SCIENCE CENTRE NEWS LETTER

March 2020
Issue 59

SCIENCE CENTRE

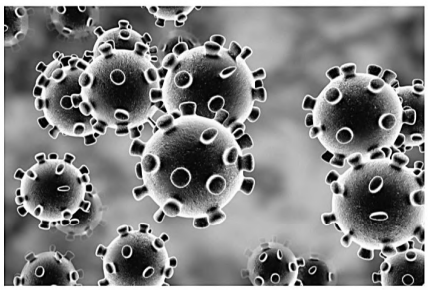
Volume 5, Issue 11

WHAT'S NEW IN SCIENCE?

Coronavirus

Coronaviruses(Cov) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle, East Respiratory Syndrome (MERs-CoV) and severe Acute Respiratory Syndrome (SARS-CoV) A novel coronavirus (nCoV) is a new strain that has not been previousaly identified in humans. Coronavirus are zoonotic, meaning they are transmitted between animals and people. Detailed investigations found that SARS-Cov was transmitted from civet cats to humans and MERS-CoV from dromedary camels to humans.

Common signs of infection include respiratory symptoms, fever, cough, shortness of breath and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death. Standard recommendations to prevent infection spread include regular hand washing, covering mouth and nose when coughing and sneezing, thoroughly cooking meat and egg. Avoid close contact with anyone showing symptoms of respiratory illness such as coughing and sneezing.



Where did the new coronavirus come from?

Since the virus first popped up in Wuhan, China in people who had visited a local seafood and animal market (called the human seafood market), official could only say it likely hopped from an animal to humans. On January 30, 2020 the CDC(Centers for Disease Control) identified the first case of person-to-person spread in the United States. The novel coronavirus case has been reported in India,with keralite student who returned from Wuhan University.

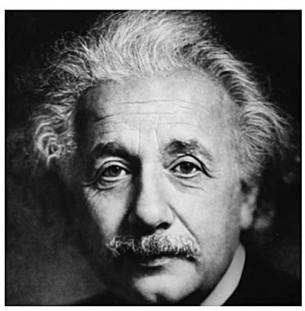
Scientists at the peter Doherty Institute for Infection and Immunity in Melbourne, Australia, annouced January 29, 2020 that they were able to grow the Wuhan Coronavirus from a patient sample in the laboratory. This is goodnews, since it will allow researchers to quickly develop new dignostic tests for the virus, which will be essential if Scientists want to be able to track its spread across China and the rest of the globe. At the moment, confirming infection requires time-consuming polymerase chain reaction-based tests for viral genes that can only be performed in a few laboratories. The technology developed in Australia will help develop new and more rapid antibody-based diagnostic test for infection that can be used in the clinic, not the lab. The ability to grow the Wuhan Coronavirus in the laboratory will also make it easier to develop a vaccine. Developing and manufacturing a vaccine requires large ammounts of viral proteins that can serve as vaccine antigens that will induce an immune response in people. But vaccine development, manufacture and testing takes time.

Courtasy: Shri Dahyabhai Pitambarbhai
Derasari Primary School No.-296

SCIENTIST OF THE MONTH

Albert Hermann Einstein

Albert Hermann Einstein was born on March 14,1879 at Ulm in Southern part of Germany. During his tenure at the Berne patent office, he proposed the world famous Theory of Relativity in 1905. The theory later helped to build a nuclear bomb. At that time, Sir Isaac Newton and his laws of motion were at the forefront of the scientific world. They were widely accepted.



Einstein's theory of relativity revolutionized Physics. According to age-old rules of physics, it was an accepted fact that matter can neither be produced nor destroyed. Einstein discovered that matter can be converted into energy and vice-versa. Einstein's finding is summed up in an equation '$E=\triangle mc^2$' where E=energy, $\triangle$m=Difference in mass of the matter and c=the speed of light, where c= 3×10^8 m/s in vacuum. This is the most famous equation in Physics. This equation made it clear that a little quantity of matter is capable of producing massive energy if it is processed in a particular way. Einstein used planck's quantum theory to explain the photoelectric effect. Along with the quantum theory, the Scientists were attracted towords this theory of relativity as well.

Einstein put forward the general theory of relativity in 1915. According to this theory, rays of light should bend while passing near a massive star. Einstein accepted directorship of the nearly established institute for mathematical studies at Princeton, New Jersey, USA . He also accepted American citizenship.

Einstein was awarded the Noble Prize for Physics in 1921 for his research on Photoelectric effect. This great Scientist bade farewell to the world on April 18,1955 at princeton.

Courtasy: Shri Dahyabhai Pitambarbhai
Derasari Primary School No.-296

SCIENCE FACTS MARCH 2020

1 March	Self Injury Awareness Day.
3 March 1838	American Astronomer, George W. Hill (who plotted the Moon's Orbit) was born.
3 March 1847	Mr. Alexander Graham Bell (Inventor of Telephone) was born.
3 March 1969	India's first Rajdhani Express train having speed of 140 km/h traveled for first time between Delhi and Hawrah.
4 March 1754	Benjamin Waterhouse (inventor of Smallpox vaccine) was born.
6 March 1937	Valentina Tereskowa (Lady Astronaut who was the first lady to enter into the space) was born.
8 March	International Women's Day (by UN).
8 March 1879	German physicist and chemist, Otto Hahn (Discoverer of radiothorium and actinium) was born.
9 March 1934	Uri Gagarin (world's first Astronaut) was born.
10 March 1876	Mr. Alexander Grehambel experimented for the first time to talk on telephone with his assistant Botish.
13 March 1781	Planet "Uranus" was discovered by well-known Astronomer Herschel.
14 March 1879	Sir Albert Einstein (discoverer of Theory of Relativity) was born.
16 March 1789	George Simon Ohm (discoverer of Ohm's Law) was born.
18 March 1858	German engineer, Rudolf Diesel (inventor of diesel motor) was born.
21 March 2016	It is the day when Day and Night time becomes equal.(Vernal Equinox)
21 March	World Down Syndrome Day.
22 March	World Day for Water.
23 March	World Meteorological Day. (WMO)
24 March 1854	Start of Telegram era in India by delivering first telegram from Kolkata to Agra.
27 March 1845	Wilhelm Conrad Rontgen (Noble prize winner & inventor of invisible 'X' rays) was born.
29 March 1967	Making of world's biggest submarine "9 Redoubtable (S611)" by France, which is having weight of 7780 ton and length of 419 feet.

U. N. : United Nations

UNESCO United Nations Educational Scientific & Cultural Organization

SCIENCE CENTRE SCS SURAT

Timings

Tuesday to Friday
9.30 am to 4.30 pm

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बहुजनहिताय बहुजनसुखाय

SCIENTIFIC QUESTION

What is Lighter than Air?

Today's aircraft take their inspiration from birds. Although they are heavier than air, birds generate a powerful force called lift, which counteracts the force of gravity. The first aircraft-balloons and airships-worked in a quite different way, however. They were lighter than air and floated above the ground.

No one knows who first had the idea to build hot-air balloons. About 2000 years ago, Chinese children used to set fire to dry twigs that they had placed inside upturned eggshells. As the twigs burned, they heated the air inside the shells and made them fly into the air, much like miniature hot-air balloons. By 1200 C.E., the people of Mongolia were building hot-air balloons shaped like dragons and monsters that were flown during religious ceremonies.

The first hot-air balloons may have been built by trial and error, but they were, nevertheless, based on a firm scientific idea dating as far back as 200 B.C.E.

When Greek thinker Archimedes leapt from his bath crying Eureka!- meaning "I've found it!"- he had discovered that objects floats if they weigh less than the water they displace, or push out of the way. A British philosopher called Roger Bacon thought that the same idea would also apply to the air. Bacon knew that ships floated on water because of Archimedes' principle. He thought that similar vessels might be built to float in mid air.

However water and air seemed to be very different substances, why should they work in the same way? It was in the 17th Century, with the pioneering work of Irish chemist Robert Boyle that people came to understand how this might be possible. Boyle showed that gases become less dense as they get hotter. This was the idea that eventually lifted human kind into sky.

It Was not until 1783 that a hot-air balloon actually took off. French brothers Joseph-Michel and Jacques-Etienne Montgolfier built a huge balloon out of linen and lined it with thin paper with a straw and wood fire burning beneath, the balloon soared around 3,000 feet (900 m) into the air.

People soon realized that heating up air was only one way of making a balloon float. Another method was to fill a balloon with a gas that was already lighter than air. The most obvious gas to use was hydrogen, the lightest gas of all, and one that was readily produced by reacting metals with strong acids. Although simple hot-air balloons are good at lifting thing into the sky, once airborne, they go wherever the wind blows them. Modern balloonists use side vents and flaps to provide a little control, but balloons are still an impractical form of transportation.

English man Roger Bacon had speculated about ships traveling through the air, and a French man , Henri Giffard, made that possible in 1852. He built cigar-shaped structure that could be relied on to move in only one direction. To this, he added a small stream engine that would turn a propeller and drive his balloon forward. It reached a top speed of 6 mph(almost 10 km/h) and traveled 17 miles(27km).

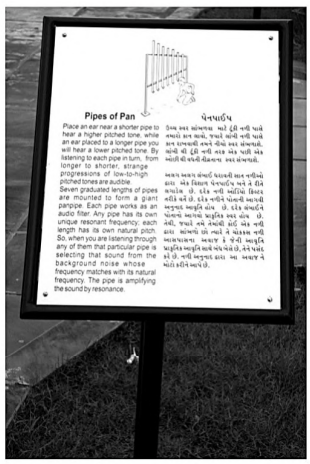
Courtasy: Shri Dahyabhai Pitambarbhai
Derasari primary school No.-296

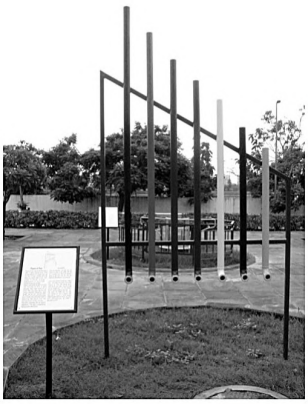
KNOW THE PARK EXHIBIT

Pipes of pan

Place an ear near a shorter pipe to hear a higher pitched tone, while an ear placed to a longer pipe you will hear a lower pitched tone .By listening to each pipe in turn, from longer to shorter, strange progressions of low-to-high pitched tones are audible.

seven graduated lengths of pipes are mounted to form a giant panpipe .Each pipe works as an audio filter. Any pipe has its own unique resonant frequency, each length has its own natural pitch. So, when you are listening through any of them that particular pipe is selecting that sound from the background noise whose frequency matches with its natural frequency. The pipe is amplifying the sound by resonance.





SCIENCE PROJECT

Surat Municipal Corporation had organized Science Fair at Art Gallery, Science Centre, Surat on 30st and 31st August 2019. Shri Dahyabhai Pitambarbhai Derasari primary school No.-296 had presented their project on 'Smoke purification' under the use of technology in problem solving subject.

Aim:- With the help of this model, Air pollution of the industry can be reduced.

Principle:-The Toxins contained in the smoke are absorbed by carbon rods and pure smoke erupts.

Working:-Three Boxes are created using a form board. Here the pvc pipe in a plastic bottle on one side and carbon nozzle is attached to the wire and placed in the bottle. Another pipe is placed in chimney like structure made using pvc sheets.

Application:- The gases that come out of the industry is, such as SO_2, NO_2, CO_2, Cl_2 etc. are absorbed by carbon rods.

Inauguration of 'Entering Space Gallery' and 'Astronomy, Through Ages Gallery'

On 14/02/2020 'Entering Space Gallery' and 'Astronomy, Through Ages Gallery' were inaugurated by Hon. Mayor Shri Jagdishbhai Patel at Science Centre Surat. Dy. Mayor Shri Niravbhai Shah, Standing Committee Chairman Shri Anilbhai Gopalani, Chairman of various Committees, Municipal Corporators and public remained present in this inauguration. The work of developing these galleries was awarded on turnkey basis to CMD (Creative Museum Designers) of NCSM (National Council of Science Museum). CMD has developed these galleries. The details of these galleries are as under:

Entering Space Gallery:

'Entering Space Gallery' is developed on the first floor of Science Centre Surat. This Gallery consists of interesting information about space, which includes early and modern rocket launched into the space, various space suits used in space and the details about different foods which are sent to space. Information about the planets of our Solar system, exhibit to experience disorientation in space and an exhibit, that gives experience about how difficult, it is to walk without the gravitational force in space are also showcased. There is an exhibit, which gives information about visitors weight on various planets and another exhibit shows the difficulties that astronaut experiences while they flying into the space. There are replica's of various vehicle used to send satellite into the space PSLV, GSLV and replicas of Mangalyaan and Chandrayaan are also on display.

Astronomy, Through Ages Gallery:

'Astronomy, Through Ages Gallery' is developed on the second floor of the Science Centre, which consists of the, information about this oldest branch of Science and Astronomy. The details through various panels and exhibits from the beginning of astronomy which includes ancient Greek, Babylon to Indian astronomy. Replica of Galileo's Telescope and a Diaroma of Tyco Brahe's observatory are show cased in the Gallery. There is also replica of eight planets of our Solar system. The details of the principle used in modern astronomy and unsolved questions of modern astronomy are also presented and the exhibit about how universe is seen, when we see universe from infrared, visible light, radio waves etc are shown. There is an exhibit that showcase the events happened after the expansion of Big bang. Replica which describes the concept of Gravity Well in Space Science, the vastness of the universe and time is taken by light to reach to earth from Moon, Sun, Stars and Galaxy are also shown. One Quiz section is, also prepared for visitors to interact and evaluate the gained knowledge after visiting the Astronomy, Through Ages Gallery. As per Hon. Mayorshri's announcement, students had visited these new galleries for free from 15.02.2020 to 29.02.2020.