



# REALTA

*Midlands Astronomy Club Magazine*

Issue 16 - August, 2010

## Comet whacked Neptune over 200 years ago

*Researchers studying Neptune's atmosphere found evidence that a comet may have hit the planet about two centuries ago. Was this a "cold-case" file re-opened, or did they discover a way to travel back in time to witness a long-ago event?*

To make the discovery, a team from the Max Planck Institute for Solar System Research actually used the Herschel Space Telescope's PACS instrument, along with what was learned from observations from when the Shoemaker-Levy 9 hit Jupiter sixteen years ago.

The 1994 impact on Jupiter was watched and documented by Voyager 2, Galileo and Ulysses, and today this data helps scientists detect cometary impacts that happened many, many years ago. In fact, just in February of this year, scientists from Max Planck discovered strong evidence for a comet impact on Saturn about 230 years ago. These "dirty

snowballs" leave traces of water, carbon dioxide, carbon monoxide, hydrocyanic acid, and carbon sulfide in the atmosphere of the gas giant planets. These molecules can be detected in the radiation the planet radiates into space.

So, the team turned their attention to Neptune, and used the PACS to analyze the long-wave infrared radiation of Neptune.

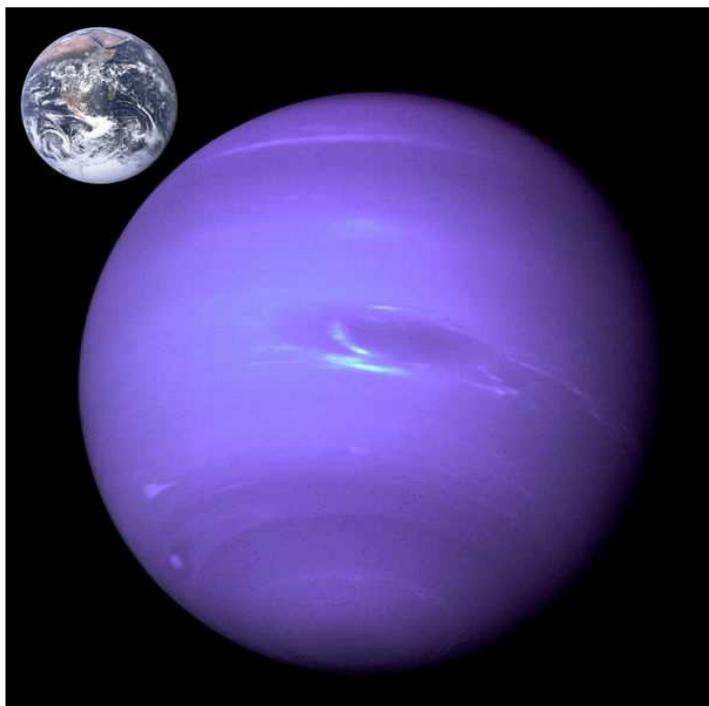
The atmosphere of Neptune mainly consists of hydrogen and helium with traces of water, carbon dioxide and carbon monoxide. However, the scientists detected an unusual distribution of carbon monoxide in the stratosphere, the upper layer of

the atmosphere, and found a higher concentration than in the layer beneath, the troposphere. "The higher concentration of

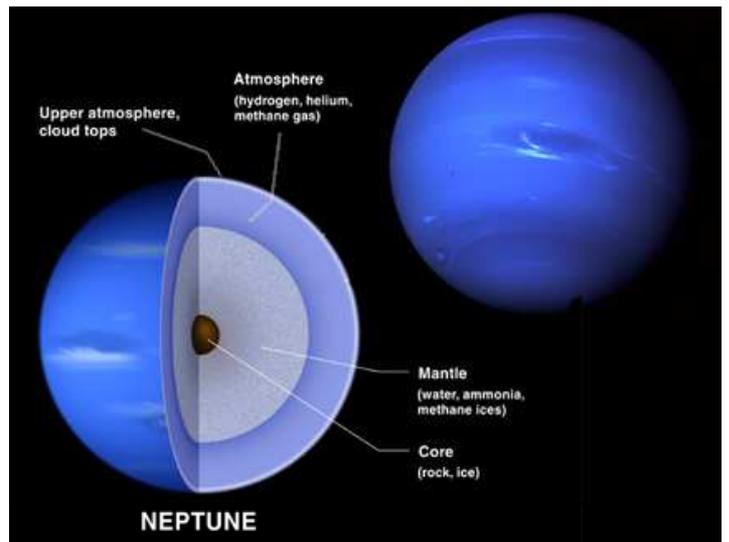
comet's ice is released and over the years distributed throughout the stratosphere.

"From the distribution of carbon monoxide we can therefore derive the approximate time, when the impact took place," said Thibault Cavalié from MPS, which showed the impact was about 200 years ago.

*By Nancy Atkinson  
<http://www.universetoday.com>*



Above: An image giving the apparent size comparison of Neptune and Earth .



carbon monoxide in the stratosphere can only be explained by an external origin," said MPS-scientist Paul Hartogh, principal investigator of the Herschel science program. "Normally, the concentrations of carbon monoxide in troposphere and stratosphere should be the same or decrease with increasing height," he said.

Another theory suggested that a constant flux of tiny dust particles from space introduces carbon monoxide into Neptune's atmosphere. However, the newest observations from PACS does not lend credence to that idea, and the team concluded the only explanation for these results is a cometary impact. Such a collision forces the comet to fall apart while the carbon monoxide trapped in the

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## Gravitational Lensing caught by amateur telescope

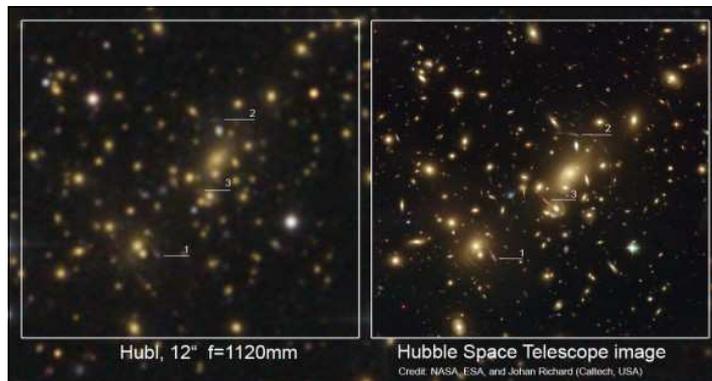
*Just a few short years ago, even the thought of capturing an astronomy anomaly with what's considered an "amateur telescope" was absolutely unthinkable. Who were we to even try to do what great minds postulated and even greater equipment resolved?*

One of the first great minds to consider the effects of gravitational lensing was Orest Chwolson in 1924. By 1936, Einstein had upped the ante on its existence with his theories. A year later in 1937, the brilliant Fritz Zwicky set the idea in motion that galaxy clusters could act as gravitational lenses.

It was not until 1979 that this effect was confirmed by observation of the so-called "Twin QSO" SBS 0957+561... and now today we

can prove that it can be observed with a 12" telescope under the right conditions and a lot of determination.

Bernhard Hubl of Nussbach, Austria is just the kind of astro-photographer to try to capture what might be deemed impossible. "Abell 2218 is a galaxy cluster about 2.1 billion light-years away in the constellation Draco. Acting as a powerful gravitational lens, it magnifies and distorts galaxies



Above: An amazing comparison of Bernhard Hubl's image of Abell 2218 and the same image taken by the HST. Abell 2218 a cluster of galaxies about 2 billion light-years away in the constellation Draco.

lying behind the cluster core into long arcs, as predicted by the General Theory of Relativity."

Say's Bernhard, "I wanted to know, if I could detect signs of these arcs with a 12" Newtonian at f=1120mm. After over 12 hours of exposure time under excellent conditions, I know that this is a

hard job, but I am glad that I could identify the three brighter arcs."

If I were a suspicious person I'd call shinanigans! I mean come on, his last name is Hubl!!!!

By Tammy Plotner  
<http://www.spaceflightrnow.com>

## Hot planet grows a tail

*A planet with a tail like a comet is slowly evaporating in the face of a wind of radiation from its parent star, according to brand new observations from the Hubble Space Telescope that are published in the latest issue of The Astrophysical Journal.*

The gas giant known as HD 209458b, which is 153 light years from us in the constellation Pegasus, was the first ever planet to be discovered by the transit

method back in 1999, when astronomers spotted its star's light dimming as the planet passed in front of it. The planet, which is only seven million kilometres from

its star and orbits once every three-and-a-half days, was then observed in 2003 by the Hubble Space Telescope's imaging spectrograph (STIS), which saw a bloated hydrogen atmosphere that extends over 200,000 kilometres. Last month, it was announced that a giant storm with winds racing from the dayside to the night-side at speeds reaching up to 10,000 kilometres per hour had been discovered. Now, it has been found that this scorched planet is even more interesting in that its atmosphere isn't merely puffed up, but is being ripped away by its star's stellar wind of charged particles, much like a comet's tail.

"Since 2003 scientists have theorised that the lost mass from the atmosphere is being pushed back into a tail, and they have even calculated what it looks like," says Jeffrey Linsky of the University of Colorado, Boulder, who led the new Hubble study. "We have measured gas coming off the planet at

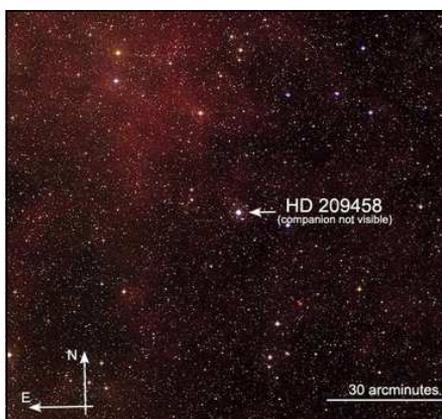
specific speeds." As much as 10,000 tonnes of gas could be escaping every second, some of it rushing away from the planet at 9.8 kilometres per second, or 35,400 kilometres per hour. Even at this rate it would take a trillion years for the planet, which has almost two-thirds of the mass of Jupiter, to evaporate says Linsky.

Ordinarily the planet would block 1.5 percent of its star's light as it transits, but with the bloated atmosphere and tail this increases to eight percent. As HD 209458b passes in front of its star, starlight flickers through the more tenuous regions of its atmosphere, being absorbed by chemical elements and molecules within the atmosphere. In the past oxygen, carbon, sodium and even water molecules have been detected, and Hubble has now even found silicon atoms in the 1,090 degrees Celsius atmosphere. As the star heats the atmosphere and bloats it, it dredges up material from deep within the planet. Hence it provides a unique way to probe not only the upper atmosphere of this swollen world, but what materials also lurk deeper within it.

By Keith Cooper  
<http://www.astronomynow.com>



Above: An artist's impression of HD 209458b and its tail. Image: Alfred Vidal-Madjar (Institut d'Astrophysique de Paris)/NASA.



Above: The location of the star HD 209458, which is a seventh magnitude star in Pegasus that hosts the 'comet-planet'. Image: ESA/NASA/Digitised Sky Survey.

## Man hit by six meteorites blames aliens

*A man who claims he is being targeted by extraterrestrials after a series of meteorite strikes on his house has now been hit by a sixth space rock in the space of a few years.*

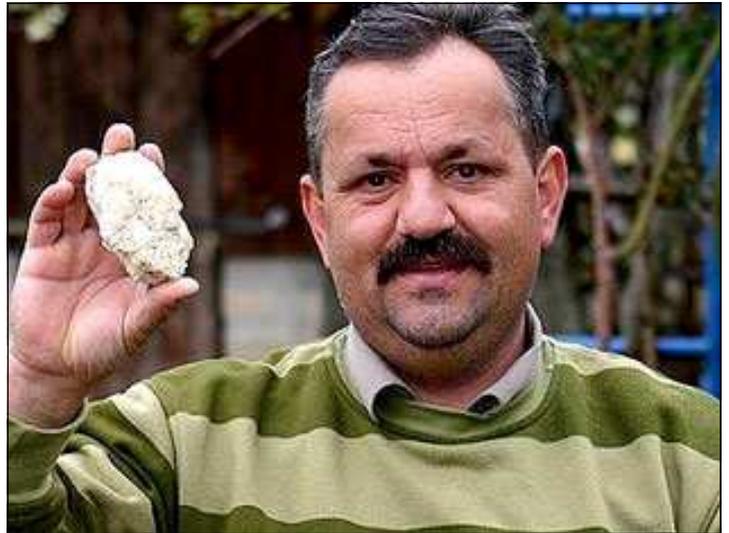
Radivoje Lajic first came to international attention in 2008, shortly after the fifth meteorite had crashed into the roof of his house in the northern village of Gornji Lajici in Bosnia.

And now, within the past month, another rock has hit the roof of his house, in defiance of all the odds - making it six strikes since the plague of meteorites began in 2007, the UK's Experts at Belgrade University have confirmed that all the falling rocks he has handed over were meteorites. They are now trying to work out what exactly it is about his house that particularly attracts them. The

strikes always happen when it is raining heavily, he says, never when there are clear skies.

Lajic has his own explanation, of course. After the fifth rock struck his house, he said: 'I am obviously being targeted by extraterrestrials. I don't know what I have done to annoy them but there is no other explanation that makes sense. The chance of being hit by a meteorite is so small that getting hit six times has to be deliberate.'

50-year-old Lajic has had a steel girder reinforced roof put on the house to protect it from the alien bombardment - which he funded by



*Above: A picture of Radivoje Lajic with one of the meteorite samples.*

selling one of the meteorites to a university in the Netherlands.

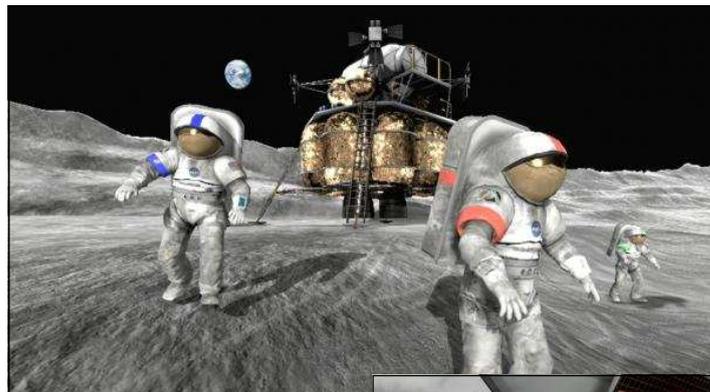
'I have no doubt I am being targeted by aliens,' he adds. 'They are playing games with me. I don't

know why they are doing this. When it rains I can't sleep for worrying about another strike.'

<http://www.dailytelegraph.com.au>

## NASA goes Lunar with online video game

*NASA has opened the moon to gamers with an online single and multiplayer game that lets players battle the elements and run a 3D outer space outpost.*



*Above and right: Actual games images of the new online 3D video game.*

NASA's Moonbase Alpha is a free online video game where players must work to restore critical systems and oxygen flow after a meteor strike cripples a solar array and life support equipment. The game includes an interactive command centre, lunar rover, mobile robotic repair units and a fully-stocked equipment shed, NASA stated.

**21 critical future NASA missions**  
Moonbase Alpha is actually a precursor to a planned NASA-based massively, multiplayer online game project. The project is being designed to have content and missions that require players gather all manner of online information from other virtual worlds, games and software applications to succeed.

meteorite impact that cripples the life support capability of the settlement. With precious minutes ticking away, you and your team must repair and replace equipment in order to restore the oxygen production to the settlement, NASA stated.

Team coordination along with the proper use and allocation of your available player controlled robots, rovers, repair tools, and the like, are key to success. There are several ways in which players can successfully restore the life support system of the lunar base, but since players are scored on the time spent to complete the task, they have to work effectively as a team, learn from decisions made in previous gaming sessions, and make intelligence decisions in order to win.

According to NASA, with Moonbase Alpha, players assume the role or roles of an astronaut working to further human expansion and research. Returning from a research expedition, players witness a

NASA said it released the game on Valve's Steam network. The agency will use the Steamworks suite of services for server browsing, leaderboards, statistics and more. Steam has more than 25 million accounts and has released more than 1,100 games.

*By Michael Cooney*  
<http://www.networkworld.com/>  
[www.midlandsastronomy.com](http://www.midlandsastronomy.com)



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## Cascade of star formation captured in Omega Nebula

*A wave of star formation is crashing through the Omega Nebula, captured in infrared by NASA's Spitzer Space Telescope. The bright nebula in the middle, formally known as M17, has long been recognized as a bustling star factory. But only recently have telescopes picked up on the bursts of activity that flank it.*

The dark wisps of dust to the right of the starburst make up a feature called M17 SWex, which the new image reveals as a young hotbed of star formation.

"We believe we've managed to observe this dark cloud in a very early phase of star formation before

its most massive stars have ignited," said astronomer Matthew Povich of Penn State University in a press release.

Spitzer detected 488 newly forming stars in the serpentine cloud, 200 of which will become blue-white class B stars larger and hotter than

the sun. Povich expects that as many as 10,000 stars are brewing below the telescope's detection limits.

But the cloud is missing the largest, hottest, bluest stars, called class O stars, which light up the neighbouring nebula. A luminous

bubble of gas and dust to the nebula's left also shows signs of O star activity. The bubble was blown off by much older stars that spewed radiation in their windy, wild youths.

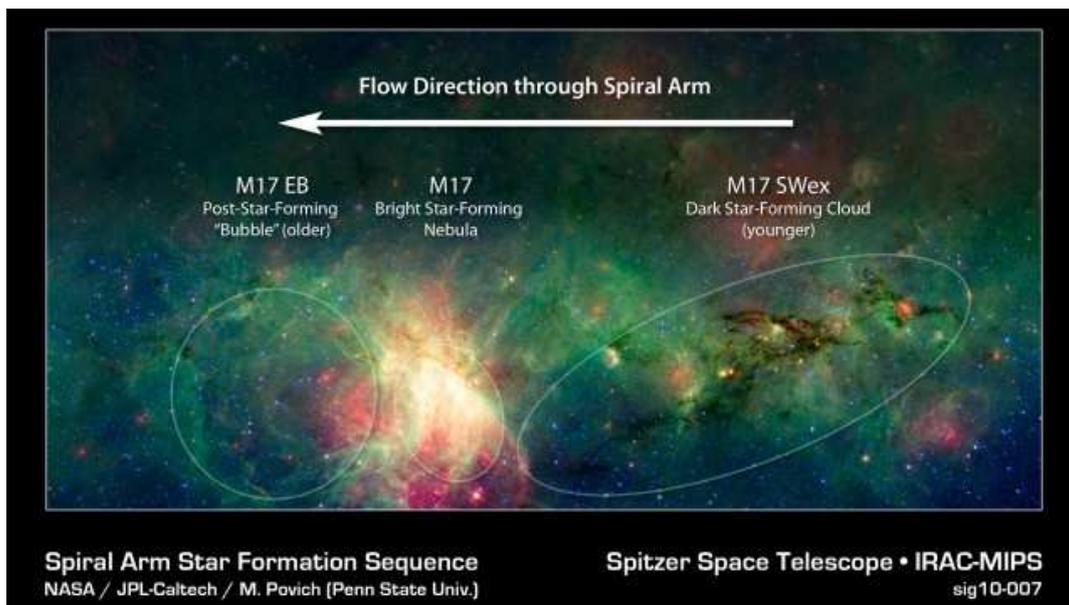
So where are the dark cloud's O stars? A solution could come from the nebula's place in the galaxy. M17 is in the process of crossing one of the Milky Way's massive spiral arms. The higher concentration of gas and dust in the spiral arm could be compressing material in M17, triggering a cascade of star formation from the bubble to the cloud.

The stars' ages support this theory: The stars in the bubble are 2 million to 5 million years old, the bright stars in the middle are about a million years old, and the stars in the dust cloud are younger than a million years. M17 SWex's big blue stars may just need an extra nudge to come to life.

This region of the sky could give astronomers new insight into what conditions massive stars need to ignite.

"We hope people will use M17 SWex as a new laboratory for studying this exact problem of how massive star formation happens," Povich said. "Most very young clouds being studied don't have as much going on as this one does."

By Lisa Grossman  
<http://www.wired.com>



## Europa analogue deep-sea vents discovered in the Caribbean

*NASA has opened the moon to gamers with an online single and multiplayer game that lets players battle the elements and run a 3D outer space outpost.*

More than three miles down in the Caribbean Sea, a remote-controlled vehicle has filmed the world's deepest "black smoker" vent: a gusher of iron sulfide so hot it could melt lead. "It was like wandering across the surface of another world," the geologist who piloted the vehicle told LiveScience. "The rainbow hues of the mineral spires

and the fluorescent blues of the microbial mats covering them were like nothing I had ever seen before."

Despite the extreme heat, alien-like creatures thrive near these vents, including tubeworms, giant clams, and eyeless shrimp.

The discovery shows that terrestrial organisms have an extraordinary ability to thrive in extreme conditions ranging from cold, acidic, and boiling black smoker habitats. For hyperthermophilic prokaryotes, the optimum temperature for growth is above 353 degrees K (80C/175F). *Pyrolobus fumarii*, an iron breathing bacterium has been found to tolerate as high as 394 degrees K (121C/250F), setting the record for the highest temperature known to be compatible with life.

Earth's extremeophiles raise one huge unanswered question: can life begin in such an environment? Life can adapt to extreme environments, but can it originate there? If extremeophiles do not need Goldilocks type mild environments to evolve, we can then imagine a

stunning array of possible lifeforms throughout the universe, ranging nearby from the clouds of Venus, to the methane lakes of Titan to the depths of Europa's ice-covered seas.

By Casey Kazan  
<http://www.dailygalaxy.com>



## Perseid meteor shower

The Perseid Meteor Shower is caused by debris coming from the Comet Swift-Tuttle. One of the main components of comets is ice. So when a comet passes near the Sun, a part of it vaporizes and is ejected from the main body. The ejected components form a stream of particles that follow the outline of the comet's orbit. When the Earth intersects with this path (or in other cases, come close to it), the particles then enter the Earth's atmosphere.

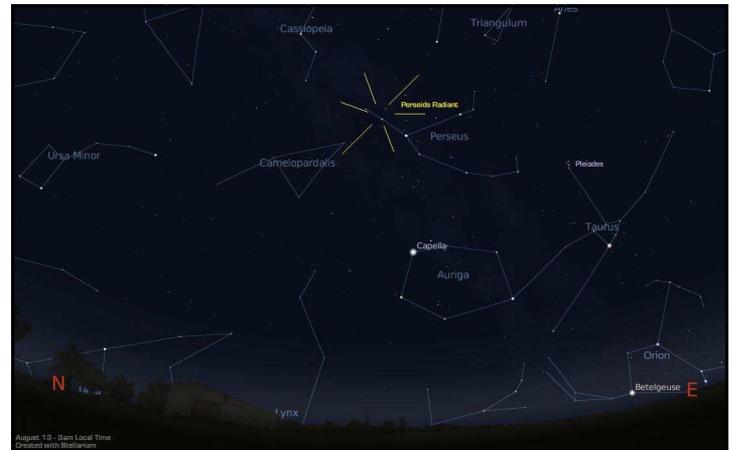
Once in the atmosphere, gravity pulls them downward into a high-speed plunge. Because they are mostly very small, virtually all of them readily ignite and disintegrate. We then observe them as streaks of light as they burn up. They can number by the hundreds to hundreds of thousands per hour, hence the name meteor shower.

The Perseid meteor shower is always seen from Earth as if coming from the constellation Perseus. It is for this reason that the Perseid meteor shower, and all other meteor showers for that matter, is named as such. The apparent source of the shower is more commonly known in astronomy circles as the radiant.

Observed since 2,000 years ago, the Perseid meteor shower is also known to some Catholics as the 'tears of Saint Lawrence' because the time when it peaks (early August) usually coincides with the saint's martyrdom. The event actually begins in mid-July but usually peaks at around August 10-12. This is the time when our planet is bathed inside the densest portion of the debris stream.

In the non-peak times, you may catch less than 10 meteors per hour. But during the peak times, 60+ of them can be visible in just one hour.

The meteor shower is most visible in the Northern hemisphere.



Above: The Perseids should offer their best viewing in the evening hours of the 12th of the month and peak on the 13th at 01:00hrs. The shower will appear to radiate from the Northeast from the constellation of Perseus.

However, for as long as you have a clear sky and standing in a dark area, you can easily spot the streaks of light wherever you are on Earth. If you're lucky, you can even catch a fireball. A bright moon can also prevent you from viewing the shower in all its magnificent glory.

Sometimes, a brilliant streak of light caused by an Iridium flare can be mistaken for a fireball. Newbie astronomers can easily be fooled

because the Perseid meteor shower can cover a big part of the sky. The Iridium flares actually come from any of the 66 satellites that make up the Iridium Satellite Constellation.

By John Carl Villanueva  
<http://www.universetoday.com>

## Fun facts about the perseids!

- ★ The Perseid meteor shower is named for the constellation Perseus, from where the meteors appear to originate.
- ★ The Perseid meteor shower is one of the most prolific showers of the year, with an average peak rate of 100 streaks per hour.
- ★ Meteors are the visible paths of vaporizing space debris as it encounters our planet's atmosphere. This debris range in size from dust particles to small pebbles, and occasionally larger stones.
- ★ As a meteoroid enters the Earth's atmosphere, it is heated by friction, which vaporizes the debris and causes the gases to glow. Most meteoroids disintegrate at about 50 miles above the surface, but become visible at about 40-75 miles.
- ★ Meteoroids orbit the Sun just like planets, comets, and asteroids. They travel at speeds of about 26 mps, but, when combined with Earth's orbital speed of about 18 mps, enter our atmosphere at a velocity rate of about 44 mps.
- ★ The meteoroids associated with the Perseid meteor shower enter the Earth's atmosphere at about 37 mps.
- ★ Our planet encounters space debris every day, thus meteors are actually visible all year long. Occasionally, Earth passes through thicker patches of debris, known as streams or swarms, resulting in a meteor "shower."
- ★ Meteoroid streams, or swarms, have orbits similar to those of comets, thus are believed to be fields of comet debris resulting from a comet's closing approach of the Sun.
- ★ The Perseid meteor shower has been associated with the ancient debris field of Comet 109/Swift-Tuttle.

- ★ Comet Swift-Tuttle leaves new debris each time it passes our planet – every 130 years. This debris field has the appearance of several streams, each measuring millions of miles long.
- ★ The Swift-Tuttle debris streams are comprised of small widely-spaced particles. Most of the meteoroids are about the size of sand grains, but some may be as large as small pebbles.
- ★ With a core diameter of about 26km, comet Swift-Tuttle is the largest known object, and one of the oldest comets, to regularly pass closely to our planet.
- ★ Comet Swift-Tuttle was originally recorded by Chinese astronomers in 69 BC and 188AD, but was formally discovered in 1862, by Lewis Swift on July 16, and by Horace Parnell Tuttle on July 19. Three others also independently discovered this comet: Dudley Observatory's Thomas Simmons; Antonio Pacinotti and Carlo Toussaint from Florence, Italy; and Danish Astronomer Hans Schjellerup.
- ★ Comet Swift-Tuttle was "rediscovered" in 1992 by Tsuruhiko Kiuchi, ten years after its expected return of 1982. That year, the comet reached 5th magnitude, making it easily visible through binoculars.
- ★ Comet Swift-Tuttle will pass within 14-million-miles of our planet when it next returns in 2126. Scientists believe that the comet will be even brighter than the 1992 pass, possibly even bright enough to be seen without binoculars.
- ★ Astronomers once believed that comet Swift-Tuttle might, in the relatively near future, pass close enough to actually impact Earth or the Moon. While continued observations and recalculations have dispelled that concern for at least the next 2,000 years, this comet remains one the greatest known solar system threats to our planet.

**Perseids StarBQ**  
You are invited to our free StarBQ on the 7th Aug.  
**See page 8 for full details.**



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## KID'S CORNER

### What are Constellations anyway?

A constellation is group of stars like a dot-to-dot puzzle. If you join the dots--stars, that is--and use lots of imagination, the picture would look like an object, animal, or person. For example, Orion is a group of stars that the Greeks thought looked like a giant hunter with a sword attached to his belt.

Other than making a pattern in Earth's sky, these stars may not be related at all. For example, Alnitak, the star at the left side of Orion's belt, is 817 light years away. (A light year is the distance light travels in one Earth year, almost 6 trillion miles!) Alnilam, the star in the middle of the belt, is 1340 light years away. And Mintaka at the right side of the belt is 916 light years away. Yet they all appear from Earth to have the same brightness.

Even the closest star is almost unimaginably far away. Because they are so far away, the

shapes and positions of the constellations in Earth's sky change very, very slowly. During one human lifetime, they change hardly at all. So, since humans first noticed the night sky they have navigated by the stars. Sailors have steered their ships by the stars. Even the Apollo astronauts going to the Moon had to know how to navigate by the stars in case their navigation instruments failed.

#### Finding the Constellations

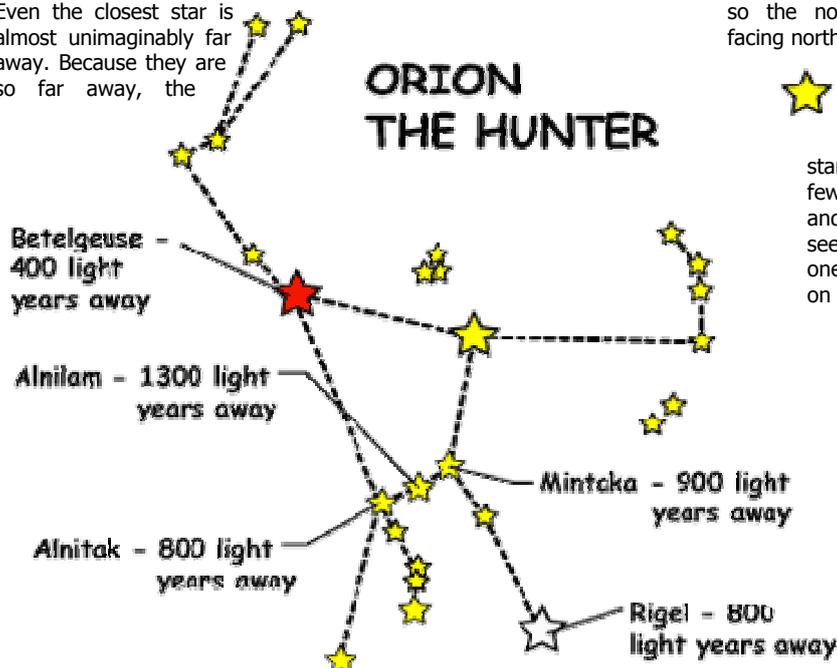
We see different views of the Universe from where we live as Earth makes its yearly trip around the solar system. That is why we have a different Star Finder for each month, as different constellations come into view. Also, as Earth rotates on its axis toward the east throughout the hours of

the night, the whole sky seems to shift toward the west.

The Star Finder charts are for a latitude of 34° N, which is about as far north of the equator as Los Angeles, California. (Charts are from The Griffith Observer magazine.) The farther north you are, the more the constellations will be shifted south from the Star Finder charts. The Star Finder charts show the sky at about 10 PM for the first of the month, 9 PM for the middle of the month, and 8 PM for the last of the month. These are local standard times. For months with Daylight Savings Time, star chart times are an hour later.

The star charts are maps of the sky overhead. So, to get the directions lined up, hold the map over your head and look up at it, and turn it so the northern horizon side is facing north.

★ If you live where big city lights drown out the beauty of the stars, you may see only a few of the brightest stars and planets. How sad! But see if you can find at least one or two constellations on a clear, Moonless night.



### What Else are Constellations Good For?

Star patterns are also very helpful for navigating a spacecraft. Most spacecraft have steered by the stars--or at least checked the stars once in a while to make sure the spacecraft was still on course and pointed in the right direction.

Space Technology 6 is a mission to test a new, very small and energy-efficient kind of reference system. This new system is called an Inertial (in-ER-shul) Stellar Compass, or ISC. The ISC is made up of a star tracker and a gyroscope. Working together, they keep the spacecraft on course.

The star tracker, like a camera, takes a picture of the star patterns in its view and compares the picture with its built-in star maps. This is how it can tell the spacecraft exactly which way it is pointed. In between pictures from the star tracker, the gyroscope tells the spacecraft how it is pointed. Together the star tracker and gyroscope keep the spacecraft stable and oriented in the right direction in space (for example, not flying "upside-down" or sideways). But the gyroscope can hold stable for only a short time. To keep the gyroscope perfectly accurate, information from the star tracker is sent to the gyroscope every few seconds.

The thing that is new and different with the Space Technology 6 ISC is that the two devices are combined into one tiny, light-weight system that needs little power to run.

The ISC was tested on the U.S. Air Force TacSat-2 microsatellite, and it worked just fine. Now the ISC technology can be used on future spacecraft sent on missions of discovery.

Right: An artist's impression of the TacSat-2 satellite in space.





## Exercise your brain

1. Compared to the other planets in our solar system, where is the Earth? The \_\_\_\_\_ from the sun?

- middle rock
- closest
- third rock
- furthest

2. About how many stars could you see WITHOUT the use of a telescope or binoculars, if you were away from the city on a clear night?

- 2000
- 2 million
- 20
- 2 billion

3. What is a solar eclipse'?

- when the sun explodes
- when the sun moves between the earth and the moon
- when the sun emits solar flares
- when the moon moves between the earth and the sun

4. A group of stars named by ancient people because of heroes or animals they reminded them of is called a ...

- galaxy
- constellation
- nebula
- aurora borealis

5. Why do stars appear to twinkle when we look at them?

- only little stars twinkle
- stars are different colours

- the earth's atmospheric layers bend their light rays
- stars fluctuate their sizes

6. What is the name of the closest star to our Earth?

- Alpha Centauri
- Andromeda
- Polaris
- Sol

7. How far away from the Earth is our sun, approximately...?

- 93 light years
- 93 trillion miles
- 93 billion miles
- 93 million miles

8. Why do planets shine?

- planets have their own source of energy
- because we are not in a black hole
- our galaxy glows
- they reflect the sun

9. The word 'planet' comes from a Greek word meaning....?

- wanderer
- large meteor
- fuzzy snowball
- atlas

10. What is a 'nebula'?

- a cloud of gas and dust
- a new star
- a fast moving comet
- the shadow of distant stars

### SUDOKU

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			9			7		
			5		8		1	3
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9			1					

### Check your answers

Answer 1: The correct answer was third rock. That's right folks, we are the third rock from name 'Sol' is the word the ancient Romans gave to our sun. It was named after their sun god, Sol.

Answer 2: The correct answer was 2000. With the use of a powerful telescope, you could see millions of stars in just one small part of the sky.

Answer 3: The correct answer was when the moon moves between the earth and the sun. A lunar eclipse is when the Earth moves between the sun and the moon. The Earth then casts its shadow upon the moon.

Answer 4: The correct answer was constellation. Two constellations named after heroes in their myths include, Hercules and Orion. Some constellations named for what they looked like include Lyra (a harp), Corona Borealis (a crown), Leo (a lion), Lupus (a wolf), and Ursa Major (a bear). One of the most famous constellations in the Northern Hemisphere is Ursa Major, the Big Bear. This is where you will find the Big Dipper, which looked to the ancient people like, what else, a huge dipper in the sky!

Answer 5: The correct answer was the earth's atmospheric layers bend their light rays. If you were in space, the stars would usually shine with a steady light. But their light rays, when passing through the different layers of air in our atmosphere, are bent, making them appear to twinkle!

Answer 6: The correct answer was Sol. The name 'Sol' is the word the ancient Romans gave to our sun. It was named after their sun god, Sol.

Answer 7: The correct answer was 93 million miles. If we could travel at the speed of 25,000 miles per hour, it would take more than 5 months to reach the sun. But I don't think we would want to get that close!

Answer 8: The correct answer was they reflect the sun. Planets are like huge mirrors in the sky. The sun shines light onto the planets, and that light is reflected back out into space, making them visible to us.

Answer 9: The correct answer was wanderer. Atlas, according to a Greek myth, was a giant whose shoulders supported the heavens. A comet is a fuzzy snowball. Planets move in a path around the sun. Each planet has a different and unique orbiting path around the sun.

Answer 10: The correct answer was a cloud of gas and dust. Nebula comes from the Latin word meaning cloud. One famous nebula is the Orion Nebula, where new stars are being born. Another is the Crab Nebula, which is the remains of a gigantic star that was viewed exploding in the year 1054 A.D. Another you might have heard of is the Horsehead Nebula, that looks like a giant horse's head!



## Sky Guide - Beginner's targets for August

In August, we have one of the best meteor showers of the year for the naked eye. The Perseids should offer their best viewing in the evening hours of the 12th of the month and peak on the 13th at 01:00hrs. The shower will appear to radiate from the Northeast from the constellation of Perseus.

### Telescopic Sights

We'll concentrate our August tour in the constellation Sagittarius. Find the teapot asterism (or house) in the South and you're there. Sagittarius is home to dozens of wonderful sights and is a great place to just scan with your telescope as you'll pick up dozens of open and globular clusters. When you look toward Sagittarius you're looking toward the centre of the Milky Way.

M22 is one of the best globular clusters for Northern Hemisphere observers. To locate M22, use the top of the teapot (Kaus Borealis) and the top star of the handle of the teapot (Nunki). M22 forms the corner of an "L" with these 2 stars. M22 consists of approximately 500,000 stars located 10,000 light years away.

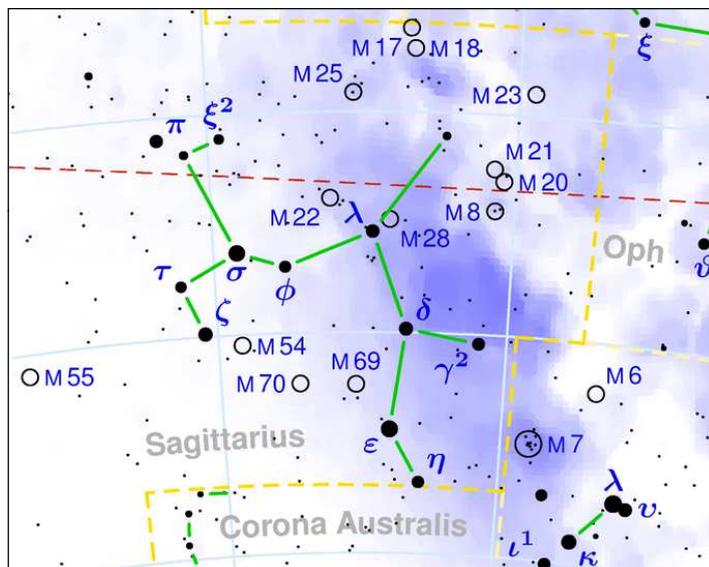
Also in the same area is a much dimmer globular cluster, M28. M28 is located just above the top star of the teapot (Kaus Borealis). It will provide a nice comparison with the much closer M22. M28 contains about 100,000 stars and is located approximately 15,000 light years from us.

The Lagoon Nebula (M8) is located just above the teapot and presents a wonderful example of an emission nebula. To locate it, use the star in the top of the handle (Nunki) of the teapot and the star at the top of the teapot (Kaus Borealis). Follow this line the same distance out from the teapot and you're there. The Lagoon Neb is quite large so use a low to medium powered eyepiece to get the most out of the view. Embedded within the nebula is an Open Cluster, NGC6530. The Nebula is a cloud of ionized hydrogen gas approximately 50 light years in diameter located approximately 5000 light years from us.

Just North of the Lagoon Nebula (about a low powered eyepiece field's width) is another fine Nebula, the Trifid (M20). The trifid is much smaller than the lagoon and will require dark skies to get a good view. The trifid is also a cloud of Ionized gas approximately 25 light years in diameter which is located about 2500 light years from us. Embedded within the nebula is a multiple star system, HN 40. Small scopes will show it as a double star while a 6" - 8" scope will show an additional 2 members.

Just outside of the eyepiece view to the Northeast is the Open Cluster, M21. This is a loose aggregation of about 50 stars of which a dozen or so are visible in small scopes. M21 is also located about 2500 light years away.

One of the brightest Nebulae in the sky is the Swan Nebula (M17), also located in Sagittarius. Using the depth of the teapot as a gauge, go up (North) from the top of the



M22 (NGC 6656) is one of the brightest globulars that is visible in the night sky and is located about 10,600 light-years away. M17 (NGC 6618 or Omega Nebula) was discovered in 1745. Earth's distance to the Omega Nebula is between 5,000 and 6,000 light-years. M8 (NGC 6523 or Lagoon Nebula) is a giant interstellar cloud, classified as an emission nebula and is located at an estimated distance of 4,100 light-years from Earth.

teapot about 1 and a half times this distance toward the constellation Scutum. Scutum contains several 4th magnitude stars which form a diamond shape. The lower star of the "diamond" also points right at M17. M17 appears as a check-mark shape in the scope and provides a fascinating view. The nebula is located about 5000 light years away from us.

These are just a sampling of the many gems located in this area of the sky. A good star chart will point you to many more in this area.

### The Planets

Jupiter and Saturn are up early in the morning hours.

Well, that's about it for the month.

By Kevin Daly

<http://members.aol.com/kdaly10475/index.html>



To help find your way around the night sky, Skymaps.com makes available for free each month.

The Evening Sky Map is suitable for all stargazers including newcomers to astronomy and will help you to:

- identify planets, stars and major constellations.
- find sparkling star clusters, wispy nebulae & distant galaxies.
- locate and follow bright comets across the sky.
- learn about the night sky and astronomy.

## Club Notes

### Next Meeting:

The next TAS meeting will be on the 7th September at 8pm in the Presbyterian Church and Hall, Main Street, Tullamore.

### Club Observing: Perseids StarBQ

Sometimes we get lucky, other times the weather hampers our efforts. Nonetheless, you are still invited to our StarBQ. Come along, bring some food and implements for a barbecue, sit around the campfire under the stars and retire to your own tent for the night! We are planning for Saturday 7th first with a fall-back to the 14th should the weather prove nasty for us. If it's cloudy, we'll still go ahead - purely for fun! - **FREE EVENT**

