Hamilton Amateur Astronomers

Event Horizon

February 2000 Volume 7 Issue 4

Ask Stella: The Unhappy Demise of Magneto-Moon

Hey all you victims of winter seeing. Are you frustrated by our puckish atmosphere? Feeling down because you can't use your zillilon inch StarBlazer to count all the galaxies in the Virgo cluster? Well, take heart my friends. You can always make yourself a big thermos of hot chocolate and go spend some time with our old friend the moon. No matter how lousy the seeing is, you'll usually get a terrific view. Unless of course you're also plagued by that other winter hazard : clouds. But hey, it's not like I can lord it over you or anything. Here in LA we can barely see past the smog.

This month's question is also about the moon. It comes to us from Shelby Ako of Churchill County High School in Fallon, Nevada. Shelby asks:

Why does the moon have less of a magnetic field than the earth? I heard that the moon had a magnetic field years ago, so why did it cool and have no magnetic field anymore?

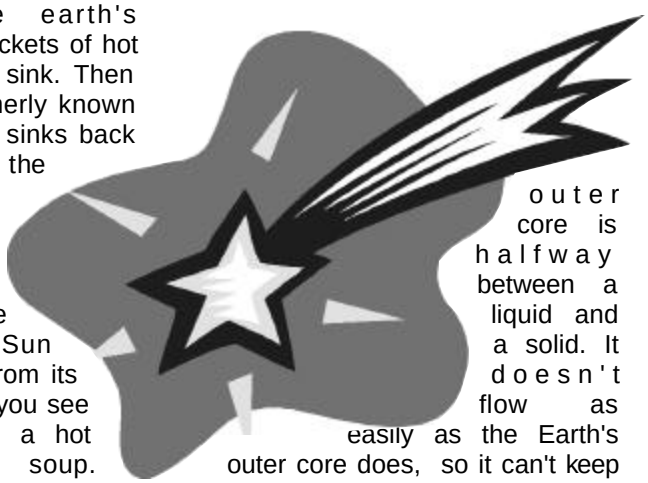
Stella writes:

The answer lies in the different compositions of the earth and moon. Our home world (a.k.a. Gaia) is made up of four different layers: crust, mantle, liquid outer core, and solid inner core. The earth's magnetic field is produced by convection currents in the outer core.

You know about convection. It happens in the earth's atmosphere when pockets of hot air rise and cool air sink. Then the air that was formerly known as hot cools off and sinks back down. Kind of like the careers of some rock musicians.

Convection is all around us. It's one way that the Sun transports heat out from its interior and it's what you see when you look into a hot bowl of chicken soup. Everything's swirling around in there, trying like mad to obey the second law of thermodynamics and equalize the temperature. Convection is also what drives the geomagnetic dynamo that gives the earth it's magnetism.

The moon, from what we can tell by seismic recorders left there by astronauts, has a very different structure. Although it also has a crust, a solid iron core, and a mantle-analogue called the lithosphere, the moon's outer core is not fully liquid. It is described as "plastic". This isn't to say that there are huge deposits of Hefty bags in the moon's interior --- just that the matierial there has a higher viscosity (resistance to flow) than a regular liquid. So the moon's



outer core is halfway between a liquid and a solid. It doesn't flow as easily as the Earth's outer core does, so it can't keep up a strong magnetic field. When the moon was young and molten (as we all were, at some point) it had a stronger magnetic field. We know this because we've examined the crystal structure in moon rocks. But as the moon cooled, its viscosisty increased until the convection currents eased off. Magnetic fields tend to fade over time unless there is

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inside...

Chair's Report

Welcome to the middle of winter! It's February, Groundhog Day is but a memory: Wiarton Willie and Puxatawny Phil both saw their shadows (the rodent in Winnipeg didn't, but that's his problem), so officially there will be six more weeks of winter. Trivia ... what astronomical event triggers Groundhog Day? You'll have to suffer through my report to find the answer!

I hope you all enjoyed the lunar eclipse as much as I did, and have many fine photographs of the event to show us. A little bird has told me that **Mike DeVilliers** has a particularly fine collection which he will be sharing with us. Now that we're on the subject of eclipses, did anybody happen to catch the partial solar eclipse that happened on February 4th? No? I'm utterly surprised!

Every month, I'm happy because one of our members does something extraordinary that makes writing these reports easy. This month, the heroine is **Margaret Walton**. Margaret has done a number of outstanding jobs for us this past month. She organized and ran a very successful mall display which attracted my queries about and much interest in the HAA. Secondly, she has produced an extremely attractive brochure that is now being distributed everywhere that anyone interested in astronomy might be likely to attend. And finally (as if that isn't enough work for one month), she has wrestled our web pages into shape. A thousand thank you's, Margaret, for your stellar contributions!

I would also like to thank **Stewart Attlesey** for bailing me out and Chairing the main meeting this month. This enables me to head off to a different latitude in order to pursue a personal scientific investigation into the effects of solar energy on the human psyche, as well as how this is affected by the presence of copious quantities of Margueritas. A side study will be made of heavenly bodies.

Has anybody figured out the Groundhog trivia question yet? Groundhog Day is the exact midpoint between the Winter Solstice and the Vernal Equinox. Contrary to tradition, the presence or absence of the groundhog's shadow makes no difference - there are still six weeks of winter left.

Unless you're studying solar energy and Margueritas, that is!

Grant Dixon, Chair
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(Please note my new e-mail address - let's hear it for cable!)

HAMILTON AMATEUR ASTRONOMERS

Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA).

The HAA is an amateur astronomy club dedicated to the promotion and enjoyment of astronomy for people of all ages and experience levels

The cost of the subscription is included in the $15 individual or $20 family membership fee for the year. Event Horizon is published a minimum of 10 times a year.

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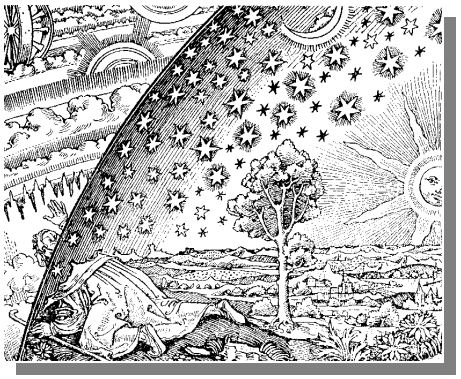

Links of the Month

March is the month for Messier Marathons so I decided to search for information about Charles Messier. I have chosen three sites that offer information about his life and his discoveries.

The first site which is located at ***http://www.seds.org/messier/xtra/history/CMessier.html*** is by far the best. These pages aren't flashy, just filled with lots of good information. The next site at ***http://my.voyager.net/stargazer/astronomy.html*** doesn't have the same depth of information about Messsier but has a number of other astronomy related pages that you can check out. The last site at ***http://www.seasky.org/mainmenu.html*** is very flashy and the webmaster proudly lists a large number of awards his website has won. However I almost didn't include this page because the information on some of his pages is a bit weak. His glossary page has some poor definitions for example. Obviously awards are given for flash and not substance. Having said that, he does have a reasonable collection of biographies including Messier's and he has a very good page with reviews and links to astronomy software.

Constellations of the Month
Canis Major and Canis Minor

Margaret Walton

Canis Major

The Greater Dog

Canis Major is the dog of Orion forever in pursuit of the hare 'Lepus'.

Canis Minor

The Lesser Dog

Canis Minor is the second of Orion's two hunting dogs. Procyon is the brightest star in the constellation. It's name is Greek for 'Before the Dog', as Procyon rises before Sirius the 'Dog Star'.

Stars

Sirius. The Dog Star. About 1900 years ago the Dog Star signaled the beginning of the dog days of summer, as at that time it rose shortly before the sun at the beginning of August and it was believed that the combination of Sirius and the sun caused the hot weather. About 3000 years ago Sirius rose just before the sun in early summer and was used by the Egyptians to predict the flooding of the Nile. The Dogon people of Mali recognized a companion to Sirius with an elliptical orbit of 50 years and used it to calculate their ritual time periods. This was hundreds of years before this companion, with an orbit of 50 years, was recognized scientifically in the mid-1800s. Sirius is the brightest star in the sky with a magnitude of -1.46 and is 8.7 light years away.

Objects to See

(all in Canis Major)

M41 (NGC2287). Open cluster. This is a large, bright, rich cluster with a reddish star near the centre. It is visible both with binoculars and naked eye. Magnitude is 4.5.

NGC2204. Open cluster. This is a large, rich cluster of magnitude 8.6. It contains about 80 stars.

NGC2243. Open cluster. Large, bright, rich cluster with a magnitude of 9.4. Contains about 100 stars.

NGC2345. Open cluster. This is a rich cluster with a strong central concentration of stars. It contains about 70 stars and has a magnitude of 7.7.

NGC2354. Open cluster. This is a rich cluster containing about 100 stars. Its magnitude is 6.5.

NGC2359. Emission Nebula. Duck Nebula or Thor's Helmet. This is a very faint, very large ring-shaped nebula. The central star is a Wolf-Rayet star. It is best viewed with a scope 8" or larger and a nebula filter. As per

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Canis Major and Minor

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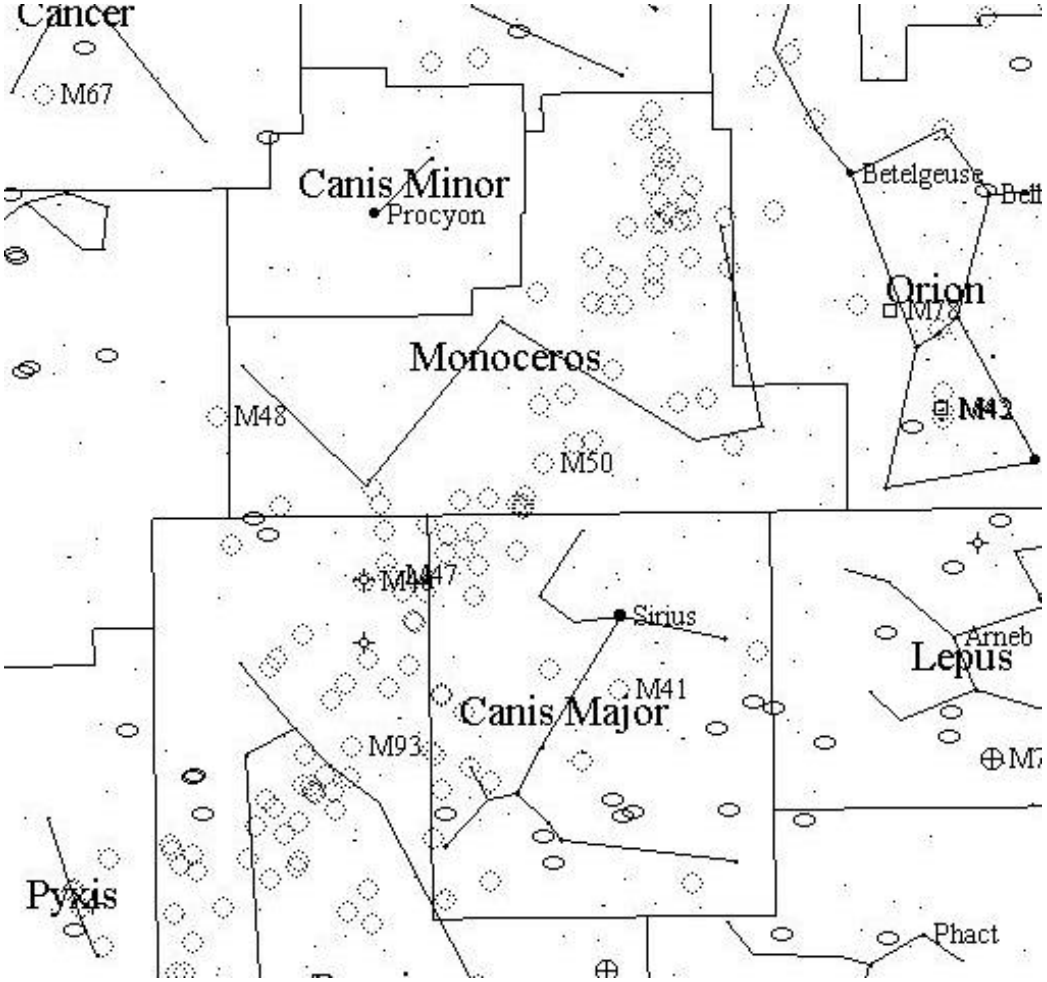
the NGC this is a (!!) remarkable object.

NGC2360. Open cluster. This is a large, bright, rich cluster of magnitude 7.2. It contains about 80 stars.

NGC2362. Open cluster. This is a large cluster of magnitude 4.1 containing about 60 stars. It is involved in a faint emission nebula. This cluster is notable as it is one of the youngest known clusters.

NGC2383. Open cluster. This is a small, rich cluster containing about 40 stars. It has a strong central concentration of stars and its magnitude is 8.4. Open cluster NGC2384 is nearby.



Ask Stella...

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something replenishing them, so the moon's magnetism just faded away.

By the way, you might be interested to know that magnetic fields are pretty common in the Universe. The Sun has one, and so do most of the other planets in our solar system. Neutron stars have very strong magnetic fields and the Milky Way has a very weak one. Here on Earth, the magnetic field is pretty important. Not only is it the source of beautiful things like auroras; life on Earth has come to rely on geomagnetism in a major way.

As a thought experiment on one of these cold, convective winter nights, it might be fun to make a list of all the catastrophes that would occur if the earth suddenly lost its magnetic field. If you come up with some good ones, write me. I'd be keen to hear.

Clear Skies,

Stella

Do you have a question that's keeping you up at night? Then e-mail ***ask_stella@earthling.net***

Ask Stella: your source for astro-

facts.

Web Site Update

The HAA Web Site has finally been updated. The events listing is now up-to-date and an 'Events at a Glance' calendar has been added for each month. Please visit the web site on a regular basis to find astronomy events throughout Ontario. If you have any events to add to the listing please let me know and I will add them. Other pages on the site - the Event Horizon and links - will be updated as soon as possible.

Margaret Walton
Margw@icom.ca
(905)627-7361

Transformation

There she hung, huge and bright.
Then, magically appeared a bite!
It grew, dimming as it spread
Across the face, bringing dread
And awe, to mortals below,
Now projecting a red glow,
With it a sense of wonder.
Why doesn't it fall, we ponder?
Stars now blink into view,
And the night seems blacker too.
Everything is transformed,
Even the uninformed.

Barb Wight

Cosmology Discussion Group

Mike Jefferson will present "Powers of Ten - The Cosmology of Ray and Charles Eames." Animating the presentation will be the National Film Board vignette, "Cosmic Zoom." Following the film will be an illustrated presentation of the Eames view of the cosmological realm, from the ultra-macro to the ultra micro. Plenty of room for questions, comments and discussion as our topic unfolds.

Saturday, February 19th, 2000 8pm. McMaster's Burke Science Building room B148.

Free Coffee, Ginger Ale, and Timbits.

Informal discussion, everyone welcome.

For further information call Larry at 529-1037.

Editor's Report

Thank you to everyone who submitted articles for this edition of *Event Horizon.*

The next deadline for submitting articles for *Event Horizon* is Friday, March 3th, 2000. Please send your articles in as soon as you can so that I can start preparing the newsletter.

Rosa Assalone
al965@hwcn.org

Did you know that...

the early Greeks thought that Mercury as an evening star was a different object when it was a morning star, calling the latter Apollo. Parmenides in the 6th century BC is said to be the first to declare they were one and the same.

Rob Roy

CALENDAR OF EVENTS

- Tuesday, February 15, 7pm
- Saturday, February 19, 8pm
- February 25, 26 ~ 8pm
  March 3, 4 ~ 8pm
- Friday, March 10, 2000 7:30pm
- Tuesday, March 21, 2000 7pm

HAJA - We will meet at McMaster University, in the Burke Science Building, room B148. For more information contact Rosa Assalone 540-8793
COSMOLOGY DISCUSSION GROUP - For more information see page 5.
BINBROOK OBSERVING NIGHTS - For confirmation or directions call Bret Culver 575-9492, Marg Walton 627-7361, Rob Roy 692-3245
HAA GENERAL MEETING - At the Spectator Building auditorium.
HAJA - We will meet at McMaster University, in the Burke Science Building, room B148. For more information contact Rosa Assalone 540-8793

RASC, Niagara Centre presents Ken Hewitt-White: Skywatching as a Way of Life

The Niagara Centre of the RASC would like to extend an invitation to you to join us for our annual RASC/NFCAAA banquet. Our banquet this year will be held at the SkyLine Brock Hotel in Niagara Falls, ON on Saturday, April 8, 2000. We are proud to have noted astronomer and television personality Ken Hewitt-White as our speaker for the evening. His presentation, "Skywatching as a Way of Life", should be an excellent one. The Skyline Brock's Rainbow Salon Restaurant offers a beautiful view of Niagara Falls from its location at the top of the hotel.

The tickets for the evening are $45. This includes a fine buffet dinner (taxes and gratuities included, drinks extra) and Ken Hewitt-White's presentation. For those that wish to see only the speaker the cost is $15. The evening will begin at 6pm when the door and bar will open. Dinner is at 7pm. Ken Hewitt-White will speak at approximately 8:30 p.m. Our annual banquet this year promises to be an exceptional one. We hope you can join us for a delicious meal and an enjoyable evening.

Seating is limited to 100 so order your tickets soon. Tickets are available now. Those wishing to order tickets can send an order to our P.O. Box or contact Joyce Sims below. Make cheques payable to RASC - Niagara Centre.

Tickets: Joyce Sims (905) 262-5276
PO Box 4040, St Catharines, ON L2R 7S3