



Clear Skies

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Greetings!

Welcome to the Cowichan Valley Starfinders Astronomy club's "Clear Skies" monthly newsletter.

What happened? It all went by so fast, summer vacations are over the kids are back at school and we are all slowly getting back into our regular routines. It seems like only yesterday we were organizing the star party. As you know we receive the bulk of our membership at the star party, however, I would like to make mention and welcome our newest CVSF members: Chantal and Jason MacLeod, Alan C. Jarvis and Bill McGowan.

On September 6th we had our last Sidewalk Astronomy session at the Downtown Duncan Farmers Market. Thanks goes out to Nancy K, Jamie N, Chantal M, Ed N, Trudy T, Ed M, Dave P and Bryon T for their time and effort promoting astronomy. In total we held five sessions with the farmers market from April thru September. I know the market was thrilled to have us there and would like us to come out next year. It is a wonderful opportunity for our club to raise public awareness of astronomy and the world around us. So a "BIG" thanks to all who made this partnership with the Duncan Farmers Market such a great success.

Weather wise we have been fortunate here on the island to have some wonderful warm weather during the day and some exceptional viewing nights. Check out "The Sky this Month" to know when to view the "Hunters Moon" and witness the Orionid meteor shower. And if your interested to know whats flying by your backyard at night go to the Satellite tracker link in the Web News section.

Many thanks to this month's contributors: Moe Raven and Bryon Thompson

Freda Eckstein

"Shoot for the moon. Even if you miss, you'll land among the stars". ~Les Brown

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Meeting Highlights

Meetings are held on the **4th Wednesday** of each month at the home of Bryon and Freda. See the website for a map or follow these directions.

Island Hwy, Mill Bay

Turn on Frayne Rd towards ocean (Serious Coffee is on the corner)

Turn right on Huckleberry Rd

3rd house on the left across from Springbank road and Mail boxes.

Look for the STAR sign

Please park on Huckleberry or Springbank Rd's.

Call Brian 743-6633 if you need directions

Our October meeting will be held at 7:30 on WEDNESDAY October 22nd.

Hope to see you all there.

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Minutes - August

By Freda Eckstein

At our August meeting we watched "Catching a Comet". It was all about the first U.S. space mission dedicated solely to the exploration of a comet, and the first robotic mission designed to return extraterrestrial material from outside the orbit of the Moon. The Stardust mission was to collect dust and carbon-based samples during its closest encounter with Comet Wild 2. The craft was launched in February 1999 on a seven year mission which travelled three billion miles when it came to a successful close in January 2006. The capsule carrying cometary and interstellar particles successfully touched down in the Utah desert. Now it is the scientists turn to examine the stardust in the lab in hopes to verify the theories that comets are responsible for most of the water on earth and that every atom on earth is made up of interstellar stardust. Another NASA comet mission was Deep Impact where the mission was to crash a probe into comet Tempel 1 in order to better understand the comet's surface and particles underneath and also identify what a comet is made of. The mission took place from November 1999 through May 2001. And finally, the European Space Agency (ESA) has a current mission called Rosetta which was launched in March 2004 and will enter orbit around Comet 67P/Churyumov-Gerasimenko in 2014. Rosetta's journey takes it out to 5.25 AU (about 790 million kilometers from the Sun) and will return to earth on December 2015. Rosetta's mission is to search for organic signatures to verify if comets seeded life on earth. These icy leftovers from the formation of the planets may hold the key to unlocking the mysteries of life's beginning. Stardust, Deep Impact and ESA's comet chaser Rosetta are leading the quest to find out. Thanks Moe for supplying the video.

For more information about upcoming meeting dates go to [Starfinders Meetings](#) [back](#)

Upcoming Events

Enter the Astronomy and Meade 2009 Winter Sweepstakes for your chance to win six amazing prizes <http://www.astronomy.com/asy/default.aspx?c=a&id=7342> Must be received online by December 19, 2008. [back](#)

Web News

For the ultimate astronomer this is living! Check out Jack and Alice's newest endeavour "Arizona Sky Village" <http://www.arizonaskyvillage.com/>. Referenced in October's Astronomy magazine.

Here's a good site submitted by Bryon T: Space Weather.com has a Satellite Tracker that monitors the Lacrosse 3 spy satellite, the International Space Station, the Early Ammonia Servicer and NASA's Hubble Space Telescope. If you want to know what's flying by your area, just go to the link and enter in your postal code. <http://spaceweather.com/flybys/?PHPSESSID=hho6o6659e8e3n1mtaihnc2p4b5> [back](#)

Cool Pics

Want to show off your latest pics? Well here's your chance; email the editor at [My Cool Pics](#) and we will try to post them in the next edition of "Clear Skies".

Check out our Photo gallery on the website where you can find pics from the Island Star Party (ISP). Quick link is <http://starfinders.ca/photos.htm> [back](#)

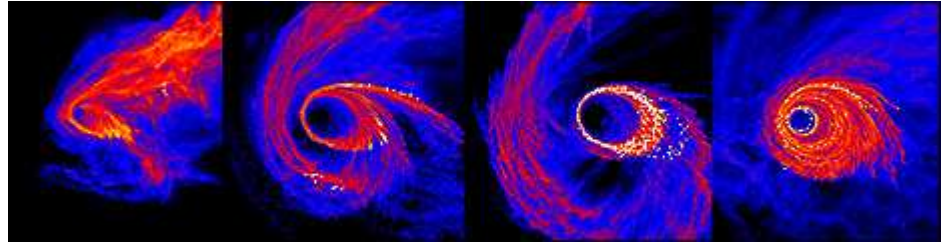
Featured Articles

Articles

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Black Hole Star Mystery 'Solved' - August 23/08 Credit BBC News



The researchers modelled how molecular clouds are sucked into black holes

Astronomers have shed light on how stars can form around a massive black hole, defying conventional wisdom.

Scientists have long wondered how stars develop in such extreme conditions. Molecular clouds - the normal birth places of stars - would be ripped apart by the immense gravity, a team explains in *Science* magazine. But the researchers say stars can form from elliptical discs - the relics of giant gas clouds torn apart by encounters with black holes.

They made the discovery after developing computer simulations of giant gas clouds being sucked into black holes like water spiraling down a plughole. "These simulations show that young stars can form in the neighbourhood of supermassive black holes as long as there is a reasonable supply of massive clouds of gas from further out in the galaxy," said co-author Ian Bonnell from St Andrews University, UK.

Ripped apart

Their findings are in accordance with actual observations in our Milky Way galaxy that indicate the presence of a massive black hole, surrounded by huge stars with eccentric orbits.

The simulations, performed on a supercomputer - and taking over a year of computing time - followed the evolution of two separate giant gas clouds up to 100,000 times the mass of the Sun, as they fell towards the supermassive black hole.

The simulations show how the clouds are pulled apart by the immense gravitational pull of the black hole.

The disrupted clouds form into spiral patterns as they orbit the black hole; the spiral patterns remove motion energy from gas that passes close to the black hole and transfers it to gas that passes further out. This allows part of the cloud to be captured by the black hole while the rest escapes. In these conditions, only high mass stars are able to form and these stars inherit the eccentric orbits from the elliptical disc.

These results match the two primary properties of the young stars in the centre of our galaxy: their high mass and their eccentric orbits around the supermassive black hole.

"That the stars currently present around the galaxy's supermassive black hole have relatively short lifetimes of [about] 10 million years, which suggests that this process is likely to be repetitive," Professor Bonnell explained. "Such a steady supply of stars into the vicinity of the black hole, and a diet of gas directly accreted by the black hole, may help us understand the origin of supermassive black holes in our and other galaxies in the Universe."

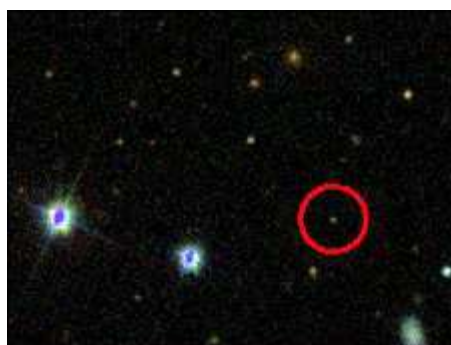
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Sky Survey Yields New Cosmic Haul - August 25/08 Credit BBC News

Astronomers looking through the data from the Sloan Digital Sky Survey, the world's largest survey of galaxies, have found a new haul of objects closer to home - including one with a potentially exotic origin. By searching through a survey region known as Stripe 82, a team led by Dr Andrew Becker of the University of Washington, has discovered almost 50 new asteroid-sized bodies in the outer regions of our Solar System.



As part of a search for supernovae - exploding stars in distant galaxies - the robotic Sloan telescope in New Mexico revisited this area of the southern sky every three days. By comparing images taken on different nights, the Washington team was able to detect the asteroids as they moved across the sky. As team member Dr Lynne Jones pointed out: "If you can find things that explode, you can also find things that move, but you need different tools to look for them."



While most of the newly discovered objects are normal members of the Kuiper belt, a large band of icy bodies stretching beyond the orbit of Neptune, there were also surprises. The team discovered two Neptunian Trojans, asteroids which share the same orbit as the outermost giant planet. "Jupiter has plenty of trojans," Dr Becker told me, "and we knew that Neptune must have a similar population of objects.

Surprisingly, not many had been found before this survey." The team's prize find

is an object given the temporary designation of 2006 SQ372. This icy body is currently roughly two billion miles away, just closer to the Sun than Neptune, but is beginning a journey that will take it out to a distance of 150 billion miles from the Earth.

Unpredictable fate

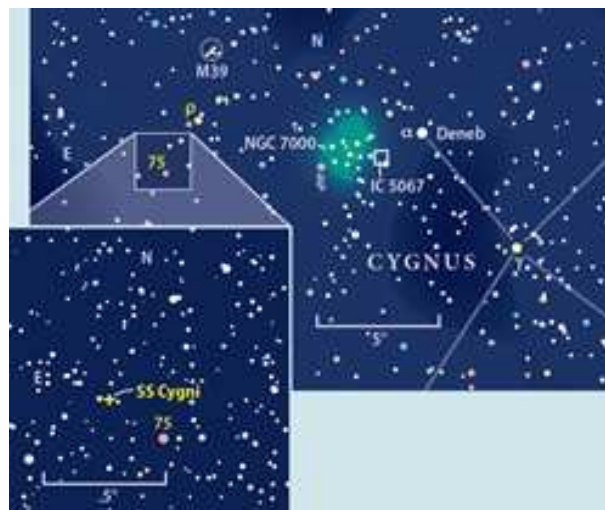
The new object is only 30-60 miles across, and not a normal asteroid: "It's probably a mixture of ice and rock, rather like a comet although it never comes close enough to the Sun to develop a tail," said Dr Becker. The new object's orbit is also unusual; only one other object - Sedna, discovered in 2003 - might come from the same region of the Solar System. Dr Becker told me that simulations carried out by a third member of the team, Nathan Kaib, show that 2006 SQ372 won't stay in its current orbit for long (by astronomical standards at least).

"Sedna is in a stable orbit, and has probably been there for billions of years, but in more than half of our simulations our new object got too close to either Uranus or Neptune within 180 million years," he explained. An interaction with either of its large neighbours would send 2006 SQ372 spinning in a random direction, leaving its fate impossible to predict. In the meantime, Sedna and 2006 SQ372 might represent the first two known objects to have come from the inner edge of the Oort cloud, a vast reservoir of cometary material believed to exist right on the edge of the Solar System.

Only further study will confirm if this really is the new object's home, but in the meantime the discoverers are thinking of a permanent name, presenting Dr Becker with a dilemma. "It will end up with the name of either a centaur, or a mythological name associated with the underworld or creation," he pondered. "I would certainly prefer the underworld scenario! Too much heavy metal music in my iPod!"

SS Cygni in Outburst— August 26/08 Credit Astronomy.com.

My "Observing basics" column in the September issue of Astronomy features the cataclysmic variable star SS Cygni. In describing this fascinating object, I wrote: "Since its discovery in 1896, SS Cygni has captivated astronomers. It ranks as one of the most popular objects in the American Association of Variable Star Observers' (AAVSO) observing program.



Unlike pulsating variable stars, typified by Mira (Omicron [o] Ceti) and Delta (δ) Cephei, SS Cygni owes its brightness changes to an interaction between the members of a close binary system: a small red star orbiting a white dwarf. Matter stolen from the former by the latter's gravity hurtles toward the white dwarf, forming a rapidly spiraling accretion disk. Heightened activity in the accretion ring is believed to be the outburst's catalyst.

Once in outburst, SS Cygni will remain "up" for a week or two before fading back into quiescence. Because of their explosive nature, SS Cygni and other dwarf novae, as well as novae and supernovae, are classified as cataclysmic variables (CVs)."

When the September issue hit the newsstands, SS Cygni was in its usual quiescent state — a mere 12th-magnitude flicker. Readers who heeded my call to check out SS Cygni each clear night in anticipation of its next outburst didn't have to wait long. Last Thursday evening, August 21, I observed SS Cygni and recorded its magnitude at 11.7. The next night, SS Cygni had jumped a nearly full magnitude to 10.8. The outburst had begun! For the past three evenings, I've watched SS Cygni continue to slowly brighten to magnitude 9.0 on Monday, August 25. I expect it to be even brighter tonight. The current outburst differs from typical SS Cygni flare-ups, which usually exhibit a rise from 12th magnitude to around 8th in less than a day. Occasionally, SS Cygni takes its time, requiring several days to reach maximum. This seems to be the case this time.

If you missed this outburst, you can still catch SS Cygni in its "up" state. SS Cygni usually remains at peak brightness for a week or two before fading back to 12th magnitude. Because outbursts occur every 50 to 60 days, the next one might occur sometime in late October or early November.

Alas, my prediction in my September column that the next SS Cygni outburst would occur around the 15th was way off!

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Naked-Eye Gamma-ray Burst Aimed Directly at Earth—

September 10/08 Credit Science@NASA.

Astronomers announced today that a remarkable gamma-ray burst visible to the human eye earlier this year came from an explosive stellar jet aimed almost directly at Earth.

Right: an artist's concept.

NASA's Swift satellite detected the explosion - formally named GRB 080319B - at 2:13 a.m. EDT on March 19, 2008, and pinpointed its position in the constellation Bootes. The gamma-ray burst became bright enough to see even without a telescope. Observations of the event by a global array of satellites and ground-based observatories have since given scientists the most detailed portrait of a burst ever recorded.

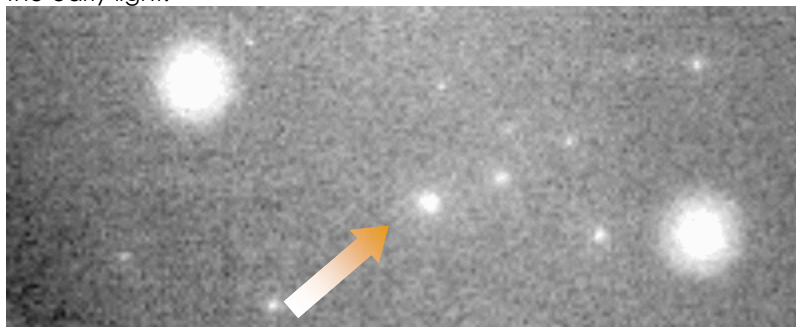


"Swift was designed to find unusual bursts," said Swift principal investigator Neil Gehrels at NASA's Goddard Space Flight Center in Greenbelt, Md. "We really hit the jackpot with this one."

In a paper to appear in Thursday's issue of Nature, Judith Racusin of Penn State University and a team of 92 coauthors report on observations across the spectrum that began 30 minutes before the explosion and followed its afterglow for months. The team concludes the burst's extraordinary brightness arose from a jet that shot material directly toward Earth at 99.99995 percent the speed of light.

Within the next 15 seconds, the burst brightened enough to be visible in a dark sky to human eyes. It briefly crested at a magnitude of 5.3 on the astronomical brightness scale. Incredibly, the dying star was 7.5 billion light-years away.

Telescopes around the world already were studying the afterglow of another burst when GRB 080319B exploded just 10 degrees away. TORTORA, a robotic wide-field optical camera operated in Chile with Russian-Italian collaboration, also caught the early light.



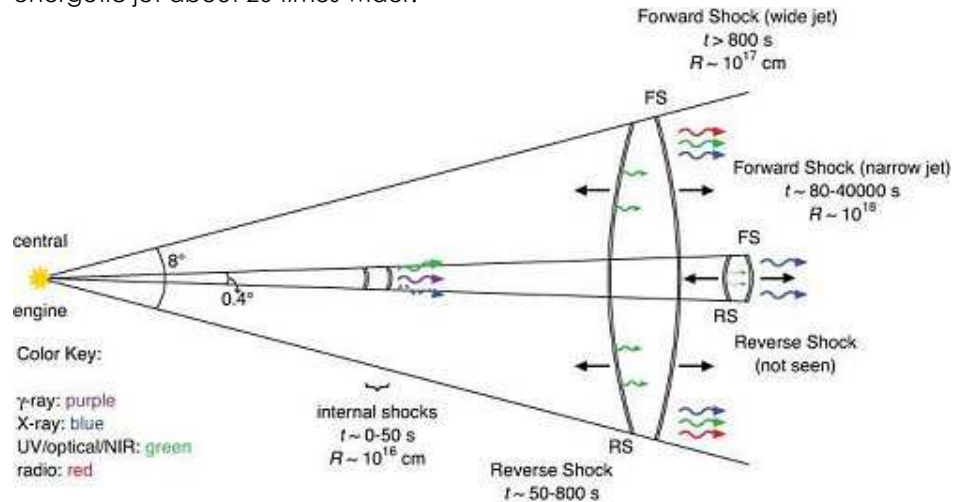
Above: GRB 080319B makes a brief appearance among the stars of Bootes in a movie made by Pi of the Sky, a Polish group that monitors the sky for afterglows and other short-lived phenomena.

Immediately after the blast, Swift's UltraViolet and Optical Telescope and X-Ray Telescope indicated they were effectively blinded. Racusin initially thought something was wrong with the telescopes. Within minutes, however, as reports from other observers arrived, it was clear this was a special event.

Gamma-ray bursts are the most luminous explosions in the Universe. Most occur when massive stars run out of nuclear fuel. As a star's core collapses, it creates a black hole or neutron star that, through processes not fully understood, drive powerful gas jets outward. These jets actually punch through the collapsing star, carrying matter and beaming radiation into space.

The team believes the jet directed toward Earth contained an ultra-fast

component just 0.4 of a degree across. This core resided within a slightly less energetic jet about 20 times wider.



Above: A two-component jet model explains the timing and spectral evolution of GRB 080319B. Credit: Nature/Judith Racusin.

"It's this wide jet that Swift usually sees from other bursts," Racusin explained. In the case of GRB 080319B, the narrow jet was seen as well, resulting in the burst's unusual brightness. "Maybe every gamma-ray burst contains a narrow jet, too, but astronomers miss them because we don't see them head-on."

Such an alignment occurs by chance only about once a decade, so GRB 080319B was a rare catch indeed.

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LHC passes test— September 10/08 Credit Astronomy.com.

The Large Hadron Collider (LHC) successfully passed its first test when it fired two beams of protons Wednesday morning. The beams were fired at different times around the collider's 17-mile (27-kilometer) circular tunnel underneath Geneva, Switzerland.

The first beam, traveling clockwise, was fired at 10:26 A.M. CEST. The beam traveling counterclockwise was fired 5 hours later.

The LHC, the largest and most expensive scientific instrument ever built, will begin the actual high-energy collisions of protons October 21. By colliding protons, scientists hope to recreate the condition our universe was in a split second after that Big Bang, which could tell us more about the make-up of our universe.

Astronomy magazine Senior Editor Richard Talcott discussed how the LHC works and what it could mean for scientists. Here are some excerpts from his Q & A.

"This is easily the highest energy experiment that's been done, and there have been other experiments that have gone on that have reached lower energies and that have found out much of what's going on in the universe. So we have a lot of good evidence that the standard model is true based on what earlier experiments have shown."

"The amount of data that we're going to get from the LHC, to put it in perspective, it's enough that if you put it all on CDs, every year there will be enough CDs to go to the Moon and back twice."

"So there's a huge amount of data that is going to come out of this, and it's teasing out the small effects from that data that's going to give us all the knowledge that we hope. It's fair to say that in terms of the basic scientific knowledge that we can and should get out of the LHC, it's going to be certainly at least as much as Hubble does, but it's not going to be in the same sense of

pretty pictures of what the universe looks like. The universe of the very small is far **8** different from the universe of the very large, and you may have to be a scientist to appreciate the beauty of the very small."

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Fifth Dwarf Planet Named Haumea – September 22/08 Credit ScienceDaily

The International Astronomical Union (the IAU) has announced that the object previously known as 2003 EL61 is to be classified as the fifth dwarf planet in the Solar System and named Haumea.

The decision was made after discussions by members of the International Astronomical Union's Committee on Small Body Nomenclature (CSBN) and the IAU Working Group for Planetary System Nomenclature (WGPSN). This now means that the family of dwarf planets in the Solar System is up to five. They are now Ceres, Pluto, Haumea, Eris and Makemake.

The discovery of Haumea was announced in mid-2005, and the object was initially given the provisional designation of 2003 EL61. It is a bizarre object with a shape resembling a plump cigar. Its diameter is approximately the same as that of the dwarf planet Pluto; however, its odd shape means that it is much thinner. It is also known to be spinning very fast, making one rotation in about four hours. Some have suggested that this rapid rotation could be the reason Haumea came to look as it does - the dwarf planet has been drawn out and elongated by its swift spin.

Haumea sits among the trans-Neptunian objects, a vast ring of distant cold and rocky bodies in the outer Solar System. At this moment it is roughly 50 times the Sun-Earth distance from the Sun, but at its closest the elliptical orbit of Haumea brings it 35 times the Sun-Earth distance from our star.

Haumea is the name of the goddess of childbirth and fertility in Hawaiian mythology. The name is particularly apt as the goddess Haumea also represents the element of stone and observations of Haumea hint that, unusually, the dwarf planet is almost entirely composed of rock with a crust of pure ice.

Hawaiian mythology says that the goddess Haumea's children sprang from different parts of her body. The dwarf planet Haumea has a similar history, as it is joined in its orbit by two satellites that are thought to have been created by impacts with it in the past. During these impacts, parts of Haumea's icy surface were blasted off. The debris from these impacts is then thought to have gone onto form the two moons.

After their discovery, in 2005, the moons were also given provisional designations, but have now too been given names by the CSBN and the WGPSN. The first and largest moon is to be called Hi'iaka, after the Hawaiian goddess who is said to have been born from the mouth of Haumea and the patron goddess of the island of Hawai'i. The second moon of Haumea is named Namaka, a water spirit who is said to have been born from Haumea's body.

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Buy and Sell

Here's your chance to clean out the closet and find a home for your slightly used treasures. Post your buy and sell items by emailing the [Editor](#) with your details.

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Ask an Expert

Have you been thumbing through the Astronomy or Sky and Telescope magazine and have some questions on the latest and greatest in astronomy gear? Or maybe you're narrowing down your search for just the right telescope and want to know the difference between Dobsonians, Schmidt-Cassegrains, Reflector and

Refractors. Well wonder no more, email [Brian Robilliard](#) our resident expert to get the "inside scoop" on what's hot or not in astronomy gear.

Are you seeing double or unable to focus? Chances are you need to collimate your scope. Are you looking for a good eyepiece? Why do you need to know the focal length of your telescope's mirror and how do you determine the focal length? For answers to these and other telescope questions email [Ed Maxfield](#) our expert on telescope tips, hints and suggestions.

Are you new to astronomy? Want to know the how to find objects in the sky? Or just wondering what that bright object in the evening sky is? Well wonder no more; email [Bryon Thompson](#) our Public Outreach Officer and master of Astronomy 101 basics.

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Kids Korner

For the younger astronomers. We want your input on what you would like to see happening at the club. Tell us a bit about yourself and why you love astronomy. Email the [Editor](#) with your submissions. For the older folks, if you have any ideas that might spark the interest of a young upcoming astronomer, please send your submissions to the editor.

Young Astronomers Video Contest

Astronomy magazine and the National Earth Science Teachers Association (NESTA) want middle school students grades 6-8 to tell us "**Is Pluto a planet or not?**", and high school students grades 9-12 to tell us "**What is a black hole?**".

Send us your video! Three minutes or less and in the form of a documentary, talk show, news broadcast, commercial, anything! You could win. **Video entries must be received no later than November 7, 2008.** For more information see the website: <http://www.astronomy.com/asy/default.aspx?c=a&id=7330>

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RASC News

Royal Astronomical Society of Canada, Victoria Centre <http://victoria.rasc.ca>
Meetings

Meetings are held on the second Wednesday of each month except July and August downstairs in the Elliot Bldg at U of Vic.

Astronomy Café

The Astronomy Café Meets on Monday evenings at Sir James Douglas School on Fairfield Road.

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The Sky This Month

By Bryon Thompson

Observing Site: **Duncan, 48.783°N, 123.700°W**

If your goal this October is to hunt for planets; try early in the evening and low in the sky or early in the morning and low in the sky....take your pick!

This month Venus is our evening star, but you'll need a clear view to the west. It shines at magnitude -3.9 only a little more than a fist's width above the horizon and sets an hour after the sun does. By the end of the month Venus can be found a little higher almost two fists width above the West South West horizon, and shines a little brighter at magnitude -4.

Although not nearly as bright as Venus, Jupiter shines at magnitude -2.2. If you are

viewing the planet on a clear night with good seeing you should be able to discover the main cloud belts on Jupiter separated by the light equatorial region. In previous articles I've mentioned the opportunity that presents itself to see one of Jupiter's moons dip into its large shadow. The best time to see this happen is on October 11 at 10:42 PST when Ganymede comes out from behind the big planet's east side and then winks out as it passes into Jupiter's shadow two hours later. The conditions for this occurrence to be visible from Earth are rare so go out and do your best "clouds- go-away-dance" and look up!

With a little bit of searching, Neptune can still be found with Binoculars. Look 2.2 degrees North West of Gamma Capricorni to see a line of fifth and sixth magnitude stars. The blue grey one to the east of these is the furthest "true" planet in our solar system. That is of course if you exclude Pluto as a planet and its farther sister Eris which is truly far away at three times the "dwarf's" distance.

Uranus is a bit closer to us than Neptune and can be found North East of Aquarius 2 degrees East North East of Phi Aquarii. On a good clear night with dark skies and good seeing you should be able to pick out Uranus with the naked eye. Telescope views are however usually clearer and show a slight but definite blue green disc.

Saturn gets up 2 hours before the sun does and continues to rise earlier each day throughout the month. It can be found in the constellation Leo. Saturn varies in apparent brightness from 1.0 to 1.1 as we approach the plane of the ring system. These rings usually reflect a lot of light. As they fade from Earth's view the planet's apparent brightness will continue to dim. We will line up with the ring plane early next year and the rings will disappear from view altogether. Although somewhat fainter, an opportunity to see more of Saturn's disc will present itself at that time.

Mercury is another morning apparition. It reaches its greatest western elongation on October 22nd at 18 degrees above the horizon and shines at magnitude 0.5 just thirty minutes before sunrise. By month's end, it will continue to brighten reaching magnitude -.09 above the eastern horizon thirty minutes before sunrise.

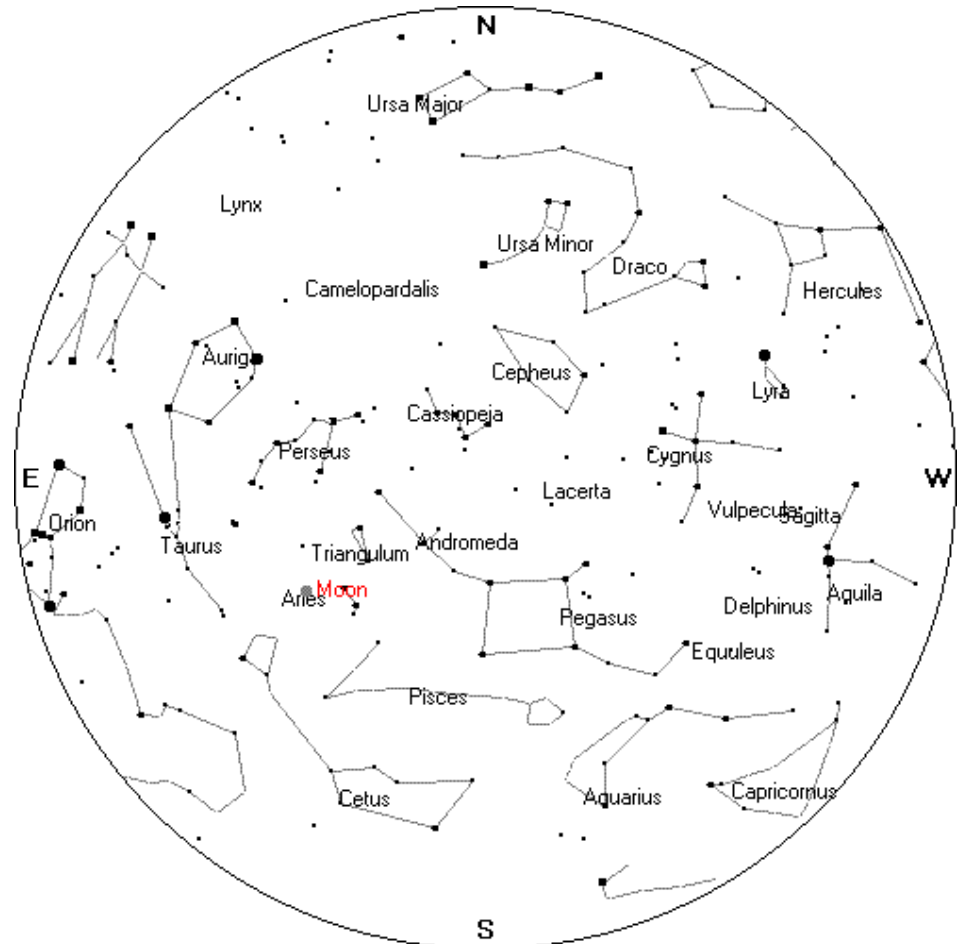
The full moon occurs on the 14th of the month. This moon's appearance in the late fall is normally referred to as the "Hunters Moon". You may remember in last year's article I mentioned the other name for this moon is the "Blood Moon" or "Sanguine Moon". The same thing that gives us red sunsets is the reason this moon is the colour that it is. Strange that full moon would warrant this moniker and would occur near the night of "All hallows eve". Hmmmmmm!

A small meteor shower awaits us on October 21. Even though it occurs during the last quarter moon there is still a chance at spotting some very fast bright streaks. There is some talk that the Orionids which usually produce about ten bright fast meteors per hour may be up to three times that number. Look for the possible increase in activity around 2:00 am local time.

The dark winter skies are coming but get out and enjoy the sights while the temperatures are still friendly and don't forget to share your viewing and always remember, Astronomy is looking up!

October 6	02:00pm PST	Mercury is at inferior conjunction
October 7	02:04pm PST	First Quarter Moon
October 11	10:42pm PST	Ganymede emerges from behind Jupiter
October 11	12:42pm PST	Ganymede passes into Jupiter's shadow
October 14	11:09pm PST	Full Moon (The Hunter's Moon)
October 21	02:00am PST	Orionid Meteor shower peaks
October 21	04:55am PST	Last quarter Moon
October 22	03:00am PST	Mercury at greatest Western Elongation (18degrees)
October 28	04:14pm PST	New Moon

Sky Chart —Here's your mid-October midnight sky chart. In order to use the sky chart properly remember the centre of the chart is the sky directly above your head (or the Zenith). Turn the chart so that the direction you are facing is at the bottom of the chart (or pointed toward your toes). The star field directly in front of you will be between the bottom of the chart and the centre.



Sky Chart Courtesy of Heavens-Above

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