Event Horizon

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March 2014

From The Editor

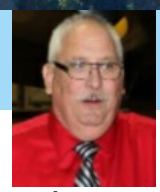
Reading food to celebrate the Spring Equinox...

…and there's lots of Astronomy goodies in here to munch on *this* month!

Enjoy!

Bob Christmas, Editor

editor 'at' amateurastronomy.org



Chair's Report by Jim Wamsley

March is finally here, and let's hope, with the first month of spring, it brings on the warmer temps, and some clear skies, for we star deprived amateur astronomers. This has been the worst winter I can remember for quite some time. Snow, Snow, and more Snow. When it wasn't snowing it was cloudy, when it wasn't cloudy, it was so cold, it made it very uncomfortable to get out to observe, even if you were dressed like the Michelin Man. I have heard that this curse of bad weather may have been brought on by a couple of our club members, purchasing some new, very nice, astro gear. These people will go un-named for their protection, but you know who you are, and be prepared to pay with sharing a view or two.

One thing the club participated in this past month, that didn't require clear skies, was the Binbrook Conservation Area's Ice Fishing Derby Feb. 9th, Five intrepid club members got out of bed in the wee hours of the morning, and made their way to the park, in order to help out with the parking of the some 200 cars that showed up to participate in this annual event. Braving the extreme cold, and with no regard to the loss of sleep, *(Continued on page 2)*

IN THIS ISSUE:

Chair's Report (continued)

Don Pullen, Leslie Webb, Mike Jefferson, Matthew Mannering and myself, rose to the call, and helped make the park's Ice Fishing Derby another success.

Even if the skies were not the best for observing the past month of February, the club was active as usual. The club's general meeting got off to a shaky start, with some technical glitches, but these were quickly overcome or overlooked. The 95 attendees didn't seem to mind the fact there was no red in the power point presentation. Rob Cockcroft's talk about Ancient Egyptian Astronomy was extremely well received; I have heard many comments from members on how much they enjoyed his talk.

The Astro Photo Group met Feb.15th, for their discussion, and talked over some of the challenges they face in the quest for better photos.

The first Astro 101 class was postponed due to a snow storm. We managed to get together on the 22nd. Ten of the club's newer members, and not so new members, learned about basic telescope & mount design, as well as some of the math behind focal length and magnification. The group was very animated, and asked many great questions. Many"AHA" moments were heard over the course of the night.

Coming up in March, Astronomy 101 will continue with its second class of four, March 15th.

Don't forget that our general meeting will take place *one week later* than normal, on **March 21st**, not the 14th. The hall was already booked for another group, when I was booking our meetings. Our speaker in March will be Don Pullen. Don will speak on some of the Universe's ways to bring an end to the human race. I'm sure this scary topic will be done in an entertaining fashion.

Later this month, the H.A.A. will once again participate in the Bay Area Science and Engineering Fair. Matthew Mannering and I, will be judging entrants for the best project demonstrating aptitude in Astronomy or Physics. The winner will receive the James A. Winger Award, and a cheque for $200.00.

The Cosmology Discussion Group will meet March 22nd. This group has been watching and discussing the TV. Series, "Cosmos" with Carl Sagan at the last couple of meetings. Maybe we could compare the old series to the new one, coming out this month "Cosmos, A spacetime Odyssey" hosted by Neil Degrasse Tyson. Whatever we do, this group always has lots of fun. Please come and join us.

Don't forget we have loaner scopes available for members, just contact me, and I will hook you up. Be sure to take advantage of all the resources your club has to offer. See you out there.

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 initiative, please contact Jim Wamsley at 905-627-4323.

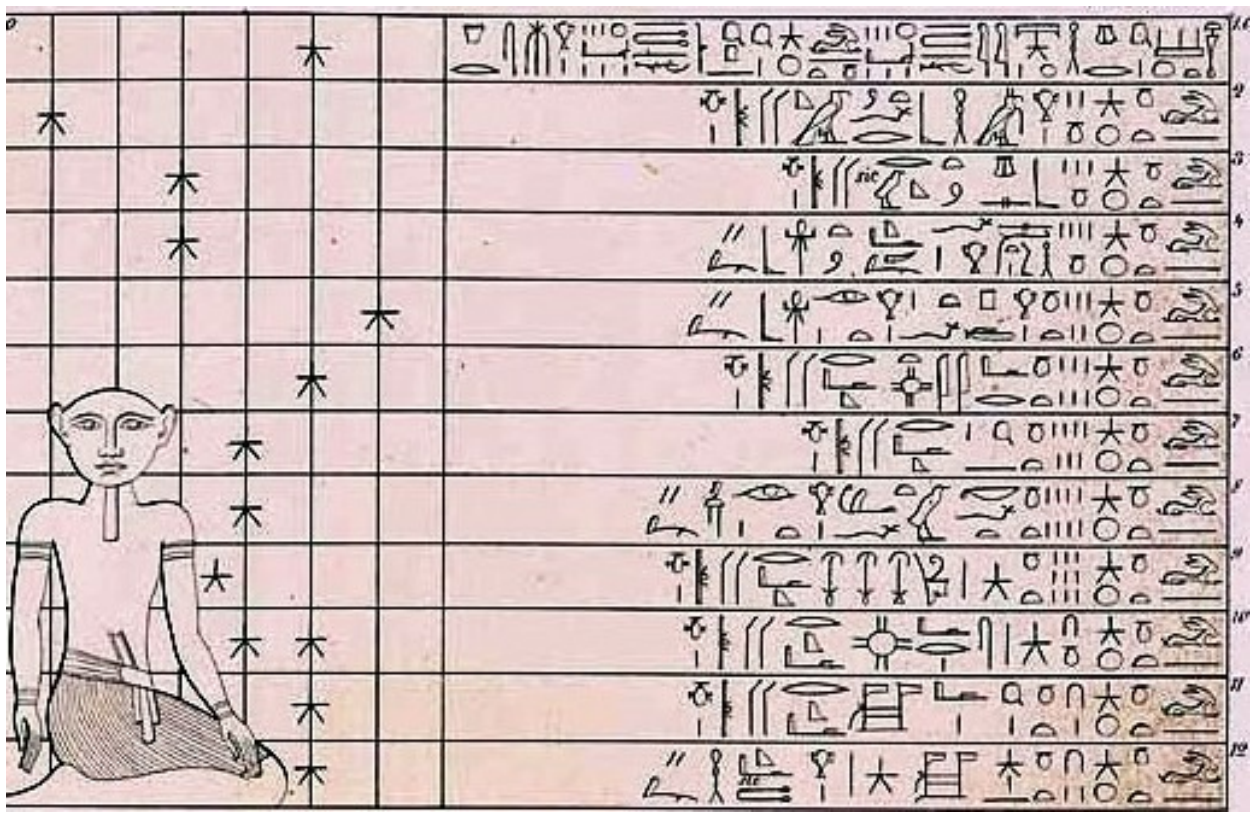
Masthead Photo: *Part of Kitt Peak National Observatory (KPNO) in Arizona, by Tom Steckner.*
This image shows the view from the building/dome for the 4m instrument looking west.
From left-to-right are the domes for the 1.3m (McGraw-Hill) & 2.4m (Michigan Dartmouth MIT) optical telescopes, and the 12m (NRAO) & 25m (NRAO VLBA) radio telescopes.

Valentine's Day February 14th HAA Meeting Summary by Mario Carr

The Valentine's Day meeting of the HAA was opened at 7:30 p.m. by Chair Jim Wamsley to a surprisingly packed house. Chairs had to be set-up to accommodate 95 people. He started off the evening, by thanking Event Horizon newsletter contributors and made a plea for new writers. There seemed to be a lot of guests in the room.

He then introduced main speaker, McMaster University postdoctoral research fellow Rob Cockcroft, who spoke about Ancient Egyptian Astronomy and his recent field trip to Egypt. There seemed to be a lot of interest and questions during and after his presentation.

The Egyptians were the first people to study astronomy and a lot of their accomplishments are unknown. We cannot map their stars to our system. We don't know who, when and where they made their observations.



He said that Egyptian culture lasted for about 3,000 years and the society was based upon different classes. To give you a sense of how long the society lasted, we are closer to the time of Cleopatra than she was to the beginning of Egyptian civilization.

The Egyptians believed when Pharaohs died they became circumpolar stars and when nobles died they became stars. To help guide these individuals to the heavens after they died, the Egyptians put star diagrams inside their coffins.

During Rob's trip to Egypt he studied these diagrams at the museum in Cairo. Unfortunately, pictures weren't allowed so he made hand drawings. That was last May just before the museum was trashed by rebels in June. His drawings may be the only record left of these star diagrams, since they were also destroyed.

Following Rob's talk, there was a break and when the meeting resumed there were four door prizes and a 50/50 Draw for $54. Membership Director Leslie Webb made an announcement of a $200 webcam competition that he's donated to the club. The webcam will be available for loan to members and whoever takes the best picture will keep the webcam.

Kevin Salwach presented his talk entitled This Day in History. He said that this will be his last talk on the topic. In keeping with the Valentine theme, Kevin showed us numerous historical and astronomical photos including him proposing to his telescope and living happily ever after.

Observing Director Matthew Mannering, gave his discussion of the Sky this Month, including current events and a discussion on some places in the universe that he would like to visit. This included sink holes on Mars, ice covered Europa, and the collision of our galaxy with the Andromeda galaxy when it occurs billions of years from now.

Jim closed the meeting at 9:35 p.m. reminding members of the astrophotography group at his place on Sat. Feb. 15.

The Sky This Month for March 2014 by Matthew Mannering

It's 6:00am the morning of the Canada/Sweden gold medal game at Sochi. I'm out on the deck in my jammies looking at the morning sky just before sun rise. The sky is very clear and scanning south-east to south-west I can see Venus, the Moon, Saturn and Mars. Bright stars such as Antares, Spica and Arcturus are readily visible. Looking at the planets and the Moon, you can trace the plane of the ecliptic through the sky as it passes through them. After a quick look I'm back inside making a cup of tea and waiting for the start of the game. Just in case you were on Pluto, we won!

The onset of Daylight Savings Time is coming up on Sunday March 9th at 2:00am. Don't forget to set your clocks ahead an hour before you go to bed Saturday night.

Supposedly spring is on its way, however the temperatures continue to stay below normal. The sky has been visible at least for a few nights now and I have used that opportunity to go out with large binoculars to view some of the brighter sights. To make finding objects easier with big binoculars I have added a binocular mount adapter which also allows the use of a red dot finder. Large binoculars have a narrow field of view compared to your average 7x50's and it can be tricky to find your target. Now I just point the red dot to the right spot in the sky and the binoculars are on target.

The actual name of the adapter is a 'Far-Sight binocular mounting and targeting system' by Farpoint. It costs about $60, which isn't cheap but it can support binoculars with objectives right up to 100mm. I have included a picture of a mounted adapter with binoculars and red dot finder (credit: Oberwerk Binoculars).

In last month's Sky This Month I mentioned the supernova in M82. It had been predicted to max out in brightness at magnitude 8 but that wasn't to be. It reached magnitude 10.5 and then started to fade. Even so, it created quite a stir along with 2 other novae visible through telescopes at the time. Astro photographers had a field day.

I want to mention a special event that will occur on March 20th at approximately 2:08am. Asteroid **163 Erigone** will pass directly in front of (occult) the bright star **Regulus** in the constellation of Leo. Regulus will disappear for up to 14 seconds depending on your view point. This is the first time in recorded history that a 1st magnitude star will be eclipsed when viewed from North America. The problem is you will have to be within 35 kilometers of Kingston to view the event. The closer to the centreline of the event you are, the longer the occulting period. If you feel like this is for you, contact the Kingston RASC and ask for help in finding a good viewing location. I may have more info on this event nearer the time. For more detailed information, see your SkyNews magazine on page 34 or the RASC handbook on pages 248 to 250.

March marks the transition from the winter constellations to the spring ones. You can now concentrate on the likes of *Leo*, *Corvus*, *Virgo* and *Coma Bernices*. The area between Leo and Virgo is known as the **Realm of the Galaxies** and for good reason. There are hundreds of galaxies in the region although many are very dim. As a starting point, look for galaxies in **Markarian's Chain** and the **Leo triplets**. The **Sombrero Galaxy (M104)** is small but bright and is easily visible from a moderately sized town. Information on how to find them is listed in the "targets" section below.

Now, I must admit that those galaxies between Leo and Virgo were very hard for me to find initially. It doesn't mean they will be for you. Everyone has different vision and varying degrees of observing experience. The brighter galaxies between Leo and Virgo should be visible if you can get away from the city. Markarian's Chain is the best known grouping in that region and I still remember when they all came into view one night at Cherry Springs. I counted a dozen galaxies in a matter of 30 seconds.

(Continued on page 5)

The Sky This Month (continued)

The two **Leo triplets**, the **Sombrero Galaxy** and **NGC 2903** are quite easy to find even in town. NGC 2903 is very bright compared to most galaxies and it is a wonder it didn't make the Messier list. In the 'targets' section below I will try to help you get started finding them all. However, it is very important to use a star atlas to help you find your way. These are small dim patches of light compared to the open clusters, globulars and nebulae that I have talked about in previous columns.

Lastly, I think you might want to have a look for the **'Stargate' (STF1659)**. This is an asterism that isn't marked in all atlases but I stumbled across one where it is identified and I was curious enough to take a look. Since then I've gone back to it many times as it has an intriguing shape. The best time to look for the Stargate is when you are star hopping from Corvus to the Sombrero Galaxy. It's actually part of the chain of stars you follow to get to the Sombrero. The Stargate is visible in almost any telescope but it is much more obvious in scopes larger than 100mm.

Easy Targets

The first set of targets is at the Corvus-Leo boundary. The Sombrero and the Stargate are both part of the same chain of star hopping. You will have to wait until later in the evening for Corvus to come up high enough above the horizon to get out of the muck. Follow the arrows in the following picture to get you on your way. Look carefully at the Sombrero with medium magnification. Can you see the dark dust lane? Can you see that one side of the central bulge is brighter than the other?

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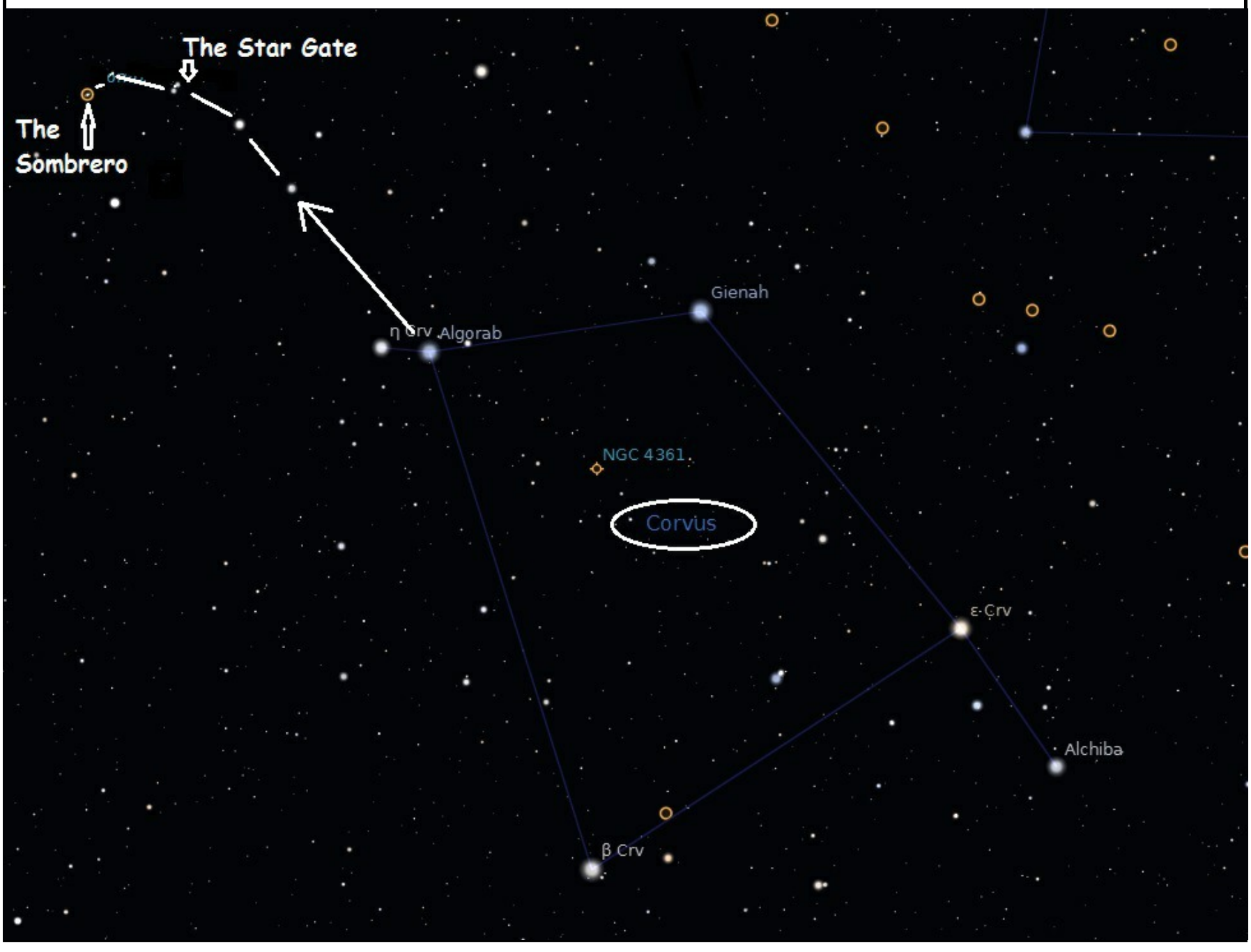
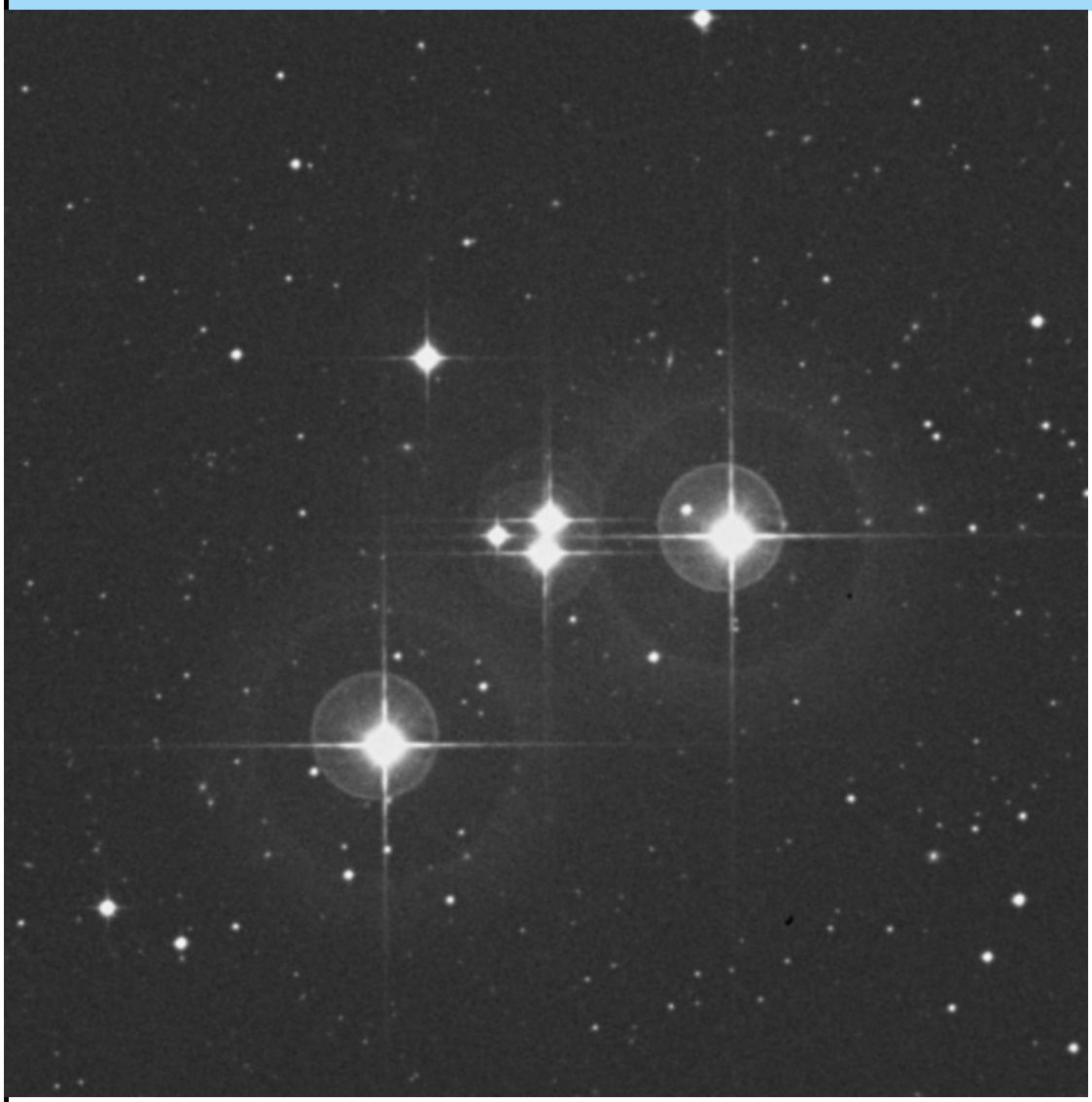


The Sky This Month (continued)



The Stargate consists of two triangles of stars, one inside the other. Take your time with the Stargate to see all 3 stars of the inner triangle.

Now move over to Leo and concentrate on his head. The next image below shows you how to find a nice bright galaxy and a double star that is easy to split. Follow the arc of Leo's head until you reach the nose, then head off to Alterf. Below Alterf are two small stars almost side by side. **NGC 2903** is just below the left star.

Not so Easy Targets

Ok, so it's time to look for the Leo Trios (see chart on page 7). The trio including **M65** and **M66** is easier to find, as it is about 4 degrees below the star Chertan in Leo. The second trio is a little harder to find. Start by finding the

(Continued on page 7)

The Sky This Month (continued)

fairly bright star around midway between Chertan and Regulus. Then search the region roughly 4 degrees below that star. The galaxies in this trio are more separated than the first, so start with a low power eyepiece to find them.

A More Difficult Target

Take your pick of the many galaxies visible in backyard scopes in the **Realm of the Galaxies** (see chart at top of page 8). The best way to start is to bisect the line between the stars Denebola in Leo and Vindemiatrix in Virgo. That will put you in the area of **Markarian's Chain** (see image near bottom of Page 8). Now make sure your eyes are fully dark adapted and slowly sweep the sky around that midpoint between the stars. Good Luck!

The Moon

Libration favours the North and East limbs early in the month. The South and West limbs are favoured later in the month.

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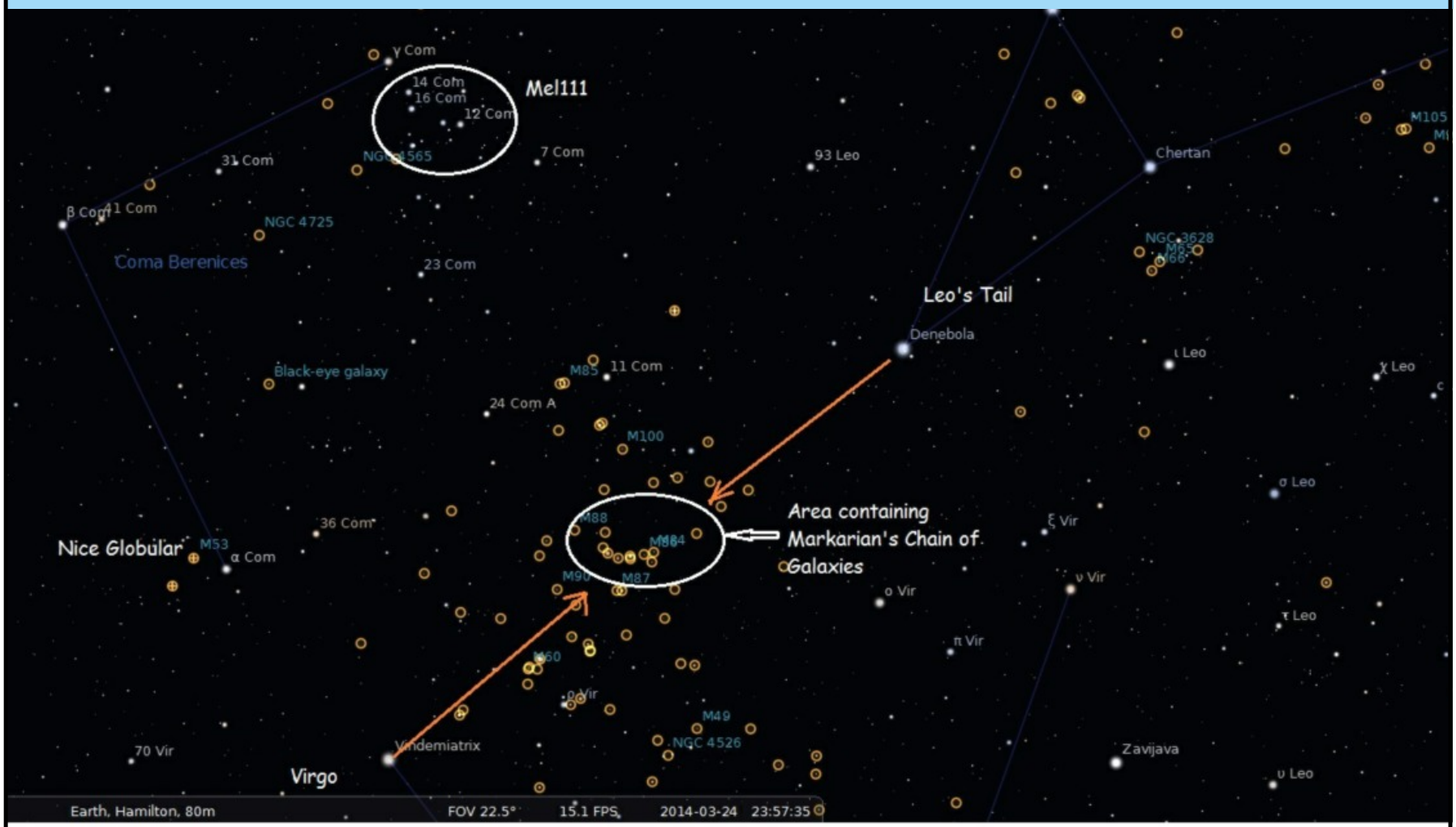
The Sky This Month (continued)



Markarian's Chain

The Planets:

- ***Mercury*** is low in the east at 6:00am just before dawn at the beginning of March and around 6:30am after the time change. This particular morning apparition favours the southern hemisphere. For us Mercury never gets much above the horizon so don't expect too much.

(Continued on page 9)

The Sky This Month (continued)

- ***Mars*** will be at opposition next month (closest to the Earth). It will rise at 10pm on the 1st and 10:30pm after the time change. By month's end, it will rise at 8:30pm. The disc of Mars is large enough now that some detail should be visible in larger scopes. Mars starts out at 11.7"arc on the 1st and expands to 14.7"arc by month's end. Try a red or yellow filter to improve the contrast of surface features.

- ***Jupiter*** is still high in the sky in Gemini. Check out the double shadow transit on the 23rd. Transit times are listed below.

- ***Saturn*** rises in the east at midnight at the beginning of the month and 12:30am after the time change. By month's end it will rise at about 11pm.

- ***Uranus*** disappears at dusk this month while ***Neptune*** reappears late in the month very low in the morning sky.

Other Events:

-*March 1st:* New Moon.

-*March 8th:* First Quarter Moon.

-*March 9th:* **Daylight Savings Time begins**.
Jupiter 6 degrees above the Moon in the late evening.

-*March 14th:* Mercury at greatest elongation from the Sun at dawn.

-*March 16th:* Full Moon.

-*March 18th to end of the month:* The Zodiacal Light will be visible for the next two weeks in the Western sky.

-*March 18th:* Mars about 3 degrees north of the Moon at 10:00pm just after the Moon rises in the East.

-*March 20th:* Asteroid Erigone occults Regulus at approximately 2:08am.
Spring Equinox at 12:57pm.
Saturn just 3 degrees north of the Moon.

-*March 22nd:* Venus at greatest elongation from the Sun at dawn.

-*March 23rd:* Double shadow transit on Jupiter from 10:08 to 10:32pm.

-*March 24th:* Last Quarter Moon.

-*March 25th:* Mars 5 degrees north of the star Spica in Virgo at 11pm.

-*March 27th:* Venus 4 degrees south of the Moon at dawn.

-*March 30th:* New Moon.

Eye Candy

The Double Cluster of Perseus.

M13, the great Globular Cluster in Hercules.

(Left) The double star **Alberio** in Cygnus.

All 3 images were taken by **John Gauvreau** with a Canon 60D at the prime focus of his William Optics Megrez 90, a 90mm refractor with a focal length of 570mm. The scope was mounted on a Meade LXD55 mount. The exposures are 30 seconds at f/6.3 and ISO 1600. These cropped images were processed with Photoshop CS3.

Through the Looking Glass by Greg Emery

I have memories of watching sci-fi movies when I was young. The first outer space, alien type movies I remember is *The Green Slime* and *Invasion of the Body Snatchers*. But predating these movies by a few years is *It Came From Outer Space* which was Universal Studios' first run at 3-D movies – and this film had a character that was an amateur astronomer in the Arizona desert.

Movie Poster for "It Came From Outer Space".

There has been a rich history of stories about aliens or extraterrestrials – the classic *War of the Worlds* by H.G. Wells published in 1897 may be the benchmark for most of us, but is it so because of the story or because of our age? *The Day the Earth Stood Still* is another great story/movie – even with Keanu Reeves in the remake. But is the early generation of movies or stories any better than what we have now? Imagine a games show or contest matching movies from different eras but of the same genre against one another. It might go something like: *War of the Worlds* vs *Alien*; *The Day the Earth Stood Still* vs. *Close Encounters of the Third Kind* or *Invasion of the Body Snatchers* vs *2001 A Space Odyssey*. And like all shows or gimmicks of this sort there would only be controversy and arguments with no decisive outcome. The movie title, *It Came From Outer Space* is so gripping – to me, anyway. Everything we have in our lives, on this planet, ultimately came from outer space. As amateur astronomers we watch and plan for the arrival of things from the vast beyond – light, meteorites, passing of a comet or even ET himself (or is it herself? or itself?). Like a good scientist or engineer (or someone writing a column that isn't too sure where it is headed) we can't tell if something truly came from outer space, unless we know what exactly outer space is – or more precisely where it is. Outer space can be defined in a variety of differing ways. The classical definition of the demarcation between the earth and outer space is at an altitude of 50 to 60 miles above sea level. This establishes outer space as being everything that exists

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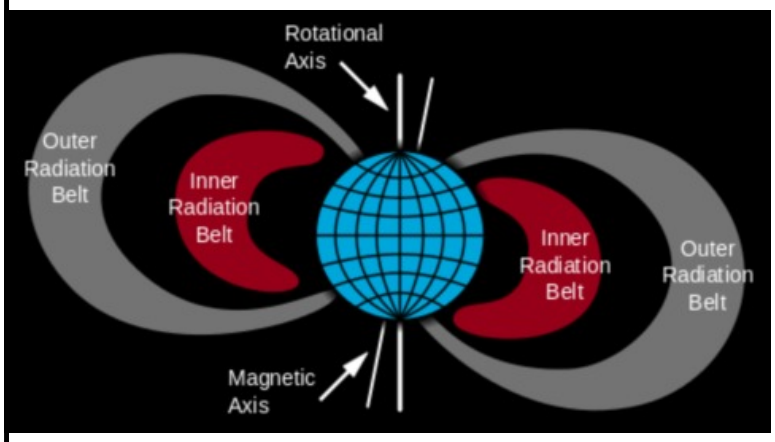
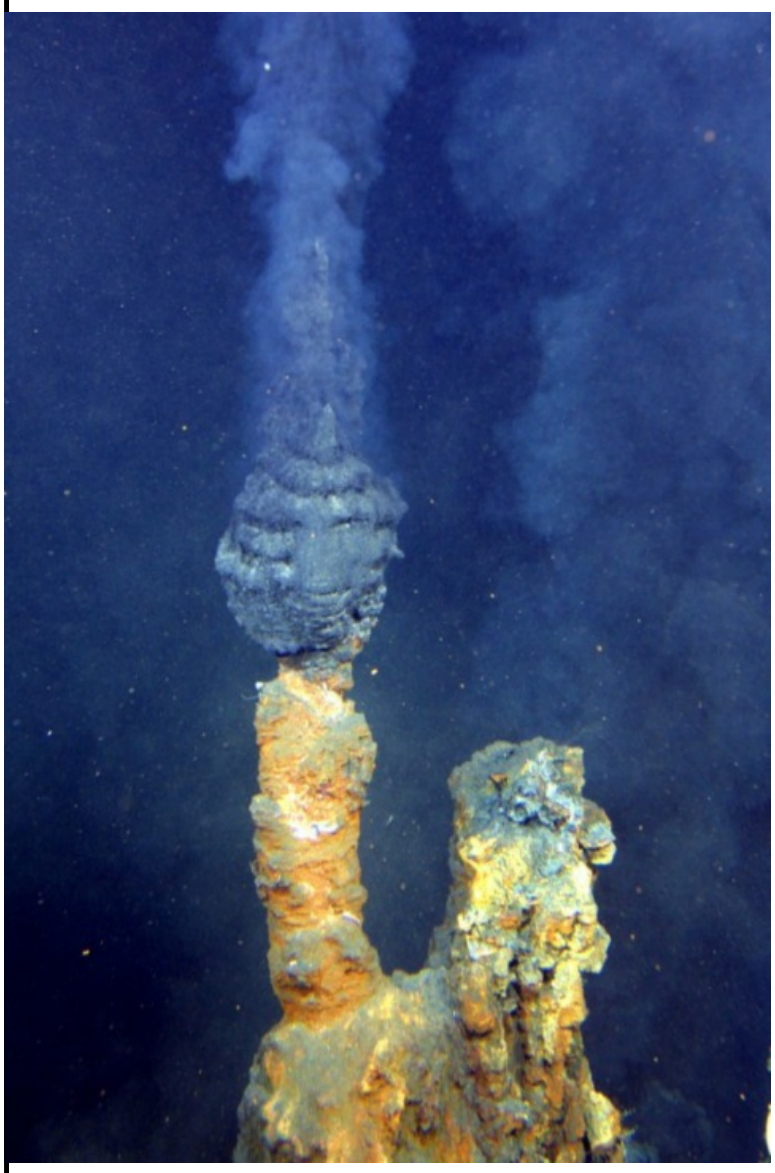
Through The Looking Glass (continued)



Radiation Belts Extended Into Space.



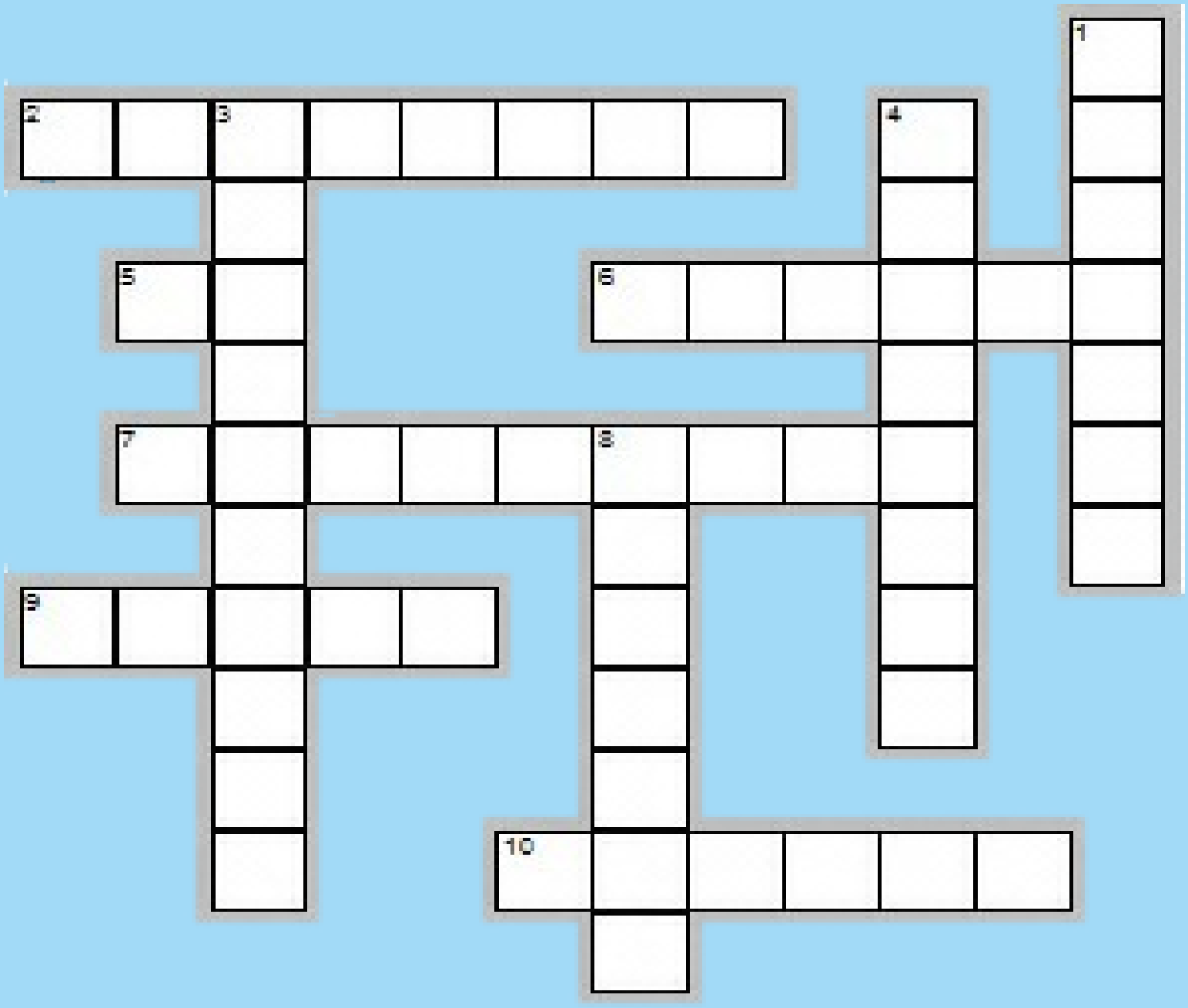
Hydrothermal Vent: Life existing in an extreme environment.

with the exclusion of the earth and the atmosphere surrounding it. Another plausible definition for outer space would be everything beyond the magnetic field of the earth. From where I am sitting (in front of an overheating HP laptop) it does not matter which of these definitions we use. The magnetic fields only extend outward to an order of 10 or so Earth Radii – compared to the distances involved solely in our own solar system, the difference in definitions is of little consequence.

We are constantly being inundated with information and debris from outer space. We receive information as one or more portions of the electromagnetic spectrum. For the majority of us this means visible light, but there is also radio, microwave, ultraviolet and infrared. When astronomers see, capture, or measure the electromagnetic radiation information is revealed – temperature, chemical composition, and physical structure. When a small piece of dust or debris hits our atmosphere the colour of the burn imparts information about the chemical composition. But what else has come to us from outer space? Well most movies or stories deal with alien beings or life forms. The Old Testament of the Bible deals with Giants and Nephalim, which are believed by some to be the result of interbreeding between alien life forms and humans. Essentially all religions speak of God(s) with extra-ordinary powers that came to earth, or came to the people. These differing religions and cultures provide a plethora (ok I am not entirely sure if plethora is the most appropriate word to use here, but I am sure it is better than cornucopia) of creation stories. In essentially all of the creation stories/myths there is an exchange between outer space (above/the heavens/the sky/Heaven) and the earth – and the exchange is often in both directions.

Panspermia is the theory that life is located throughout the galaxies and that it can be transferred or distributed from place to place through a variety of mechanisms involving comets, asteroids, planetoids, dust and any other detritus littering the cosmos. The idea may initially sound as plausible as a swallow carrying a coconut from the tropics to a more northerly climate (that is for all of you Monty Python fans) but upon examination the theory does hold water. Life has been discovered here on earth where life was once thought to be unable to survive. Underwater thermal vents are basically the steam pipe of a volcanic system. Yet life was found near these vents. The adverse conditions found here are as far from the norm as the conditions are in outer space. The transport of the life forms through the galaxy are easy to visualize. Early adopters of panspermia are the likes of von Helmholtz, Lord Kelvin and Arrhenius. Funny, it seems that no matter what I am doing over the last 30 or so years – one or more of these guys manages to get involved in it!

Astronomy Crossword by Mario Carr



Across

2. On March 7, this type of Moon passes just two degrees above Aldebaran.
5. On March 23, which one of the two moons crosses the face of Jupiter?
6. This March constellation is high in the southern evening sky.
7. This star is also known as the red eye of Taurus?
9. This planet is a bright object in the eastern morning sky?
10. In the midnight sky on March 20, this planet will be three degrees from the Moon?

Down

1. On March 9, the Moon is near this planet in the southern evening sky?
3. So far, NASA's Kepler spacecraft has discovered 715 of these?
4. On March 18 Mars, Spica and the Moon form one of these in the southeast evening sky?
8. Recently, more of these have been reported?

Answers can be found on page 18 . (No peeking!)

What is an Amateur Astronomer? by Mike Jefferson

A book that I have at home, “Stargazer's: The Contribution of Amateurs to Astronomy” edited by Storm Dunlop and Michele Garibaldi, divides us into 2 separate groups. The one is the group of the real, contributing amateur and the other is the hobby astronomer. Both love to be fascinated with the night sky and the sun (by day). However, where the second spends much time with a non-structured observing programme, watching what intrigues at any particular moment, the true amateur has goals and wishes to make contributions to professional science – hence the term “'amateur' astronomer”.

This first group is usually interested in investigating such phenomena as variable stars, binary stars, changes in planetary atmospheres and the sun, etc., via a regular and ongoing observing programme that is intended to yield results, possibly even as contributions to the professional community. Sometimes these amateurs are seconded to professional scientists who act as the principal investigators for them. Some of this kind of activity does not even involve a telescope as it is based in the internet and utilizes data from satellites, spacecraft and professional observatories.

The hobbyist, on the other hand, is usually more interested in non-structured observing, public presentations and simply being an astronomy ambassador for the professional community, which depends on public support for its programmes – no public interest, no money!

Both the hobbyist and the amateur render important contributions to all of human astronomical activity.

But what about astronomy clubs (societies)? Other than the HAA, most seem to be in a period of malaise and young people do not seem to be all that interested in joining them. Is there no interest from the younger generation in astronomy, astrophysics and space exploration? On the contrary. There is a great deal of excitement from them over what goes on in the professional community. They may not join astronomy clubs, but like Michaela Brchnelova from Bratislava, Slovakia, they are using data from spacecraft like the XMM-Newton and other probes, to show whether collisions between supernovae debris and interstellar gas clouds are slowing down that ejecta debris. In her particular case, she won the second prize of the Astronomical Society of the Pacific and the American Astronomical Society for her work in this area. They are amateur astronomers. In her case and in many others too, there are professional friends and adult sponsors involved in these projects.

Years ago astronomy and space science were bizarre subjects to be involved with and anyone who was interested in these areas was likely to be labeled a 'space cadet'. Today, with so much going on in all areas of space exploration and its associated fields, these activities are simply part of the everyday norm of human endeavour and such investigations are no longer seen as novel or out of the ordinary.

Artist impression of XMM-Newton Space Telescope (from ESA)

A Two-Toned Wonder from the Saturnian Outskirts

By Dr. Ethan Siegel

Although Saturn has been known as long as humans have been watching the night sky, it's only since the invention of the telescope that we've learned about the rings and moons of this giant, gaseous world. You might know that the largest of Saturn's moons is Titan, the second largest moon in the entire Solar System, discovered by Christiaan Huygens in 1655. It was just 16 years later, in 1671, that Giovanni Cassini (for whom the famed division in Saturn's rings—and the NASA mission now in orbit there—is named) discovered the second of Saturn's moons: Iapetus. Unlike Titan, Iapetus could only be seen when it was on the west side of Saturn, leading Cassini to correctly conclude that not only was Iapetus tidally locked to Saturn, but that its trailing hemisphere was intrinsically brighter than its darker, leading hemisphere. This has very much been confirmed in modern times!

In fact, the darkness of the leading side is comparable to coal, while the rest of Iapetus is as white as thick sea ice. Iapetus is the most distant of all of Saturn's large moons, with an average orbital distance of 3.5 million km, but the culprit of the mysterious dark side is *four times* as distant: Saturn's remote, captured moon, the dark, heavily cratered Phoebe!

Orbiting Saturn in retrograde, or the opposite direction to Saturn's rotation and most of its other Moons, Phoebe most probably originated in the Kuiper Belt, migrating inwards and eventually succumbing to gravitational capture. Due to its orbit, Phoebe is constantly bombarded by micrometeoroid-sized (and larger) objects, responsible for not only its dented and cavity-riddled surface, but also for a huge, diffuse ring of dust grains spanning *quadrillions* of cubic kilometers! The presence of the "Phoebe Ring" was only discovered in 2009, by NASA's infrared-sensitive Spitzer Space Telescope. As the Phoebe Ring's dust grains absorb and re-emit solar radiation, they spiral inwards towards Saturn, where they smash into Iapetus—orbiting in the opposite direction—like bugs on a highway windshield. Was the dark, leading edge of Iapetus due to it being plastered with material from Phoebe? Did those impacts erode the bright surface layer away, revealing a darker substrate?

In reality, the dark particles picked up by Iapetus aren't enough to explain the incredible brightness differences alone, but they absorb and retain *just enough* extra heat from the Sun during Iapetus' day to sublimate the ice around it, which resolidifies preferentially on the trailing side, lightening it even further. So it's not just a thin, dark layer from an alien moon that turns Iapetus dark; it's the fact that surface ice sublimates and can no longer reform atop the leading side that darkens it so severely over time. And that

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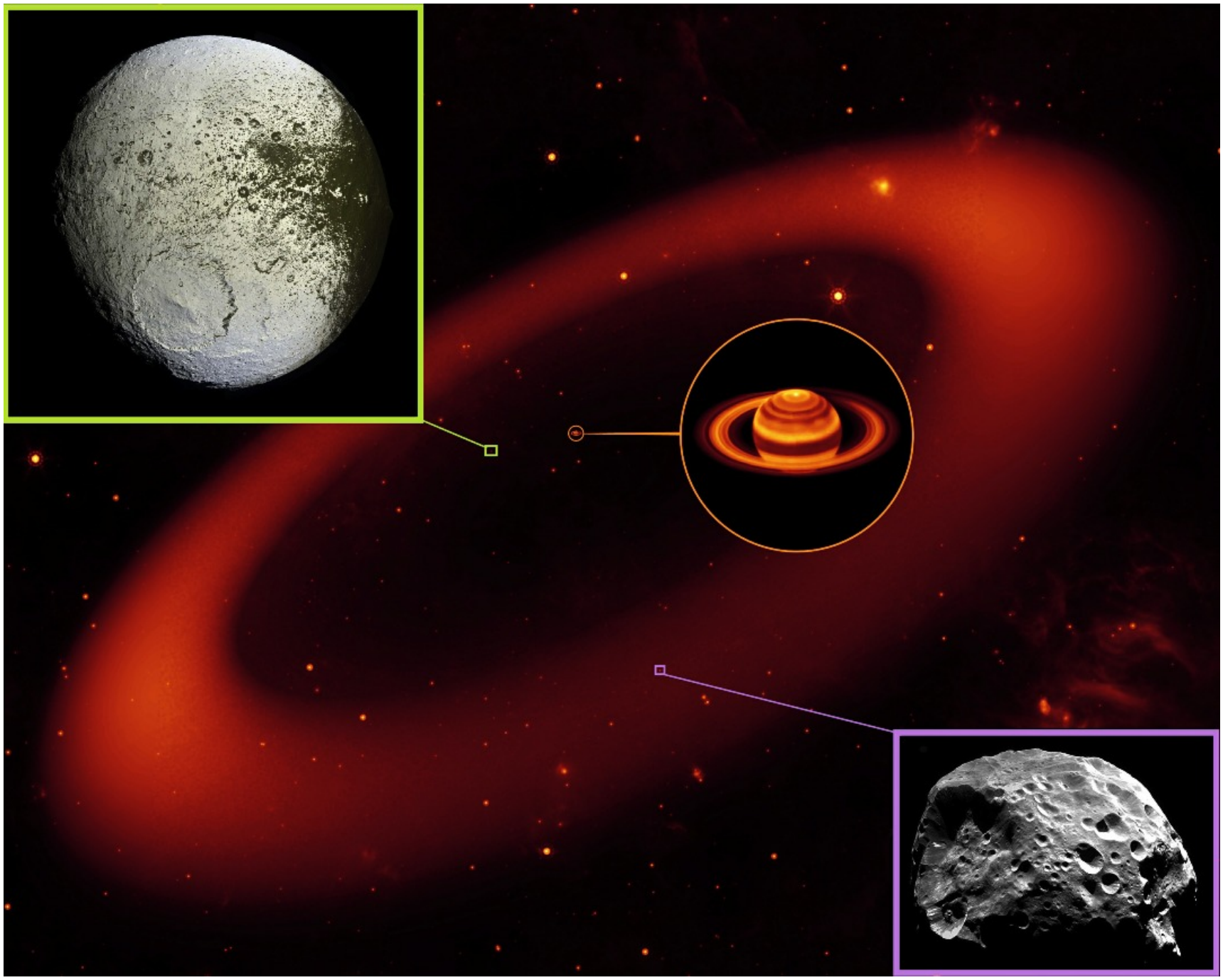
story—only confirmed by observations in the last few years—is the reason for the one-of-a-kind appearance of Saturn's incredible two-toned moon, Iapetus!



Images credit: Saturn & the Phoebe Ring (middle) - NASA / JPL-Caltech / Keck; Iapetus (top left) - NASA / JPL / Space Science Institute / Cassini Imaging Team; Phoebe (bottom right) - NASA / ESA / JPL / Space Science Institute / Cassini Imaging Team.

Learn more about Iapetus here: http://saturn.jpl.nasa.gov/science/moons/iapetus.

Kids can learn more about Saturn's rings at NASA's Space Place: http://spaceplace.nasa.gov/saturn-rings.

For Sale — Celestron CG-5 Computerized Mount

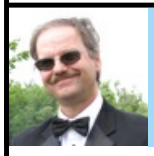
The Advanced Celestron (CG-5) Computerized equatorial is a heavy-duty mount with sturdy stainless steel legs and dual-axis motors that provide sidereal tracking and slewing at a 3 deg. per sec. clip. It has an auto guider port for astrophotography and is GPS compatible. The included NexStar computerized control system boasts many of the same functions and features as Celestron's most advanced GO TO mounts including a database of over 40,000 celestial objects. The mount is capable of holding a 30 lbs. payload. A polar-axis scope is also included.

Asking Price:

$ 375.00

Please contact:

Vince Chaisson
905-388-7124
Vincechaisson 'at' hotmail.ca



Treasurer's Report by Steve Germann

Treasurer's report for February 2014 (unaudited)

Opening balance:	$7608.29
Revenue:	$410.00
Expenses:	$270.66
Closing Balance:	$7747.63

Major revenue included Calendar Sales $159, Memberships $195, 50/50 $56
Major expenses included postage for calendars: $4, postage for membership tax receipts: $7.12, shipping for loaner binoculars: $20, BASEF prize: $200, antivirus software: $39.54.

SkyStopper Equatorial Platform

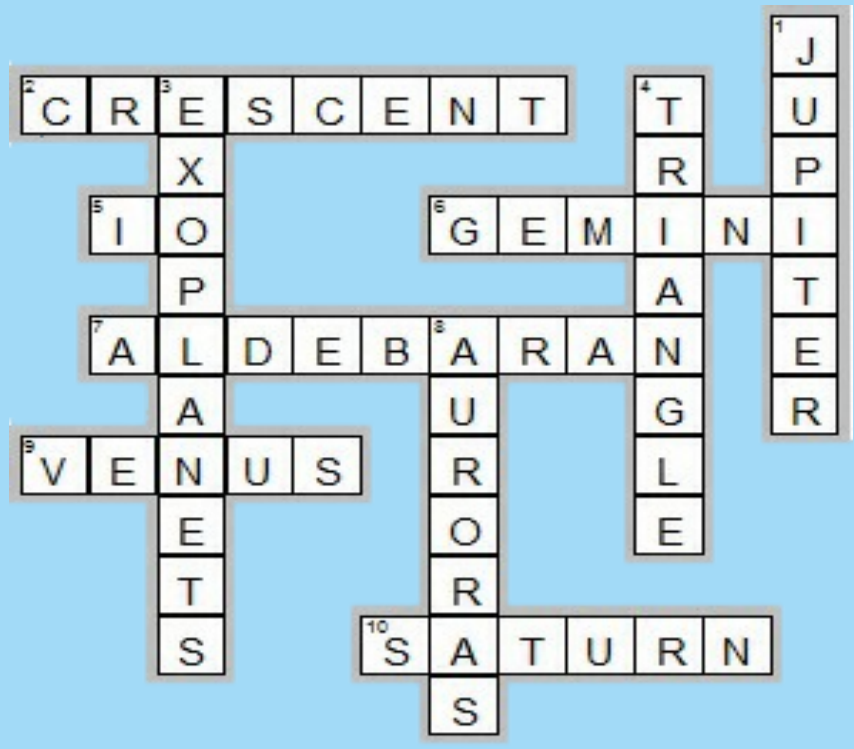
The SkyStopper equatorial platform, custom made for your telescope and latitude, can be yours in just a week, for only $649 plus shipping. (Local pickup save $25 and all the shipping)

Features:

- handles high power eyepieces without drift
- patent pending dual direction guide capability guides in any part of the sky, not just the meridian
- do guided astrophotography and manual fine centering with your Dob
- effortless tracking through the zenith
- compatible with push-to digital setting circles
- compatible with goto Dobs that can stop their clock drive
- runs on 12v accessory power from your tank
- star, sun, moon, half-solar, and tuned rates
- easy to assemble, adjust and maintain
- adjustable bubble level allows quick setup at a variety of sites
- made in Canada, ships from Canada
- quick release magnetic linkage
- infra red remote control with audio acknowledgement
- pushbutton override possible instead of remote
- extra long levelling feet for range of latitudes
- high weight capacity and stability
- typically 90 minutes run time
- quick rewind or re-center
- low power
- dimmable led display

http://www.skystopper.ca/ or email smrg@cogeco.ca

Answers to Astronomy Crossword on Page 13

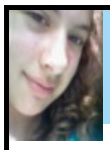


William J. McCallion

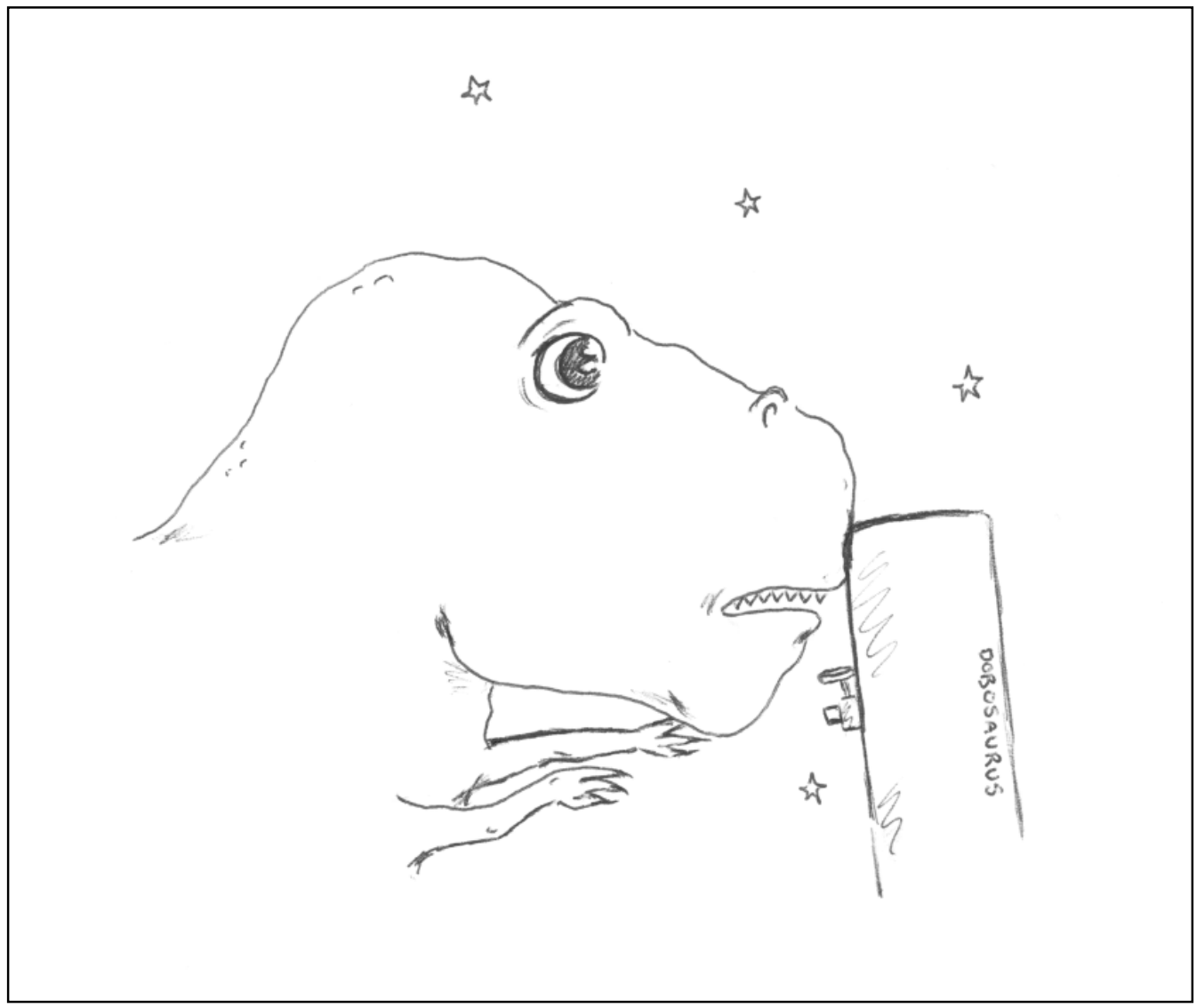
Planetarium

McMASTER UNIVERSITY, HAMILTON, ONTARIO

- Public shows every Wednesday (7:00pm)
- Public transit available directly to McMaster campus
- Tickets $5 per person; private group bookings $100
- Different shows every week
- Upcoming shows include:
  - **Mar 5: Introductory Astronomy for Kids (1st Wed of every month)**
  - **Mar 12: The Life and Times of Betelgeuse**
  - **Mar 19: 101 Fuzzy Observations**
  - **Mar 26: Supermassive Black Holes**
- For more details, visit www.physics.mcmaster.ca/planetarium



Cartoon Corner by Alexandra Tekatch



"Why T. Rex was never an astronomer"

UPCOMING EVENTS

March 21, 2014 - 7:30 pm — *General Meeting* at the Hamilton Spectator Auditorium. Our main speaker will be **Don Pullen**, whose talk will be "Cosmic Doom — Some of the ways that the Universe is out to get you". Don has been an active member of the HAA since the early 2000's, having served in numerous roles including Treasurer, Second Chair, Calendar Editor and most recently as Webmaster. You can find him hanging out at most club meetings and public events. By training, his background is electronics and computer programming, but his passion is anything science.

Please note that the March meeting will take place on the 3rd Friday of March.

2013-2014 Council

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Second Chair	John Gauvreau
Treasurer	Steve Germann
Membership Director	Leslie Webb
Observing Director	Matthew Mannering
Event Horizon Editor	Bob Christmas
Recorder	Mike Jefferson
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Binbrook Conservation Area
Come observing with the HAA and see what a great location this is for stargazing, a family day or an outdoor 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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Hamilton Amateur Astronomers
PO Box 65578
Dundas, ON
L9H 6Y6
www.amateurastronomy.org

General Inquiries:
secretary @amateurastronomy.org

Membership:
membership@amateurastronomy.org

Meeting Inquiries:
chair@amateurastronomy.org

Public Events:
publicity@amateurastronomy.org

Observing Inquiries:
observing@amateurastronomy.org

Newsletter:
editor@amateurastronomy.org

Webmaster:
David Tym
Webmaster@amateurastronomy.org

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