

# SCIENCE CENTRE NEWS LETTER

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## SCIENCE CENTRE

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### WHAT'S NEW IN SCIENCE?

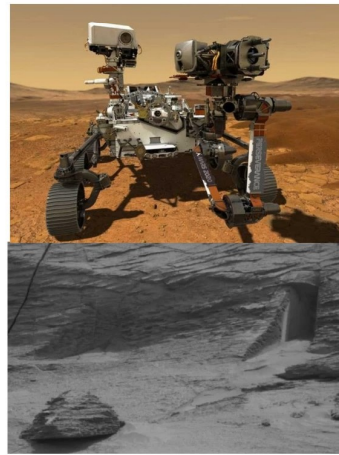
#### NASA's Curiosity Rover Finds a 'Doorway' On Mars

NASA's (National Aeronautics and Space Administration) Curiosity Rover ('Mars Rover' was designed by NASA to explore the 'Gale Crater' on planet Mars as a part of NASA's Mars Science Laboratory (MSL) mission which was launched in Space on 26 November 2011) seems to have found a "doorway" on Mars. A rectangular opening on Mars' surface looks a basement doorway, perhaps leading to an underground civilisation! The image was taken by Curiosity Rover as it ascended Mount Sharp. Most likely to believe this is an underground bunker for secret alien meetings. Unfortunately, it's not.

According to Ashwin Vasavada, Project Scientist from the Mars Science Laboratory (MSL), NASA, the rectangular opening is simply the space between two fractures in a rock. The area imaged by Curiosity's Mastcam has formed from ancient sand dunes. These dunes piled on each other over centuries. Once these sand dunes were

compacted together, they were buried and unburied over time as the sand on Mars surface shifted.

Owing to the pressure from this constant piling, the sandstone essentially fractured at different spots. So, that door is not a door, but in fact a small opening in the rock, which Vasavada thinks is about 30 centimetres high. Vasavada said, "This particular doorway-shaped fracture likely formed in one of two ways. Usually, these fractures in Martian sand dunes are vertical. In this case, it appears that there were two vertical fractures, and the middle piece has been removed. Or perhaps it's a single vertical fracture and its blocks have moved a little bit."



The Curiosity Rover has been trawling around Mars since it landed in August 2012 in Gale Crater. The Rover has till date covered 17.3 miles (27.84 kilometres) in 3472 Martian days

### SCIENTIST OF THE MONTH

#### Abhay Vasant Ashtekar

Abhay Vasant Ashtekar was born on 5 July 1949 in Kolhapur, Maharashtra. Ashtekar enrolled in the graduate program for gravitation at the University Of Texas, Austin. He completed his PhD at the University of Chicago, Illinois, United States (U.S) under the supervision of Robert Geroch in 1978. He is the Professor of Physics and the Director of the Institute for Gravitational Physics and Geometry at Pennsylvania State University, United States. As the creator of Ashtekar variables, he is one of the founders of Loop Quantum Gravity and its Subfield Loop Quantum Cosmology. He has also written a number of descriptions of

Loop Quantum Gravity that are accessible to Non-Physicists. Stephen Hawking made prediction about entropy of a black hole in 1974. This was calculated and explained by Ashtekar and his colleagues in 1999 . Oxford Mathematical Physicist Roger Penrose has described Ashtekar's approach to quantum gravity as "The most important of all the attempts at 'quantizing' general relativity." Ashtekar was elected as Member to National Academy of Sciences in May 2016.





### Timings

Tuesday to Sunday  
& Public Holidays

9.30 am to 4.30 pm

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## SCIENCE FACTS JULY 2022

1 July	Birthday of famous Physician & Bharat Ratna Awardee Bidhan Chandra Roy which is celebrated as 'Doctor's Day' in India.
2 July 1938	Birthday of Chandrakumar Naranbhai Patel (inventor of the Carbon Dioxide Laser).
4 July 2005	Successful collision of NASA's satellite "Deep Impact" with comet into the space was held at the distance 13.04 million km from the Earth.
5 July 1996	First Clon Mammal (Genetically identical individuals) 'Dolly' (a sheep) was born on this day
6 July 1906	Daulat Singh Kothari (well known Indian physicist) was born.
6 July 1885	Vaccine for Rabies first time used on human on this day.
7 July	International Cooperative Day (First Saturday of July )
11 July	World Population Day. (by U.N.)
16 July 1945	The first detonation with code name "Trinity" conducted by United States at "Los Alamesh". This date is marked as the beginning of Atomic Age.
16 July 1969	Successful launching of "Apollo 11" with the help of "Saturn V" rocket from Kennedy Space Center at Florida.
18 July	Nelson Mandela International Day for freedom, justice and democracy. (by U.N.)
18 July 1980	Launching of Indian satellite "Rohini RS-1" into the Space.
19 July 1814	Samuel Colt (inventor of Revolver) was born.
24 July 1969	Successful landing of "Appolo-11" in the pacific Ocean.
25 July 1978	"Louise Joy Brown" the world's first successful Test Tube Baby was born in Great Britain.
26 July 2019	20th Annual System Administrator Appreciation Day. (Also known as Sysadmin Day). (Last Friday of July)
U.N.: United Nations	

Answers: 1) d, 2) c, 3) b, 4) b, 5) b, 6) c, 7) a



## SCIENTIFIC QUESTION

### Haemophilia

Haemophilia is mostly an inherited genetic disorder that impairs the body's ability to make blood clots, a process needed to stop bleeding. This results in people bleeding for a longer time after an injury, easy bruising, and an increased risk of bleeding inside joints or the brain. Those with a mild case of the disease may have symptoms only after an accident or during surgery. Bleeding into a joint can result in permanent damage while bleeding in the brain can result in long term headaches, seizures, or a decreased level of consciousness.

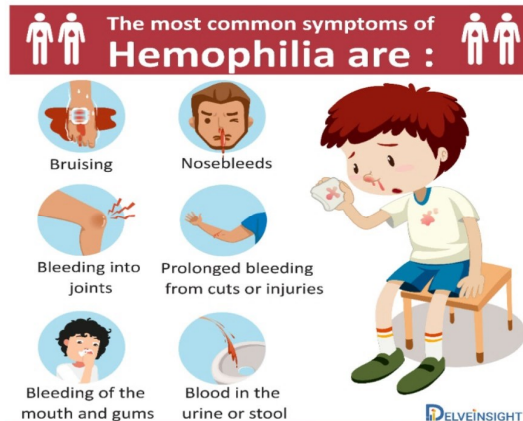
There are **two main types of haemophilia: haemophilia A**, which occurs due to low amounts of clotting factor VIII (an essential blood-clotting protein), and **haemophilia B**, which occurs due to low levels of clotting factor IX (one of the serine proteases (enzyme) of the coagulation system). They are typically inherited from one's parents through an X chromosome carrying a non functional gene. Other types include **haemophilia C**, which occurs due to low levels of factor XI (the zymogen form of factor X<sub>II</sub>, one of the enzymes of the coagulation cascade), and **parahaemophilia**, which occurs due to low levels of factor V (is a protein of the coagulation system).

**Signs and symptoms:** General symptoms include internal or external bleeding episodes, which are called "bleeds". People with more severe haemophilia experience more severe and more frequent bleeds, while people with mild haemophilia usually experience more minor

symptoms except after surgery or serious trauma. The most characteristic type of internal bleed is a joint bleed where blood enters into the joint spaces. This is most common with severe haemophiliacs and can occur spontaneously (without evident trauma). If not treated promptly, joint bleeds can lead to permanent joint damage and disfigurement.

Children with mild to moderate haemophilia may not have any signs or symptoms at birth, especially if they do not undergo circumcision. Their first symptoms are often frequent and large bruises and haematomas (a localized bleeding outside of blood vessels) from frequent bumps and falls as they learn to walk.

**Diagnosis:** Haemophilia can be diagnosed before, during or after birth if there is a family history of the condition. Several options are available to parents. If there is no family history of haemophilia, it is usually only diagnosed when a child begins to walk or crawl. They may experience joint bleeds or easy bruising.



There is no long-time cure for this disease. Treatment and prevention of bleeding episodes is done primarily by replacing the missing blood clotting factors. Clotting factors are usually not needed in mild haemophilia. In moderate haemophilia clotting factors are typically only needed when bleeding occurs or to prevent bleeding with certain events. In severe haemophilia preventive use is often recommended two or three times and may continue for life.

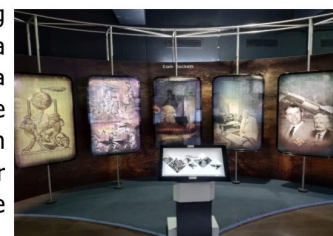
## KNOW THE EXHIBIT

### Early Rockets: Part-2

This Exhibit is situated at "Entering Space Gallery" between Fun Science Gallery and Power of Play Gallery at the first floor of Science Centre.

This exhibit is explained with five (5) parts, which explains how Rockets were made in earlier times. The part-2 describes how Chinese and Mongols made and used Rockets:

China was the first civilization to make and use rockets. Rockets were used in the form of fireworks at festivals and ceremonies. Later, these fire arrows were used to set fires and defend from invading troops during the song dynasty, they started to use gunpowder to make ancient Chinese rockets. The construction process was quite complicated. First a tube was rolled from paper and then the gunpowder was packed into the tube. The tube was then fixed to an arrow and would be launched by a bow. A large number of rockets used to be piled inside a launcher, much similar to the body modern rockets. Till 12th century they developed several long range rockets. According to legends, there was a man in China, named Wan Hu. He attempted to visit moon. He made a chair, fastened with 47 large gun powdered rockets. He asked his servant to ignite the rocket. In a huge blast, the chair was surrounded by heavy smoke. When the smoke cleared, Wan Hu was gone without a trace. Well, maybe he was dead due to the explosion but this story portrayed the dream of mankind to fly to moon. In 1232, after the battle of Kai-Keng, Mongols learned to create their own rockets. For self-defence, China had locked itself within the Chinese walls. Thus, it was the Mongols who spread the rockets to Europe.



## QUIZ

1. Which of the following is not used for electro plating metal articles?

- a) Nickel                      b) Silver                      c) Chromium                      d) Sodium

2. Petroleum is mainly a mixture of which one of the following class?

- a) Carbohydrates    b) Carbogens                      c) Hydrocarbons                      d) Alcohols

3. What is the main constituent of LPG?

- a) Methane                      b) Butane                      c) Ethane                      d) Propane

4. What is measured by the use of Spring Balance?

- a) Mass                      b) Weight                      c) Pressure                      d) Speed

5. Which of the following is major source of water pollution?

- a) Industrial Wastes                      b) Untreated sewage  
c) Use of Fertilisers                      d) Toxic Metals

6. Which type of mirror is used as a back view mirror?

- a) Plane Mirror                      b) Concave Mirror  
c) Convex Mirror                      d) Any of these

7. To sharpen the blade of a knife by rubbing it against a surface, Which of the following is most suitable?

- a) Stone                      b) Plastic Block                      c) Wooden Block                      d) Glass Block