the time, but it was still a milestone moment!

*(Continued on [page 5](#))*



## Maya 2012 and a Wedding (continued)

Eventually, all 16 of us met up at the 24-hour open-air sports bar at the resort, and we celebrated our arrival (while I did a cheers to myself for seeing the Southern Cross). Afterward, at about 2 in the morning, I noticed Alpha and Beta Centauri skimming the treetops on my walk to my room, and felt compelled to grab my camera and tripod and ring off several short time exposures of these stars before going to bed. [The next morning, Cheryl's sister would tell me that a security guy told her there were crocodiles in the mangrove swamps interspersed within the resort! Yikes! I was out there alone not knowing that!?!]

### Day 2

After sleeping in, I registered with our tour group in the late morning. At the same time, I booked my bus trip to the Maya ruins at Chichen Itza for the following Thursday. Then it was breakfast at the buffet place, then, eventually, I met up with some of our group down at the beach. It was all-in-all a relaxing day, with dinner at the buffet place, then nightly entertainment at the sports bar. Afterward, we took a break before it was time to head to the beach party. It was about 10:30 pm and I took the opportunity to take my camera and tripod to the beachfront and have a look at the night sky. I set up my camera (alas, I didn't have my equatorial mount with me), and I took about a dozen 30-second images of the Southern Cross, and the two Centaurian pointers, the best 9 of which I stacked for this composite image, which I then blended with my best single shot of the sea-front view towards Cozumel. Oh, by the way, I could see the globular cluster Omega Centauri with my unaided eyes; it looked like a fuzzy little spot when I looked slightly away, using averted vision. My only regret was not bringing my binoculars!

*(See Bob's photo at the top of p.4 - ed.)*

### Day 3

We spent part of Monday afternoon walking to a nearby lagoon, up the beach from our resort, and strutting about in the lagoon's waters; a nice place! After relaxing by the poolside at the resort, we had reservations for dinner at the on-site Italian restaurant. The meal was delicious. No matter what we ordered, everybody thoroughly enjoyed their meals this night! Later, as the now-usual

nighttime partying was getting going, we all happened to be near the highest point on the property, near the front lobby. I, as the resident astronomer in the group, gave everyone else an impromptu tour of the sky. I pointed out Mars high in the west in Leo, Saturn and Spica were high in the south in Virgo, Arcturus was virtually directly overhead, Vega was rising in the northeast, and Rigel Kent, Hadar and the Southern Cross were low in the south. What a sky to be showing to a bunch of astronomy newbies!

### Day 4 (Wedding Day)

Mid-morning, we, the wedding party, met with the resort's wedding planning staff to make final preparations. Later that afternoon the groom and the best man (Andy and I) were in my room to get ready (at the same time, Cheryl and the maid of honour were doing their preparations). Then, at 4pm, on the beach by the banquet hall, it was time. It was a very moving and lovely wedding ceremony. Then there were lots of pictures, at the ceremony site, and around the pool of the resort, then the steak dinner at the banquet hall. After dinner, it was nightfall, and I stepped outside for a little air, when I noticed Venus and a thin crescent moon very close, side by side in Taurus, with Aldebaran nearby. "Trina! Come here! You've gotta see this!", I said to Cheryl's sister, who was 15 feet away from me having a smoke. "Wow!" she said. That was a Galileo moment for her. Afterward, I followed the star Canopus to my room to get ready for some post-wedding partying that night.

### Day 5

On Wednesday, a few of us took a taxi into nearby Playa del Carmen. We walked up and down 5<sup>th</sup> Avenue, the main shopping street in town, with all those vendors calling out to us, "Senor! Come in! Buy!" and so on. We stopped at lunch at this quaint taco place for some lunchtime snacks and a cerveza (that means beer in case you don't know), and we were serenaded by a Mexican musical troupe who sung and played La Bamba for us. Olé! Then we walked down by the beachside, beside the terminal for the Cozumel Island ferry, and had more cervezas. Then it was back to our resort for a buffet dinner, then the usual nighttime stuff, although I had to take it easy and go to bed early, because Thursday was.....

*(Continued on [page 6](#))*

## Maya 2012 and a Wedding (continued)

### Day 6 (Chichen Itza Day Trip)

.....my trip to the Maya Ruins at Chichen Itza, a 3 hour bus ride away. It was a long trip, but my anticipation grew as we got closer to our first stop, the Cenote or Sink Hole, revered by the Maya in their time as a place of sacrifice, and whose water is 60 feet below the edge and about 200 feet deep.



*(Photo below - ed)*

After lunch at a buffet restaurant in the nearby village of Pisté, it was off to the ruins of Chichen Itza itself. After getting off the bus and passing through the main gate into the archaeological grounds, we walked ahead towards a grove of trees, through which I started making out a huge pyramid-shaped structure. As I passed the trees, there it was, “El Castillo”, the Pyramid of Kukulcan!



*“El Castillo”, the Pyramid of Kukulcan*

Our tour took us to the Ball Court, which is huge; as long as a football field, with two sideline walls, each of which has a ring, over 20 feet up. In their day, the Maya played a ball game (no touching the ball with arms, hands or feet) whereas the objective was getting the ball through one of the rings, which ended the game. The losers, unfortunately, were killed as sacrifice to the Gods.

Our tour took us from there to the “wall of skulls”, the Temple of Venus, then to El Castillo, the Pyramid of Kukulcan, where our tour guide gave us a neat demonstration of how an eagle was made to cry out from the temple up at the top, by standing at a certain spot in front of El Castillo and clapping his hands, the echo of which acoustically bounced off the top of El Castillo as the caw of an eagle! On my own, I looked at the Temple of the Warriors and the Temple of Las Mesas. Then I walked to the south end of the Chichen Itza complex, past the Tomb of the High Priest, to El Caracol, an observatory where Maya observers of the sky would climb up to note the movements and motions of the Sun, the Moon, the planets and the stars. The Maya were obsessed with astronomy, which definitely motivated me into taking this day trip to Chichen Itza.

They had a numerical system remarkably similar to our decimal system. It is a *vigesimal* system, with a base of 20, not 10. See the 20 Maya “digits” below. I have also included the number 2012, which consists of 3 Maya numerals (5.0.12). The most significant digit is 5. *(Continued on [page 7](#))*



## Maya 2012 and a Wedding (continued)



*El Caracol, a Mayan observatory*

Multiply that by 20-squared (400) to get 2000. The next digit is 0 (times 20 = 0), then 12 is the least significant digit; 2012!

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14
15	16	17	18	19

	= 5 x 400 = 2000
	= 0 x 20 = 0
	= 12 x 1 = 12
	2012

These numerals were used in the Maya Calendar, as well as for advanced mathematical calculations. The Maya were an incredibly advanced civilization, advanced enough to invent the number zero for themselves, independently, and to develop a calendar more accurate than our own, which kept track of the motions of the planets, the sun and the moon, and could be used for predicting eclipses thousands of years in the future or past.

This was a fantastic, eye-opening experience of an excursion I won't soon forget. And I did it in 2012, a significant time on the Maya Calendar (but hopefully not the end of the world at the next winter solstice)!

### Day 7

Friday was rather anticlimactic, after all the goings on. I spent most of it relaxing (and getting sun-burned) by the resort poolside with the newlyweds

and the rest of our group. I was reflecting back at the week that was. I saw the Southern Cross, saw Andy & Cher get married, and visited a world-famous ancient city of a mysterious Mesoamerican civilization.

In the evening, some of us went back to Playa del Carmen for a couple of hours, then we had dinner back at the resort, then we had to say goodbye to Cher's sister, who, due to a quirk in our group package scheduling, had to go home a day early on a red-eye flight.



*Playa del Carmen*

### Day 8 (Home)

It was time to pack up, and get ready for the shuttle ride back to the airport, and after checking our bags and sitting around for a couple of hours, we cleared security and boarded our flight. What a week, and what weather! Sunny and hot every day! Six out of seven nights were clear! There was just a brief shower Sunday afternoon, then a tiny bit of rain Friday night, but that was it. What a shock it was arriving back in Hamilton airport Saturday Night (April 28, 2012), just before midnight, stepping off the plane into the 4 degree night! Back to reality.



## May 20, 2012 Solar Eclipse - One Perspective - by Don Pullen

Northern California and Nevada (along with other places along the track to the west over the Pacific) were expected to see an annular eclipse on Sun May 20, 2012. Sadly we weren't going to be as fortunate. However we did have a chance to see some of a partial eclipse before sunset. According to calculations for our area, we were expected to see up to approximately 18% of the sun covered during the 20 minutes or so of the eclipse visible from our area before the sun set.

Eclipses are a fairly rare event and I wanted to take advantage of the opportunity to catch it, even though it was not going to be all that impressive. I'm not an eclipse chaser, but I saw the total one in Halifax back in the 60's and the almost total eclipse in our area back in the 80's. Knowing that our next opportunities won't be until 2017 and 2021 for good partials, and a total in 2024, I wanted to view what I could. Plus it would be good practise for the upcoming Venus transit on June 5.

I checked with various sources, including Stellarium and found that the Sun was going to set a little north of due west. This meant if I wanted to catch as much of the eclipse as possible, I needed to be overlooking a large body of water so that the distant shore wouldn't obstruct those last few seconds of the eclipse that would be lost to those who observed from a more "conventional" location where trees or buildings would block the view sooner.

I eventually selected Port Dalhousie (a suburb of St. Catharines) as my primary target destination since I knew the pier projected out into Lake Ontario sufficiently so that the view would have no obstructions except the Niagara escarpment behind Burlington, more than 20 km distant. Without traveling to the shores of Lake Huron, this was the closest reasonable point I would find. However even though the skies were clear when I first ventured out, I also knew there was a slight risk of thunderstorms forecast for that day and was prepared

to travel further afield if necessary to find clear skies.

When I got to Port Dalhousie, the skies were still clear, but there was a significant amount of haze and smog in the air, especially in the direction towards the western shore of Lake Ontario. It was a warm day and lots of people were milling about enjoying the beautiful weather. Since it was early, I decided to enjoy the historic area, wandering around some of the shops and looking at the boats that were moored in the harbour.

I eventually collected my gear and wandered out along the pier to set up. I had brought my 100mm f/5 achromat telescope to be used as a 500mm telephoto lens with a white light (Baader) solar filter mounted on a camera tripod and my Canon 40D connected prime focus. Once set up, it attracted a lot of attention. I had people asking if I was trying to image the green flash (which sparked an explanation why it couldn't be done from there), photograph the sunset, or was I there for the eclipse. When I got into explaining the eclipse, I mentioned I had a couple of solar eclipse glasses and was willing to share them once the eclipse was underway. In all, I had several dozen people look through the glasses at the eclipse and at some of the images I had captured as I conducted an impromptu sidewalk astronomy session all the while continuing to collect images.

Some thin clouds did roll in just as the eclipse was starting and the smog contributed to degrade the image quality somewhat, but I was still satisfied that I got some reasonably good images and in some cases the clouds added a nice effect to the photos. Some of the images are included in this article and others can be seen on the HAA blog or on Facebook.

*Solar eclipse photos by Don and other HAAers can be found on the following pages- ed*



## Images from May 20, 2012 Partial Solar Eclipse



Top left: Partial solar eclipse begins - note the sunspots.

Below right: Partial solar eclipse in progress.

Bottom: Sunset with the sun partially eclipsed.

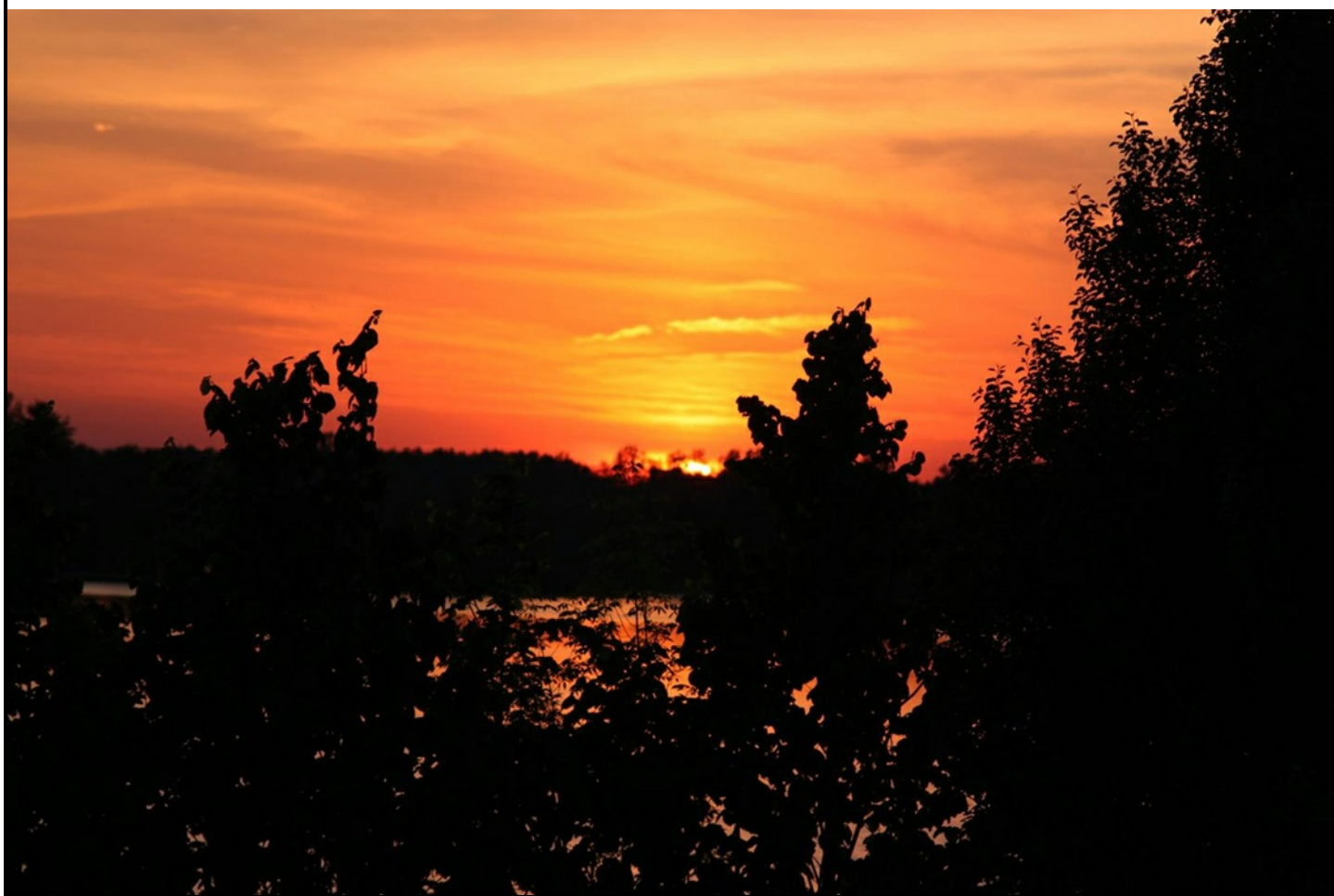
All photos by Don Pullen. Taken with Canon 40D.



## Images from May 20, 2012 Partial Solar Eclipse



Partial Solar Eclipse photos by Jim Wamsley. Note the treetops silhouetted against the sun in the image on the right! Taken through zoom lens at 300mm with Canon T1i DSLR. Images taken at Binbrook Conservation Area.





## Images from May 20, 2012 Partial Solar Eclipse



**Top left:** Kevin getting set up.

**Top right:** Solar eclipse sunset

**Above:** Joe McArdle observing with his PST

**Right:** Kevin using projection to view the eclipse

Photos by Ann Tekatch





## May 18, 2012 General Meeting Summary by Keith Mann

The Sun is the subject of irony for astronomers: while we'll happily invest great time and effort to peer at distant stars, we largely ignore the one that's right next door. Once in a while, though, it has our undivided attention. Between the upcoming partial solar eclipse and the incredibly rare transit of Venus, now is certainly one of those whiles. No doubt it's these two events - and the transit in particular - that resulted in the great turnout at the May meeting of the Hamilton Amateur Astronomers. As our Chair, **Bob Christmas**, noted during his opening remarks, it was an especially good crowd considering that our meeting had been delayed a week due to a scheduling conflict at the Spectator, and thus fell on the May long weekend.

Bob kept his remarks brief, and secretary **Jim Wamsley** took only a few moments to show off one of the loaner 'scopes and invite members to see him if they'd like to reserve one. Guest speaker **Rob Cockcroft of The McMaster University Origins Institute** was promptly welcomed to the stage and launched into his presentation on the transit.

While most of us are aware that transits of Venus are rare, Rob help us understand just how rare they are when he reminded us that this transit would be only the seventh one recorded by astronomers. Certainly there have been countless others, but prior to 1639 our understanding of planetary orbits wasn't sufficiently advanced to predict when one would occur. In fact, the calculations were so new in that year that only two astronomers recorded observations. Nevertheless, the data they collected was enough to provide the first computed result of the distance between the Earth and Venus, and by extension the distance between the Earth and the Sun. Consider for a moment the novelty of the perspective on the universe those astronomers gained! Perhaps not since Eratosthenes' calculation of the radius of the Earth had man learned as much about the size of the cosmos.

The subsequent transits, in 1761 and 1769, are as remarkable for the tales of scientific adventure left in their wake as they are for their results, which were a much-improved calculation of interplanetary distances and the discovery of Venus' atmosphere. The 1874 and 1882 transits were of

relatively little significance in terms of that calculation, and by 2004, of course, methods such as radar telemetry had made parallax calculations obsolete. The transit continued - and continues - to have scientific value, however, because it helps astronomers understand occultation and lets them better detect small exoplanets.

After the break - and the generous distribution of solar observing glasses to the crowd by Rob - Observing Director **John Gauvreau** presented The Sky This Month. As usual, John began with observing reports and astrophotos from the membership at large. This month, those included plenty of "supermoon" reports, some photos taken by Bob from Cozumel, Mexico (featuring the Southern Cross and Alpha and Beta Centauri), and some solar astrophotos by Jim.

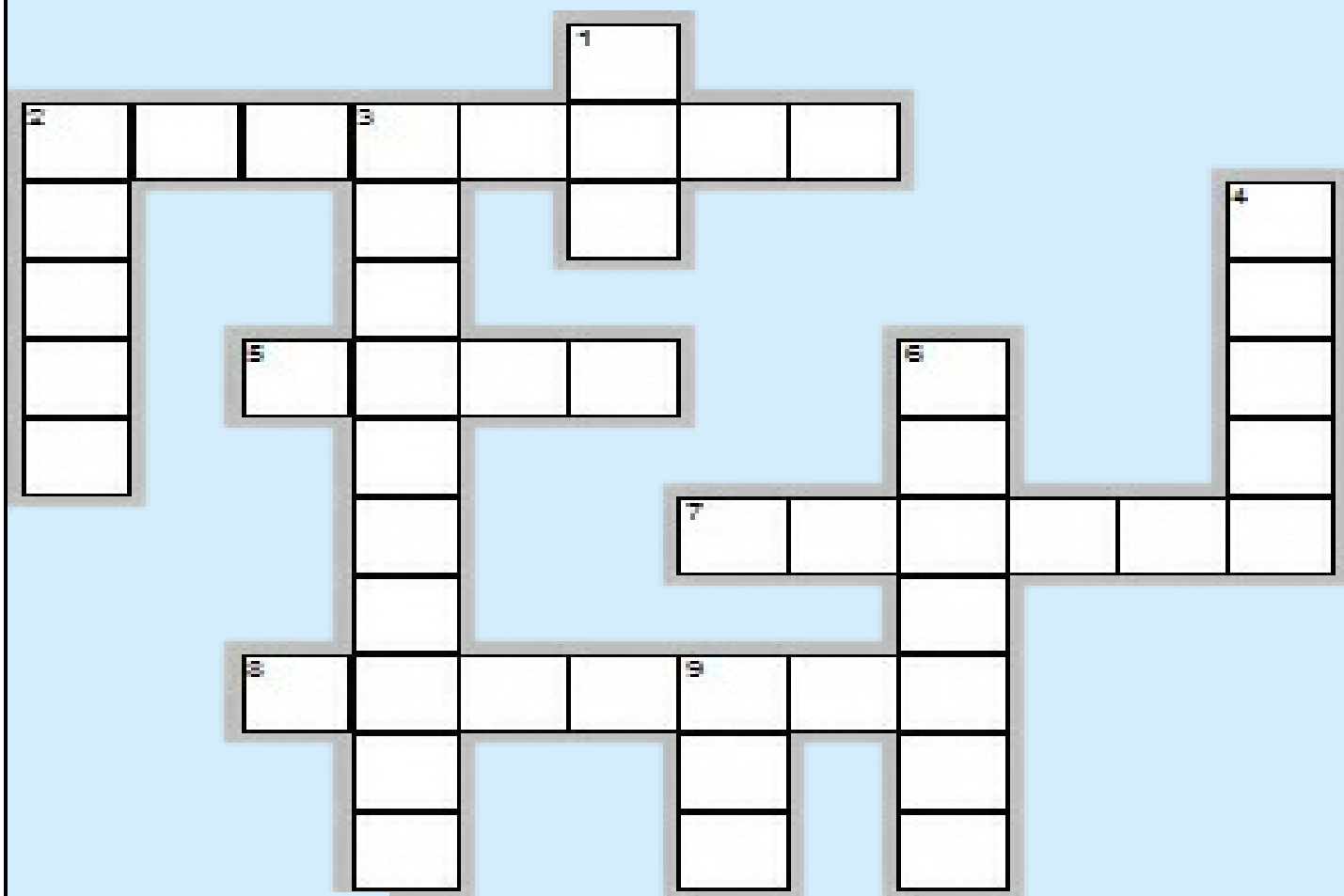
Departing from his usual constellation-centric theme, John focused on the topic of double stars. Those of us who have had the opportunity to observe with John will know how much he enjoys observing doubles. John shared with us some great reasons for making double stars one of your observing goals, and discussed some of his favourites, from the well-known Mizar to the beautiful Iota Cancri.

As Bob wrapped up the meeting, the buzz about the transit continued, and our members and guests left, for once, hoping for a sunny day as much as for a starry night.





## Astronomy Crossword by Mario Carr



### Across

2. On June 20 at 7:09 p.m. this event starts summer
5. On June 25, the moon is below this planet in the evening sky
7. This mathematician was the first to calculate a Transit of Venus
8. This once in a lifetime event with Venus and the Sun will occur on June 5

### Down

1. How many Venus Transits have been observed?
2. On June 27 there will be a grouping of the moon, Saturn and this star in the evening sky
3. The full moon on June 4 is also known as this moon
4. On June 4 western Canada will see one of these partial eclipses
6. On June 17, the waxing crescent moon is just below this planet low in the dawn sky.
9. Venus Transits have helped us determine the distance to this object

**Answers on page 19**  
**No peeking!**



## The Sky This Month: June by John Gauvreau

### Sky Calendar

June 4 - Full Moon (Strawberry Moon)  
June 5 - Transit of Venus  
June 17 - Moon and Jupiter less than 1 degree apart (early morning)  
June 19 - New Moon  
June 20 - Summer Solstice  
June 26 - First Quarter Moon  
June 30 - Mercury at greatest elongation (low in west at dusk)

### Under the Sky

Summer arrives with Mars and Saturn high overhead in the early evening. The shortest nights of the year are made more bearable by starting your observations of these planets in the dusky skies after sunset. Don't wait until dark to look at these beauties; the lighter sky behind them will reduce glare and actually enhance the appearance of these bright planets.

**Saturn** is still less than 5 degrees from Spica, the brightest star in Virgo, and on June 27 they are joined by a barely gibbous moon. The three will make a nice triangle in the southwest.

**Mars** is still in Leo at the beginning of the month, but is moving eastwards, ever closer to Saturn, and actually joining Saturn in the constellation Virgo by the solstice. Come August, the two will join Spica for a spectacular conjunction in the low western sky. On the 14th of that month, Mars will pass between Saturn and Spica, creating a straight line of first magnitude objects. This is a conjunction that takes place very low in the west after sunset, but all three participants are bright enough to shine through the twilight and this conjunction is not to be missed.

This conjunction comes just days after the summer's annual favourite, the **Perseid Meteor Shower**. As always, the HAA will be hosting a public event at the club's dark sky observing site, the Binbrook Conservation Area. Last year about 800 members of the public brought blankets and lawn chairs for a fun night under the stars, despite a bright moon and thin cloud cover. This year the shower occurs just a few days before new moon, so the sky will be dark, and if it's clear this year should be one of the best Perseid showers ever. I hope to see you there.

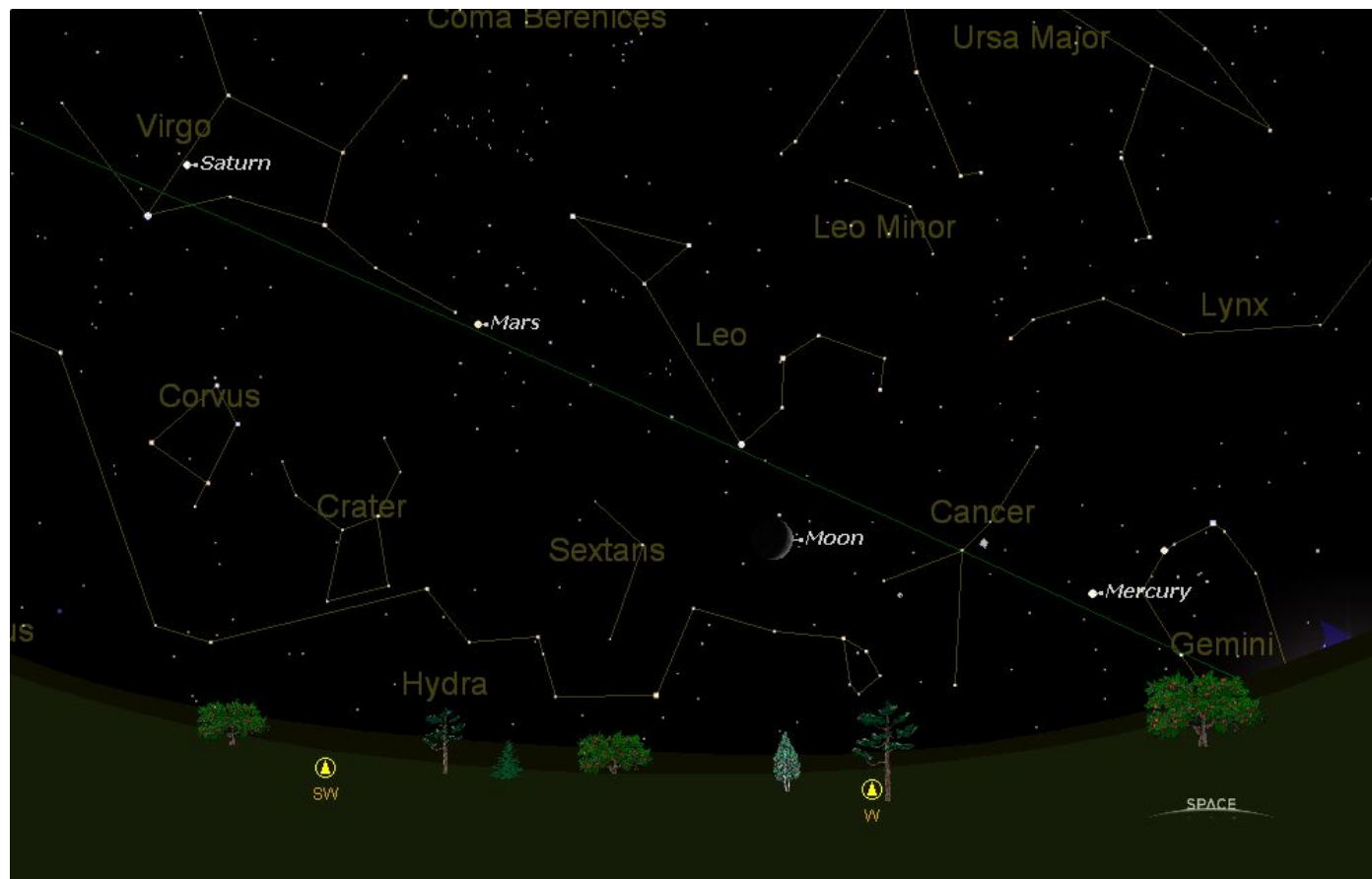
Remarkably, even with Saturn and Mars so prominent, it is Venus that holds our attention so raptly. The June 5th **Transit of Venus** is an event so rare that none of us will have the chance to see this again in our lifetimes. Although not the most visually impressive observation, it is one of those things that grip our imagination, as we visualize the planets whirling about in their orbits, and then in a scene out of *2001; A Space Odyssey*, they line up in a feat of syzygy not often matched. Remember that it is very important to use proper solar observing techniques and equipment (like the solar observing glasses that our excellent guest speaker, Rob Cockcroft, handed out at the last meeting). Serious and permanent eye damage can result from a careless mistake, so please be careful while you enjoy this rare treat.

So with Venus gone, we have a chance to see the other inferior (meaning closer to the Sun) planet, **Mercury**. By month's end it is at greatest elongation, low in the west after sunset. Follow the path from Mercury to Mars to Saturn, and think about how you are looking along the line of the ecliptic and also looking farther and farther out into the solar system. On June 23 and 24 the moon fills the gap in the line-up between Mercury and Mars (see diagram on next page).

(Continued on [page 15](#))



## The Sky This Month (continued)



By the end of the month, **Venus** has emerged into the morning sky, joining **Jupiter** there for the first couple of weeks of July. On the morning of July 15th, the pair is joined by a slim crescent moon, making one of the most beautiful conjunctions of the year for those with a clear view of the eastern horizon. The grouping will all lie within a few degrees of each other against the backdrop of Taurus, but will only

sit about 20 degrees above the horizon at sunrise (see diagram at left).

A month later in mid August, Venus has reached its maximum elevation in the morning sky. For those early risers it is a lovely reward for heading off to work so early. On August 13th a slim moon joins Venus again, although by now you will see that Jupiter has left the grouping and is riding high in the morning sky.

(Continued on [page 16](#))



## The Sky This Month (continued)

So by the end of summer Mars will be lost in the west, Venus and Jupiter will be up in the morning sky, and for evening observers Saturn alone will linger, delighting us with her rings and moons, and no doubt even after such a rich year, with a myriad of conjunctions, eclipses and transits, we will be more than satisfied with this lone planet, drawing us out as the evenings cool, the nights lengthen and we begin our observing cycle again.

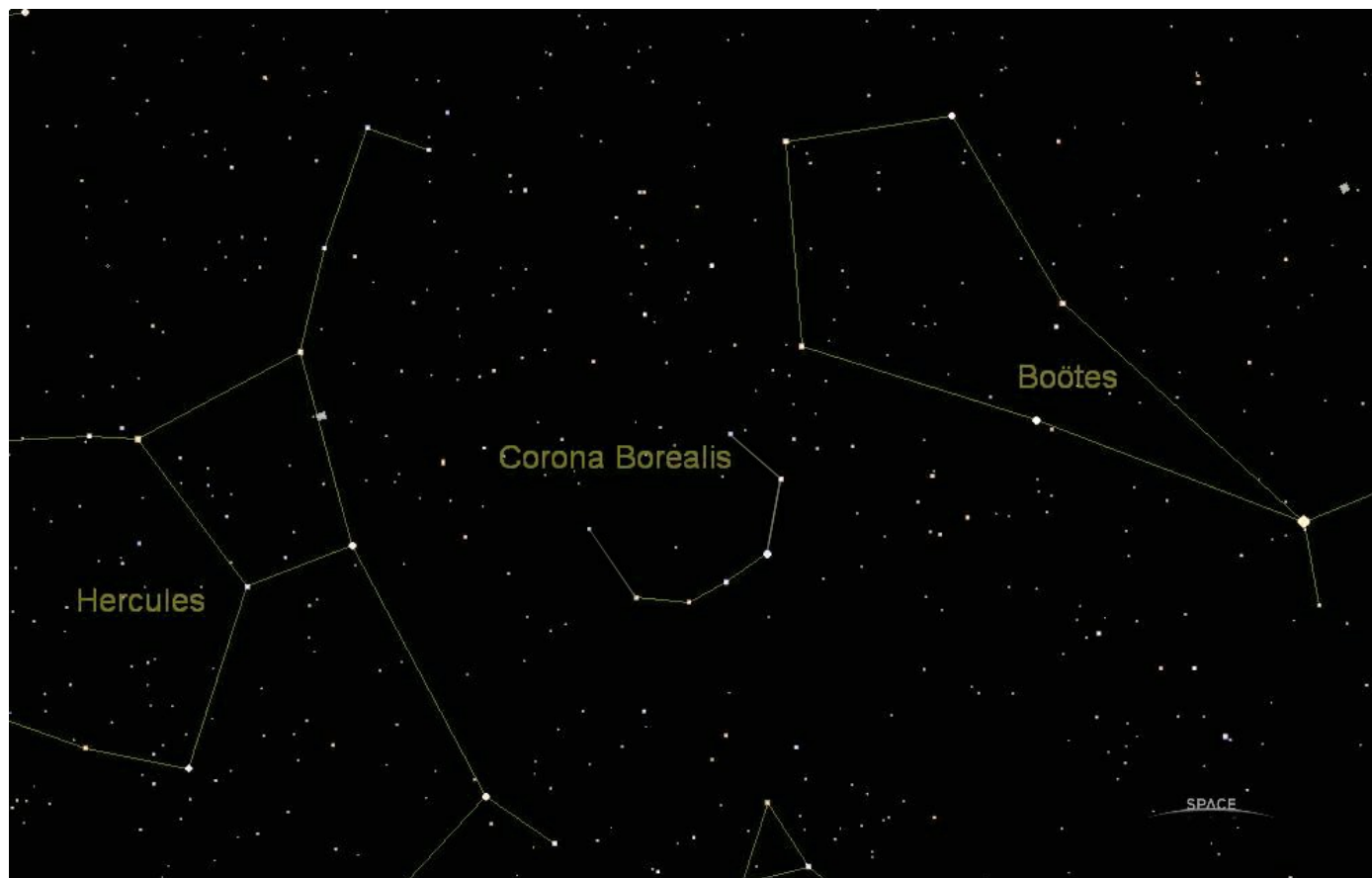
As always, feel free to send me any observing reports, photos, questions, or comments that you would like to share with your fellow members. I love to hear about your observing experiences. See you out there!

John

[observing@amateurastronomy.org](mailto:observing@amateurastronomy.org)

### Corona Borealis

Corona Borealis means the Northern Crown, and indeed come mid-summer it sits almost directly overhead, a crown on our starry sky. This constellation is small and faint, but is both easy to find and easy to identify. It fills the space between the prominent constellations of Boötes (with its dazzling alpha star, Arcturus) and Hercules, favourite of many an observer, for it is home to the famed M13, the great globular cluster (but don't miss M92 in Hercules as well. This little gem is often overlooked because of its more famous neighbour, but it is equally enjoyable). Between two such prominent constellations, Corona can't be missed.



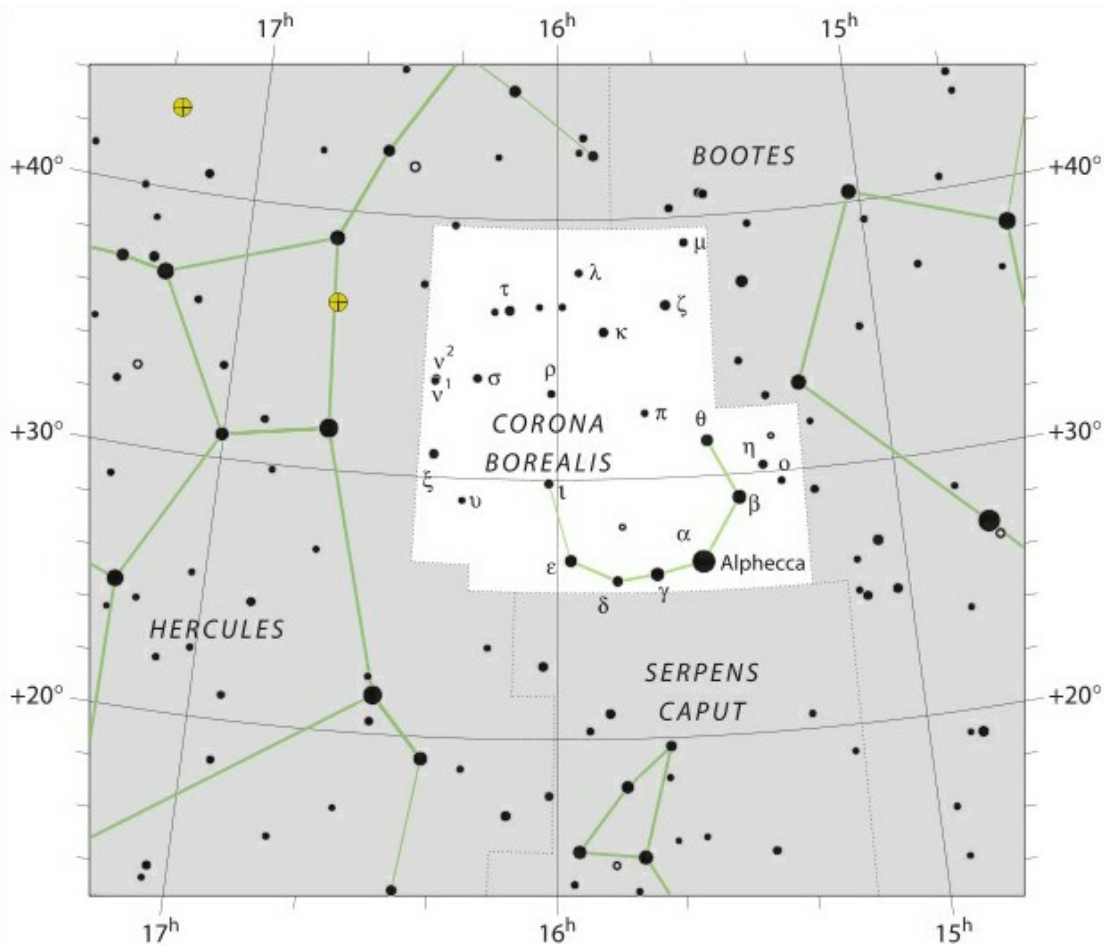
*(Continued on [page 17](#))*

## The Sky This Month (continued)

Once there, its distinctive arced shape stands out, and it is easy to imagine it as a slim metal crown or a wreath of laurels upon some ancient Olympian or mythical hero's head. In fact, it represents the crown worn by Ariadne on the occasion of her wedding. This daughter of King Minos of Crete was wedded to god Dionysus (brother of Athena and Apollo). She had recently been jilted (by Theseus, famed for killing the Minotaur, who was Ariadne's half sibling, and imprisoned by King Minos. Confused yet? Welcome to the world of Greek mythology!) Theseus dumped her and Dionysus was so moved by her beauty and sorrow that he married her and upon the conclusion of the wedding, he threw the crown into the sky where the jewels turned to stars, and Ariadne could see and appreciate it for all time, as can we. I'd like to say that they lived happily ever after, but this is Greek mythology and we all know better than that. They did have 12 children though, so they had that going for them.

Corona Borealis is home to a pair of fine variable stars. R Corona Borealis (R CrB, but you can call it R Cor Bor), sits in the middle of the circle made by the crown. Usually it is the only star visible there, shining at magnitude 6. In 2007 it dimmed over the period of about 6 months to 15th magnitude! Since then it has been slowly brightening and is currently about 12th magnitude. It should come back to full brightness, only to plunge again at some unpredictable time in the future. Keep an eye on this one for a great show.

T Corona Borealis (T CrB) is just the opposite. It sits just outside the circle of stars that make the crown and usually it is about 10th magnitude, but twice in the past 150 years it has suddenly brightened. In 1866 it brightened to 2nd magnitude (making it the brightest star in the constellation) and then in 1946 it did it again. You can understand why it is known as the Blaze Star. Since 1946 there have been a couple of times when it has had small bursts. When will T CrB erupt again? Nobody knows, so a quick glance at the constellation each evening that you're out may prove to be time well spent if one day you see Corona Borealis show an extra star.





## Summer Star Parties

- June 14-17 Cherry Springs Star Party, Cherry Springs State Park, near Coudersport, Pennsylvania. <http://www.cherrysprings.org/>
- July 19-22 Gateway to the Universe Star Party, Marten River Provincial Park near North Bay, ON. <http://www.gatewaytotheuniverse.org/>
- July 20-23 Stargazing Manitoulin, Gordon's Park DSP (on Manitoulin Island), Ontario <http://www.gordonspark.com/>
- Aug. 16-19 Starfest, River Place Campground, north of Mount Forest, Ontario <http://www.nyaa.ca/starfest.htm>
- Aug. 17-20 Manitoulin Star Party, Gordon's Park DSP (on Manitoulin Island), Ontario <http://www.gordonspark.com/>

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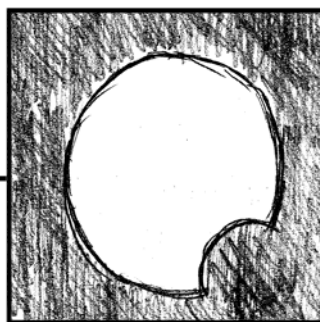
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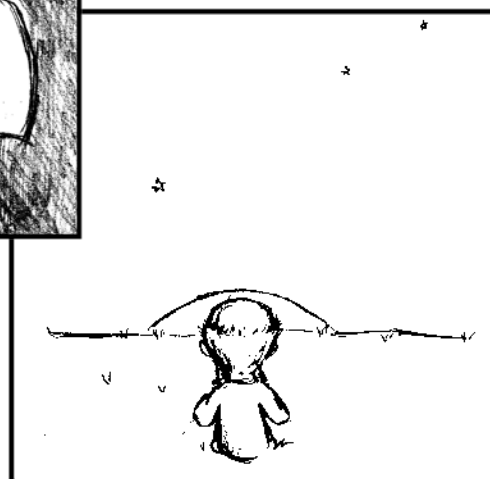
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**[www.camtechphoto.com](http://www.camtechphoto.com)**

# Lamest Solar Eclipse Ever



**\*silence\***



**I've been waiting 50 years for this!**

**I just died a little inside.**

## Answers to Astronomy Crossword on Page 13



## UPCOMING EVENTS

**June 2, 2012** - 7:30 pm HAA Astronomy Book Club meeting. The book will be *Death by Black Hole* by Neil deGrasse Tyson. Contact Jim Wamsley for details or directions: 905-627-4323.

**June 8, 2012** - 7:30 pm, General Meeting at the Hamilton Spectator Auditorium. Mike Reid of the University of Toronto will be our guest speaker.

**July 28, 2012** - Public Stargazing Event at McQuesten Park in Hamilton. Watch our website for details.

**August 11, 2012** - Annual Perseid Meteor Watch at Binbrook Conservation Area. Watch our website for details.

**September 14, 2012** - General Meeting at the Hamilton Spectator Auditorium. Speaker to be announced.

## 2011-2012 Council

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