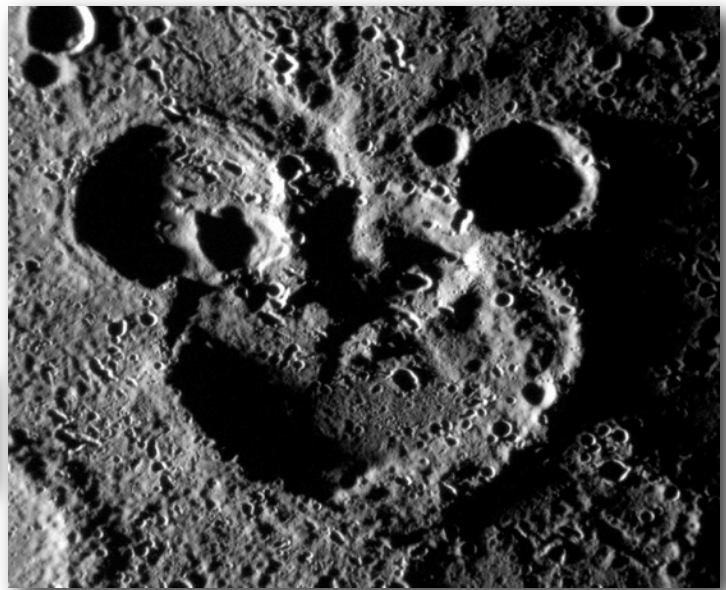




Astronomy News for Bluewater Stargazers
Vol 7 No. 4 April 2013

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Mickey Mouse on Mercury???

This collection of craters, shaped not unlike the iconic head of a certain cartoon mouse, was imaged by NASA's MESSENGER spacecraft on June 3, 2012.

All together now: C-R-A, T-E-R...

M-O-U-S-Eeeeeee...



The image above isn't map-projected; that is, it's not aligned with north as up. In reality the large crater that makes up Mickey's "head" is north of the two "ears". Still, this is one big mouse head — the large crater in the center has a diameter of approximately 105 km (65 miles)!

Read more about this and see many other images of the first rock from the Sun on the MESSENGER mission site [here](#).

Disclaimer:

This April 2013 issue continues the tradition of providing **serious astronomy news** and information about BAS events. Still, being an April issue, it is possible that some of the articles that follow may be on the lighter side and that **some may even be totally bogus**. This issue is meant to be a bit more light-hearted than usual since spring has sprung and the silly season is upon us. **READER BE WARY.**

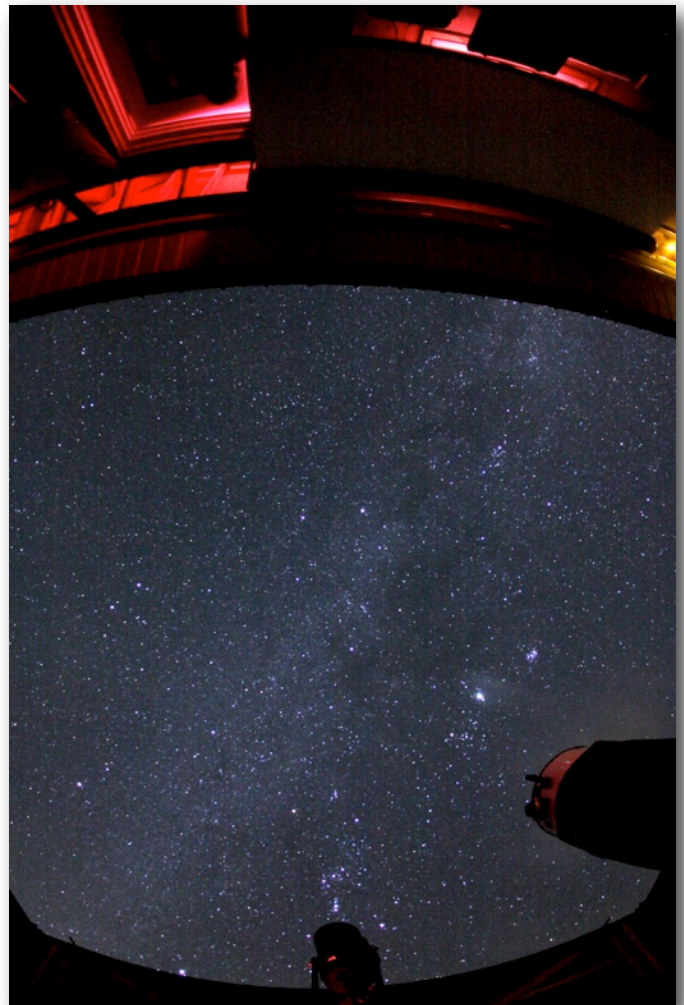
[The editor takes NO responsibility for anything that may befall you as a result of taking anything you might find in the following pages seriously. Once again: "Caveat Emptor"]

The ES Fox Observatory "Comfort Committee" has added a washroom facility to the warmup room (image below). It will no longer be necessary for the ladies to make the long trek up to the Learning Centre to use the washroom. We now have all the comforts of home!

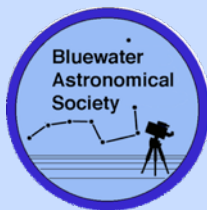


Please note, two cranks of the sawdust dispenser knob is sufficient for an average load. Too much makes the composting bacteria generate too much gas. The result is explosive decomposition. We should avoid post-digestive explosive decomposition at all costs.

ES Fox Cupola! Even if the ISS has a much higher location for its cupola, the ES Fox Observatory has a nice one here on Earth. This view with a 10 mm lens from the observing floor includes the 10-inch SCT and a 16-inch Dob. It reminds me a bit of the view out the ISS window, but I have yet to see an image of the stars from the ISS which is as nice as the view here. Canon 50D image, ISO 1600, exp=20 s, 10 mm fl f/2.8 taken by JH.



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BAS Executive 2013-2015

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Public Outreach:	TBA	



BAS Events for Apr 2013

- Apr 3 BAS meeting** Grey Roots Museum 7 pm
Astronomy Trivia Quiz Night (fun, prizes, learn astronomy!)
- Apr 6 (LQ+4) BAS viewing @Fox** ES Fox @dark (backup Apr 13 Sat (NM+3))
- Apr 13/14 (NM +3)** Jupiter, Cres Moon in Hyades vis. anywhere with low western horizon
- Apr 13 Community Club Fair** at OS Library 9:30 to 3:00 pm (volunteers needed to baby-sit the displays and hand out brochures)
- Apr 14 to 20 Astronomy Week**
- Apr 16 (FQ-2) Celebrate the Night Sky talk** Grey Roots Museum 7:30 pm
Speaker: Joan Skelton **Public viewing after 9 pm** (Members & scopes appreciated) backup Apr 20 @Fox
- Apr 20 (FQ+2) Astronomy Day** ES Fox @dark (additional to Apr 16 GR viewing)
- Apr 28** Saturn at opposition mag = 0.1 but good Saturn viewing lasts several months before/after

New BAS executive for 2013 to 2015 is:

- President:** Aaron Top
 - Vice-President:** John Hlynialuk
 - Secretary:** Lorraine Rodgers
 - Treasurer:** Cheryl Dawson
 - Past-President:** Brett Tatton
 - Past-Past President:** Dan Gieruszak
 - Membership Chair:** Dave Skelton
- Welcome to the new members on exec and Thank You to those who served in the past!

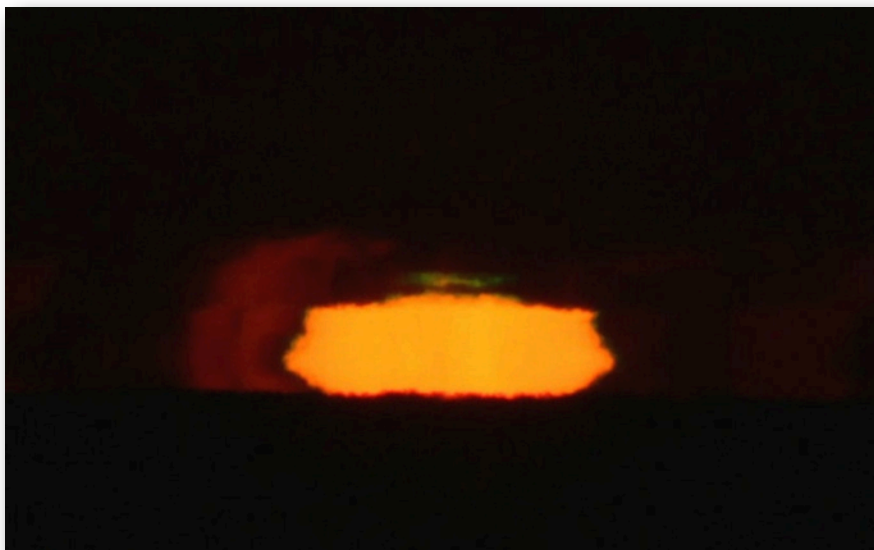
From the "Top": Amazing Moments are Hard to Describe by Aaron Top (President BAS)

The best moments in life are those that you experience that others often do not. When you are by yourself and see something that is amazing -an awesome fireball (my favourite), a rare bird you didn't expect, even hearing a song, maybe one you have played many times and it gives you that goose bump feeling (where all the hairs stand up on the back of your neck).

There will always be those rare moments when everything just seems to play out perfectly. Life is certainly interesting. Sometimes, I go out and wait patiently to observe an event and something unexpected happens! I have photographs and projects that have taken years to capture or experience but every time I go out I learn something new. The biggest thing is I am always amazed by what I see even if I do not happen to get a photograph of it. There will always be those awesome things that you try to describe with words and the words are difficult to find.

Always expect the unexpected.

Green flash seen from Sauble Beach: This image is the third time I have witnessed a green flash. This time I watched it through the view finder of my camera as I relentlessly snapped away. It lasted only seconds but I managed to record it because I was set up ahead of time with a plan. It is hard for me to put into words how awesome the event was. And let's not forget about all the fireballs I have had the pleasure of seeing over the years. That brief flash will only remain a memory but I can replay it in my mind forever.



New Mount Proposed for SCT Scope At Fox



The mount pictured here is one that BAS exec have been looking at purchasing to replace the 1970's (non-GOTO) mount under the Meade 10-inch SCT currently doing the main work at the Fox Observatory. The AZ-EQ6 GT is the newest item available from SkyWatcher and has all the "bells and whistles".

The club is in good financial position to make the \$2000+ purchase and it would give us the ability to do all the things we would want to do. Not the least of which is actually locating objects quickly with the GOTO system. There are several other mounts out there but none at this price and with this set of features. Please have a look at KW website below for details. There will be a vote at the Apr 3 meeting on whether we purchase this mount or spend our money elsewhere. The two other contenders are also shown below.

The AZ mount is very impressive and includes an auto-guider port, dual encoders and easy switch-over to altazimuth operation. A second telescope can be mounted at the end of the counterweight arm on an adapter not shown in the image left. Even the guys at KW are shaking their heads in disbelief at what this system has to offer at the price being asked. One of our members (in London, ON) has one and is very pleased with its performance.

See the web page below for more details about the AZ-EQ6 mount:

<http://www.kwtelescope.com/home/sky-watcher-az-eq6-synscan-gps.html>



The Meade LX80 dual mount was also in the running and at half the price, it looked like a good buy. The auto-guide port is an extra-cost option (\$40US). It does not have dual encoders that allow manual re-position without losing its GOTO position. After it came out, there were lots of internet posts on problems with the unit including slop in declination, overweight issues (wouldn't handle more than 17 lb.) and the auto-guider port accessory not working with current software. Check Cloudy Night for reviews and see the web page below for more (dealer) details. Sounds like a typical Meade release - get it out and deal with the problems later.

<http://www.meade.com/lx80/specifications>



The Celestron CGEM-DX is a good solid equatorial (only) mount priced in the same range (\$1800) as the dual Skywatcher above. It has good reviews except for the instruction manual ("worst ever") and some component parts like counterweights not being shipped. Would have been the choice except that the AZ-EQ6 has dual capacity for only a little bit more money. Dual telescopes are a real bonus when we observe the sun since we can have both an H-alpha scope mounted at the same time as a visually-filtered scope. Alternately a larger finder could be used with a video cam for public star nights. The CGEM mount is robust but offers less versatility.

<http://www.celestron.com/astronomy/celestron-cgem-dx-mount-tripod.html>

First Kazakh Woman In Space

Novoye Pokoleniye, a Kazakh newspaper, reported on Friday, March 30 that Dariga Nazarbayeva, the daughter of President Nursultan Nazarbayev, would become the first Kazakh woman to fly into space. Accompanying her would be her one-year-old daughter who was receiving special training to become the world's first child astronaut. Nazarbayeva was already something of a Kazakh celebrity because of her presidency of Khabar TV. Her mission in space would be to launch a new satellite TV channel, Khabar-3, which would transmit to "the most remote areas of the world where the Kazakh diaspora lives: in the USA, Mongolia, France, New Zealand and so on." The paper also reported that only Kazakh cuisine would be served on the flight. In addition, "The research program also envisages making several feminine space experiments such as wet cleaning in zero-gravity conditions, cleaning of portholes in open space, nail-varnishing and hair-dyeing in a vacuum. The time of narrow specialist-orientated research is gone and the epoch of space exploration for everyday-life purposes is coming. So, who else, if not a woman and housewife, is to make laboratory experiments here?"



Not sure what happened here!

Horoscope for the month: Aries

Aries have ram-like eyebrows and smug expressions. They should not be quite so smug because they are constantly clunking themselves in the skull. Aries rarely say one thing and do another. They usually do the wrong thing and don't discuss it. Never point this out to an Aries unless you want your kidneys pulled out through your sinuses. Aries folks love Pisceans because of the way they smell. Aries use guns to describe philosophical concepts. Whether you live in a palatial estate or a cardboard tepee, you will insist until death that it is exactly what you always wanted. Most Aries were concrete parking bumpers in at least two of their past lives. Aries are never born. They skip gaily from their mothers' wombs. This may even involve rollerblades. The Aries makes life decisions as a toddler. Aries marry several times for funnies but never divorce. Their spouses have many freak accidents resulting in death or crippling injury. Being infallible, God is probably an Aries. This would make Satan an Aquarius. Aries always hold management positions. If one is assigned to clean toilets, he will form a one-man union. Then he will go and picket in the parking lot. All of you think you're Lech Walesa. People run away when an Aries comes around. They know that if they do not, the Aries will set them on fire.

Report from the "Webmaster"

BAS has had a web presence for the last few years with our website at www.bluewaterastronomy.info and it has worked out pretty well for the most part. When BAS signed up with our current web host, no one on the executive had much experience with web design and so our "default webmaster" (yours truly) used a "canned" web design program that had an easy interface to learn but which had limited options. The main limit was that in spite of our web host providing unlimited space for our use, the program used to build the site (third party software) would not store a website bigger than 5 MB. Once this limitation was realized, I obtained another program and started to build a replacement that would have more capability. By the time you read this, that new website will be up and running and you will have a brand new web presence with more of the bells and whistles of a real website. These include:

- more pages (Menu tabs) -we were limited to 5 before,
- a download page for SGN, and SGN archives from past years,
- a Contact form for anyone to send BAS an email,
- an Image Gallery with a larger collection of BAS images,
- a Forms page for forms like our bylaws, events lists, volunteer forms, etc.
- a Map/Chart page to download charts and maps for comets, etc.,
- useful astronomy Links like telescope reviews, NASA, aurora info, etc.
- a Weblog, where exec can post info on astronomical and other events.

Still under construction is a secure Members Only area where we can keep more sensitive documents.

Have a look and let the Webmaster know what you think, one way or the other. There is a lot of information there that had to be entered by hand, so if you spot a typo or something is not working as it should, please let me (stargazer@wightman.ca) know and I will get it corrected. Thanks for putting up with our growing pains!

April Fool Day's Asteroid to Buzz Earth this Sunday: No Joke!

An asteroid the size of a passenger jet will zoom by Earth on Sunday (April 1) just in time for April Fools' Day, but it has no chance (probably) of hitting the Earth, NASA says. "The asteroid 2012 EG5 will be closer than the moon when it passes Earth at 5:32 a.m. EDT. The space rock is about 46 m wide, according to a NASA update. The space rock may be visiting Earth on April Fools' Day, but its flyby is no prank. The asteroid will creep within 230,000 km of Earth during its closest approach, which is just over half the Earth-Moon distance. The moon typically circles the Earth at 382,900 km." *(No worries. This sort of thing happens all the time; some of the space rocks even enter the Earth's atmosphere but few survive the fiery plunge to the ground. -JCB [item posted Mar 31, 2012 on Strictly Astronomy website. PS do you see anything wrong with the graphic below? -ed]*



Update on Russia's Mega-Meteor

Sky and Telescopes Weekly Bulletin has some more interesting information about the recent Russian super-bolide. The many video recordings have allowed accurate orbit calculations to be done and the origin of the object is clearly from the asteroid belt. It may have been nudged by an interaction with a passing asteroid out there or perhaps by a resonance with Jupiter. It was definitely not related to the close pass of 2012 DA14 - just one of those cosmic coincidences.

A refined atmospheric trajectory and pre-crash orbit might eventually emerge from work now being done at the UWO by a team led by Peter Brown. They're looking at star positions in nighttime images taken at the exact locations where several bolide videos were recorded to further refine the orbit. Brown has collected many of the videos and here is his list of the 5 best:

[Kichigino](#) (54.50056°N, 61.27165°E)

[Yemanzhelinsk](#) (54.756579°N, 61.304044°E):

[Kurchatovskiy](#) (55.220774°N, 61.296265°E)

[Korkino](#) (54.89092°N, 61.39958°E)

[Central Chelyabinsk](#) (55.16632°N, 61.44478°E)

The object entered the atmosphere at about 19 km/s (over 68,400 km/h) along a generally east-to-west track. The fastest man-made object, the Apollo spacecraft returning from the moon re-entered at 40,000 km/h (11 km/s) or about 60% as fast. For you Mach fans, the asteroid was moving at Mach 56 when it hit the top of the atmosphere!

A European weather satellite actually glimpsed it skirting along Earth's limb and according to calculations done by Juri Borovicka's team, the bolide's flight path had a slope of 16½°. It started breaking apart relatively high up, 32 km above the ground. The point of peak brightness occurred, according to NASA dynamicists, at an altitude of 23.3 km.

Even though the dazzling light was brighter than the sun (magnitude -26) some of the videos show Russians hardly aware of the event and going about their business as if nothing was happening. About a minute and a half later (depending on the location, a powerful shock wave did get everyone's attention as it blew out glass and even some very solid doors. One large part of a building was also caved in. Luckily no one was killed although over a thousand individuals suffered injuries from flying glass shards.

Purdue impact specialist H. Jay Melosh notes that what many are calling a contrail (as in "condensed water vapor") was actually a smoke trail. "Probably most of the mass ended up as fine dust that blew away," he says. There was quite a reddish glow visible for 10 to 15 seconds as the heated material cooled. The fact that the object broke apart at a fair altitude (25-30 km) meant that Chelyabinsk (pop. 1,100,000) was spared serious damage caused by an explosion equivalent to 25 Hiroshima A-bombs. This is about as loud a wake-up call from the asteroid belt as you can get!

Meteorites were collected fairly quickly from a large area around the town of Chelyabinsk and were relatively easy to pick out of holes in the snow. There were 5 or 6 dozen found in the first few days but most were only a few grams. Since then, several larger fragments have come to light including a whopper of 1.8 kg or 4 pounds. Several pound sized fragments have been found as well (see image above).

The large crater in a local lake (Lk. Chelyabinsk) appears more and more likely to be the result of a much larger fragment that punched its way through the ice. Russian scientist Viktor Grokhovsky believes it was created when a large chunk of meteorite, 60 cm (2 ft) long and weighing roughly 100 kg fell into the lake. That's what divers expected to find lying on the lake bottom, about 10 m down, but after exploring the murky, silty conditions they came up empty-handed. However, researcher Evgeny Narkhov (also at Ural Federal University), soon released a preliminary map of magnetometer readings taken over an area the size of a football field. The lakebed map shows several hot spots, suggesting that the meteorite likely broke apart on impact. "There are not small pieces and a large one, as you might think, but several large fragments," Narkhov notes in a [university news statement](#). Analysis is continuing, and the divers will likely be heading back down very soon.

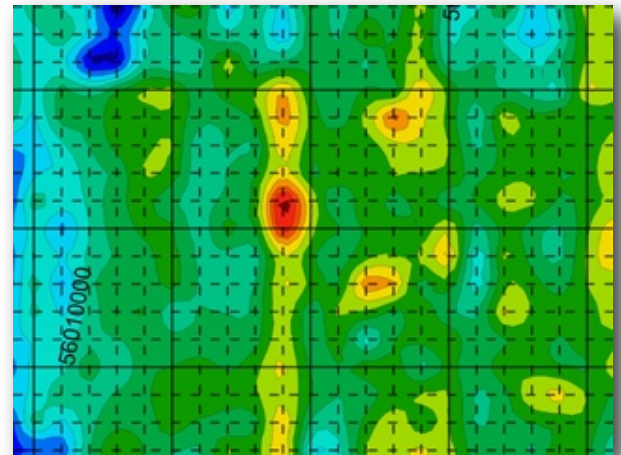
The meteorite fragments are a common stony meteorite type, called an ordinary



The largest known piece of the Chelyabinsk meteorite, weighing 4 pounds (1.8 kg) with two smaller fragments.

chondrite, containing only 10% or so metallic iron. Given the power of the blast, the entry velocity, and the typical density of chondrites (about 3.6 g/cm³), Peter Brown (UWO) estimates the original object had a diameter of about 17 m (54 ft) and a mass of roughly 10,000 metric tons.

Meanwhile, after ignoring some initial offers that were clearly fraudulent, meteorite collectors report that genuine bits of the Chelyabinsk fall are finally making their way into the marketplace. The going rate is \$20 to \$40 per gram. But nationalistic pride and protectionism are involved, and the Russian Duma is considering a proposal to prohibit the exporting of meteorites, a practice that is permitted for now. [article put together from S&T report -ed]



A map of the magnetic field measured at the bottom of Lake Chelyabinsk. The area shown measures 100 by 60 meters. Red areas might indicate the location of large fragments of the Chelyabinsk meteorite, which fell in countless pieces across the region on February 15, 2013. Both images from Ural Federal University

Another Physics of UFOs PETER HUSTON'S REBUTTAL TO MICHAEL GAINER (pg 4 March issue SGN)

Although I have several problems with some of the minor assumptions he makes in the article [The Physics of UFOs] for the moment let's focus on Gainer's key arguments. He assumes such a craft should be capable of making a 10 light year round trip to a new destination and back to its home system in approximately 20 (Earth) years time each way. Although he never explicitly states it, he also assumes that the laws of physics as currently understood will not be violated. (i.e. no "hyper-warp-jump-faster-than-light-drives"). Fair enough. He states that the spacecraft should be accelerated at a rate of 10 m/s^2 and that, at this rate of acceleration, it will require 174 (Earth) days to reach half the speed of light. This would take a great deal of power, therefore he states: "the only source that can supply energy of this magnitude is thermonuclear nuclear fusion." He then explains that the energy from the thermonuclear fusion would have to be directed rearward as "a constrained unidirectional particle beam," then concludes: "There is no possible material construction that can constrain and direct the thermal and blast energy of the nuclear fusion rate required for interstellar travel. Consequently, I conclude that alien spacecraft cannot exist." In other words, if I understand correctly, what Gainer is saying is that an interstellar spacecraft must use thermonuclear power as its power source and because there is no possible material that could contain and direct thermonuclear power into a propulsion beam, interstellar spaceflight is impossible. To a non-physicist such as myself, the obvious questions are "Why is such a material impossible?" and "Why is thermonuclear power the only feasible power source?"

To answer these questions and check Gainer's claim, I consulted with Carl Frederick, a retired physics professor and hard science fiction writer who regularly contributes to the magazine Analog Science Fiction/Science Fact. (A publication that, until recently, was edited by Stanley Schmidt, a Ph.D. physicist. For the record, no one claims that all stories in Analog are scientifically sound in all ways, (i.e. time travel stories), but part of the "game" of being an Analog contributor is to know exactly when, how and why one is breaking scientific laws and to only do it with a good reason.) A few of his criticisms and comments were as follows.

First, to assume that something is impossible because current technology, as opposed to the known laws of physics, doesn't allow it is "silly." Other points were that there is a great deal of research being done into controlled fusion and that might considerably change the way in which a thermonuclear spacecraft engine might work. Furthermore, as there are now indications that quantum physics might allow a spacecraft to draw energy from the vacuum as it travels, the thermonuclear engines might not be the only source of fuel. Additionally, Frederick said that the Gainer assumed that nuclear fusion is the best form of energy. He disagreed saying that particle / anti-particle annihilation was a better alternative. Finally, he said, there's no reason one couldn't go slower and use less fuel, if you, for instance, freeze the crew.

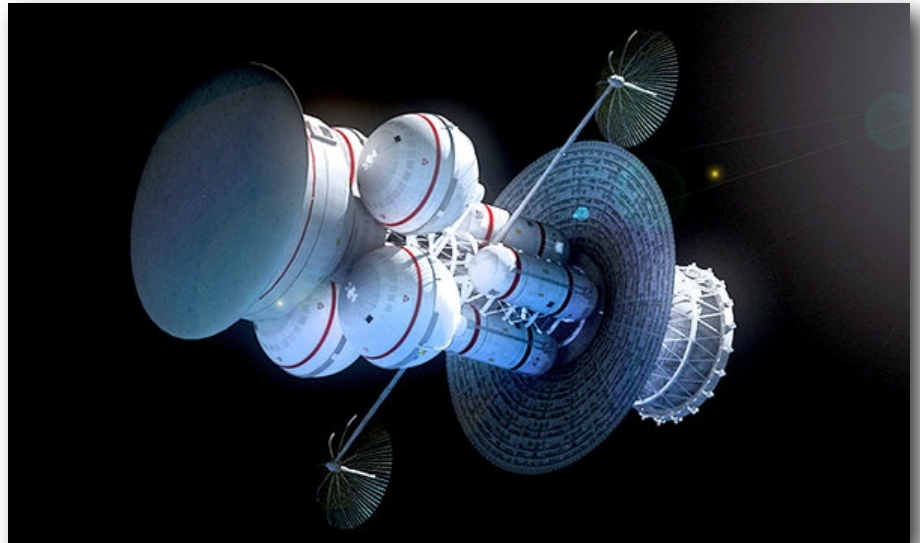
As for me, the non-physicist, although I really could not address the main points of the article, I had many quibbles about the minor assumptions in the article. For example, he assumes that a spacecraft would require energy in equal amounts to accelerate to its destination, decelerate when arriving, accelerate on its way home, and decelerate as it approaches home. Why? Couldn't it use solar sails catching photons and the gravitational forces of planets and other astronomical objects to help slow itself? And, why do so many people assume that a spacecraft would need to make a return trip? I have little doubt that there are plenty of would-be astronauts who would gladly take a one way trip to another star system never to return home again. Indeed, surveys have found that there are astronauts who would take a one-way trip to Mars.

There are other points I question, many of which hint that Gainer is assuming we only can use modern technology (e.g., he states his UFO would be built in orbit by shuttles.) At least one other point ignores the modern UFO mythology entirely: Gainer assumes his ship needs a shuttle to land and return to the ship. Why? Particularly since UFOs are reported to land and then float away gently into the sky. Personally, I like the idea of taking the small UFO Gainer describes and putting it inside a giant "mother ship" that contains a crew of thousands or more and is a permanent home to generations of beings all living a more or less urban life style as they float between systems. It's just one of dozens or more of alternatives to the scenario he, first, envisions, and then, secondly, uses to claim interstellar spacecraft are impossible. Perhaps such a race could even have "seeded" space using robotic craft to cache fuel here and there. (Note: I'm speculating. I do not believe anything in UFOlogy seriously indicates alien visitation.)

Gainer's article is the sort that led to my burn out from skepticism. It contains questionable assumptions at several points and then over-reaches from the logical conclusions to make the point the author wishes. For example: "When UFOs are reported they should be evaluated with the attitude that alien spacecraft cannot exist." This may be the author's belief, but, based on what I saw, it is a faith-based belief, not grounded in proven fact. And, as skeptics, isn't it simply enough to say "When UFOs are reported they should be evaluated with the attitude that none have ever been proven to be alien spacecraft"? We are supposed to be the people who read, question and think—not the ones who blindly repeat assertions that fit our pre-conceived notions.

I think we, as skeptics, need to be more careful of such statements and false conclusions. They only hurt us in the end.

About Peter Huston: In the 1990s, Peter Huston was a frequent contributor and book reviewer to skeptical publications, president and vice-president of the Inquiring Skeptics of Upper New York, and author of, *Scams from the Great Beyond* and *More Scams of the Great Beyond*.



Comet to Buzz Mars in 2014

March 27, 2013: NASA press release

According to Don Yeomans of NASA's Near-Earth Object Program at JPL: "There is a small but non-negligible chance that Comet 2013 A1 will strike Mars next year in October of 2014," says. "Current solutions put the odds of impact at 1 in 2000." "The nucleus of the comet is probably 1 to 3 km in diameter, and it is coming in fast, around 56 km/s. "If it does hit Mars, it would deliver the energy of 35 million megatons of TNT," estimates Yeomans.

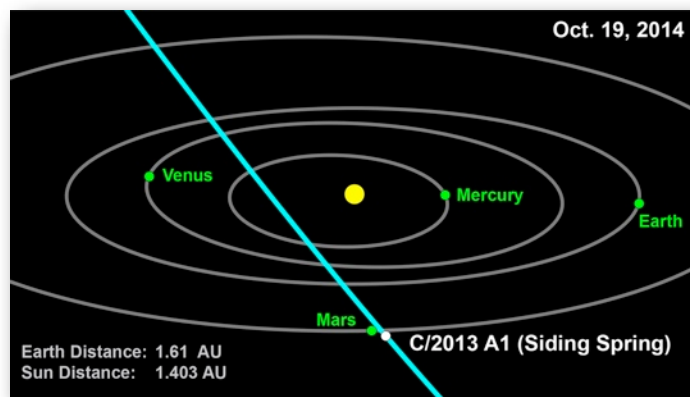
For comparison, the asteroid strike that ended the dinosaurs on Earth 65 million years ago was about three times as powerful. The meteor that exploded over Chelyabinsk, Russia, in February of 2013, was puny. The Mars comet is packing 80 million times more energy.

An impact wouldn't necessarily mean the end of NASA's Mars program. But it would transform the program-- along with Mars itself. "I think of it as a giant climate experiment," says Michael Meyer, lead scientist for the Mars Exploration Program at NASA headquarters. "An impact would loft a lot of stuff into the Martian atmosphere--dust, sand, water and other debris. The result could be a warmer, wetter Mars than we're accustomed to today."

Meyer worries that solar-powered Opportunity might have a hard time surviving if the atmosphere became opaque. Nuclear-powered Curiosity, though, would carry on just fine. He also notes that Mars orbiters might have trouble seeing the surface, for a while at least, until the debris begins to clear.

A direct impact remains unlikely. Paul Chodas of NASA's Near-Earth Object Program stresses that a 1 in 2000 chance of impact means there's a 1999 in 2000 chance of no impact. "A near-miss is far more likely," he points out. Even a near miss is a potentially big event. The latest orbit solutions put the comet somewhere within 300,000 km of the red planet at closest approach. That means Mars could find itself inside the comet's gassy, dusty atmosphere or "coma." Visually, the comet would reach 0th magnitude, that is, a few times brighter than a 1st magnitude star, as seen from the Red Planet.

"Cameras on ALL of NASA's spacecraft currently at Mars should be able to take photographs of Comet 2013 A1," says Jim Bell, a planetary scientist and Mars imaging specialist at Arizona State University.



This computer graphic depicts the orbit of comet 2013 A1 (Siding Spring) through the inner solar system. On Oct. 19, 2014, it is expected to pass within 300,000 km of Mars.

Image credit: NASA/JPL-Caltech

"The issue with the rovers will be power for imaging at night, Opportunity is solar powered and would need to use reserve battery power. Curiosity is nuclear powered, so it could have better odds at night-time imaging." Researchers will be keenly interested to see how the comet's atmosphere interacts with the atmosphere of Mars. For one thing, there could be a meteor shower. "Analyzing the meteor spectrum could reveal the chemistry of the upper atmosphere," notes Meyer.

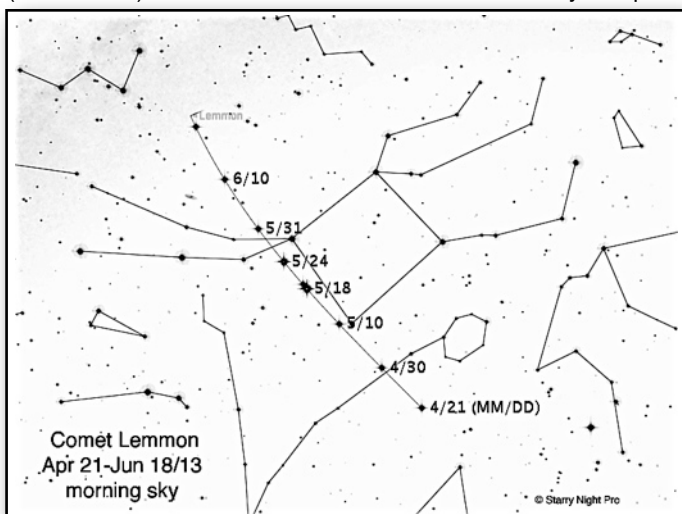
Even before the comet, NASA had been sending a spacecraft to Mars to study the dynamics of the Martian atmosphere. MAVEN (short for "Mars Atmosphere and Volatile Evolution"), is to be launched in November 2013, it would reach Mars just a few weeks before the comet in 2014. But, MAVEN won't be fully operational until perhaps two weeks after the comet passes.

Astronomers world-wide are monitoring 2013A1. As new data arrives, the error bars will shrink and Yeomans expects a direct hit to be ruled out. "The odds favor a flyby, not a collision," he says. Either way, this is going to be good.

Comet Lemmon Looking

Good in Southern Hemisphere

Like PanSTARRS, Comet Lemmon (C/1012 F6) will not be well placed for viewing for northern observers. It will also be low in the sky (morning this time), and fading as it moves away from the sun over the interval from mid-April into May and June. It has been easily observed by southern stargazers as the many images, (including APOD) show. At time of publication, Lemmon is mag 4, with a long ion tail showing up on photos (9° Mar 14). It will fade as it enters the N. sky. Hopefully the green colour will persist. The chart left shows the location of Lemmon in Psc and Pegasus this spring. The positions are given for about 5:45 am on the dates shown.



The chart left shows the location of Lemmon in Psc and Pegasus this spring. The positions are given for about 5:45 am on the dates shown.

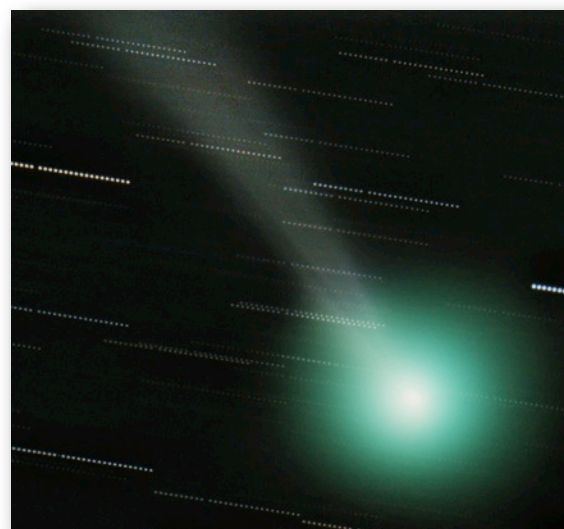


Image by Dennis Zambelis NSW AU. "The brief period of clear sky tonight allowed me to capture this beautiful visitor to our southern skies, Comet Lemmon. It is glowing green due to ethane outgassing from its nucleus as it approaches the Sun, the ethane glows due to interaction with the solar radiation. It is visible with binoculars in the low south-western skies. Captured with a modified Canon DSLR and a Celestron 14 telescope from Seaham just out of Newcastle". Image and caption posted on NBN News Newcastle, AU)

Messier Marathon report

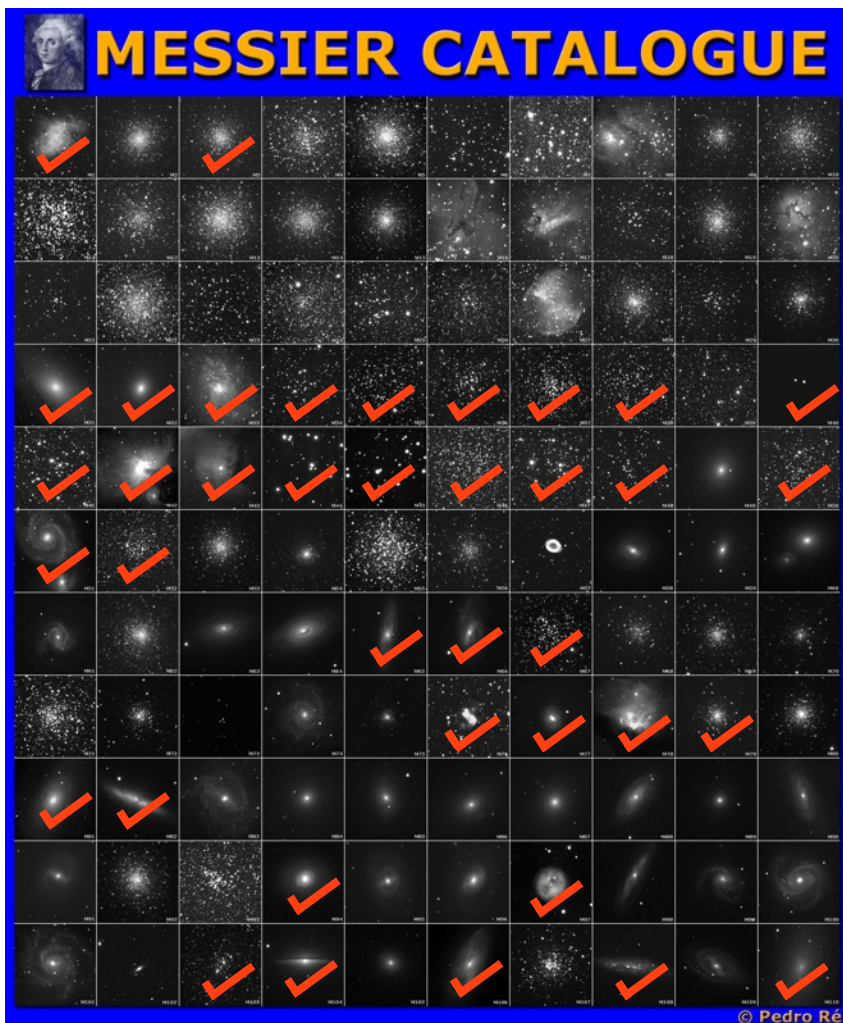
The Messier Marathon scheduled for Saturday Mar 9 was pushed ahead one night because forecasts showed a clear night Friday and cloud and rain moving on for the weekend. Re-scheduling was a GOOD move because, it turned into a great night -good dark skies and not too cold. We were able to last until midnight or so and one of us (Frank W.) got in a grand total of 35 Messier objects before lenses frosted over. (There is an advantage to having a Go-To mount.)

Aaron T. came in second with 31 and John H. sadly racked up only 23. Other observers who came (Lorraine R., Greg R., Jana G., Brett T.) were not keeping score but just having a great time under the stars and watching occasional meteors. We saw one that was very bright and broke into two pieces before fading out. This was another highlight of the night (apart from the good observing.)

The chart at right shows all of the Messier objects seen by observers through the night. Not all 38 checked items were seen by everyone, so the total checkmarks do not reflect the total number seen by a specific observer. Two of us (Lorraine R. and John H. tried to up the list by doing some more viewing a week later, but after only 4 were seen the skies clouded over and brought a halt to that attempt. You may remember what a beautiful day Thursday Mar. 14 was. However, before the cloud moved in, the early evening was just perfect for catching the first glimpse of Comet PanSTARRS from this area. See image and story below.

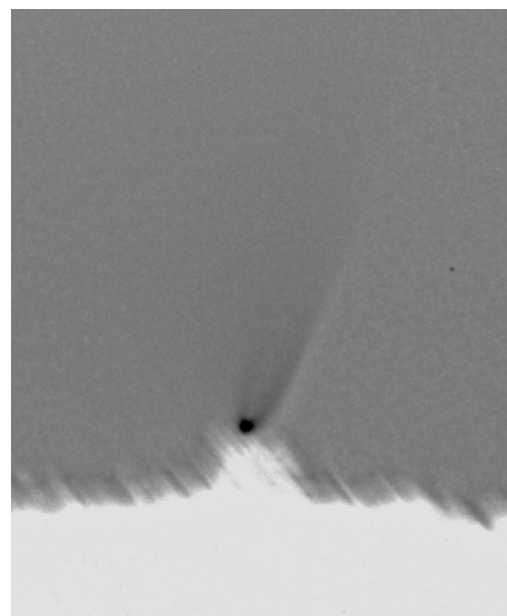
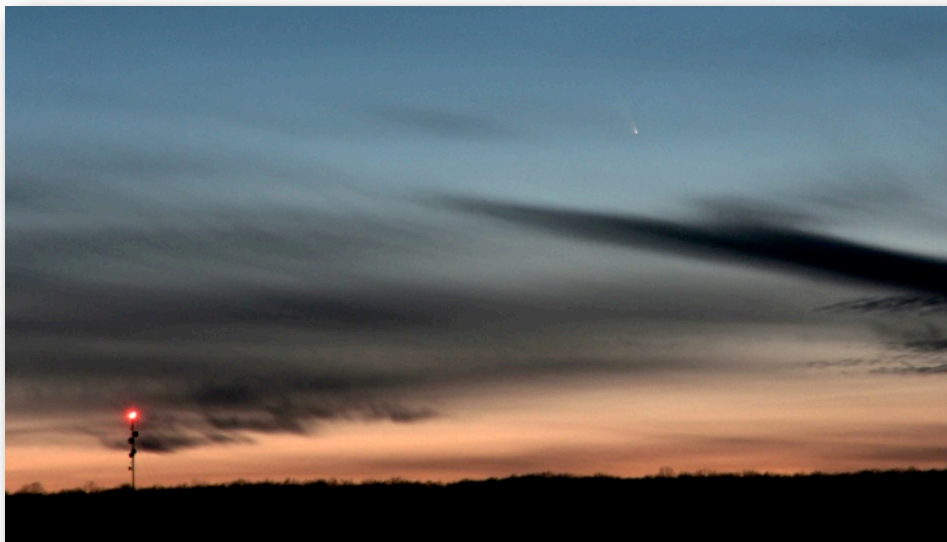
This chart shows images of the full Messier list and will be updated as we gradually work our way through the list.

Image credit: Pedro Re [<http://www.astrosurf.com/re>]



Comet PanSTARRS appears

Thank goodness one of those “dumb and dumber” moments did not lead to failure on the one clear night (so far) when Comet PanSTARRS was high enough to see in our northern skies. I forgot my charts, my telephoto lens and a suitably warm coat when I went out to try to catch the comet Mar 14. The daytime sky was impressively blue and the crisp temperature promised a fine evening of observing more Messier objects. Even though the sky closed in after 10 pm (so I only added 4 more Messiers), it was not bad after sunset for comet watching. I managed to locate it somewhat north of where I guessed it would be and got a few good images. It set around 9 pm but I was impressed at how bright the nucleus appeared. There were no nearby stars to compare it to, but my guess is around magnitude +1, anyway. The moon will not be a problem from Apr 1 to Apr 16.



A negative image of PanSTARRS shows more details in the tail structure. Taken Mar 18, 2013 by Doug Cunningham from Arizona with Limestone Mtn in the foreground. Canon 60Da / TAK TOA 150 Exp 7s 1000 ISO Doug Cunningham Photo, Mar 18, 2013

[See Doug's full article on the next page. -ed]

Comet Pan-STARRS (C/2011 L4) Disappoints

“Comets are like cats ... they both have tails ... and do precisely what they want.”

Dedicated Comet Hunter, David Levy

Yesterday, (March 23rd), Paula and I were hiking in Cave Creek Canyon near Portal, AZ, when we met a husband and wife birding couple. After discussing their dearth of bird sightings, they asked us about whether we had seen the new comet called Pan-STARRS (officially designated as C/2011 L4). The extensive media hype had certainly raised their expectations. They, like many others, had tried to find it, but failed. Even if you had a clear western horizon, you needed an astronomer to point you in the right direction. As we departed the husband said, “I remember Comet Hale-Bopp and I miss it!” We agreed! So far, in our astronomy experience, Comet Hale-Bopp was the best comet experience of our lives.

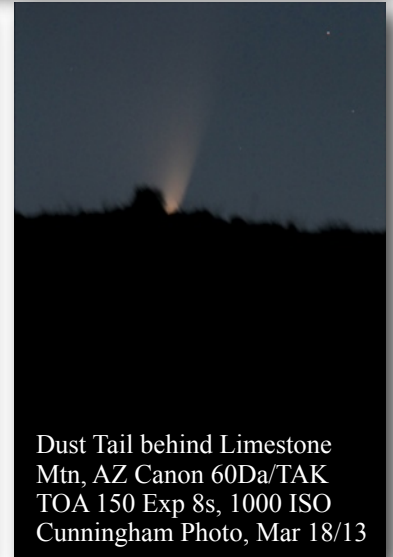
What a strange name for a comet: “Pan-STARRS”. Actually, it was discovered on June 6th, 2011, by an innovative imaging system called the Panoramic Survey Telescope & Rapid Response System, or Pan-STARRS. This telescope is located on the dormant volcano, Haleakala, on the Hawaiian island of Maui. It is the first (PS1) of four optical telescopes, each with a 1.8 m mirror to be installed on the island. The system is funded with the primary goal to locate and determine the orbital characteristics of Near-Earth Orbit Crossing asteroids/comets. Each telescope will image a 3° field of view, using the largest CCD camera ever built. This 1.4 billion pixel CCD camera will capture objects as faint as magnitude 24, using exposure times between 30 and 60 seconds. I found it interesting that each of the telescopes (PS1 to PS4) will image the same area of the sky to provide independent confirmation of hazardous asteroids. The comet, at discovery, was faint and shining at visual magnitude 19, 25,000 times fainter than the faintest star that can be seen with the unaided eye.

The first time that Paula and I saw Comet Pan-STARRS was on March 12th, when we joined Rick Beno and his wife, Vicki, along with our guests from Ontario, Steve and Bev Miller, and travelled about 15 miles into New Mexico to get out of the shadow of Arizona’s Chiricahua Mountains. About 8 of us were assembled there with our various observing devices: imaged stabilized binoculars, a spotting scope, and a Meade 12 inch SCT. The western sky was clear and utterly transparent, perfect for this first viewing. The Chiricahua Mountains seemed etched on the horizon. Paula, using her Canon IS 12x36 binoculars, was the first to pick out Pan-STARRS located to the left of a thin crescent Moon. We watched as a fascinating spectacle unfolded. The comet and a thin crescent Moon set behind the distant Chiricahua mountains in air that was so clear and steady we could easily see earthshine on the Moon. The Moon’s sunlit crescent was broken into two sharp arcs by the distant mountains which made it look like a “happy face smile” with the central teeth missing. Even better, we watched as Pan-STARRS set behind those same mountains and, after the brighter comet nucleus had been occulted, the comet’s tail was still visible projecting above the mountain. Earthshine and comet tail were visible at the same time! A very COOL observing experience! Our neighbor, Fred Espanak, journeyed to a nearby location south of San Simone and he made a wonderful video of the whole event. You can see his video and relive our own experience at <http://www.astropixels.com/blog/>. Seeing the comet tail above the mountains inspired me and six nights later, on March 18th, I was able to record my own image of the Pan-STARRS’ tail after its nucleus had set behind the local mountains.

So, actually, in spite of this article’s title, Comet Pan-STARRS did not disappoint us. Granted, it was no Hale-Bopp, and we did have a



Comet tail over Limestone Mtn, AZ, Canon 60Da / TAK TOA 150 Exp 7s 1000 ISO Doug Cunningham Photo, Mar 18/13



Dust Tail behind Limestone Mtn, AZ Canon 60Da/TAK TOA 150 Exp 8s, 1000 ISO Cunningham Photo, Mar 18/13

few nice views of it on March 12th, 16th, and 18th. However, after March 18th, desert dust storms combined with horizon clouds offered only marginal views of a dimming, receding comet.

The mixed reactions of the general public to Pan-STARRS is understandable. I can trace their disappointment to the high expectations, generated by media hype, which were then dashed by the comet’s innate character and compromised observing conditions. Firstly, there was a brightness problem with Comet Pan-STARRS. This comet came within 45 million km of the Sun at perihelion and became what astronomers call a “sun grazer”. This close approach resulted in the over-optimistic predictions for its brightness when it later appeared in our northern hemisphere. Comet Pan-STARRS appears to be a fresh comet from the outer Oort cloud and comets like this, when they are warmed by the Sun on their first approach, have a history of brightening early and then dimming after their thin coating of volatiles evaporates. David Levy was right. Comets, like cats, are highly unpredictable objects and aren’t bound by any astronomers’ predictions.

Although Pan-STARRS had been predicted to be much brighter, it only got to a visual magnitude of 2.5-3.0, slightly fainter than the Big Dipper stars. Three factors then conspired to reduce the comet’s visibility. Firstly, the light of the comet was not concentrated like that of a star. Instead, it was spread out over an apparent area about ½ the size of the Moon. Secondly, the comet was located low in the western sky, just after sunset. At that elevation, the contrast between its dust tail and the evening twilight was dramatically compromised. Thirdly, scattered light from the waxing gibbous Moon further reduced the contrast. Added to these difficulties was the fact that observers had to know where to look in a brief observing window of about 45 minutes’ duration. No wonder the comet was described by many people as “under-whelming”!

Gemini (Gem)

α-Gemini - Castor β-Gemini - Pollux
 γ-Gemini - Alhena δ-Gemini - Wasat
 ε-Gemini - Mebusta ζ-Gemini - Mekbuda
 η-Gemini - Propus μ-Gemini - Tejat

Gemini is a conspicuous zodiacal constellation made up of two almost parallel lines of stars with two bright stars, Castor and Pollux, at the head of each line. Castor and Pollux have long been known as the Twins and give the constellation its name. Pollux has a magnitude of 1.2, making it the 15th brightest star in the heavens. The star 1-Gemini is almost exactly at the location of the summer solstice, the northernmost point of the sun's journey around the celestial sphere. It was in Gemini that the planets Uranus and Pluto were first discovered; Uranus near η-Gemini and Pluto near δ-Gemini. M35, an open cluster, is a beautiful and impressive sight in fieldglasses.

DOUBLE STARS

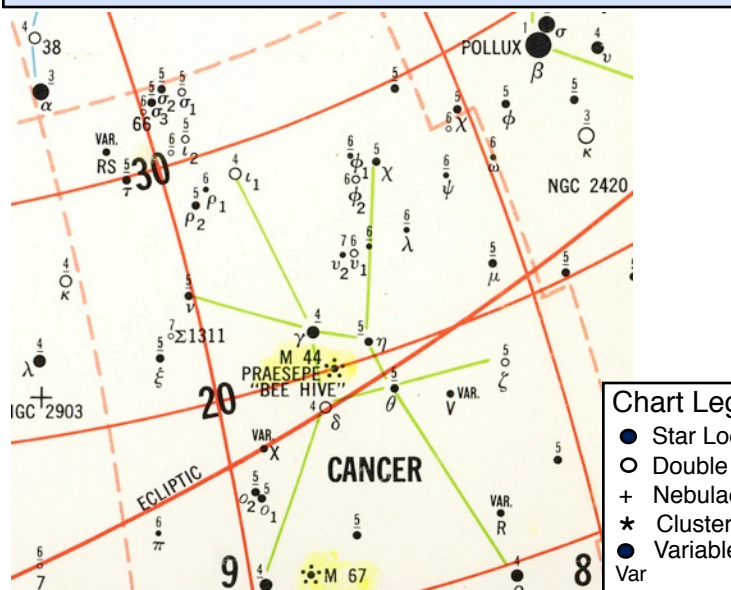
	Mag.	Sep (s)	Location	Remarks
α	2.0-2.8	5	073232	Both Greenish-White; beautiful.
δ	3.5-8.0	7	071722	Yellow-Magenta.
ε	3.0-10.0	112	064125	
κ	3.7-8.0	6	074225	Orange-Pale Blue.
λ	3.6-10.0	10	071517	Pale Green-Blue.
15	7.0-9.0	29	062521	White-Blue.
20	6.0-6.9	20	062817	
38	4.7-8.0	7	065213	Yellow-Blue; good contrast.
0Σ156	6.8-7.0	0.5	064418	

MESSIER OBJECTS

	Mag	Location	Remarks
M35	5.3	060624	Open Cluster. Considered to be one of the most beautiful in the sky.

Other Objects of Interest in Gemini

η-Gemini - Semi-regular variable (period 233.4 days), magnitude range 3.2-4.2.
 ζ-Gemini - Cepheid variable, period 10 days 3 hr. 41 min., magnitude range 3.7-4.5.
 NGC 2392 - A planetary nebula with an 8th magnitude star in its center. Location 072721.



Cancer (Cnc)

Cancer is a zodiacal constellation east of Leo and directly above the head of Hydra. The stars in this constellation are of the 4th and 5th magnitudes; it is the most inconspicuous of the zodiacal constellations. Its most interesting feature is the coarse open cluster Praesepe, more often called the "Bee-Hive." It is barely visible to the naked eye, but in binoculars it is a beautiful sight. It lies just north of the ecliptic contained in the rough square formed by the stars γ, δ, η and θ-Cncrī. ι-Cncrī is a fieldglass double.

DOUBLE STARS

	Mag.	Sep (s)	Location	Remarks
ζ	5.7-6.0-6.3-7.8	6-0.9-0.2	081018	Quadruple; only two, 6" apart vis. in small scope. Yellow-Or.
ι1	4.2-6.6	31	084429	Yellow-Blue; fine contrast.
ν1	6.0-7.1	6	082924	
φ2	6.3-6.3	6	082427	
66	6.0-8.1	5	085932	
Σ1245	6.0-7.2	10	083307	
Σ1311	6.8-7.3	8	090423	

MESSIER OBJECTS

	Mag	Location	Remarks
M44	3.7	083720	Open Cluster. "The Beehive;" a coarse cluster 500 ly away; 358 stars to 18th mag.
M67	6.1	084912	Open Cluster. Stars of mag 9 to 12.5, surrounded by brighter stars in a semi-circle. Resembles nebula in a small scope.

Other Objects of Interest in Cancer

γ-Cncrī - Frequently occulted by the moon; an interesting sight. Dates and times given in Observer's Handbook.
 R-Cncrī - Long period (362 d) variable; max 6.8, Location 081312.
 V-Cncrī - Long period (272 d) variable; max 7.9, Location 081817.

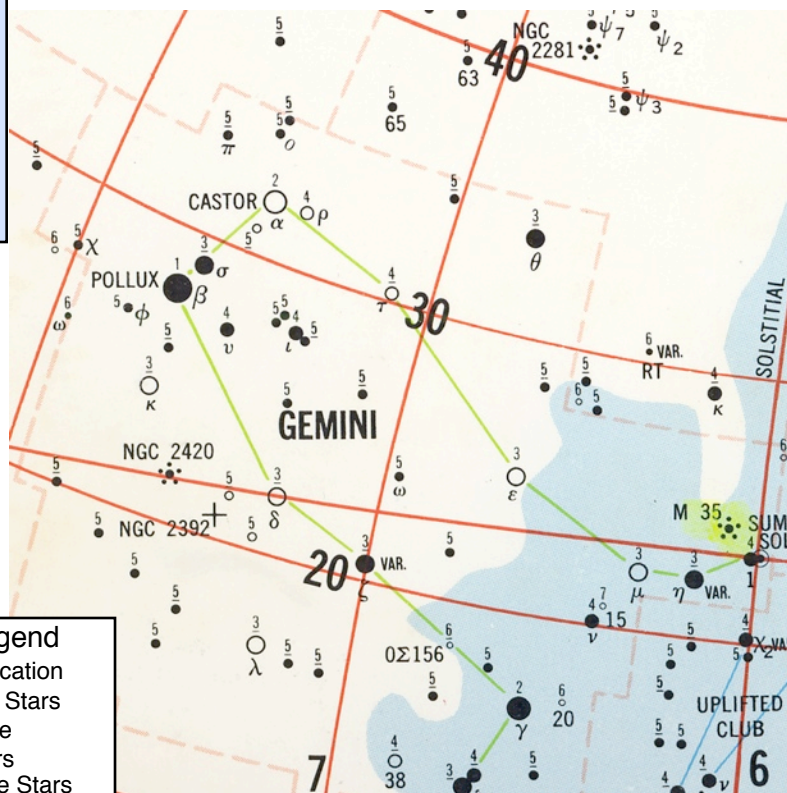


Chart Legend

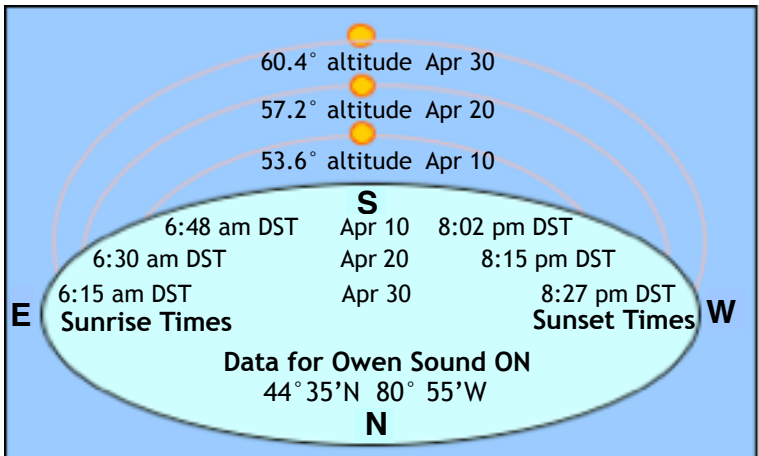
- Star Location
- Double Stars
- + Nebulae
- ★ Clusters
- Variable Stars
- Var

- Apr 3 Last Quarter Moon rises at 2:56 am DST
- Apr 4 Comet PanSTARRS nearest M31
- Apr 8 Mercury 7° S of Moon
- Apr 10 New Moon rises at 6:42 am DST
- Apr 14 Jupiter 2° N of Moon
- Apr 15 Moon at apogee (404 862 km)
- Apr 18 First Quarter Moon rises at 12:42 pm DST
- Apr 19 Mercury 2° S of Uranus
Occultation of 71 Ori (mag 5.2) by Moon 10:54 pm DST
- Apr 20 Start looking for Comet Lemmon, dawn sky. See p.7
- Apr 22 Lyrid meteors peak 20/h (7:00 am DST)
- Apr 24 Spica 0.004° S of Moon, occultation (not vis. here)
- Apr 25 Full Moon (Grass Moon) rises at 8:33 pm DST
Saturn 4° N of Moon
Penumbral Lunar Eclipse (visible in E. Hemisphere only)
- Apr 27 Moon at perigee (363 268 km)
Occultation of κ-Lib (mag 4.8) by Moon 4:54 am DST
- Apr 28 Saturn at opposition mag 0.2, ring tilt is 18°

Planets

MERCURY, stays close to the Sun for all of April and is a difficult target. It is a bit better later in April. **VENUS**, (-3.9), is also in the sun's glare in the western sky and improves slightly toward month-end. **MARS** is in conjunction with the Sun and not visible until June or July. **JUPITER**, (-2.1) is well-placed in the evening sky in Taurus but by the end of the month will be setting by midnight. **SATURN**, (mag 0.2), rises at 10 pm DST Apr 1 and is 20° high by dark on Apr 30. It is at opposition on Apr 28. Ring tilt is still 18° or so. **URANUS**, (5.7) is too close to the sun to see this month. **NEPTUNE**, (7.8) is in bright twilight close to the sun and equally difficult for viewing. Finder charts for the **asteroid, Vesta (7.8)** and dwarf planet, **Ceres (8.1)** can now be found on the BAS website. Ceres is between Gemini and Auriga and Vesta will be between the horns of Taurus for the first week of April only. **PLUTO** (mag. 14) is a dawn planet and only 22 degrees high in Sagittarius at the start of morning twilight.

The diagram below gives the sunrise/sunset times and the sun's altitude on three dates this month. The sun continues climbing in elevation this month. The moon calendar below the sun chart shows lunar phases for the month. Times of moonrise for NM, FQ, FM and LQ are in the Sky Calendar listing at left.



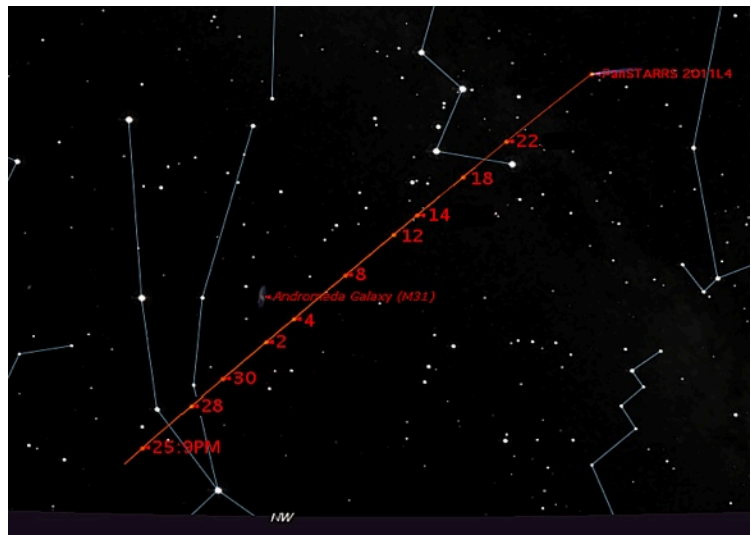
BAS Events

- Apr 3 **BAS meeting** Grey Roots Museum 7 pm
- Astronomy Trivia Quiz Night (fun, prizes, learn astronomy!)**
- Apr 6 (LQ+4) **BAS viewing @Fox** ES Fox @dark
(backup Apr 13 Sat NM+3)
- Apr 13/14 (NM +3) Jupiter, Crescent Moon in Hyades visible anywhere with low western horizon
- Apr 13 **Community Club Fair** at OS Library 9:30 to 3:00 pm (volunteers needed to baby-sit the displays, hand out stuff)
- Apr 14 to 20 **Astronomy Week**
- Apr 16 (FQ-2) **Celebrate the Night Sky talk** Grey Roots Museum 7:30 pm Speaker Joan Skelton, **Public viewing after 9 pm** (Members & scopes appreciated) backup Apr 20 @Fox
- Apr 20 (FQ+2) **Astronomy Day** ES Fox @dark (additional to Apr 16 GR viewing)
- Apr 28 Saturn at opposition mag = 0.1 but good Saturn viewing lasts several months before/after

Special Events

PanSTARRS (cont'd)

Comet PanSTARRS Mar 25 (9pm) to April 22. Now outward bound, it is fading noticeably. Comet Lemmon is next. See page 7 above.



April 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3 LQ	4	5	6
	7	8	9	10 NM	11	12
	13	14	15	16	17	18 FQ
	19	20	21	22	23	24
	25 FM	26	27	28	29	30

By permission
University of Texas
McDonald Observatory

BAS Member Loaner Scopes

Solar H-alpha scope now available!

Our Lunt solar scope is now available for loan by BAS members! You need to provide a mount like a heavy-duty tripod, or a regular equatorial or azimuth mount). A short training session will be provided on pickup.

BOTH 12-inch Dobs now available.

BOTH 12-inch telescopes are now available for the winter, and we have at least one 8-inch dobsonian for free member loan. Contact Brett T. or John H. if you are interested.

Scopes come in and out periodically so keep checking with Brett or John if you are interested in a loaner.



SGN Classified Ads Section

(Now also on our website)



FOR SALE: Canon EOS 50D DSLR (body only)

15.1 Mp Excellent noise reduction features for night photos. Includes spare battery and charger, strap, software and manual.

Asking \$ 600. John H. 519 371-0670 stargazer@wightman.ca

Information about the 50D can be found here:

http://en.wikipedia.org/wiki/Canon_EOS_50D

and here: <http://www.imaging-resource.com/PRODS/E50D/E50DA.HTM>

FOR SALE: Televue Pronto

2 element E.D. Refractor, 2.7" / 70mm diameter. f.l. 480mm, f/6.8. with 1-1/4" Star Diagonal, with 45 degree Prism diagonal (for terrestrial viewing), with Televue Red dot finder, complete with TeleVue Soft Case. Asking \$ 700.-- Firm Anton VanDijk 519 376-9912 ravand@rogers.com



FREE STUFF:

Andreas Gada has donated back issues of Sky & Telescope and Astronomy magazines

These are free to pick up at the ES Fox Observatory

Next time you are there, HELP YOURSELF !

MORE FREE STUFF:

We are accumulating several small refractors and other equipment that we cannot use.

Check out the FREEBIE SCOPE BIN at the ES Fox Observatory

Next time you are there, HELP YOURSELF !

SGN Recipe: "Successful Launch" Beans

Successful Launch Beans

Courtesy of Norm Carlson, former NASA Test Director Chief

- Put 6 lbs. of dried **Great Northern Beans** in an 18-quart electric cooker.
- Cut 10 lbs. of **smoked ham** into cubes.
- Add ham and ham bones to beans.
- Add ½ shaker of **lemon pepper**.
- Add 3 lbs. chopped **onions**.
- Add 2 stalks chopped **celery**.
- Add 1 tsp. **liquid smoke**.
- Cover with water and cook for at least 8 hours.
- Enjoy!

Famous Launch Day Cornbread

Martha White Self-Rising Corn Muffin Mix
Follow directions on box.

For Sale: Genuine Fake Chelyabinsk Meteorite

A quick check on the meteorite market on the Internet shows a number of Chelyabinsk meteorites for sale. Present asking price for unregistered specimens is between \$20 and \$40 USD per gram. The sample in the ad at right is 19 gm and should fetch around \$400. This is no April Fool joke and you can see that this seller is trying to sucker someone in. Once again: CAVEAT EMPTOR! Officially, the Russian government is supposed to authenticate these specimens but no one turns them in so who knows what you are getting.

NOTE!!!

[galeriacores](#) [auctions](#)

BEFORE CHELYABINSK:



Auction: [Oum Dreyga](#) witnessed 2003 Meteorite fall 19.3gr INDIVIDUAL ONDA2
Price US \$239.00

AFTER CHELYABINSK:



Auction: [Chelyabinsk RUSSIA 2013 Meteor Event](#) 19.00gr Very Rare Meteorite Specimen
Price US \$750.00

More about eBay seller [Galeriacores](#)

(Buy only from [IMCA](#) members or trusted dealers!)

X-Rated Constellations?

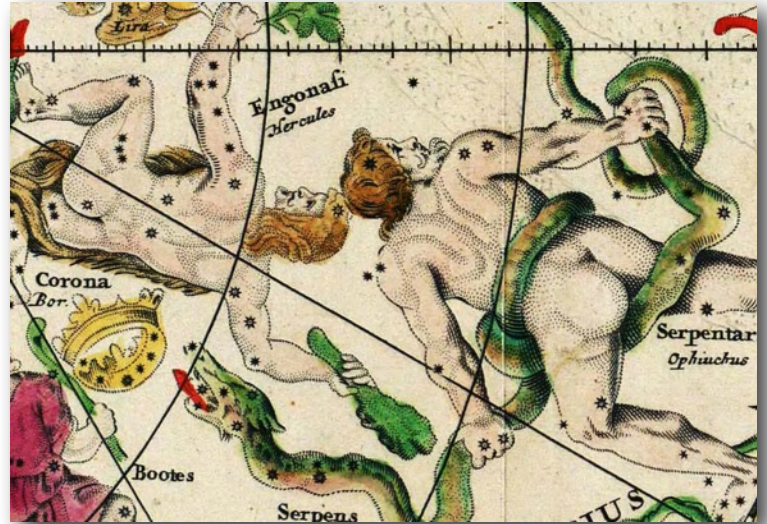
By NICK JEFFREYS

HIGH atop Siberia's famous Nevitch Observatory, an astronomer has uncovered mysteries of the night sky for adults only -- heavenly bodies so sexy they've been dubbed "The X-Rated Constellations" figures. "Using my own invention -- the UR2nawT Space Telescope -- I've been able to see below Orion's Belt and enter a peep show of wonders invisible to the naked eye," world-renowned star charter Dr. Ivan Pervyski, top professor at the Siberia School of Space, told the Russian Daily Newski via high-tech satellite phone.

"I've spotted and plotted star systems shaped like male genitalia, rounded female breasts, curvaceous bottoms and fondling figures. I've even discovered more than a few couples engaged in "hanky-panky" -- you know what I mean".

"My diagrams illustrate two of the most well-known constellations -- Hercules and Orion the Hunter -- in a very interesting star position that I was unable to see with the old-fashioned telescopes. This was a position I did not believe was possible, but there it was! I guarantee the entire scientific community will be breathless after viewing them."

For more than 6,000 years stargazers have been looking up into the darkness, working hard to connect the bright dots into pictures. So far, 88 official constellations have been recognized and recorded, including the 12 astrological signs of the zodiac. "I can tell you that Virgo is no Virgin!" says Pervyski. "She is part of a constellation I named the Andromeda Three-some."



The pioneering professor began making observations from Nevitch five years ago. "The very first night I was looking over Hercules, my favorite constellation. With the improved optics, I discovered I could really study his rippling muscles, strong biceps, manly chest, heaving . . . um, yes, there were many aspects of the image I had never been able to pinpoint before.

"The work was so stimulating I couldn't stop. I grabbed a piece of paper and began to draw. Days turned into weeks, weeks into months. I was in a fever. For five years, I have been awake every night, drawing and sketching these shockingly pleasing images. I hope the world is ready to see what is really going on in the darkness. My finished work -- Atlas of the Sexual Sky (ASS) -- will only be available to students 21 years of age and over." [publication date is sometime in April 2013 -ed]

Mars Rovers in Head-On Collision on Mars

Houston TX-- NASA reported incredible bad luck with its twin rovers on Mars today. The Spirit probe had a devastating head-on collision with the Opportunity probe. Both rovers were completely destroyed in the mishap.

The Martian rovers have been operating since early 2004. The twins landed on opposite sides of the Red Planet and have been exploring Mars ever since. NASA recently let the rovers explore 'at will'. NASA chief Buzz Allgrin said this was the main cause of the accident.

"Mars is 8,950,000 square miles. The rovers are only five feet across. The chances for collision seemed miniscule. I still can't believe it happened!" said the chief while shaking his head.

The martian rovers had their accident at Cydonia Planitia, right in front of the famous 'Face on Mars'.

"Oh, that's just a coincidence too. There's nothing going on there, the planet is completely dead." Chief Allgrin said very quickly.

The NASA chief also said the agency had learned its lesson.

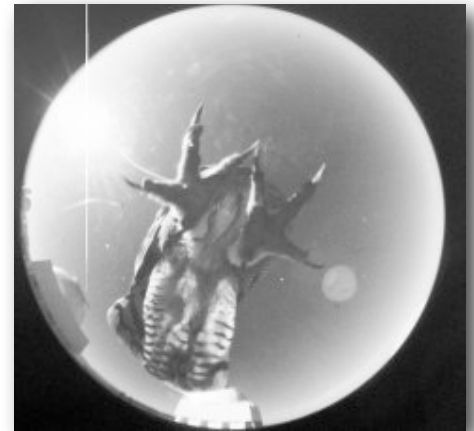
"We just won't have more than one rover operating on Mars. The universe is much smaller than people think!"

Universe ages 80 million years in single day

Thursday, 21 March 2013

Fans of utter bollocks are today enraptured by the news that people posing as scientists are claiming that the universe is 80 million years older today than stated yesterday.

According to George Esfthathiou, "There's less stuff that we don't understand by a tiny amount." (NB this is a genuine quote by a genuine 'scientist'). Of course the extra 80 million years will have to be filled up with various evolutionary fairytales, such as fish deciding to walk on land and lizards choosing to fly. We contacted atheist fundamentalist and evolution crackpot Richard Dawkins, but he was unavailable for comment, since he was in Italy at the inauguration of Pope Francis.



DID YOU KNOW that a new constellation has just taken hold of the sky, much to the surprise of many sky gazers? The constellation of Ollie the Owl has suddenly started dominating the southern hemisphere, as shown above. The constellation is taking the place of Wrinkles the

Rhinoceros, who was unexpectedly voted off the sky by the other constellations. Astronomers have discovered a new black hole in this constellation which Dr. Ivan Pervysk (see item above) has included in his new atlas, "ASS" due to be published on Apr 1, 2013.

