



# PINNACLE



## A WINDOW TO WORLD OF SCIENCE

Science Newsletter-Volume II

### BIRLA SHISHU VIHAR, PILANI

A Prestigious Day School for Boys and Girls Affiliated to CBSE

## SCHOOL SCIENCE ARENA

### Science Week Celebration -2016

Birla Shishu Vihar observed and celebrated Science Week from 12th -17th October, 2016 with the theme "Scientific Issues for Nation Development". Students participated with enthusiasm in various Science related events like poster making competition, Science quiz competition, Anveshika activities and paper reading conducted during the week. They were also shown various science based documentaries. The students not only participated in these events but also enjoyed them.

The main attraction of Science Week Celebration was the Debate on the topic "Is it feasible to inhabit Mars in next 6 years?" The Chief Guest for the event was Mr. John Mason, an eminent educationist.

Debate was adjudged by a panel of jury from the field of science. The judges Dr. Raj Singh and Dr. Anil Kumar Sr. Scientists from CEERI, Pilani highly appreciated the efforts of the students. The students put forward their opinions on the topic with full confidence and in a very logical manner. This way whole week was dedicated to promote scientific temperament in the students for the development of nation.

Courtesy- Science Department

### Achievements.....

- ✓ CBSE Regional Level Science Exhibition 2015– School’s model "Human on Chip" clinched the Running Trophy trailing 69 schools behind and qualified for National.
- ✓ 2<sup>nd</sup> National Level Science Project Competition – KHOJ PRAYAS, held on 1<sup>st</sup> and 2<sup>nd</sup> May, 2016 – School was represented by a model "Modern police station and prison cell" and bagged 3<sup>rd</sup> position.
- ✓ Science Model Exhibition – Institution of Electronics and Telecommunication Engineers (IETE), Pilani centre conducted a Science Model Exhibition held on 30<sup>th</sup> January, 2016. School clinched 2<sup>nd</sup> and 3<sup>rd</sup> position respectively.
- ✓ Paramjeet and Devraj of class VIII and Harshita Joshi of class X were awarded with certificate of high Distinction in Science International Benchmark Test (IBT) conducted by ACER on 20<sup>th</sup> November, 2015.
- ✓ School was ranked 2<sup>nd</sup> among BET schools in Inter-school Dr. Amarjeet Singh General Science Trophy Test – Senior held on 24<sup>th</sup>, 27<sup>th</sup> and 28<sup>th</sup> November, 2015.
- ✓ School stood 2<sup>nd</sup> in Junior and Middle category among BET schools in Science held on 19<sup>th</sup> and 20<sup>th</sup> October, 2015 Quiz competition.



#### School Science arena

- Insight of science related activities and achievements at various levels.

#### Illuminating Minds

- An Epiphany (Astonishing scientific breakthrough)
- Hodgepodge in animal world (06 amazing animal hybrid created by humans)
- Mental floss (Splendid facts of science)
- Mystery Investigation (Explaining the strange and mysterious through science)
- Glimpses of Science activities
- Brain teasers (Exercise for brain)
- Did you know?

#### Greetings to all!!!

Development is required in every individual to every nation in all aspects and for development to happen, science and technology go hand in hand. It goes without saying that, a nation’s development and prosperity is judged to a large extent by the status of science and technology of that nation.

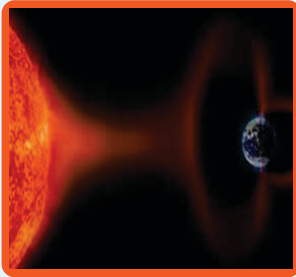
The objective of the second issue of Pinnacle is to equip the students with the recent development in the field of science and also help them to escape from the vicious cycle of ignorance and superstitions.

I would like to sincerely thank our Principal, Mr. Pavan Vashishtha, who has always been the guiding force behind this newsletter. I would also like to thank teachers of science department for their unconditional support to conduct science activities in school.

Hema Joshi  
(Coordinator Science)



## Preparation For Solar Storm That May Cost Us 2.6 Trillion Dollars



Solar flares strongly influence the local space weather in the vicinity of the Earth. They can produce streams of highly energetic particles in the solar wind, known as a solar proton event. These particles can impact the Earth's magnetosphere, and present radiation hazards to spacecraft and astronauts. Additionally, massive solar flares are sometimes accompanied by coronal mass ejections (CMEs) which can trigger geomagnetic storms that have been known to disable satellites and knock out terrestrial electric power grids for extended periods of time. Scientists are preparing for a solar storm that could break communications for years and potentially put life on Earth in danger. An event like the infamous Carrington Event of 1859, which caused one of the worst known geomagnetic storms, would throw off much communication technology if it happened today. If such an event were to hit the Earth, it could stop communications satellites from working, break GPS systems and stop planes from flying. It could also lead to even more lasting problems, like wiping out data from computer's memory. Fixing all the problems could cost approximately 2.6 trillion dollars.

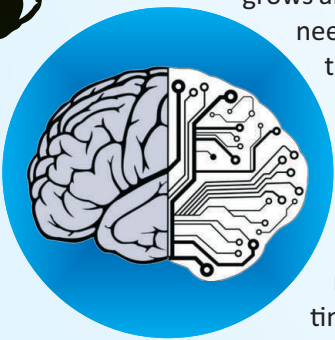
## Oz Scientists Create World's Thinnest Lens

Australian scientists have claimed that they have developed a lens which is 2000 times thinner than human hair, a breakthrough set to revolutionize nanotechnology. The finished lens is 6.3 nanometers in size as compared to the previous smallest lens which was 50 nanometers thick. According to ABC News, the lens, has been created by a team of researchers led by Yuerui Lu from Australian National University (ANU). Scientists said the lens could have revolutionary applications in medicine, science and technology and it could be used to create bendable computer screens



## Cyborg Mice

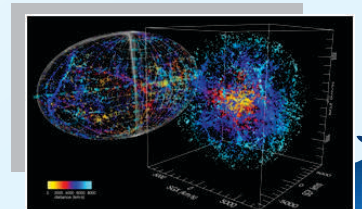
A team out of Harvard wired up the brains of living mice, and are now able to stimulate and monitor individual neurons. The scientists created a soft, flexible mesh from a conductive polymer, which brain tissue melds with and grows around like a scaffold. They laced the mesh with nanowires, rolled it up, and used a hollow needle to implant it in anesthetized mice's brains, where it unfurled and intermingled with the brain tissue. The nanowires, touching individual neurons without irritating them, then can record or spark neural activity with extreme precision, effectively creating a mouse brain that is part biological, part electronic. In other words, a cyborg.



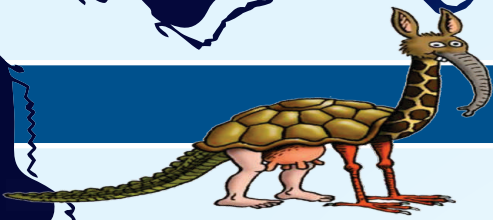
Right now, the mice need to be hooked up to a computer for the nanowires to transmit information, but future versions will likely be wireless. Researchers hope to scale up the mesh, enabling them to study hundreds of neurons at once, over a long period of time — research which is not currently possible, and has huge potential to expand our understanding of how the brain works. If proven safe, this could be the prototype of real-life neural lace in humans, and could lead to astonishing medical and technological advancements. By stimulating degraded brain areas, a similar mesh could treat neurodegenerative diseases like Parkinson's. It could also be used to integrate humans even closer to technology — effecting plugging the computers right into our brains.

## Hawking To Announce Plans To Map Universe

Stephen Hawking, one of the world's best known physicists, is set to announce plans to map the entire known universe using a superconducting center he founded at Cambridge University. The Cosmos computer will plot the position and movement of billions of galaxies, black holes, supernovas and other cosmic structures.



# HODGE-PODGE IN ANIMAL WORLD



(Creation of various animal hybrids by human being)

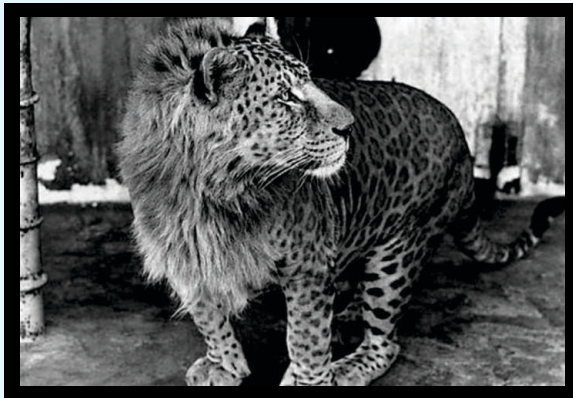


Ancient folktales often contain mythological creatures, sometimes these are described as hybrids (e.g., hippogriff as the offspring of a griffin and a horse). More often they are kind of chimera, i.e., a composite of the physical attributes of two or more kinds of animals, mythical beasts, and often humans, with no suggestion that they are the result of interbreeding, e.g., harpies, mermaids, and centaurs.

In the Bible, the Old Testament contains several passages which talk about a first generation of hybrid giants who were known as the Nephilim. The Book of Genesis (6:4) states that "the sons of God went to the daughters of humans and had children by them". As a result, the offspring was born as hybrid giants who became mighty heroes of old and legendary famous figures of ancient times.

**So here we have the real application of science to create those amazing mythological creatures which were far away from reality.....**

## Leopon



A leopon is a hybrid resulting from the crossing of a male leopard with a lioness. The head of the animal is similar to that of a lion while the rest of the body carries similarities to leopards. These hybrids are produced in captivity and are unlikely to occur in the wild. The first documented leopon was bred at Kolhapur, India in 1910. Based on the data from the Japanese cats, leopons are larger than leopards and combine features from the leopard and lion. They have brown, rather than black, spots and tufted tails. They will climb like leopards and seem to enjoy water, also like the leopard. Male leopons may have sparse manes about 20 cm long.

## Cama

If you know anything about camels or llamas, you probably just cringed at the thought of a male camel, which is about 6 times the size of a llama, breeding with a small female llama. If it makes you feel any better, the size difference is actually impossible to overcome naturally, so these creatures have been created using artificial insemination. The converse combination does not produce offspring. A cama is a hybrid between a male dromedary camel and a female llama, and has been produced via artificial insemination at the Camel Reproduction Centre in Dubai. [1] The first cama was born on January 14, 1998. The aim was to create an animal capable of higher wool production than the llama, with the size and strength of a camel and a cooperative temperament



## Dzo or Dzomo

A dzo is a hybrid between the yak and domestic cattle. The word dzo technically refers to a male hybrid, while a female is known as a dzomo. A male combination, referred to as Dzo, is infertile while the female Dzomo is capable of producing offspring. This hybrid is stronger and heartier than yaks, and prized in Mongolia and Tibet for producing more milk and meat than regular cows.



## Geep



This little fellow is what you get when you mix a goat with a sheep. This combination is very rare because, unlike most creatures on this list that are just different species, goats and sheep belong to different genera as well. Sheep are of the genus *Ovis* while goats belong to *Capra*, and because of the chromosomal differences, most geeps are stillborn. A geep is a chimera resulting from the fusion of both a goat and sheep embryo. The procedure was first performed successfully in Australia in 1984. In 1985 researchers at the University of California-Davis successfully produced a geep. The resulting animal consists of a mosaic of sheep and goat DNA. In the outward appearance, those portions containing sheep DNA will have wool, while those containing goat DNA will have hair.

## Zebroid



A zorse is the offspring of a zebra stallion and a horse mare. It is a zebroid: this term refers to any hybrid equine with zebra ancestry. The zorse is shaped more like a horse than a zebra, but has boldly striped legs and, often, stripes on the body or neck. Like most other interspecies hybrids, it is infertile.

The crossing of zebra's to horses, donkeys, and ponies was originally started in England and Africa. The reason for the breeding was to create a horse-like organism that was resistant to diseases that were being spread by the tsetse fly in Africa. Because the zebra was native to Africa and had a natural immunity to the diseases carried by the tsetse fly, people began crossing the zebra with domestic horses and donkeys

## Wholphin

A wholphin or wolphin is an extremely rare hybrid born from a mating of a female common bottlenose dolphin (*Tursiops truncatus*) with a male false killer whale (*Pseudorca crassidens*). The first recorded wholphin was born in a Tokyo SeaWorld, but he died after 200 days. The first wholphin in the United States and the first to survive was Kekaimalu, born at Sea Life Park in Hawaii on May 15, 1985; her name means "from the peaceful ocean".

They are extremely intermediate between both parents. Since a bottlenose may have about 88 teeth and a false killer whale has about 44, a wholphin will have 66. They are smaller than a false killer whale but are larger than a normal bottlenose.



## MENTAL FLOSS



### Why We Should Not Sleep With Our Head towards North?

Myth is that it invites ghost or death but science says that it is because human body has its own magnetic field and Earth is a giant magnet. When we sleep with head towards north, our body's magnetic field become completely asymmetrical to the Earth's Magnetic field. That cause problems related to blood pressure and our heart needs to work harder in order to overcome this asymmetry of Magnetic fields. Apart from this another reason is that our body have significant amount of iron in our blood. When we sleep in this position, iron from the whole body starts to congregate in brain. This can cause headache, Alzheimer's disease, Cognitive Decline, Parkinson disease and brain degeneration.



## Why should we touch Feet of our elders?



Usually, the person of whose feet you are touching is either old or pious. When they accept your respect which came from your reduced ego their hearts emit positive thoughts and energy which reaches you through their hands and toes. In essence, the completed circuit enables flow of energy and increases cosmic energy, switching on a quick connect between two minds and hearts. To an extent, the same is achieved through handshakes and hugs. The nerves that start from our brain spread across all your body. These nerves or wires end in the fingertips of your hand and feet. When you join the fingertips of your hand to those of their opposite feet, a circuit is immediately formed and the energies

of two bodies are connected. Your fingers and palms become the 'receptor' of energy and the feet of other person become the 'giver' of energy.

## Why Should we Visit Temple?

Temples are located strategically at a place where the positive energy is abundantly available from the magnetic and electric wave distributions of north/south pole thrust. The main idol is placed in the core center of the temple, known as "*\*Garbhagriha\**" or *\*Moolasthanam*. This *\*Moolasthanam\** is where earth's magnetic waves are found to be maximum. Thus a person regularly visiting a temple and walking clockwise around the Main Idol receives the beamed magnetic waves and his body absorbs it. This is a very slow process and a regular visit will let him absorb more of this positive energy. Scientifically, it is the positive energy that we all require to have a healthy life.



## Why Do Temples Have Bells



People who are visiting the temple should and will Ring the bell before entering the inner sanctum (Garbhagudi or Garbha Gruha or womb-chamber) where the main idol is placed. According to Agama Sastra, the bell is used to give sound for keeping evil forces away and the ring of the bell is pleasant to God. However, the scientific reason behind bells is that their ring clears our mind and helps us stay sharp and keep our full concentration on devotional purpose. These bells are made in such a way that when they

produce a sound it creates a unity in the Left and Right parts of our brains. The moment we ring the bell, it produces a sharp and enduring sound which lasts for minimum of 7 seconds in echo mode. The duration of echo is good enough to activate all the seven healing centres in our body. This results in emptying our brain from all negative thoughts.

## Why do we throw Coins into a river in some custom?



The general reasoning given for this act is that it brings Good Luck. However, scientifically speaking, in the ancient times, most of the currency used was made of copper unlike the stainless steel coins of today. Copper is a vital metal which is very useful to the human body. Throwing coins in the river was one way our fore-fathers ensured we intake sufficient copper as part of the water as rivers were the only source of drinking water. Making it a custom ensured that all of us follow the practice.

## Why do we join both palms together to greet?

People greet each other by joining their palms—termed as "Namaskar." The general reason behind this tradition is that greeting by joining both the palms means respect. However, scientifically speaking, joining both hands ensures joining the tips of all the fingers together; which are denoted to the pressure points of eyes, ears, and mind. Pressing them together is said to activate the pressure points which helps us remember that person for a long time. And, no germs since we don't make any physical contact!





( Explaining Strange and Mysterious through science)



Here are few strange phenomenon happening in the world. Although there are many explanations about that strange phenomenon, but it still cannot answer clearly why it happened. One of the surprising phenomenon is the occurrence of "blood rain in Kerala, India in September 2001".

Strangely after investigation, the red rain particles that it contained were similar to that of the blood. Odd, odd, unusual. How to explain this so that it makes sense?

**So, more info on few of these strange phenomena, with little explanation below!!!!**

## Blood rain phenomenon in Kerala, India (the blood monsoon)



Between July 25 and September 23, 2001, reported that rain has fallen strangely with unusual water color that is red. Strange and terrible incident occurred in the southern Indian state of Kerala. The man was shocked and scared because it was raining like the shed blood freely from the sky. Blood rain is occurring sporadic throughout the region and scientists rushed to the scene to analyze its composition.

Perhaps the most ambitious theory was given by the scientist Godfrey Louis and Santosh Kumar of the University Mahatma Gandhi, Kerala. They speculated that the contaminating cells originated from outside the earth and that they had been brought to Earth by meteorites, confirming the theory of panspermia. Louis and Kumar said, that the cell has the "unusual nature".

## Strange light phenomena (geo luminescence)

Rattling file cabinets, gas pipes exploded and five-star performance from Charlton Heston and Lorne Green was not the only signs that your house has been hit by earthquakes. Testimonies from survivors of the earthquake have often heard reports of strange flashes of light that shot upward rolling in the area around the epicenter of the quake. This phenomenon last occurred in the region of ancient China as well as in Lincolnshire, England, where people claimed to see strange lights and flying balls of light ball light. Scientists have theorized that light is the result of geo-luminescence, a phenomenon where rocks actually produce light when exposed to extreme pressure, and that ease is the result of friction geology.



## Abduction by Alien



UFO sightings so varied, with descriptions of the most opposed to human logic. Amazing story, the kidnapping of foreign individuals. It appears here shows that more active imaginative work here. The stories that the kidnapping of the man-woman for the proliferation of alien creatures, or so many people who claim to have been abducted by aliens.

Established theory that can explain it is the presence of strong electromagnetic fields, may occur naturally, can cause a person to feel attacked simultaneously in nearby existing electrical equipment disturbed by the magnetic field so that the electrical equipment (such as a car radio) do not work. People then saw flashes of light before fainting. Built from experiences like that, the word "aliens", would be the first on your lips.

## The Taos Hum, buzz Weird Mysteries

Residents in the town of Taos, New Mexico, have long been puzzled by the strange phenomenon that occurs in the region namely, the emergence of the buzzing sound that seemed to come from far away, sounds like a diesel engine that burns. But the sound source not found it until now. This sounds strangely not all could hear, just never heard about half of the population. Those who have heard ever visited the scientists to ask for an explanation of this phenomenon. Research carried out has failed. Even the sound detection by using sophisticated audio equipment was not

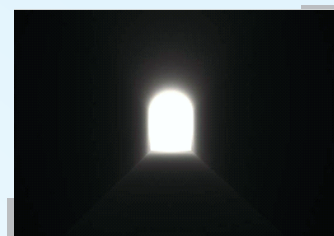


successful. About Hum in Hawaii, people speculated that shows the activity of volcanoes in the area.

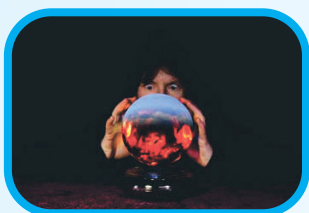
## Near-Death Experiences and Life after Death

People who were once near death have sometimes reported various mystical experiences (such as going into a tunnel and emerging in a light, being reunited with loved ones, a sense of peace, etc.) that may suggest an existence beyond the grave. While such experiences are profound, no one has returned with proof or verifiable information from "beyond the grave."

Skeptics suggest that the experiences are explainable as natural and predictable hallucinations of a traumatized brain. A study of people in cardiac arrest in 2015 found that when the heart is dying, it gets peppered by signals from the brain, which tries to stay active. The scramble of signals might be responsible for near-death experiences, researchers figure.



## Psychic powers and extra-sensory perception (ESP)



Psychic powers and (ESP) rank among the top ten unexplained phenomena if for no other reason than that belief in them is so widespread. Many people believe that intuition (see #3) is a form of psychic power, a way of accessing arcane or special knowledge about the world or the future. Researchers have tested people who claim to have psychic powers, though the results under controlled scientific conditions have so far been negative or ambiguous. Some have argued that psychic powers cannot be tested, or for some reason diminish in the presence of skeptics or scientists. If this is

true, science will never be able to prove or disprove the existence of psychic powers.

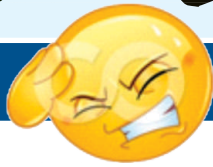
## The Body and Mind Connection

Medical science is only beginning to understand the ways in which the mind influences the body. The placebo effect, for example, demonstrates that people can at times cause a relief in medical symptoms or suffering by believing the cures to be effective — whether they actually are or not. Using processes only poorly understood, the body's ability to heal itself is far more amazing than anything modern medicine could create. So while there are many unexplained phenomena, the explainable science of the body and mind, is amongst the most amazing phenomena of all.



## Glimpses of Science Activities.....





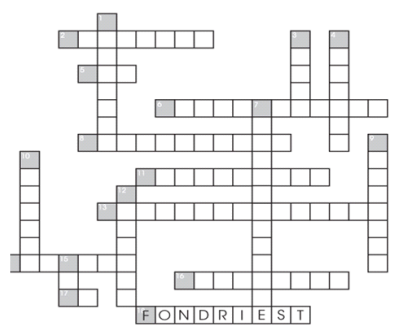
# BRAIN TEASERS



## (A) Cross word puzzles

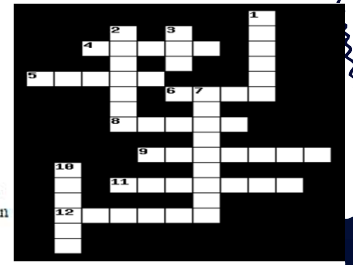
### Water Quality Parameters

- Across**
- Sulf component naturally occurring in water
  - A five day test
  - Water's ability to pass an electrical current
  - Signals migration and reproduction
  - Nutrient for algae
  - Required for fish to breathe
  - More toxic at high pH and temperature
  - Affects water clarity
  - Acidity or alkalinity
  - Where should you buy your next DO meter?
- Down**
- Often added to drinking water
  - Fecal coliform bacteria that comes from human/animal waste
  - High levels of this in hydraulic fracturing wastewater
  - Used by plant/algae for photosynthesis
  - Proportional to conductivity
  - Water hardness is affected by this mineral
  - EPA maximum contaminant level is 10mg/l
  - Measure of oxidizing/reducing potential



### The Solar System

- Across**
- Although not the closest to the sun, this planet is the hottest because of a thick atmosphere of carbon dioxide.
  - This object is no longer considered to be a planet.
  - Its two satellites are named Phobos and Deimos (Fear and Panic).
  - You were born on this planet, hopefully.
  - The closest planet to the sun, it orbits the sun once every 88 days.
  - This planet is more massive than all of the others combined.
  - This planet's axis is so tilted that it orbits the sun on its side.
- Down**
- Made mainly from ices and dust, these objects can form tails millions of kilometers long when they pass near the sun.
  - Named for the Roman god of the sea.
  - This object is at the center of the Solar System.
  - Chunks of rock, most of which are found between the orbits of Mars and Jupiter.
  - This planet possesses the Solar System's most impressive system of rings.



## DID YOU KNOW?



1. Every year over one million earthquakes shake the Earth.



2. When Krakatoa erupted in 1883, its force was so great it could be heard 4,800 kilometers away in Australia.



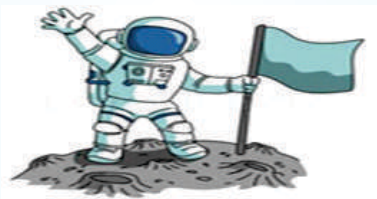
3. The largest ever hailstone weighed over 1kg and fell in Bangladesh in 1986.



4. Every second around 100 lightning bolts strike the Earth



5. Astronauts cannot belch—there is no gravity to separate liquid from gas in their stomachs.



6. An electric eel can produce a shock of up to 650 volts.



7. In 5 billion years the Sun will run out of fuel and turn into a Red Giant.



8. Giraffes often sleep for only 20 minutes in any 24 hours. They may sleep up to 2 hours (in spurts – not all at once), but this is rare. They never lie down.



9. Without its lining of mucus your stomach would digest itself.



10. There are 60,000 miles of blood vessels in the human body.



11. There are more living organisms on the skin of each human than there are humans on the surface of the earth.

