

SCIENCE CENTRE NEWS LETTER

November 2019
Issue 55



Published by
Banchhanidhi Pani

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Commissioner

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SCIENCE CENTRE

Volume 5, Issue 7

WHAT'S NEW IN SCIENCE?

Privatisation of the scientific industries.

Privatisation of scientific industries like nuclear power production, space exploration etc., have begun to be globally accepted. Privatisation of these industries ensures efficient functioning, better outcomes as well as better utilisation of the resources.

1. Nuclear industry: There are many ways in which private companies can get involved in the nuclear industry. The most immediately obvious ways in which private companies can get involved is in the 1) developing and owning power plants and 2) mining of raw material. However, there are also other opportunities for companies to get involved in: 1) Construction of power plants, 2) Logistics of raw material and waste and 3) Manufacturing of Parts, among others.

2. Space exploration: Ever since the legalization of privatized space travel in 2004, more and more

and Virgin Galactic have been taking a more active role in space travel. For example, some companies now bring cargo to the International Space Station through private space shuttles and mine precious metals from asteroids. The biggest cited benefit of the privatization of space travel is its cost-effectiveness. For example, whereas the old Space Shuttle program cost around \$4 billion each year, the new commercial resupply services contracts only cost around \$50 million per launch. Thus, NASA now has more money available to spend in other areas. Instead of being bogged down by the routine application of old research, NASA can prioritize their limited budget to work more on research of other unknowns and development of new long-term space travel technologies. Additionally, with many private companies all developing new space technologies, there is more competition for innovation, which may also lead to faster growth in the field of space technology.

3. Hyperloop: A Hyperloop is a proposed mode of passenger and/or freight transportation, first used to describe an open-source vacuum train design released by a joint team from Tesla and SpaceX. Founded in 2015, Canadian private startup Transpod is developing a Hyperloop concept that will travel at a maximum speed of 758 miles per hour, about 50% faster than air travel and just short of the speed of sound. The Company intends to present a full-scale concept at the InnoTrans Rail show in September of this year. Working closely with the University of Toronto, they expect to have a commercial prototype by 2020.

Courtesy: J.H. Ambani Saraswati Vidhyamandir



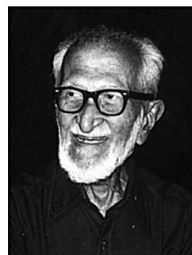
companies have been joining in on a new space race. In recent years, companies such as Space X

SCIENTIST OF THE MONTH

Sálim Moizuddin Abdul Ali

Sálim Moizuddin Abdul Ali was an Indian ornithologist and naturalist. Sometimes referred to as the "Birdman of India", Salim Ali was the first Indian to conduct systematic bird surveys across India and wrote several bird books that popularized ornithology in India.

Salim Ali was born on 12th November 1896 in Mumbai. He was introduced to the serious study of birds by W. S. Millard, secretary of the Bombay Natural History Society (BNHS) where Amiruddin was a member, who identified an unusually coloured sparrow that young Salim had shot for sport with his toy air gun. Millard identified it as a yellow-throated sparrow, and showed Salim around the Society's collection of stuffed birds. Salim Ali was very influential in ensuring the survival of the Bombay Natural History Society (BNHS) and managed to save the 100-year-old institution by writing to the Prime Minister Pandit Nehru for financial help. He helped in the



establishment of an economic ornithology unit within the Indian Council for Agricultural Research in the mid-1960s. Ali had considerable influence in conservation related issues in post-independence India especially through Prime Ministers Jawaharlal Nehru and Indira Gandhi. He received several honorary doctorates and numerous awards. The earliest was the "Joy Gobinda Law Gold Medal" in 1953, awarded by the Asiatic Society of Bengal based on an appraisal of his work by Sunder Lal Hora (and in 1970 he received the Sunder Lal Hora memorial Medal of the Indian National Science Academy).

The Indian government awarded him with a Padma Bhushan in 1958 and the Padma Vibhushan in 1976. He was nominated to the Rajya Sabha in 1985. Dr. Salim Ali died in Mumbai at the age of 90 on 20 June 1987, after a protracted battle with prostate cancer.

Courtesy: J.H. Ambani Saraswati Vidhyamandir

SCIENCE FACTS NOVEMBER 2019

Aviation Month, Good Nutrition Month, National Diabetes Awareness Month

3 rd Nov 1957	Soviet Union launched an artificial Earth Satellite "Sputnik-2" which was the first satellite to carry a living organism i.e. A dog named 'Laika'.
3 rd Nov 1960	America launched "Explorer 8" satellite into the space to discover atmospheric Composition of the Ionosphere.
5 th Nov 1855	French Meteorologist Leon Teisserenc de Bort (Discoverer of Stratosphere) was born.
6 th November	International Day for preventing the Exploitation of the Environment in war and Armed conflict. (Recognised by U.N.)
7 th Nov 1867	French Scientist Mary Curie (Discoverer of Radium) was born.
7 th Nov 1888	Indian Famous Scientist Chandrashekhara Raman (Discoverer of Raman Effect) was born.
8 th Nov 1922	South African Surgeon Christian Bernard (Who made first successful Heart Transplant) was born.
9 th Nov 1801	Gail Borden (Father of Modern Dairy Industry) was born.
9 th Nov 1897	British Chemist Ronald G.W. (Inventor of Flash Photolysis Methodology) was born.
10 th November	World Science Day for Peace & Development (by UNESCO)
12 th Nov 1896	Dr. Salim Ali (Internationally honoured Indian Ornithologist known as "Birdman of India") was born.
13 th Nov 1893	American Bio-chemist Adverd A Doicy (Inventor of process to make Vitamin K1) was born.
14 th November	World Diabetes Day [by WHO]
14 th Nov 1776	Henri Dutrochet (discoverer of process of Osmosis) was born on this day
14 th Nov 1863	Belgian Chemist Leo Baekeland (Inventor of Bakelite) was born.
18 th Nov 1897	British Physicist Petrik M.S.Bleckett (Discoverer of Nuclear Reaction) was born.
19 th Nov 1997	Kalpna Chawala's (First Woman Astronaut of Indian Origin) first flight in space.
19 th Nov 1912	Cell Biologist George E Palade (Discoverer of Ribosomen) was born.
20 th November	Universal Children's Day. (by U.N.)
21 th November	World Television Day. (by U.N.)
29 th Nov 1803	Austrian Physicist Christian Doppler (Discoverer of Doppler effect Radar) was born.
30 th Nov 1858	Sir Jagdishchandra Bhagwanchandra Bose (Great Indian Scientist and Botanist) was born.
30 th Nov 1917	Sir Jagdishchandra Bose started "Bose Research Institute" for research on Plants and Animals at Calcutta.
<p>U. N. : United Nations WHO : World Health Organization UNESCO : United Nations Educational Scientific & Cultural Organization</p>	



Timings

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday
& Public Holidays

11.00 am to 6.30 pm

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Ans :- 1) b, 2) d, 3) d, 4) c, 5) a, 6) a, 7) d, 8) c.

KNOW THE EXHIBIT AT FUN SCIENCE GALLERY

Cross section of cone

Rotate the cone and observe the rotating cone filled with coloured liquid. As slope varies you can find different geometrical shapes like circle, ellipse, hyperbola, parabola.

- The angle of the plane when it slices the cone produces one of four cross-sections.
- When the plane intersects the cone parallel to one edge of the cone, the intersection will be a parabola.
- When the plane intersects the cone parallel to the base of the cone, a circle will be produced.
- When the plane intersects the cone parallel to the central axis of the cone, half of a hyperbola is produced.
- When the plane intersects the cone at any other angle, an ellipse is formed.



SCIENTIFIC QUESTION

What are Tardigrades?

Tardigrades, often called water bears or moss piglets, are near-microscopic animals with long, plump bodies and scrunched-up heads. They have eight legs, and hands with four to eight claws on each. While strangely cute, these tiny animals are almost indestructible and can even survive in outer space.

Habitat:

Water bears can live just about anywhere. They prefer to live in sediment at the bottom of a lake, on moist pieces of moss or other wet environments. They can survive a wide range of temperatures and situations.

Research has found that Tardigrades can withstand environments as cold as minus 328 degrees Fahrenheit (minus 200 Celsius) or highs of more than 300 degrees F (148.9 Celsius), according to Smithsonian magazine. They can also survive radiation, boiling liquids, massive amounts of pressure of up to six times the pressure of the deepest part of the ocean and even the vacuum of space without any protection. A 2008 study published in the journal Current

Biology found that some species of tardigrade could survive 10 days at low Earth orbit while being exposed to a space vacuum and radiation.

In fact, water bears could survive



after humanity is long gone, researchers found Scientists from Harvard and Oxford universities looked at the probabilities of certain astronomical events Earth-pummeling asteroids, nearby supernova blasts and gamma-ray bursts, to name a few over the next

billions of years. Then, they looked at how likely it would be for those events to wipe out Earth's hardiest species. And while such catastrophic events would likely wipe out humans, the researchers found little tardigrades would survive most of them, they reported in a study published online July 14, 2017, in the journal Scientific Reports.

"To our surprise, we found that although nearby supernovas or large asteroid impacts would be catastrophic for people, tardigrades could be unaffected," David Sloan, a co-author of the new study and researcher at Oxford, said in a statement.

When the Lander of the Beresheet mission of Israel, crashed on the Moon with that the container of Tardigrades placed in the Lander also crashed and they came out from the Lander. The container consists of thousands of Tardigrades which are now in the Moon's atmosphere. And now it is believed that they are polluting the natural satellite's surface and atmosphere.

Courtesy : J.H. Ambani Saraswati Vidhyamandir

SCIENCE QUIZ

- 1. Which of the following galaxies is the closest to Milky way?**
a) Hoag's object, b) Andromeda galaxy, c) Maywell's object, d) Cygnus A
- 2. How many chambers does the human heart have?**
a) 3, b) 5, c) No chambers, d) 4
- 3. Which alloy of silver has 92.5% of silver in it?**
a) Steel, b) Britannia silver, c) Constantan, d) Sterling silver
- 4. Who is regarded as the father of medicine?**
a) Socrates, b) Aristotle, c) Hippocrates, d) Plato
- 5. Light year is the unit of what?**
a) Distance, b) Space, c) Time, d) Power
- 6. Who gave the Black Hole Theory?**
a) Stephen Hawking, b) C.V Raman, c) Albert Einstein, d) Galileo
- 7. Which is the lightest element on the periodic table?**
a) Carbon, b) Iron, c) Sodium, d) Hydrogen
- 8. What is the purest form of iron?**
a) Pig Iron, b) Cast Iron, c) Wrought Iron, d) Invar

SCIENCE PROJECT

Surat Municipal Corporation had organized 'Science Fair' at Art Gallery, Science Centre, Surat on 30st and 31st August 2019. J.H. Ambani Saraswati Vidhyamandir had presented their project on 'Smart Traffic Solution For Smart City'.

AIM: - To provide a platform, a setup for two wheeler riders and make transport an easier, affordable, comfortable and memorable one. Riders will be able to utilize full benefits of the vehicular mechanism.

Project based on problems faced by two wheeler riders: - In India nearly 1.5 lakh two wheeler users are killed every year in accidents. That accounts for nearly 400 deaths per day. The increasing traffic and other problems like punctures, broken roads, etc. are an obstacle for two wheeler riders.

Working: - The working mechanism is totally on principle of mechanics in which rider will have to physically pedal the cycle and thus producing a torque which will further help to generate system of forces thus leading to rotation of pulleys and instigating cause of motion of vehicle.

It is environmental friendly, cheap mode, convenient mode; improve physical standards of lives of individual, reduced accident chance, traffic problems etc.

Highlights:-

1. Feasible solution to the traffic problems which can be incorporated to existing infrastructure with minimum requirement of land area.
2. Efficient aerodynamic design of ride
3. Eco-friendly operation, Can work on human/Solar power, minimum carbon footprint.

