From The Editor

In last month's newsletter, I announced that all previous issues of our newsletter would soon be online, thanks to the efforts of Charles Baetsen. I'm very pleased to confirm that this has been completed and you can access every single issue of Event Horizon right back to the club's formation in 1993.

At our April 13th meeting, there will be a silent auction for a beautiful 6" reflecting telescope. Details can be found starting on page 3.

A few of the images taken of the recent conjunction can be found inside this issue as well. Many thanks to our photographers for sharing their images with us.

Ann Tekatch
Editor@amateurastronomy.org

Chair's Report by Bob Christmas

Here we are, past the Vernal Equinox, and now the days are longer than the nights. This means spring has sprung. Hey, have you been enjoying the warmer days we've been getting in and around the Hamilton area of late? I sure have!

These almost-summer-like temperatures have made for much more enjoyable conditions for astronomical observing, and have sure made it a lot more comfortable the past month to observe and photograph Venus, Jupiter... and the Moon... as they gradually and gracefully passed each other. Several other members of the HAA have taken advantage of this gorgeous weather and numerous clear nights to do the same thing, as all these gorgeous images of Venus and Jupiter we've been passing around attest.

March has been busy. Our monthly meeting featured longtime HAA member and Past Chair Mike Spicer, who talked about the Messier Objects, those 110 deep sky objects noted *(Continued on page 2)*

IN THIS ISSUE:

Chair's Report (continued)

by Charles Messier, who was a comet hunter who catalogued these objects for the sole purpose of not mistaking them for comets! But with it being Messier Marathon season, this is a convenient list of night sky objects to endeavour to observe at the eyepiece of a telescope in one night.

March also saw a couple of fascinating planetarium shows exclusively put on for the HAA by McCallion Planetarium of McMaster University. One of these, "A Tale of Two Voyagers" was a visual journey along the paths of each of these two probes as they visited Jupiter, Saturn, Uranus and Neptune and their moons, until finally hurtling out of our solar system on their way to the heliopause (the maximum limit of influence of the solar wind) and into interstellar space. The other show was "2012: Mayan Clocks and Modern Science", which was a fascinating and well-put-together tour of the night sky at the Yucatan Peninsula about 1200 years ago at the height of Maya civilization, combined with an overview of the Maya numbering system and Maya calendars, as well as an overview (and debunking) of conspiracy theories surrounding the mysterious date of December 21, 2012, which I discussed in this column space last month. Fascinating indeed!

So, here comes April, and we have more activities coming up in the month ahead, including our April monthly meeting, on the 13th, in which Brady Johnson and Brian Dernesch, the owners of Kitchener-Waterloo Telescope, will be speaking about line filters and their uses in astrophotography with digital SLR cameras and CCD cameras. They will also be bringing with them numerous gadgets and astro-toys for us to gawk at, so you won't want to miss this meeting! It's free and open to the public.

Later in the month, we're hoping to do our rescheduled "The Sky This Season", live under the sky at Binbrook Conservation Area. We will also be at Bayfront Park on Saturday, April 28, which is Astronomy Day, during which we hope to do both solar observing by day, and night-sky observing at night. Stay tuned to the HAA website for details to come.

In the meantime, we look forward to warmer weather, more frequent clear nights, and the transition from winter skies to spring skies, and all the familiar deep sky sights that go therewith... not to mention Mars in Leo and Saturn in Virgo, marching across the evening sky!

Enjoy!

Bob Christmas

March Treasurer's Report by Steve Germann

(Unaudited)

Opening Balance	$7785.41
Revenue	$515
Expenses	$284.59
Closing Balance	$8015.82

Major Revenue included:
Sale of Assets (tripod) $50; Memberships $260; Planetarium Show $55; Telescope Sale $100; 50/50 draw $50.
Major Expenses included:
Permit for Burlington park booking $38.49; BASEF prize (books) $46.10; Planetarium Show Fee $200.

Masthead Photo Credit: Photo of the Leo Triplet of galaxies taken by Everett Cairns from his cottage on the Bruce Peninsula on March 26, 2012. The photo is a stack of twenty 30 second exposures. Everett used a manual focus 300mm lens and f/stops of f/2.8 and f/4.0 for the exposures.

The Boardman Telescope Silent Auction by Ann Tekatch

A beautifully crafted, 6" Newtonian telescope on an equatorial mount and finely finished wooden tripod has been donated to our club by Anne Boardman of Hamilton. Mrs. Boardman's late husband, Alfred (Al) Boardman, made the telescope. Al ground the mirror and built most of the telescope by hand. Anything he couldn't make himself was purchased from Efstonscience in Toronto, including the eyepieces. The optical tube was from American Can and Al applied many coats of paint to it to strengthen and beautify it.

Al Boardman was a die maker at American Can and a perfectionist (which is obvious from his telescope's craftsmanship). The telescope was built over a period of time from 1966 to 1967 in the couple's apartment. It was used primarily in the backyard of their home on Hamilton's east mountain. Anne recalls sharing views of the moon and stars. When the couple's two children were old enough, they too, enjoyed looking through their father's telescope.

Above: The Boardman telescope. Note that it requires new straps to connect the optical tube to the mount. Bungee cords are being used in the photo.

At right: The mirror and its cell rest atop the custom box used to store them.

All photos are courtesy of Jim Wamsley.

When not in use, the telescope mirror was stored in a custom made wooden box lined with a special felt material. The mirror remains flawless. The telescope's optical tube and mount were stored indoors and are perfectly preserved.

(Continued on page 4)

The Boardman Telescope Silent Auction (continued)

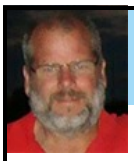
Our club's telescope making group took the Boardman telescope outside and viewed Jupiter and the moon with it. Once the mirror cooled down, the images were quite pleasing. Those of us who have been around a few years recognized the classic lines of this reflector and its equatorial mount. It is a textbook example of Newtonian telescopes from that era.

The telescope needs new straps to hold the optical tube to the mount and also needs to be collimated. Although completely portable, its solid wooden tripod and metal equatorial head are heavier than today's factory assembled commercial mounts. It would make an excellent telescope for the cottage or backyard. Hopefully, skies will be clear at our April 13th general meeting and everyone will be able to enjoy views through it.

To ensure that this telescope finds a good home with someone who will be able to appreciate its craftsmanship and look after it, the club will hold a silent auction at the April 13th meeting. A reserve bid of just $75 has been placed on the scope. This (very) low price will no doubt be quickly exceeded. Proceeds from the auction will be used in our astronomy outreach and loaner scope programs.

This is your chance to own a fine telescope with a local history.

At left: the mirror and its cell fit securely in the custom made storage box. Note also the various eyepieces that come with the telescope.



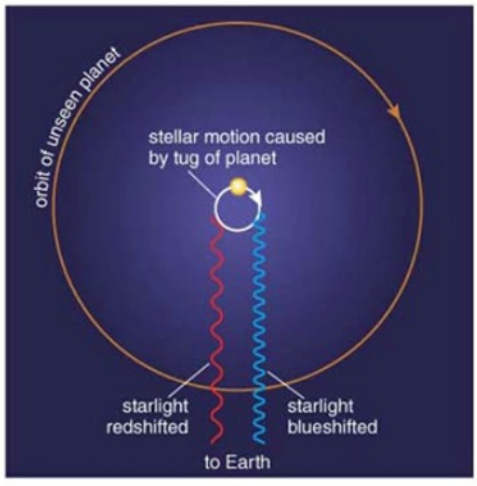
Through the Looking Glass by Greg Emery

I have been so pre-occupied with travel for the last 7 months that I find it is invading parts of my life that I would not otherwise expect it to trespass upon. Hence the origins for this month's ramblings. In the distant future, and I do mean distant, what will tourism be like? Assuming that travel in the far future is not restricted to our solar system – where would the hot vacation destinations be? Could voyages be made to exoplanets? Is there a Hedonism PEG51 for single astronomers? A news item this month reported that the 500th celebrity tourist had signed up with Richard Branson's Virgin Galactic for the small sum of $200,000 – I wonder if they serve a meal for that price?

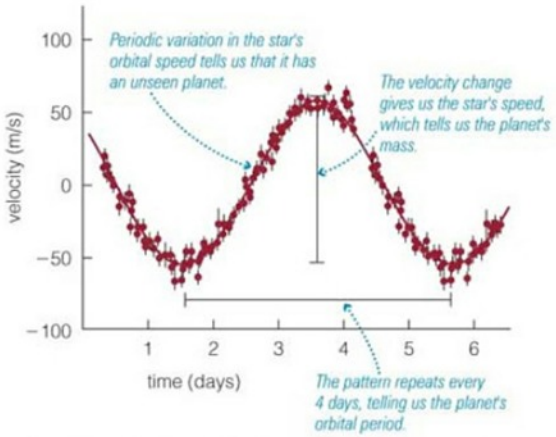
Exoplanets, by definition, are planets or planet-like objects that are beyond the classically accepted boundary of our solar system. As of early 2012 there are of the order of 750 identified exoplanets encompassing just over 600 star systems (some systems are identified as multiple planet systems such as our own). It is estimated that somewhere between 10 and 50% of the stars similar to our Sun will harbour planets. Further estimates indicate that many other star types (red dwarf for example) can have planets around them as well. This puts the number of estimated planets in our galaxy to be of the order of 100 billion.

A very high percentage of the identified exoplanets have calculated masses greater than that of the Earth. Many of these are in the Jupiter class in terms of their mass. This however does not mean that essentially all the planets in the Milky Way will be very large planets that are dissimilar to the Earth. There is a statistical problem with these estimates, however.

The methods used to detect the exoplanets favour larger planets. The number of planets of given size categories may actually be quite different from the data that exists now. There are currently several different methods used to detect exoplanets. These methods include visual, Doppler shift, Transit, astrometry and gravitational microlensing. Each method is well suited to find exoplanets of certain characteristics, which naturally places a bias on what is ultimately found. The Doppler shift (radial velocity) method relies on the perturbation of the star's orbit due to the presence of planets in orbit around the star. The exoplanet(s) will cause the star to wobble. This wobble causes the light emitted by the star to be blue shifted when the star is wobbling towards us, and red shifted when the star is wobbling away from us. The slightly more technical explanation of the wobble is that the presence of the exoplanet(s) causes the centre of mass of the system to be shifted slightly away from the centre of mass of the star. The star and exoplanet(s) orbit around the centre of mass. This method automatically favours the detection of larger mass exoplanets.



a Doppler shifts allow us to detect the slight motion of a star caused by an orbiting planet.



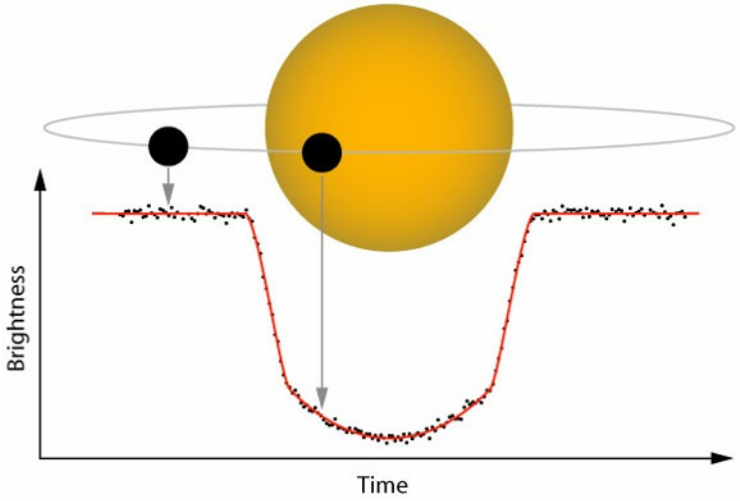
b A periodic Doppler shift in the spectrum of the star 51 Pegasi shows the presence of a large planet with an orbital period of about 4 days. Dots are actual data points; bars through dots represent measurement uncertainty.

(http://lasp.colorado.edu/education/outerplanets/exoplanets.php)

(Continued on page 6)

Through the Looking Glass (continued)

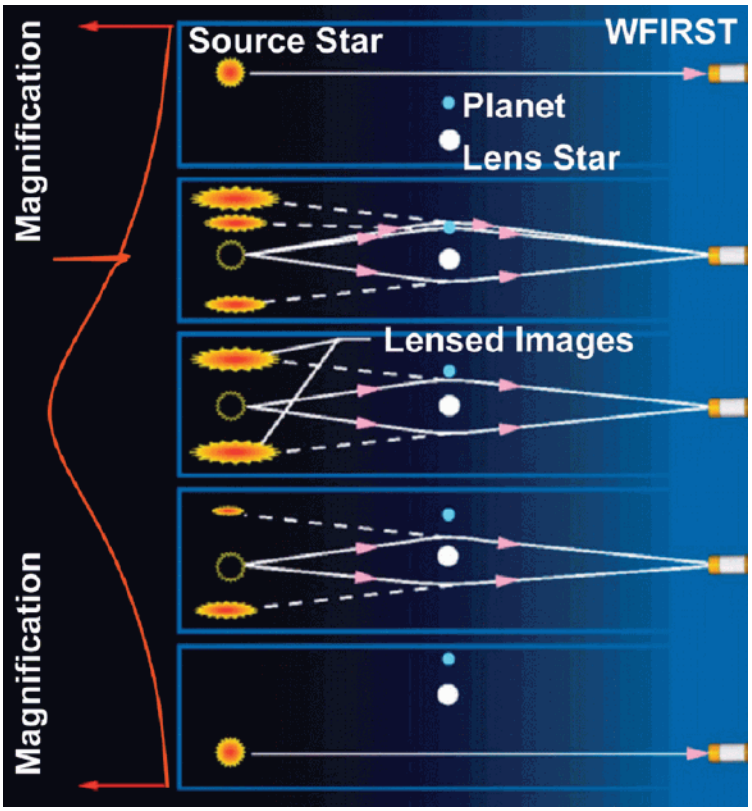
Another method is the transit method. If the orbit of the exoplanet brings it across the face of the star (from our point of view) then the transit of the exoplanet will result in a slight dimming of the star's brightness. The dimming of the brightness will yield radius of the planet; timing of the minima will provide information about the orbital period and characteristics. Under some conditions, the atmosphere (composition) can be determined from spectroscopy, or more precisely from a change in the absorption lines during transit.



(http://code.google.com/p/oscaar/wiki/IntroToDiffPho t)

Gravitational microlensing is the increase in brightness of a background star. The gravitational field of the star and orbiting exoplanet can bend light from a distant background star. This light is now visible to the observer on earth, whereas without the gravitational lensing of the star and exoplanet the light ray would not have been visible from the earth. This method does require that the earth, star and exoplanet and background star all line up for a brief time. *(Continued on page 7)*

(http://www.ipac.caltech.edu/wfirst/overview/science/exo/)



Through the Looking Glass (continued)

Astrometry is the precise measurement of a star's position. The presence of exoplanets may cause a noticeable (measurable) change in the position of the star. The changes of the star's position are very small.

The data for known exoplanets tends to favour high mass planets. These planets have also tended to be relatively close to the star. Other data being gathered for these exoplanets includes some curious things. A majority of the exoplanets found orbit stars that have a moderate to high metallicity (ratio of all elements excluding hydrogen and helium to total hydrogen and helium). The exoplanets have orbital parameters with a large angle of inclination to the ecliptic or stellar equator. The orbits also tend to have a larger deviation from circular. The planets in our solar system are all roughly circular in orbit. Recent data suggests that stars such as red dwarfs may have small mass exoplanets. As a matter of fact the data trends of the exoplanets found so far suggests that there are many, many more small mass exoplanets than there are large Jupiter size ones. We have just until recently been really efficient at finding the large mass ones.

March 25-26 Moon-Venus-Jupiter Conjunction Photos

Widefield photo of the winter Milky Way with the Moon, Venus and Jupiter by Everett Cairns. Image taken March 26, 2012 from Everett & Donna's cottage on the Bruce Peninsula. For this photo, Everett used a 14-24mm f2.8 zoom lens on a fixed tripod.

(Continued)

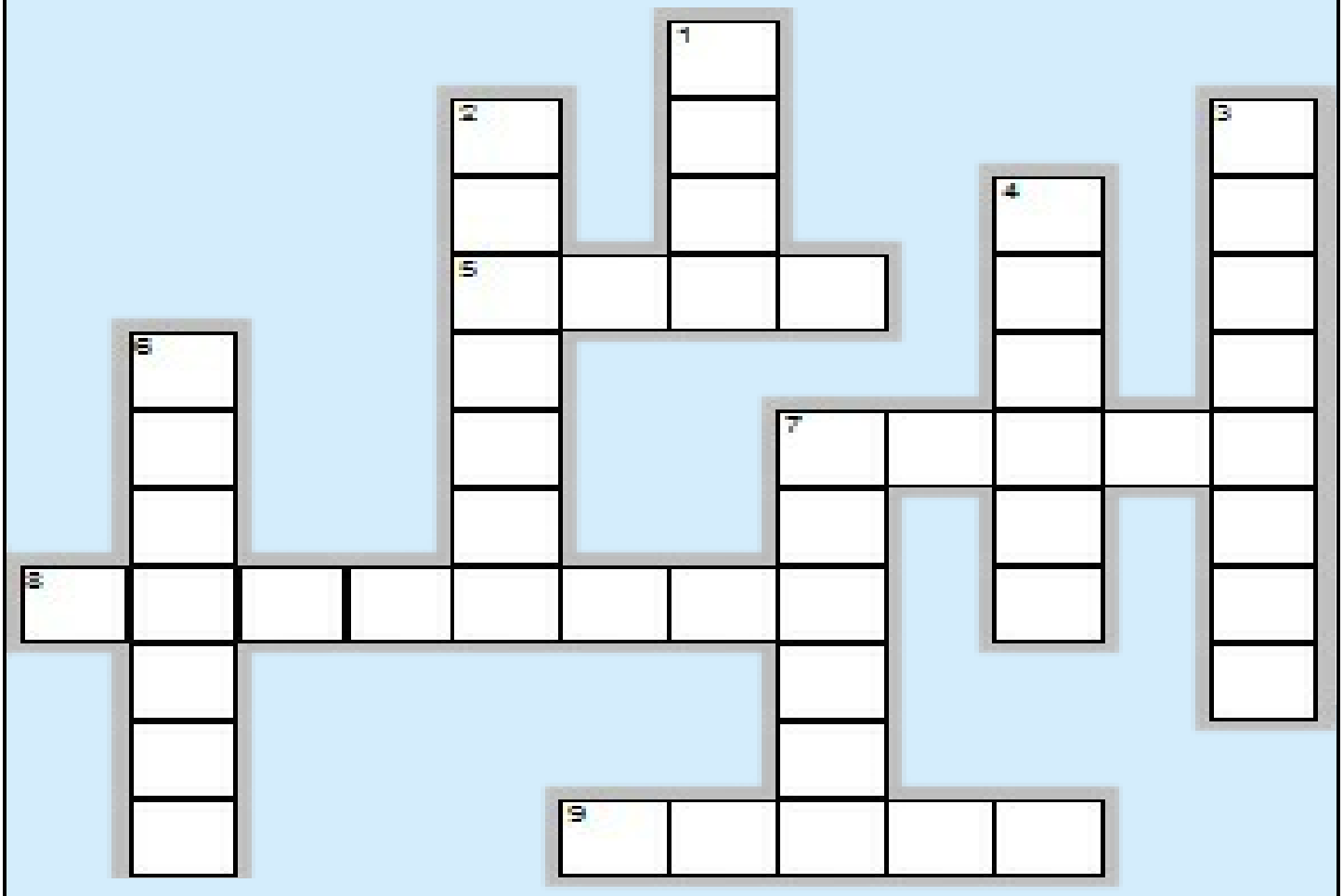
Above: Don Pullen photographed Monday's conjunction from Sam Lawrence Park at the edge of the escarpment.

Left: Ann Tekatch took this image of John Gauvreau as he was photographing the March 26 conjunction from Binbrook Conservation Area.

(Continued)

Moon & Venus against the stars of the constellation, Aries. Taken by John Gauvreau on March 26 from the Binbrook Conservation Area.

Astronomy Crossword by Mario Carr



Across

5. The full moon on April 6 is known as this moon
7. On April 6 the full moon is close to
8. On April 28 the HAA will celebrate Astronomy Day at this park
9. On April 30 this planet is at its maximum brightness

Down

1. On April 24 Venus is above the
2. On April 22 the moon is close to
3. On April 3 Venus is beside this star cluster
4. On April 21 this meteor shower peaks
6. This person was the first to walk in space on April 12, 1961
7. On April 15 this planet is at opposition

Answers on page 16
No peeking!

The Sky This Month April by John Gauvreau

Sky Calendar

April 3 - Venus beside the Pleiades

April 6 - Full Moon (Full Pink Moon, Paschal Moon)

April 15 - Saturn at opposition; visible all night

April 18 - Mercury at greatest elongation (morning sky)

April 21 - New Moon

April 21 - Lyrid Meteor Shower

April 22 - Moon 3 degrees from Jupiter

April 29 - First Quarter Moon

April 30 - Venus at greatest brightness; magnitude -4.7

Under the Sky

The past month saw many observers emerge from their respective hibernations, ready to take advantage of the warm air and get out under the sky again. Sleepy eyes turned skyward to take in the spring constellations and those eyes widened to a parade of planets that revived the mind and heart.

A rare appearance of Mercury, conjunctions between the moon and Venus, the moon and Jupiter, and Venus and Jupiter, made for a feast for naked eye observers and astrophotographers. After a week of temperatures that would have been comfortable on a beach in the Caribbean, the two nights of the great triple conjunction of the moon, Venus and Jupiter would be generously described as seasonal, and accurately described as the coldest night I went observing this past winter. However, it was clear, and I am more than happy to put up with a cold wind to see such a remarkable conjunction. I hope that you got outside too for at least a few minutes to see this lovely sight. *(John captured the conjunction in the breathtaking photo at left. Taken at the Binbrook Conservation Area on Monday, March 26 - Ed.)*With the warmer weather we also begin our *(Continued on page 12)*

The Sky This Month (continued)

public observing nights, and over the next few months we will be out with our telescopes sharing views of the sky with any and all. The pleasure of seeing the wonders of the universe through your telescope is surpassed only by sharing those sights with others. I hope you can come out with your own telescope, or come out to observe through one of the scopes available there.

And yet another observing opportunity comes during the HAA's The Sky This Season, a night at the club's dark sky observing site at the Binbrook Conservation Area. You have undoubtedly received emails advising you when the park will be open for observing (or if you don't receive these notifications and would like to, just provide your email address to Matthew Mannering, the club's Membership Director). All members are welcome to come out and observe on those nights, but during The Sky This Season things are just a bit different. All members are welcome to come out and observe through the many scopes that will be there, and a guided tour of the spring sky will be provided out under the stars!

The Sky Calendar mentions the Lyrid Meteor Shower, which peaks on the evening of April 22nd. This shower is often fairly quiet, but some years it surprises us with a great showing. It can't be predicted which years will be the good ones, so it's always worthwhile to have a look. The meteors themselves, even if there are relatively few of them, are often bright and leave trails in the sky. The peak of this shower is short lived, so try to get out on the night of the 22nd.

I hope to see you out there, and as always, feel free to send me any observing reports, photos, questions, or comments that you would like to share with your fellow members.

John

observing@amateurastronomy.org

Corvus

Although we can all agree that Orion is a beautiful constellation, and Saturn's rings are magnificent, and that the Andromeda Galaxy is not to be missed, we all have our favourite sights out under the night sky, and they are not always the biggest or the brightest. Perhaps there is a personal connection, an anecdote that you associate with a specific object, or perhaps you remember your first observation fondly. Whatever it is, it imparts meaning to some objects and brings you joy as you return to observe them again and again. I truly don't know why, but I have a fondness for Corvus, the Crow.

The Crow (sometimes it is referred to as a raven) has many mythological references. Perhaps it is the raven that Apollo sent to spy on both his adversaries and his potential partners. Upon delivering the bad news that one partner was not being faithful to him, Apollo decided to take out his wrath on the messenger, and turned the crow from a beautiful white bird to the pure black and coarse sounding bird that he has remained ever since. In another story, the crow is sent to fetch Apollo some water, but is distracted by some lovely fruit. After waiting for the fruit to ripen and then enjoying it, he finally returns to Apollo and gives the excuse that a water serpent prevented him from fetching the water. Apollo sees right through this lie and places the crow and the water serpent in the sky as punishment. This is seen today as Corvus the crow appears in the sky atop Hydra, the water serpent. I don't really understand how a serpent that didn't exist except in the imagination of the crow ended up in the sky beside him, but you start looking for logic in the old Greek myths then you're in a lot of trouble. I prefer to think that the crow is the one from Aesop's Fables that found itself in need of water, and flew down beside a cup. The water was too far down in the cup for the crow to reach, so he demonstrated his cleverness by dropping stones in the cup until the water level rose to where he could reach it. He had a drink, and was rewarded for his intelligence by being placed in honour in the sky (yes, I know, in one story it is a punishment to be placed in the sky and in another is it an honour, but again, let's not look for too much logic here). The constellation of Crater, the Cup, sits right beside Corvus, completing this particular sky story. *(Continued on page 13)*

The Sky This Month (continued)

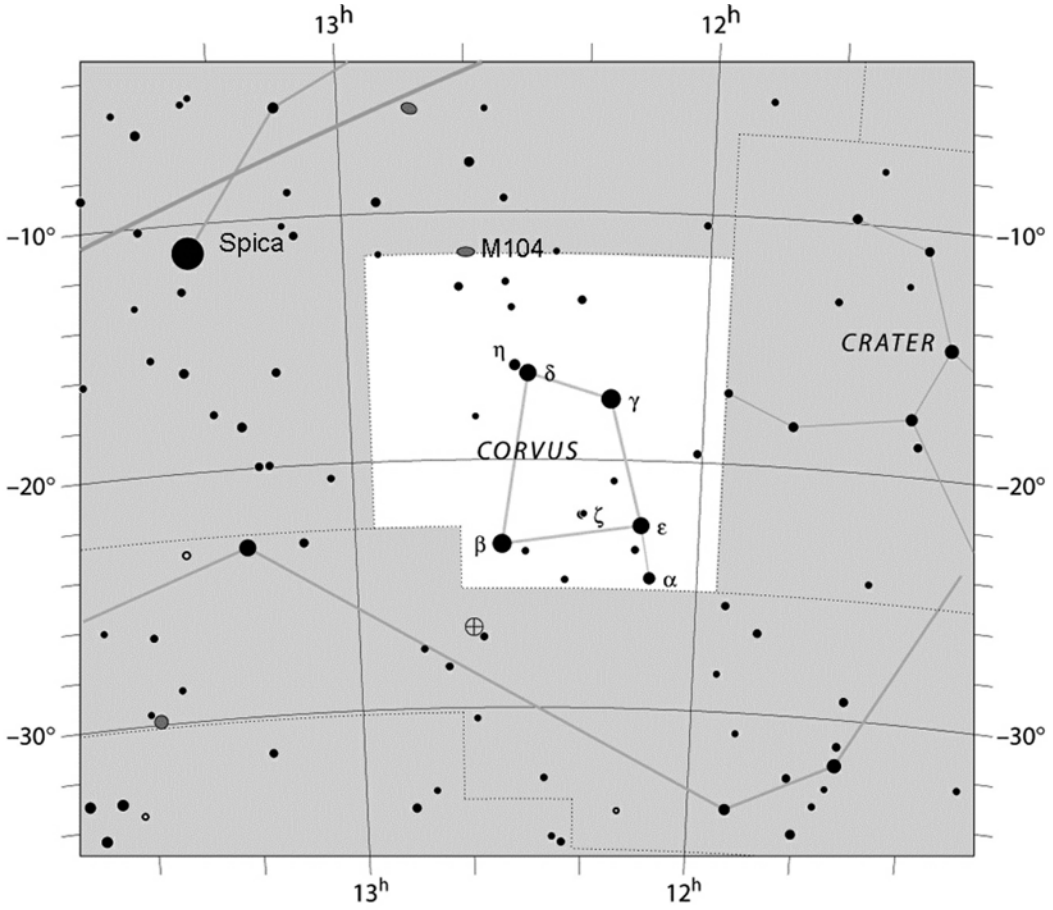
Corvus is a small constellation, with stars no brighter than third magnitude, but the shape of the main four stars is easily identifiable and makes finding Corvus fairly easy. They form a quadrilateral that sits just to the west of Spica, the brilliant star in Virgo. From the Big Dipper, follow the handle to the brightest star of Bootes (arc to Arcturus) then continue in a straight line to Virgo (spike to Spica). Then look just to the right and there is Corvus.

Corvus has a couple of lovely **double stars**. The top left corner (north-east) of the quadrilateral is Delta Corvi. This easy to find double is wide (25 arc seconds) and has a big difference in brightness and colour. The primary is a yellow star of magnitude 3 while the secondary is gray or pale purple and only magnitude 8.5. Another good double is Struve 1669 with the two stars having a separation of only 5 arc seconds. With them both being warm yellow stars of 5th magnitude, this will be a fine test for a small telescope. How low a magnification can you use and still separate the pair? They are easily found as you scan for another deep sky object, M104.

M104 is the **Sombrero Galaxy**, and is not actually in Corvus, but just barely across the border in Virgo. It is much easier to find it using Corvus. Of all the other galaxies higher up in the Virgo cluster, M104 is actually the brightest galaxy in Virgo. It is a spiral that is seen somewhat edge on, showing us a lovely dust band across the large central bulge of the galaxy. Even in small telescopes, this is a nice one!

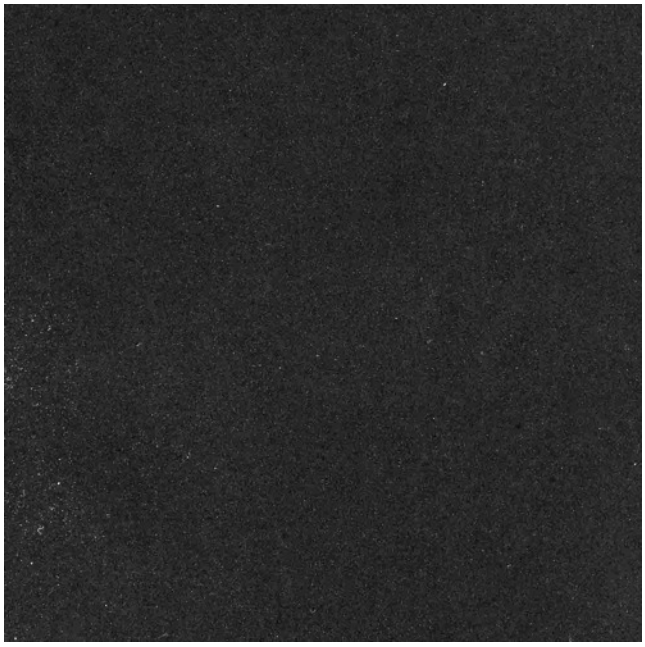
To be fair, we should include a deep sky object that is actually in Corvus, and there is a great one available. NGC 4038 and 4039 are the **Antennae**, or sometimes called the Ring-Tail galaxies. They are a pair of colliding galaxies that are small and faint at only magnitude 10.7. If you have a scope that can scoop these up though, you are in for a treat as they show a distinct shape, much like a comma or a shrimp!

Because the constellation of Corvus is so low in declination, it is important to catch it at the right time, when it is at its highest, and that means now. Don't miss this opportunity to catch the crow as it flies north again on these warm spring nights.



Consternation of the Month by Bill Tekach

Apathy is the virtually unknown 89th of the 88 constellations. Lacking any stars visible to the unaided eye, it does not have any constellation lines to draw and has no recognizable figure. Not that Apathy the goddess of inertia and leisure (sometimes more derisively referred to as the goddess of sloth and dimness) had a very aesthetic figure to begin with. This constellation is thought to be only about the size of the full moon. It is not near the Milky Way, the ecliptic, or the mysterious NGP. Since no one ever bothered to catalog the Apathy constellation its exact location is unknown, but may be inferred.



Since more apathetic people live in the northern hemisphere, it is only logical that is where the greatest total amount of apathy about looking at the night sky may exist. The next piece of evidence is that many amateur and professional astronomers have astrophotos of the Apathy constellation. Often these excellent photos are misinterpreted. They are sometimes called "too dark," "underexposed," or explained away, for example "I forgot to take the lens cap off." Closely examine the accompanying suspected astrophoto of the Apathy constellation. It is claimed that it was only an unexposed photographic plate that was soiled by dirty developer. That is obviously part of a cover up conspiracy. Just like the Apathy constellation has been covered over by some other constellation or constellations.

What about the jewels of the night sky that await the keen observer? Actually there are several candidates available for the dogged observer. As with all objects in the constellation, detailed information is completely lacking but never the less captivating. First there is M0. You probably did not even know the was a Messier Zero, sometimes called Moe or the Three Stooges nebula. Well now you do. Messier listed five objects that later could not be found. They are M40, M47, M48, M91, and M102. Any one or perhaps all of these objects may have existed and ultimately disappeared into that void, the Bermuda Triangle of the night sky known as the Apathy constellation. For the more determined observer there is NGC0. It was the first object observed for the NGC catalog. It was near the end of a long observing run and the astronomers in their half asleep haze lost focus and started to play tic-tak-toe on the observing log sheet where they had recorded NGC0. When the observatory director unexpectedly appeared, they hid that sheet. Thus the record of the first NGC object ever observed was lost forever. The last NGC object found in the Apathy constellation was NGC____ or NGC????. You may have seen it in computer database lists of NGC objects. As is typical, no one has bothered to complete the entry.

So take heart, you may have already seen the Apathy constellation. Think, have you ever looked at the night sky and said, "I can't see anything" or looked at the stars and noticed a dark patch devoid of any? You probably were looking right at the Apathy constellation and didn't even know. So don't be apathetic, that next clear night, look up, way up, and you may see nothing, or is it the Apathy constellation?

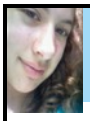
The constellation, Apathy, is only visible on April 1st each year. - Ed.

HAA Helps Hamilton

To support our community, we will be collecting non-perishable food items and cash for local food banks at our general meetings. Please bring a non-perishable food item to the meeting or a donation of cash and help us help others in these tough economic times.
If you would like to help or have any questions about this new initiative, please contact Jim Wamsley at 905-627-4323.

March General Meeting Photos courtesy of Joe McArdle

Clockwise from top left:
Mike Jefferson shares a few words.
One of the club's 8" Dobsonian loaner telescopes.
Mike Spicer speaks on how to do a Messier Marathon.
John & Mike awaiting their turns to speak.
An attentive aggregation of aspiring amateur astronomers.

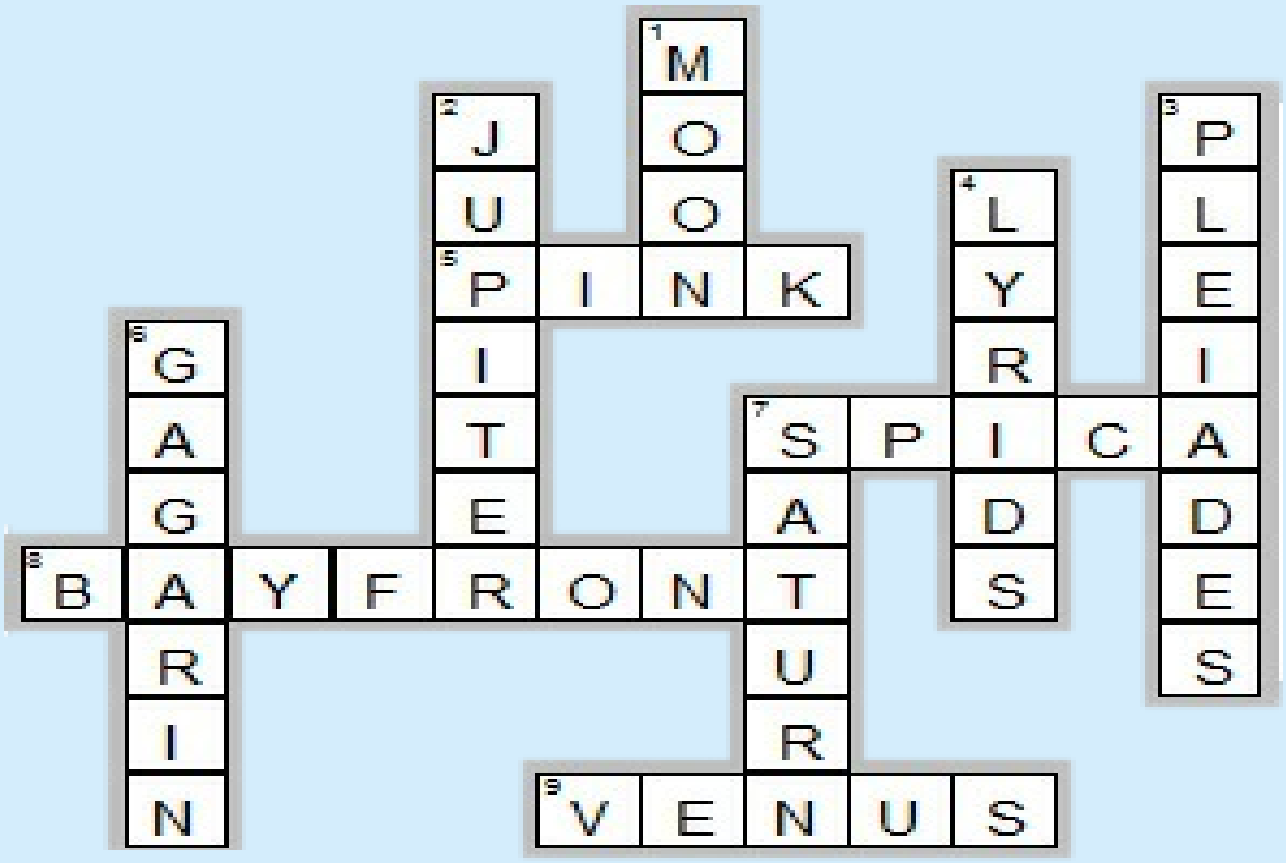


Cartoon Corner by Alexandra Tekatch

April Fools Joke - Astronomy Version

He doesn't know that I put black marker around the eyepiece.

Answers to Astronomy Crossword on Page 10



UPCOMING EVENTS

April 7, 2012 - 7:30 pm HAA Astronomy Book Club meeting. Contact Jim Wamsley for details or directions: 905-627-4323.
April 13, 2012 - 7:30 pm at the Hamilton Spectator Building. Brady Johnson and Brian Deneshe of KW Telescopes will be our guest speakers. John Gauvreau will entertain us with The Sky This Month.
April 28, 2012 - Bayfront Park Astronomy Day Public Event. See website for details & times .
www.amateurastronomy.org
May 4, 2012 - 7:30 pm Imaging Clinic at the Hamilton Spectator Building
May 11, 2012 - 7:30 pm General Meeting at the Hamilton Spectator Building. Rob Cockcroft of McMaster University will speak about June's Transit of Venus.

2011-2012 Council

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Observing site for the HAA provided with the generous support of the
Binbrook Conservation Area
Come observing with the HAA and see what a great location this is for stargazing, a family day or an out-door function.
Please consider purchasing a season's pass for $79 to help support the park.
http://www.npca.ca/conservation-areas/binbrook/
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