PRAJYA
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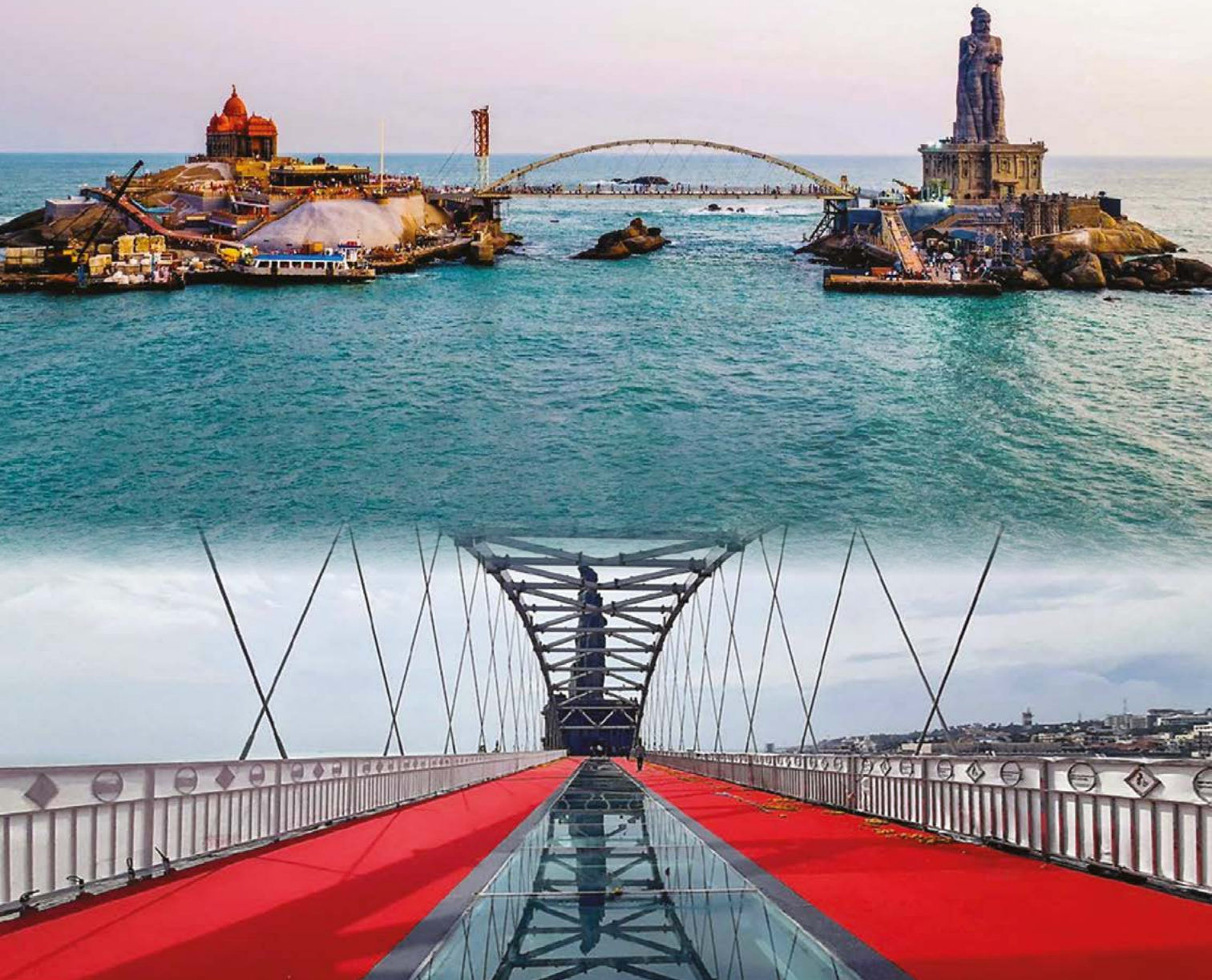
India's first glass sea bridge in Kanyakumari



Savitribai Phule Jayanti

3rd January

Savitribai Phule Jayanti is celebrated on 3rd January every year. It is the birthday of Savitribai Phule, a prominent, social reformer & educator. She is known as the "mother of Indian feminism".

COMMENTS & SUGGESTIONS
prajya.magazine@davchennai.org

FROM THE EDITOR'S DESK

Needless to say, food plays a significant role in the life of people. As per Ayurveda and yogic philosophy, there is a direct correlation between the type of food we consume and our physical and mental well-being, as also our spiritual state.

While advancement in technology has made life more convenient, it has a flip side which directly affects our habits, particularly food habits. Dietary supplements have become ubiquitous, quite unfortunately. Mother Nature, generously provides us with all the nutrients that we require in various forms. Artificial supplements should be avoided, especially for the young.

आहार शुद्धौ सत्त्व शुद्धिः

(Rough translation: "The purity of food leads to the purity of the inner self.")

Indusfood is working toward advancing the Indian food economy. It offers an international stage for food companies to connect with global buyers, explore new markets and expand their range. It showcases India's unique food offerings and also facilitates global partnerships and investment opportunities.

Indian government's initiatives like **Project Vistaar and Kisan Kavach** will be a boon to the food growers to better their yields and livelihood.

Read, reflect and revert with your thoughts and feelings.
We look forward to your support and suggestions.

- Editorial Team

Dear Readers,

There have been requests from quite a few readers for hard copies of Prajya. We understand that quite a high percentage of our young readers keep revisiting some articles, and a handy print version within reach induces one to read more often, highlight things and make notes. This also partly contributes to students spending less screen time. The Prajya team is happy to bring to you the issue in print.

However, there are few things that we want to be careful about:

A. We don't want to print more than what is required and

B. Keep the cost of the print version (plus postage) within reasonable limits.

Please note that the access to free online e-version will continue.

So, it will greatly help us if you could fill in the details in the link provided.

http://bit.ly/Prajya

Happy Reading !

Watch out for the Monthly Prajya Quiz online

Visit https://davchennai.org/publications/prajya-news-magazine/

Content

International Current Affairs

National Current Affairs

Defence updates

General Knowledge

Shri Sampath D

China's latest achievements

a) China sets new spacewalk record

Two Chinese astronauts aboard the Tiangong space station completed a **nine-hour spacewalk** and this feat sets a **new global record.** Chinese astronauts **Cai Xuzhe** and **Song Lingdong** broke the record for the longest spacewalk. This feat was confirmed by China Manned Space Agency (CMSA). The previous record belonged to US astronauts James Voss and Susan Helms who spent eight hours and 56 minutes outside Space Shuttle Discovery. Their mission took place in March 2001 during an International Space Station expedition.

The former Soviet Union in 1965 became the first nation to carry out a spacewalk. Since then, Russia and the United States have conducted hundreds of such missions, primarily outside the International Space Station for tasks ranging from solar panel installations to materials research.

The first ever spacewalk undertaken by a Chinese astronaut was in September 2008, when Zhai Zhigang spent around 20 minutes outside the Shenzhou-7 spacecraft. In recent years, China has been making significant efforts to establish itself as a major player in the space sector. The recent video footage showed the astronauts leaving the Wentian lab module.

They were tethered by safety cables during the extravehicular activity. Their work was supported by robotic arms and team coordination.

The crew of Shenzhou-19, reached Tiangong in late October and is scheduled to return to Earth in late April or early May 2025. They will reportedly land at the Dongfeng site in Inner Mongolia. Till then, more spacewalks will be conducted as part of the mission, which will also include a large number of scientific experiments and technical tests. The two astronauts donned their **Feitian spacesuits** to carry out an array of tasks on the station's exterior, including the installation of space-debris protection devices.

b) China unveils world's fastest high-speed train prototype

China unveiled an updated model of its high-speed bullet train the CR450 which reached a speed of 450 kmph during the test runs and an operational speed of 400 kmph making it the world's fastest high-speed train, states China State Railway Group Company (China Railway).

The new model, known as the CR450 prototype, will further shorten travel time and improve connectivity, making travel more convenient and efficient for the country's passengers. This innovation aligns with China's ambitious plans to expand its high-speed rail network to 70,000 km by 2035, cementing its leadership in global rail systems.

The CR450 prototype with key performance indicators - **operational speed, energy consumption, interior noise, safety and passenger comfort and braking distance** - set a new international benchmark. It is significantly faster than the CR400 Fuxing high-speed rail (HSR) currently in service, which operates at speed of 350 kmph.

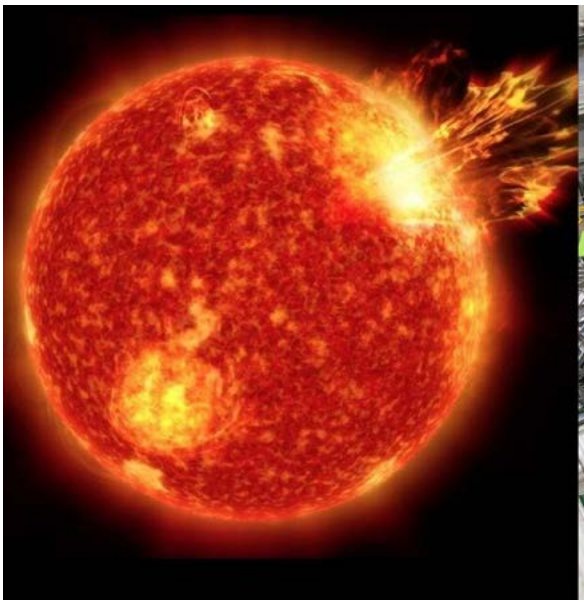
It is seen that the HSR network expansion has played a crucial role in the nation's economic and social development, reducing travel times and boosting industrial development along railway routes. Moreover, the train service between Beijing-Shanghai is the most profitable, while the networks in other cities are yet to turn lucrative.

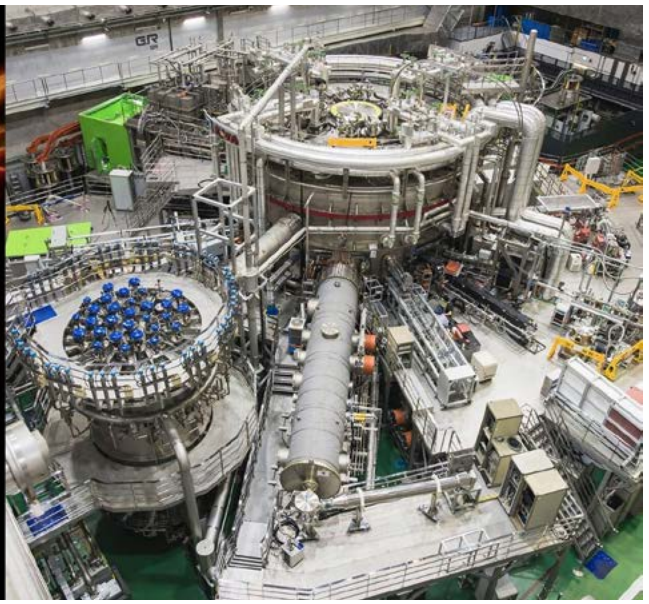
In recent years, China's HSR exported its network in Thailand and Indonesia, and built the Belgrade-Novi Sad HSR in Serbia.

China's high-speed rail journey, which began in the early 2000s, has transitioned from following global trends to setting them. The CR450 follows iconic projects like the Shanghai Maglev (430 km/h) and international initiatives like the Laos-China Railway, which links Kunming to Vientiane. Future plans include extending high-speed networks through Southeast Asia, connecting Kunming to Singapore via Laos, Thailand and Malaysia.

The Feitian space suit is an extravehicular space suit design developed and used by the China Manned Space Program. It provides life support, environmental protection and communications for taikonauts (Chinese astronaut) during extravehicular activity. The name fēi tiān literally and separately means "flying" and "sky" in Mandarin. It is a reference to the flying gods and goddesses feitian, sometimes translated as flying apsara, in Chinese.

Kum Anu Narayan





'Artificial Sun' sets new record

Keeping the swirling, superhot plasma stable long enough for fusion to occur is one of the biggest challenges.

Scientists in South Korea have achieved a major breakthrough in the quest for clean, nearly endless energy. Their **Korea Superconducting Tokamak Advanced Research (KSTAR)** reactor, often called the "artificial sun," heated a loop of plasma to an incredible 180 million degrees Fahrenheit (100 million degrees Celsius) for 48 seconds. This beats the previous record of 31 seconds set by the same reactor in 2021.

Fusion energy, the power source of stars, has attracted scientists for over 70 years. In the cores of stars, hydrogen atoms fuse to form helium under extremely high pressure and temperature. This fusion process releases enormous amounts of energy as light and heat without producing harmful greenhouse gases or long-lasting radioactive waste.

However, recreating star-like conditions here on Earth is extremely difficult.

A common design for fusion experiments is called a tokamak. It works by heating a special state of matter called plasma and containing it in a donut-shaped chamber using powerful magnets. Plasma consists of positively charged ions and free electrons, and it needs to be heated to temperatures hotter than the sun because Earth-based reactors have much lower pressure compared to the centres of stars.

Keeping the swirling, superhot plasma stable long enough for fusion to occur is one of the biggest challenges. The sun's core is around 27 million degrees Fahrenheit (15 million degrees Celsius) and has extremely high pressure.

On Earth, fusion reactors must make up for the lower pressure by reaching temperatures many times hotter than the sun's core.

Scientists can heat plasma to those temperatures, but confining it without damaging the reactor is tricky. Magnets or lasers are usually used to keep the plasma in place. To improve their latest results, KSTAR researchers changed some parts of their reactor, swapping out carbon for tungsten to make the **"divertors"** (which remove heat and waste from the reactor) more efficient.

"Despite being the first experiment run in the environment of the new tungsten divertors, thorough hardware testing and campaign preparation enabled us to achieve results surpassing those of previous KSTAR records in a short period," said KSTAR Research Center Director Si-Woo Yoon.

The team's next goal is to reach 180 million degrees Fahrenheit for five minutes (300 seconds) by 2026. This record follows recent successes by other fusion experiments, such as the U.S. National Ignition Facility, which briefly produced more energy than it used. These breakthroughs keep hope alive for a future powered by fusion.

Plasma is a state of matter along with solids, liquids and gases. When a neutral gas is heated such that some of the electrons are freed from the atoms or molecules, it changes state and becomes a plasma. It consists of a partially ionised gas, containing ions, electrons and neutral atoms.

Shri Mrithyunjay GN

New milestones in *quantum technology*

Willow - Changing the face of quantum

In December 2024, Google unveiled Willow, its latest state-of-the-art quantum chip.

Before we go exploring the significance of this announcement, let's learn how a quantum computer works.

Understanding quantum computing

Regular computers use bits, like switches that are either on (1) or off (0). Quantum computers use qubits which can be on, off or somewhere in between at the same time.

This "in-between" state, called superposition, lets quantum computers explore many possibilities at once. Entanglement links qubits together, so they act like a team, even when far apart. This teamwork makes quantum computers incredibly fast for certain problems, like finding patterns in cryptography or simulating molecules, potentially changing fields like medicine and materials science.

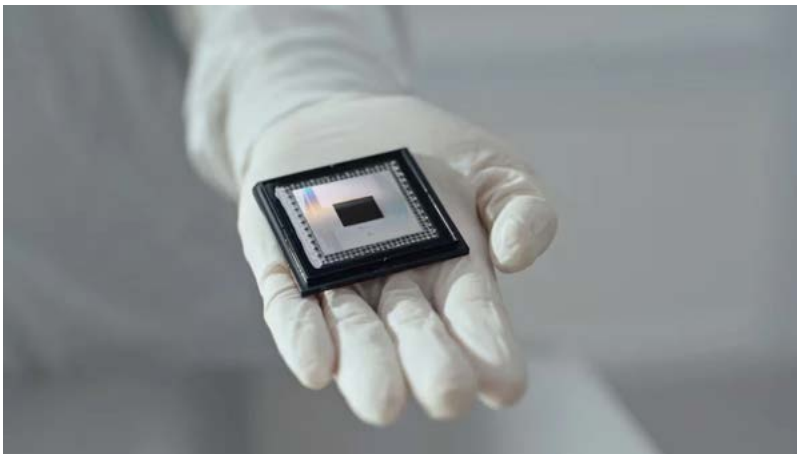
What makes Willow so special?

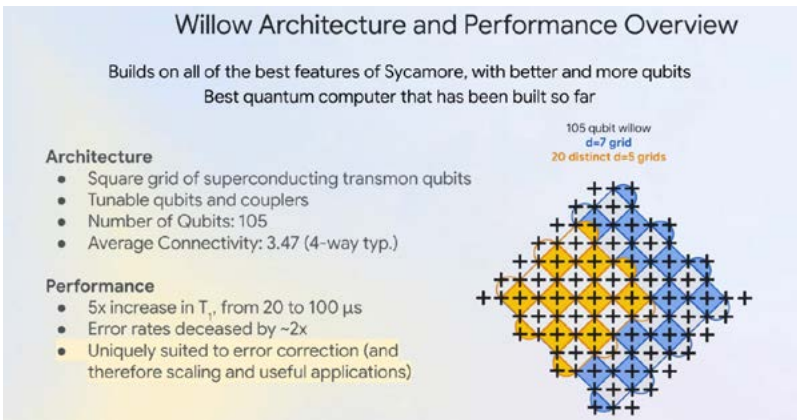
Willow features 105 **superconducting transmon qubits,** a substantial increase from previous Google chips. **A transmon is a type of superconducting charge qubit designed to have reduced sensitivity to charge noise which results in a fluctuating electric field.**

This higher qubit count enables more complex quantum computations and the potential to tackle problems beyond the reach of classical computers.

In a blog post explaining the power of Willow, Google reported that Willow performed a computation in under five minutes what would have taken one of today's fastest supercomputers 10 septillion (1 followed by twenty six 0s) years to complete — a number that vastly exceeds the age of the Universe.

"The Willow chip is a major step on a journey that began over 10 years ago. Willow brings us closer to running practical, commercially-relevant algorithms that can't be replicated on conventional computers," stated Hartmut Neven Founder and Lead, Google Quantum AI.





Willow is not just hardware; it's a platform for exploring quantum algorithms and applications. **Google researchers are using Willow to investigate areas like materials science, drug discovery and AI.**

A new superhighway

In December 2024, researchers at Northwestern University Illinois, decided to make their own breakthrough in quantum computing by **teleporting light** through the internet.

While that seems like a sentence from a futuristic science fiction novel about hackers fighting digital aliens, the truth is simultaneously more interesting and rather mundane.

Using a traditional fibre optic internet connection that we are likely to find in our homes, a team headed by computing engineer Prem Kumar teleported a state of light through more than 30 kilometres of fibre optic cable filled with regular internet traffic.

Let us break this down into simpler terms.

Quantum communication uses quantum mechanics, like superposition and entanglement, to transmit information. This allows for a much greater density of information to be transmitted.

The process works by using **quantum entanglement.** Two quantum particles are linked, regardless of the distance between them, **this means if one particle changes, the other will also automatically change, irrespective of the distance between them.**

So, instead of particles physically traveling to deliver information, entangled particles exchange information over great distances — without physically carrying it.

While this has been done through quantum specific channels before, **this is the first time it has been done through regular internet traffic, while avoiding loss or interruption of information.**

"This is incredibly exciting because nobody thought it was possible," said Prem Kumar, a Northwestern University computing engineer. "Our work shows a path towards next-generation quantum and classical networks sharing a unified fibre optic infrastructure. Basically, it opens the door to pushing quantum communications to the next level."

With further development this has the potential to revolutionize the way we communicate. It could lead to the development of truly secure communication networks that are impossible to hack, even with the advent of powerful quantum computers, because unless we see the entangled particles we would never be able to understand the information transmitted.

Google's Willow chip and the success of quantum teleportation at Northwestern University represents a significant milestone in the pursuit of practical quantum computing, bringing us closer to a future where quantum computers truly revolutionise various fields.

Kum Shrivaishnavi R

WORLD'S FIRST BABY BORN USING STEM CELL TECHNOLOGY

Stem cells have been quite the rage in the scientific world ever since their discovery in the late 1900s. The fact that they could be made to grow to become any desired tissue was a breakthrough that revolutionised personalised treatment plans. If the embryonic stem cells could be harvested during the birth of a child, these cells could be used to synthesise any body part for the same child, in case of an injury.

In the early 2000s, the reverse was made possible – adult, mature cells of the human body could be reversed to become stem cells, called induced Pluripotent Stem Cells (iPSCs). This meant that if someone had not had the chance to harvest their stem cells during birth, they could simply be made in the lab.

While the usage of iPSCs is still not very widespread for medical treatments, it has now found its place in the fertility wing. In vitro fertilisation (IVF) is a technique used to help a couple get pregnant by the use of hormonal injections to promote ovulation. The mature egg is then harvested and fertilised using the father's sperm in a lab. The embryo is then transplanted into the mother's womb to complete the pregnancy. While this process has helped millions of people become parents, it comes with its set of challenges – side effects of the hormonal injections and high cost among others.

To confront these problems. Gameto, a company working on revolutionizing women's reproductive health, has launched **Fertilo,** a programme to use iPSCs (provided by REPROCELL, a company specializing in stem cell technologies) to help in the IVF process. In this programme, iPSCs are made to mature into Ovarian Support Cells (OSCs), which are cells in the female body that mature the egg before ovulation. While the egg maturation process was activated by the hormonal injections in traditional IVF procedures, usage of OSCs mimics the natural way of egg maturation at a fraction of the cost, and in a significantly less amount of time (from a few weeks to just 3 days). This method also eliminates hormone administration – which means, side effects are prevented.

The first child employing this method was born in Lima, Peru in December 2024. This represents a huge leap in fertility care and technology to cater to women in a minimally invasive and safe manner. The founder of Gameto, Dr. Dina Radenkovic, expressing her pride at the success of the programme, is now looking to expand the reach of the programme globally.

Shri Mrithyunjay GN

Project DIGITS

World's smallest AI supercomputer

Project DIGITS is a personal AI supercomputer designed to bring the immense power of NVIDIA's AI platform to researchers, data scientists and students worldwide.

Another day and another AI Innovation. At the Computer Electronics Show (CES), NVIDIA unveiled another purported game-changer in the field of artificial intelligence. Project DIGITS is a personal AI supercomputer designed to bring the immense power of the NVIDIA's AI platform to researchers, data scientists and students worldwide.

Powered by their flagship Grace Blackwell Superchip, this device isn't just a powerful PC; it's a localised AI powerhouse, democratising access to advanced AI capabilities.

It will be nothing short of "placing an AI supercomputer on the desks of every data scientist, AI researcher and student empowering them to engage and shape the age of AI."

NVIDIA and AI

Founded in 1993, NVIDIA was initially focused on graphics processing units (GPUs) for gaming. However, their GPUs' processing power could also be used for other intensive tasks, including complex calculations needed to create an AI model. This opened the door for using GPUs to accelerate AI algorithms, particularly deep learning.

NVIDIA's GPUs significantly reduced the time and cost of training complex AI models, making AI more accessible to researchers and developers. Their advancements in GPU architecture and software tools have been instrumental in driving the AI revolution, powering breakthroughs in various fields from image recognition to natural language processing.

To this day, NVIDIA is seen as the industry leader in creating hardware that allows all the most popular AI models to function.

Project DIGITS system-on-a-chip (SoC) boasts a petaflop of AI computing performance at FP4 precision.

What does that mean? Well, a petaflop represents a quadrillion (1,000,000,000,000,000) operations per second, a measure of a computer's processing power. FP4 precision refers to a specific way the computer stores numbers, optimising for speed in AI calculations. Simply, the GB10 is incredibly fast and efficient for AI tasks.

This configuration allows developers to run massive 200-billion-parameter large language models (LLMs) such as ChatGPT or Gemini directly on their desktops instead of being dependent on servers in a different location.

One of the most impressive aspects of Project DIGITS is its power efficiency. Despite its immense processing capabilities, it can run on a standard electrical outlet. Each unit includes 128GB of RAM and up to 4TB of storage.

Project DIGITS will be available in May 2025 starting at USD 3,000. This price point, combined with the powerful hardware and software ecosystem, makes Project DIGITS a significant step towards democratising access to cutting-edge AI development tools.

The real impact?

The question is, why does this matter? What use is it if AI keeps growing in terms of capabilities and access, if all it is used to do is create AI slop?

AI slop is a derogatory term for low-quality content, including writing and images generated by artificial intelligence. This liberal access to AI raises the question again: is there something as too much AI? With a dearth of proper training, data AI models are being trained on AI generated content, leading to worse outputs.

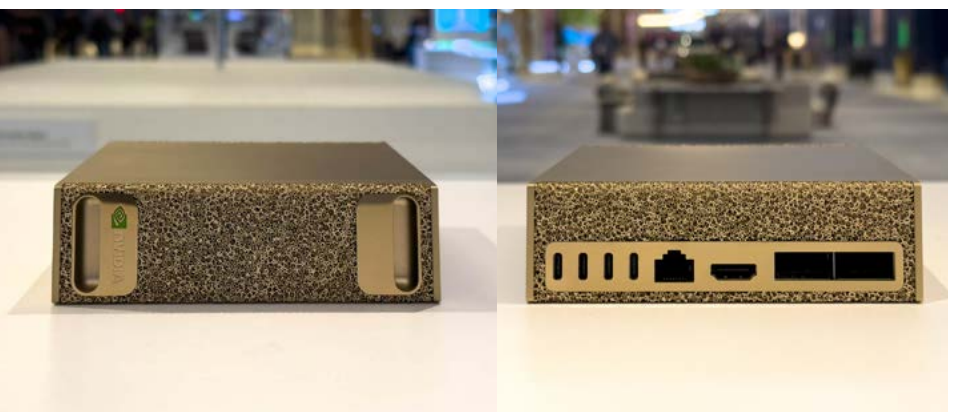
With ChatGPT and Gemini, so many news and blogging websites have now switched to AI summarisation and article writing tools. Google actively summarises search results at the top of the page.

And none of these is compelling, accurate or, in some cases, remotely entertaining to read.

Have we reached a saturation point with AI? Have we jumped too far ahead without actually considering how we will be using these models and tools? **These questions should also be considered in the context of the enormous amount of energy and non-renewable resources it takes to run these devices.**

The constant chasing for higher profit margins by companies which leads them to integrate supposed AI into all their products even if they don't access it. Then there are the ethical debates surrounding AI such as Deepfakes stealing copyrighted art.

This quote from Joanna Maciejewska,**"I want AI to do my laundry and dishes so that I can do art and writing, not for AI to do my art and writing so that I can do my laundry and dishes"** is worth a thought.



Shri Ramaswamy R

General Joseph Aoun is Lebanon's President

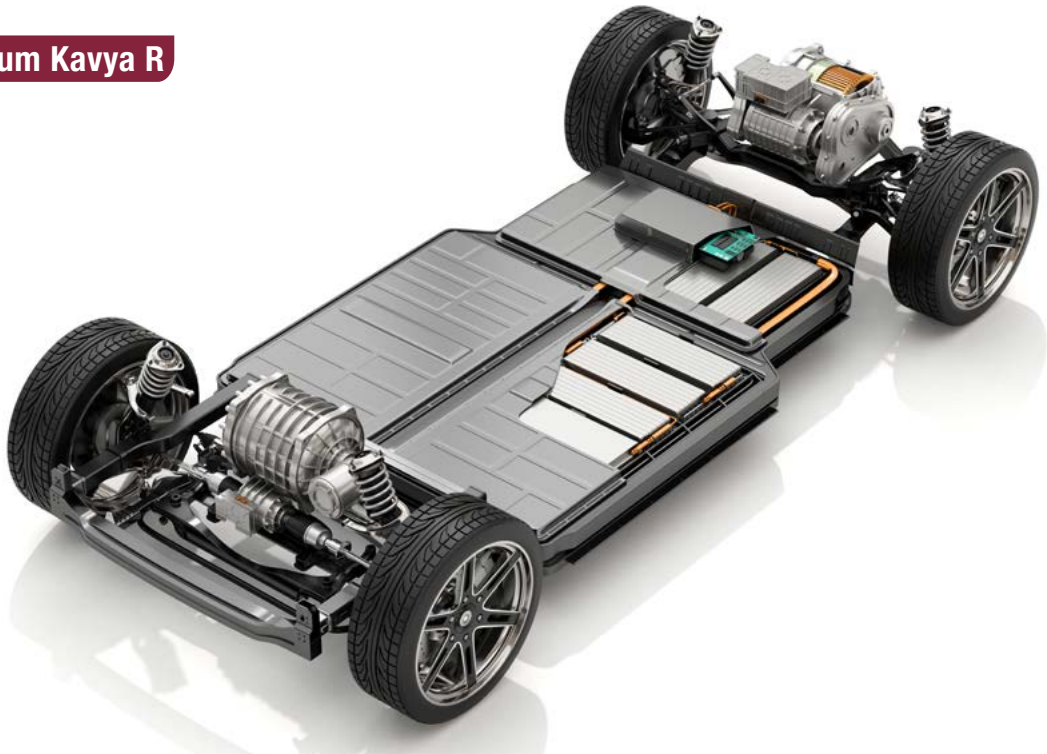
Country	Area (km^2) Ranking	Population (millions)	Language	Capital	Currency (For 1 USD)	Economy (Nominal GDP GR)
Republic of Lebanon	10, 542 (161)	5.5	Arabic	Beirut	Lebanese Pound ($89.5x10^3$)	Developing country destroyed by civil war. (112 in HDI).

The Republic of Lebanon is in West Asia off the Mediterranean Sea. The country was created by British and French mandate after the defeat of the Ottoman Empire in WWI. In the beginning, the country was predominantly Christian with liberal values. Beirut was the economic capital of West Asia and was known as Paris of the Middle East. The country got embroiled in civil war in 1970s which ended only in 1990. Again in the 2000s the country became home to Hezbollah extremists who were backed by distant Iran and as a result got caught in the crossfire with neighbouring Israel.

Amidst all the storm Lebanon underwent, their parliament in January 2025, has successfully elected Joseph Aoun (60) as President ending a string of 12 failed attempts in the last two years. An unrelated but namesake Michel Auon was earlier President till October 2022. The President polled 99 votes -13 more than the $2/3^{rd}$ requirement. He supposedly has the blessings of USA and Saudia Arabia, both superpowers at the world and regional levels respectively. Aoun had earlier served as Army Chief.

President Aoun has the unenviable task of managing the 1.5 million Syrian refugee crisis created by the ISIS and of rebuilding the war-ravaged nation. He needs not just sympathy but real time help from the international community mainly represented by USA, France, Saudi Arabia, Qatar and Egypt. If all goes well and reconstruction involving billions of dollars take place, India and their technocrats too will have a role to play.

Kum Kavya R



World's first fire proof EV battery

The new battery, created at the Daegu Gyeongbuk Institute of Science and Technology (DGIST), is a lithium metal battery with a unique triple-layer solid polymer electrolyte.

Ever since electric vehicles underwent a revolution with Tesla cars in 2015, the biggest factor determining growth and advancement in the field is the battery technology that powers these vehicles. Over the last decade this has seen enormous growth, all towards making a lighter weight battery that will give longer range.

But one thing has plagued innovation in the battery space - the components of the battery. Because of how compact the cells are and the amount of energy they store, Electric Vehicle (EV) batteries have always been an extreme fire hazard. Numerous reports of EVs combusting instantaneously because of battery failure has posed manufacturers a huge challenge.

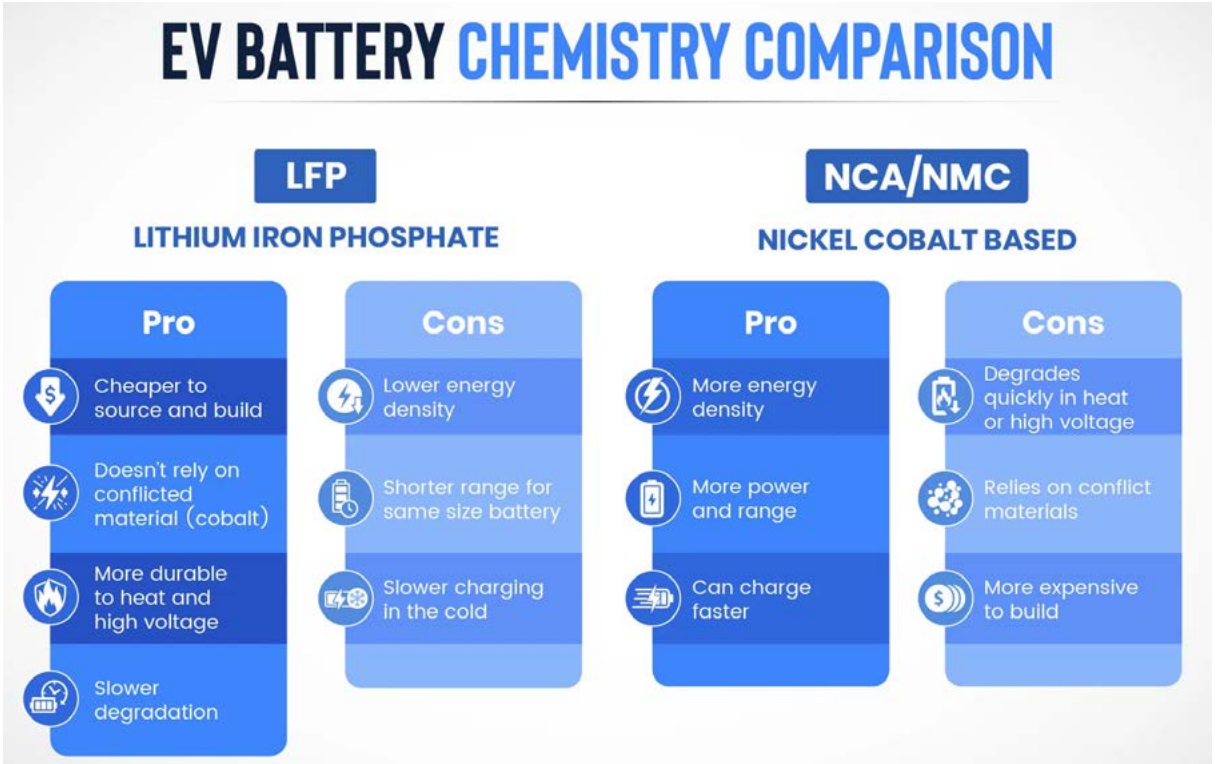
But now, a team of researchers in South Korea has developed a groundbreaking fire-proof EV battery that promises to put these safety concerns to rest.

The new battery, created at the Daegu Gyeongbuk Institute of Science and Technology (DGIST), is a lithium metal battery with a unique triple-layer solid polymer electrolyte.

A lot of this may sound like chemical jargon but it is pretty simple to understand if we can first see how batteries actually work.

How do batteries work?

A battery has two parts, the anode and cathode, separated by a liquid substance called an electrolyte. The anode gives up electrons, which flow through a wire to the cathode, creating electricity. Once the anode runs out of electrons, the battery is dead.



In rechargeable lithium-ion batteries, like the ones found in our smartphones and EVs, the anode can be charged with electricity from plug points thereby giving it more electrons. These use liquid electrolytes. The electrolytes are flammable and can cause a rapid thermal reaction that leads to battery fires.

How did they fix this?

The DGIST team replaced the flammable liquid electrolyte with a solid polymer electrolyte. This eliminates risk because the polymer is inherently fire-resistant. What's more, **this innovative design not only prevents fires but also significantly improves battery performance and lifespan.**

Because the polymer can be spread thinner the batteries have a triple-layer structure further enhancing performance. The outer layers are soft to ensure good contact with the electrodes, while the middle layer is strong to provide structural integrity and prevent short circuits and fires.

The benefits

In addition to its fire-proof properties, the new battery also has impressive performance. **It retains 87.9% of its capacity after 1,000 charge-discharge cycles, which is significantly better than most current batteries.** This means that EVs equipped with this battery could have a longer range and a longer lifespan.

The potential applications of this breakthrough are vast. While EVs are an obvious target, the battery could also be used in smartphones, wearable devices and large-scale energy storage systems.

The development of this fire-proof EV battery, despite still being in research stages, is a major step forward in making EVs safer and more reliable. It could also help to accelerate the transition to a cleaner and more sustainable transportation future.

Shri Sampath D

India joins UN Committee of Experts on Big Data

India has joined the **UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD),** which underscores the country's growing stature in the global statistical community and highlights its commitment to leveraging data and technology for informed decision-making.

The UN-CEBD was created to further investigate the benefits and challenges of Big Data, including the potential for monitoring and reporting on sustainable development goals.

As part of the committee, India will contribute to shaping global standards and practices in harnessing Big Data and data science for official statistical purposes. India's active engagement in the Committee of Experts will highlight its pioneering initiatives, including the establishment of the Data Innovation Lab and exploration of alternate data sources such as satellite imagery and machine learning for policy making.

This membership is a strategic opportunity for India to align its domestic advancements in Big Data and data science with international goals, which will showcase the country's capability to lead transformative initiatives in the data domain.

Big Data and advanced data science techniques have the potential to revolutionise the production and dissemination of official statistics.

By integrating non-traditional data sources such as IoT, satellite imagery and private sector data streams, India aims to modernize its statistical processes, enhance the accuracy of estimates and enable the timely availability of critical data for policy formulation decision making and governance.

This engagement will also complement India's ongoing efforts to streamline statistical production and drive innovation in data collection, processing and analysis to reduce the time lag in data availability. It will also improve decision-making and provide policymakers with real-time insights for evidence-based decisions, addressing key socio-economic challenges.

This recognition will strengthen India's ability to influence global statistical practices, reinforcing its commitment to sustainable development.

Kum Pavithra S

Tricolour hoisted on Antarctica's highest peak

On 25th December 2024, **Narendra Singh Yadav** created history by hoisting the Indian tricolour on **Mount Vinson Massif,** Antarctica's highest peak. This remarkable achievement came at the end of his expedition to climb the Seven Summits' highest peaks on all seven continents.

Yadav's great success has brought his village, Nehrugarh in the Kosli area, joy and pride. His will and bravery act as a model for the whole country. The trip to the top was not a simple one. Yadav faced temperatures as low as -52°C and took six days to get to the top from the base camp. His hard work and skill show his expertise as a climber, having reached some of the world's toughest peaks, including Mount Everest.

Mount Vinson Massif, in the Ellsworth Mountains, rises to 16,050 feet or 4,892 metres above sea level. Its extreme climate and remoteness are challenging even for very experienced climbers. However, despite all this difficulty, the peak rewards with stunning views of the Antarctic landscape — a highly sought-after prize for many adventurers and mountaineers.

Yadav does not just win for himself; he helps promote adventure sports in India and gets people to know more about global warming's effects on Antarctica. With Spark Minda, an automotive part maker, he plans to push for a greener and smarter future.

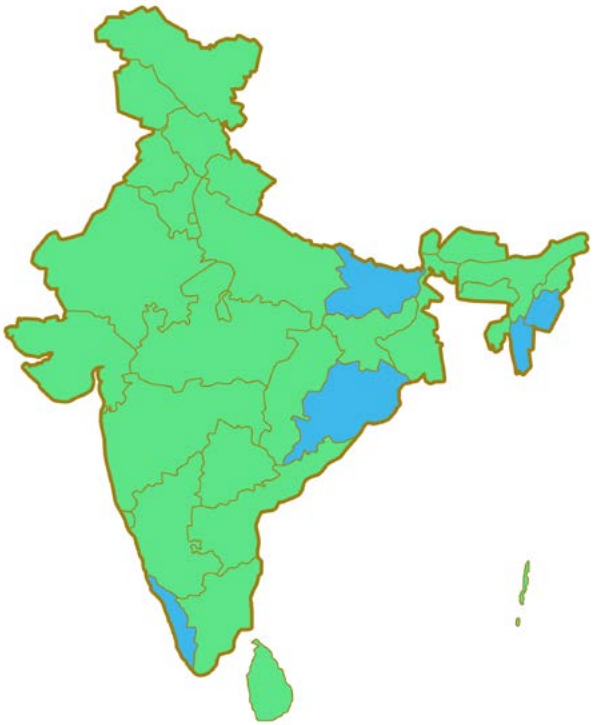
As India's youngest male mountaineer to conquer the Seven Summits, Yadav calls upon the government to promote mountaineering in India and value climbers for their contributions beyond natural disasters. His remarkable achievement serves as a reminder of the importance of perseverance, determination and innovation.

In Yadav's own words, "This journey is not just about reaching a summit but about inspiring others to chase their dreams." His extraordinary achievement is proof of the strength of the human spirit and a source of inspiration to mountaineers and adventurers across the country.

With this outstanding feat, Yadav has secured a spot in India's list of highly successful mountaineers.

Smt Gaayathiri G

New Governors appointed



The President of India has appointed Governors for five states. President Droupadi Murmu appointed two new governors and reassigned three others, reorganising the leadership in five states.

- **Dr. Hari Babu Kambhampati,** who currently holds the position of Governor of Mizoram, has been appointed as the Governor of Odisha.
- **General (Dr.) Vijay Kumar Singh (Retd.)** has been designated as the new Governor of Mizoram.
- **Rajendra Vishwanath Arlekar,** currently serving as the Governor of Bihar, will now assume the role of Governor of Kerala.

State	Governor
Andhra Pradesh	Justice (Retd.) S. Abdul Nazeer
Arunachal Pradesh	Lt. General Kaiwalya Trivikram Parnaik, PVSM, UYSM, YSM (Retired)
Assam	Lakshman Prasad Acharya
Bihar	Arif Mohammed Khan
Chhattisgarh	Ramen Deka
Goa	P.S. Sreedharan Pillai
Gujarat	Acharya Dev Vrat
Haryana	Bandaru Dattatraya
Himachal Pradesh	Shiv Pratap Shukla
Jharkhand	Santosh Kumar Gangwar
Karnataka	Thaawarchand Gehlot
Kerala	Rajendra Vishwanath Arlekar
Madhya Pradesh	Mangubhai Chhaganbhai Patel
Maharashtra	C.P. Radhakrishnan
Manipur	Ajay Kumar Bhalla
Meghalaya	C H Vijayashankar
Mizoram	General (Dr.) Vijay Kumar Singh, PVSM, AVSM, YSM (Retd.
Nagaland	La. Ganesan
Odisha	Dr. Hari Babu Kambhampati
Punjab	Gulab Chand Kataria
Rajasthan	Haribhau Kisanrao Bagde
Sikkim	Om Prakash Mathur
Tamil Nadu	R. N. Ravi
Telangana	Jishnu Dev Varma
Tripura	Indra Sena Reddy Nallu
Uttar Pradesh	Anandiben Patel
Uttarakhand	Lt. Gen. Gurmit Singh, PVSM, UYSM, AVSM, VSM (Retd.)
West Bengal	Dr. C.V. Ananda Bose

- **Arif Mohammed Khan,** the Governor of Kerala, has been assigned the position of Governor of Bihar.
- Former Union Home Secretary **Ajay Kumar Bhalla** has been appointed as the Governor of Manipur.

A same person can be appointed as the governor of two or more States.

The powers and functions of a Governor

The powers and functions of the Indian Governor are divided into four main categories:

- Executive powers
- Legislative powers
- Financial powers
- Judicial powers

Smt Sarada Devi Ravutu

Masali

India's first border village to go solar

As a renewable power source, solar energy is important in reducing greenhouse gas emissions and mitigating climate change. It is critical to protecting humans, wildlife and ecosystems.

Masali in Gujarat's Banaskantha district has become the country's first "border solar village" after solar rooftop work in all 199 houses was completed under the Pradhan Mantri Surya Ghar Muft Bijli Yojana. Located about 40 kilometres from the Pakistan border, Masali is the first among 17 such border villages in the district, comprising six in Suigam taluka and 11 in Vav taluka, covered under the scheme.

The government's main objective is to make the country self-reliant in the energy sector and achieve a sustainable future using renewable energy.

- **Total expenditure to complete the project:** ₹1.16 crores.
- **Subsidy under the PM Surya Ghar Bijli Yojana:** ₹59.81 lakhs.
- **Public contribution:** ₹20.52 lakhs.
- **Corporate social responsibility (CSR) funds:** ₹35.67 lakhs.
- **Production:** 225.5 kilowatts of electricity which is more than required.

Significance: The scheme has permanently addressed the issue of electricity supply shortage and Masali has received the title of the second solar village in the state after Modhera. With the efforts of the district administration, Masali has become a completely solar-based village. The development highlights India's commitment to renewable energy and rural electrification.

Pradhan Mantri Surya Ghar Muft Bijli Yojana is the world's largest domestic rooftop solar initiative and aims to provide solar power to one crore households by March 2027.

DO YOU KNOW ?

- **Corporate social responsibility (CSR) funds are contributions companies make to a better society and a cleaner environment.**
- **India's first solar power plant was set up in 1986 in Ungra village, near Mahbubnagar district, Telangana.**
- **The first solar panels were installed in 1884 on a rooftop in New York City by Charles Fritts.**

Smt Archana Sundar

News from ISRO

CE20 cryogenic engine test

ISRO has added yet another feather to its cap with the **successful sea-level hot test of the CE20 cryogenic engine at the ISRO Propulsion Complex in Mahendragiri,** Tamil Nadu. This engineering marvel marks a leap forward for India's space ambitions, setting the stage for ground-breaking missions.

Cryogenic engines, the backbone of powerful rockets, operate using liquid oxygen (LOX) and liquid hydrogen (LH_2) stored at ultra-low temperatures. LOX remains liquid below –183°C and LH_2 below –253°C. When combined, they create an explosive yet efficient fuel source that powers rockets to achieve extraordinary feats.

The CE20 is no ordinary engine. It boasts an advanced restart capability, courtesy of its multi-element igniter, making it indispensable for interplanetary and crewed missions like Gaganyaan. Another innovation is its nozzle protection system, designed to prevent flow separation and vibrations, ensuring optimum performance and reliability.

Cryogenic engines amplify rocket efficiency and payload capacity, enabling India to launch heavier satellites and explore distant planets.

They symbolise India's self-reliance, placing the nation among a select league of countries (US, Russia, France, China and Japan) that have mastered this technology.

The visionary leader

At the helm of ISRO's remarkable journey is **Dr. V. Narayanan, the newly appointed Chairman.** A veteran with over four decades of experience, Dr. Narayanan has been instrumental in pushing India's space frontiers. From his early days at ISRO in 1984 to directing the Liquid Propulsion Systems Centre (LPSC), his leadership has shaped many landmark missions.

Dr. Narayanan's pioneering work on the Cryogenic Upper Stage (CUS) propelled the GSLV Mk-II to success. His vision brought the C25 Cryogenic Stage to life for the LVM3 rocket, a cornerstone of India's lunar and human spaceflight endeavours. Chandrayaan-2, Chandrayaan-3 and Aditya-L1 bear testimony to his expertise in propulsion systems.

Looking ahead, Dr. Narayanan is steering ISRO towards next-gen technologies like LOX-Methane engines and electric propulsion systems.

Under his guidance, projects such as Chandrayaan-4 and the Bharatiya Antariksha Station promise to elevate India's status as a space superpower.

An alumnus of IIT Kharagpur, Dr. Narayanan's accolades—from the Distinguished Alumni Award to numerous fellowships—mirror his extraordinary contributions. His journey from designing test facilities to shaping India's space narrative is nothing short of inspiring.

As ISRO continues its trailblazing journey with the CE20 Cryogenic Engine, the future of India's space programme shines brighter than ever. The stage is set for more historic milestones, with technology and leadership paving the way to the stars.

Kum Sunita D Behera

Agricultural initiatives

The Indian government has launched several initiatives to transform the agricultural sector, leveraging technology to improve farmer livelihoods and promote sustainable practices. Two notable projects, Project VISTAAR and Kisan Kavach, aim to revolutionize the way farmers access information and protect themselves from pesticide exposure.

Project VISTAAR: A digital revolution in Indian agriculture

Launched by IIT Madras and the Ministry of Agriculture, Project VISTAAR (Virtually Integrated System to Access Agricultural Resources) seeks to modernize India's agricultural extension system. This digital platform integrates advanced technologies and a database of over 12,000 agri-focused start-ups, providing farmers with digital access to crop advisory services.

The platform offers comprehensive information on government schemes, crop production, marketing, value addition and supply chain management. By digitalizing the extension system, Project VISTAAR aims to enhance the efficiency and effectiveness of agricultural services, empowering farmers to make informed decisions.

Kisan Kavach – Bharat's indigenous anti-pesticide bodysuit

Dr. Jitendra Singh, Union Minister for Science and Technology, launched Kisan Kavach, India's first indigenous anti-pesticide bodysuit. Developed by **BRIC-inStem, Bangalore**, in partnership with **Sepio Health Pvt. Ltd.**, the suit protects farmers from health risks caused by pesticide exposure.

Priced at ₹4,000, the suit is washable, reusable and can last up to a year. The advanced fabric technology deactivates harmful pesticides upon contact, ensuring maximum safety for farmers.

Benefits

The Kisan Kavach bodysuit has several benefits, including:

- Protection from pesticide-induced health risks
- Reduced risk of pesticide exposure
- Increased safety for farmers
- Promotion of sustainable agricultural practices.

These initiatives demonstrate the government's commitment to promoting sustainable agriculture and empowering farmers through technology. By providing digital access to information and protective gear, Project VISTAAR and Kisan Kavach are set to transform the agricultural landscape in India.

Jamsetji Tata Award 2024

The Indian Society for Quality (ISQ) recognises business leaders for exceptional contribution to quality and innovation in various fields every year. For 2024, the Jamsetji Tata Award was conferred on **Kiran Mazumdar Shaw,** Chairperson of the Biocon group. This is in recognition of her pioneering efforts in the Biosciences sector and her commitment to quality which has propelled Biocon to achieve a leading position in the global biopharmaceutical sector.

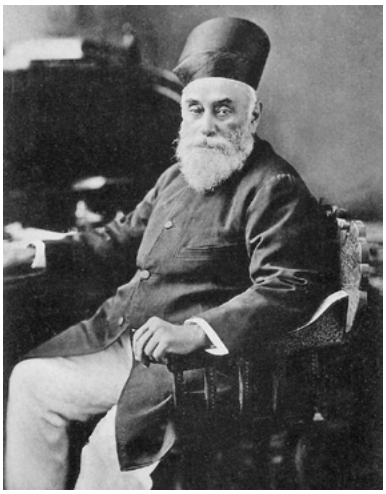
The institution

The ISQ is a not-for-profit society that promotes quality education and provides a platform for knowledge sharing on best practices in Quality Management. This was established in 1996 to fill the need for a national forum for interaction among quality professionals and academics. It is engaged in creating and disseminating knowledge through conferences, seminars, contests for projects and case studies, specialised training programmes etc. ISQ is linked to similar national quality bodies in other countries.

ISQ has instituted various national awards for outstanding leaders of quality. These are awards for industrialists, professional heads of organizations and quality promotion bodies, counsellors and Gurus who have served India in the quality management discipline, through teaching and counselling, leading organisations and guiding others, spearheading sustainability and promoting consistent practice of quality management principles.

The Award

Jamsetji Tata Award is given to industry leaders who have made significant contribution by leading an organisation with exceptional and holistic focus on quality.



They are persons with humility, constancy of purpose and determination, demonstrating outstanding results. This award was instituted in the year 2004 and since then many Industry stalwarts like Venu Srinivasan of TVS Motor Company, Dr. J.J. Irani of Tata sons, B.Muthuraman of Tata Steel, Dr.Surinder Kapur of Sona Koyo Steering systems, Nandan Nilekani of Infosys and many others have been conferred this award.

Kiran Mazumdar Shaw has now joined this illustrious group of people.

The recipient

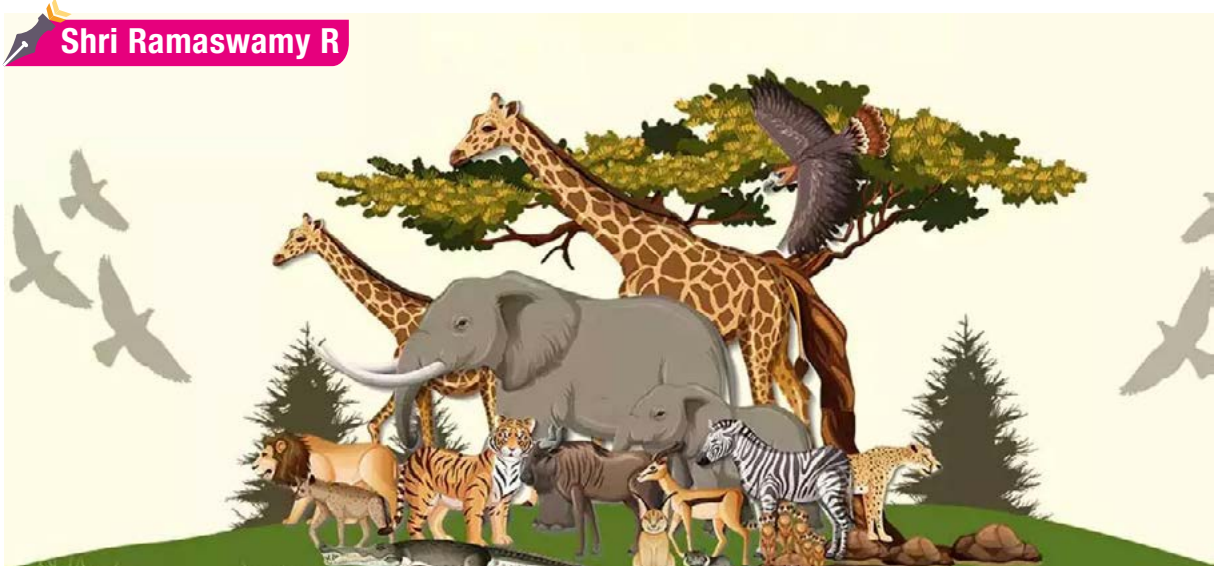
The 1953-born Kiram Mazumdar Shaw is the Founder and Executive Chairperson of Biocon Limited and Biocon Biologics Limited. Born in Bengaluru, she had her schooling and graduation in Bengaluru. After her graduation, she went to the Melbourne University, Australia, to study malting and brewing. She was the only woman enrolled and she topped her class. She was conferred the degree of Master Brewer in 1975.After a couple of stints at breweries, she joined the Biocon Biochemicals Ltd., Cork, Ireland. After a short stint as a trainee manager, she returned to India and started Biocon India in 1978. She developed her R&D team in 1984 focusing on solid substrate fermentation technology. In 1990 Biocon Biopharmaceuticals Pvt. Ltd was incorporated.

In 2024 she listed Biocon in the stock market. **Biocon was the first Biotechnology company in India to issue an IPO.** On the very first day of trading it was heavily oversubscribed with a market value of USD 1.11 Billion. The rest is history.

Kiran Mazumdar Shaw started getting recognised from 1982 and since 2002 there has not been a single year in which she has not got an award or an accolade. She is the epitome of *nari shakthi* and richly deserves the Jamsetji Tata Award.

- **Solid state fermentation (SSF) is a biomolecule manufacturing process used in the food, pharmaceutical, cosmetic, fuel and textile industries. These biomolecules are mostly generated by microorganisms grown on a solid support without free-flowing water, selected for this purpose.**
- **IPO - Initial Public Offering refers to the process where private companies sell their shares to the public to raise money from public investors. The process of IPO transforms a privately-held company into a public company.**

Shri Ramaswamy R



Wildlife news

India's first coastal and wader bird census in Jamnagar

India's first coastal and wader bird census was held in January 2025 in Jamnagar, Gujarat. The participants included bird enthusiasts, experts, researchers and staff from the Gujarat Forest Department and Bird Conservation Society Gujarat (BCSG). The census was conducted in the Marine National Park and Marine Sanctuary, covering a distance of 170 km from Okha to Navlakhi along the southern coast of Kutch. The locations are considered home to over 300 bird species including rare wading birds like crab plover and great knot. The Marine Park lies along the Central Asian Flyway, a critical route for birds flying between the Arctic and Indian Oceans. The scope of the census included bird counting, expert talks and knowledge sharing. The birds counted were coastal and wader types. The former are found mostly in oceans and on shores and are excellent swimmers. They feed on saltwater fish and travel great distances between breeding grounds and wintering areas. The waders are found around wetlands and inland water bodies. **They have long necks, bills and legs, and wade through the water while picking insects and fish from shallow waters.** The Gujarat State Government initiative was aimed at bird conservation. The data gathered on bird populations, habitats and migration patterns are to help build effective strategies for preserving avian biodiversity.

Butterfly discovered in Tripura

Butterfly *Rachana jalindra* also known as The Banded Royal Butterfly was first spotted in May 2021 in the wildlife sanctuary in Sipahijala district, Tripura. The butterfly is found in forests across South and Southeast Asia, including Sri Lanka, Myanmar, Thailand, Malaysia and Northeast India. The butterfly prefers dense vegetation and is often seen resting on leaves. The male banded royal butterfly has a deep purple or bluish sheen with brown borders, while the female is brownish with white markings.

If you smile when you see a butterfly, you have happiness in your soul." — Diana Cooper

"Float like a butterfly, sting like a bee." — Muhammad Ali

"The butterfly counts not months but moments and has time enough." — Rabindranath Tagore

"Beauty is where the beheld butterfly disappears from sight." — R.H. Peat

"Butterflies are like angel's kisses sent from heaven." — Malia Kirk

"Don't wait for your wings, fight for them." — Gayatri Pardeshi

"The wings of transformation are born of patience and struggle." — Janet Dickens

"We are but small butterflies in the garden of life." — Carston D. Roach

"The caterpillar does all the work, but the butterfly gets all the publicity." — George Carlin

"Butterflies are nature's angels. They remind us of what a gift it is to be alive." — Robyn Nola

The underside of the butterfly is pale brown with white bands. The Banded Royal butterfly is a rare species that is protected under the Indian Wildlife (Protection) Act of 1972. Major butterfly parks India and Neighbourhood: Parks located in Srirangam (TN), Bannerghatta (KA), Parpoli(MH), Kazi Ranga(AS), Rangrang (Sikkim) and Bumdeling (Bhutan).

The study of butterflies plays an important role in the inspection of a healthy ecosystem not disturbed by pollution, destruction of greenery and climate change. Butterflies moving from flower to flower are the key pollinators. Most adult butterflies live only one or two weeks, but some species hibernate during the winter and may live several months.

Butterflies are spectacular insects for both scientists and artists alike, inspiring many quotes on their flight and short life.

First photographic evidence of Pallas' cat in Himachal Pradesh

Otocolobus Manul alias the Pallas's cat was first observed in 1776 in the vicinity of Lake Baikal and goes by the discoverer's name. They carry long, dense light grey fur and rounded ears set low on the sides of the head. Their approximate dimensions are length 55 cm, 25 cm tail and 30 cm height. They are found in cold continental climate in mountains where the snowfall is below 20 cm, in a large region from Caucasus in Eastern Europe through Central Asia and Tibet and as far as Southern Siberian mountains. The wildcat lives in rocky crevices and burrows and feed on rabbits and rodents.

The first photographic evidence of a Pallas's cat in Himachal Pradesh, India was recorded in March–May 2024, in the Hangrang valley, which is located at Tibetean border. The study was conducted by the Wildlife Wing of the State Forest Department in collaboration with the Nature Conservation Foundation. The foresters' cameras captured 19 images at three different locations and this confirmed the cat's presence at altitudes 3900 – 4100 metres in rocky habitats. The evidence stressed the need for more research on the wildcat.

Currently, Pallas's cat habitat is threatened by fragmentation, illegal trade, climate change, feral dogs and inevitable military presence.

Assam's elephant population sees 7-year rise

Assam recorded an elephant population of 5,828 during Estimation 2024 conducted by the state forest department, an increase from the earlier survey in 2017 of 5,719 numbers. The population includes 3,044 adults, 1,042 sub-adults, 717 juveniles and 1,025 calves.

Pachyderm herds are matriarchal and have dozens of members. Over the years the males opt out and form their own smaller gangs. The leaders have fabulous memory and lead their herd 50 to 60 kms in a single day in search of food and water. The average full-grown Asian elephant consumes about 200 kilograms of food each day. They spend almost 80% of their day eating, digesting and excreting, which happens about 15 times and spread their excreta over a wide area.In a year elephants produce over 40 tonnes of dung, rich in organic matter and which serve as nutrient-rich fertilizer. Beetles and other insects rely on dung as primary food source, which further contributes to the ecosystem by breaking contents and recycling nutrients. Also, as only half the food is digested, nearly 40% excreta is available as cellulose for producing paper. **The per day per animal equivalent is 115 sheets of paper and as a result, less trees need to be felled for paper production.**

Historic dolphin tagging initiative in Assam

The Ganges River Dolphin ***(Platanista gangetica),*** India's National Aquatic Animal, is unique in its ecology. Nearly blind, they rely on echolocation for navigation and other biological needs. These dolphins are apex predators and serve as umbrella species for river ecosystems. 90% of the species reside in India, being distributed across the Ganga-Brahmaputra-Meghna and Karnaphuli river systems. Over the past century, the distribution has drastically declined, owing to habitat fragmentation and human activity.

The first ever satellite tagging of Ganges River Dolphin was carried out in Assam in December 2024, the historic milestone aimed at conserving the animal. The dolphin surfaces only for 5 to 30 seconds, any given time and this posed considerable challenges in understanding their ecological needs and for any scientifically sound conservation interventions. The satellite tagging would help in monitoring the movement of the animal.

The project stakeholders were led by **Ministry of Environment, Forest and Climate Change (MoEFCC)** with collaboration from Wildlife Institute of India (WII), Assam Forest Department and Aranyak, an NGO based in Guwahati concerned with wildlife conservation in North East India.

This monumental effort underscores India's unwavering commitment to wildlife conservation and sets a new benchmark in the protection of endangered species.

Smt Manju Aildasani

India's first bio-bitumen road

National Highways are the lifelines of our country connecting major cities and towns. Let me tell you about our first environment-friendly roadways.

Recently, India's first bio-bitumen national highway was inaugurated by Union Minister for Road Transport and Highways, Nitin Gadkari in Nagpur district of Maharashtra.The one-kilometre-stretch of Nagpur - Mansar National Highway project on NH-44 has been made using asphalt mixed with 15% bio-bitumen.

This is the country's first national highway built with bitumen obtained from a crop residue called lignin. **Lignin is a complex aromatic polymer that is a major component of plant cell walls, especially in wood and bark.** Pune-based Biotech Company Praj Industries and Central Road Research Institute (CRRI) have jointly constructed this road.

- Bio-bitumen is a sustainable alternative to conventional fossil fuel-based bitumen. It is free from petroleum and is known as bio-asphalt.

- It is produced from organic materials such as bio-char, vegetable oils, crop stubble, algae, lignin and similar substances.
- This innovation can help reduce greenhouse gas emissions by 70% when compared to fossil-based bitumen.
- This project aligns with India's vision for Aatmanirbhar Bharat, promoting self-reliance and large-scale domestic production.

Gadkari brought to light that farmers will transition from mere food producers to energy and resource providers. By converting agricultural waste into valuable bio-bitumen, farmers can contribute to India's sustainable future.

Advantages

- Reduces construction costs.
- Creates jobs.
- Generates revenue for bio-refineries.
- Reduces pollution caused by burning stubble.

Smt Laxmi A

Medical initiatives

Nadi tarangini- India's first Ayurvedic diagnostic device

Nadi Tarangini, an AI-powered pulse diagnostic device developed by **Atreya Innovations,** received approval from the Central Drugs Standard Control Organization (CDSCO), making it India's first ayurvedic medical device to be officially recognized.

It was conceived by Padma Bhushan awardee Prof. J.B. Joshi and Dr. Aniruddha Joshi after over six years of research at IIT Bombay.

Features

- It combines modern technology with ancient Ayurvedic practices.
- It analyses 22 Ayurvedic parameters, including *Tridosha* balance (*Vata, Pitta, Kapha*), stress levels, digestive health and overall well-being.
- Produces a 10-page report in 10 languages with detailed health insights based on pulse data.
- Accuracy is approximately 85%.

Technology involved

- Uses piezoelectric pressure sensors to mimic the tactile sensation of pulse examination after testing with multiple sensors.

Relevant facts

- Research was initiated due to a personal health issue faced by Prof. J.B. Joshi.
- Seed funding of ₹5 crore received to expand research and production capacity.
- US patent was awarded for the sensing technology and process.

G-Gaiter Paedriatic - India's first robotic-assisted paediatric gait trainer

Genrobotics, a leading robotics company, launched India's first robotic-assisted paediatric gait trainer 'G-Gaiter Paediatric' designed for the physical rehabilitation of children with mobility issues.

A piezoelectric sensor is a device that uses the piezoelectric effect to measure changes in pressure, acceleration, temperature, strain or force by converting them to an electrical charge. The prefix *piezo-* is Greek for 'press' or 'squeeze'.

As continuous and effective efforts are required to develop the neuroplasticity of a physically disabled person, G-Gaiter has become a boon to them.

HIGHLIGHTS

- Helps children relearn motor patterns.
- Improves muscle coordination.

- Enhances functional mobility to develop an efficient gait pattern tailored to the patient's needs.
- Aids physical rehabilitation of children with gait disabilities caused by conditions such as cerebral palsy, muscular dystrophy, and brain and spinal cord injuries.
- Combines advanced Virtual Reality (VR) technology with interactive games to create an engaging therapeutic experience.
- The patented exoskeleton design ensures natural gait training and allows for adjustable configurations to suit a variety of patient needs.
- With a child-friendly interface, it prioritises comfort and accessibility, ensuring a positive experience for young users.
- Additionally, its real-time monitoring capability provides detailed analytics, offering valuable insights into therapy progress and enabling more precise, personalised treatment.

Relevant facts

- A gait trainer is a wheeled device that assists a person who is unable to walk independently to learn or relearn to walk safely and efficiently.
- The device will be installed at Sree Avittam Thirunal (SAT) Hospital in Thiruvananthapuram, one of India's Centres of Excellence for Mother and Childcare.

Maharashtra's first surgical robot

Noble Hospitals in Pune installed Maharashtra's first made in India robotic system which recently received approval from the Central Drugs Standard Control Organisation (CDSCO), India's regulatory body.

Why in the news?

The hospital recently conducted its first surgery (robotic right extended hemi colectomy) for a patient diagnosed with colon cancer using this system.

Features

- Five lean robotic arms.
- An immersive 3D HD headset that delivers unparalleled optics for surgeons.
- A vision cart that offers 3D 4K imaging for the entire surgical team.

Advantages

- Recovery is much faster as it uses minimally invasive technique with fingertip-sized incisions.
- Better precision and flexibility than traditional laparoscopic or open surgery.
- Patients can return to their normal routine quickly.

The robotic system will be used in many life-saving procedures including general surgeries, cardio-thoracic, urology, gynaecology and many complex surgical procedures.

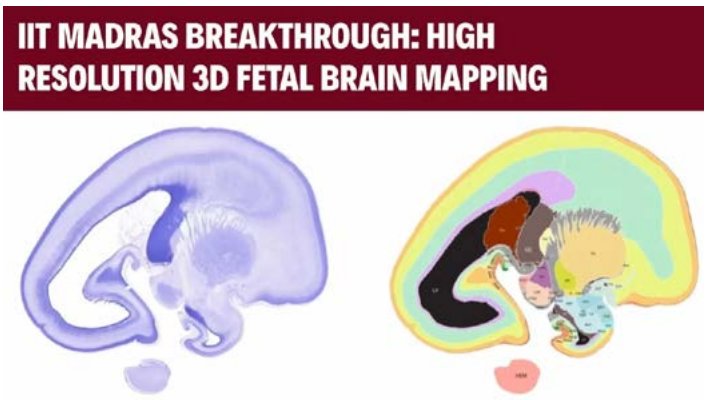
The **SSI Mantra** surgical robot is a 3 robotic system for performing intricate surgeries.

Relevant facts

The first Indian-made surgical robot system was installed at Rajiv Gandhi Cancer Institute in New Delhi and later in Hyderabad and Raipur.

IIT Madras creates world's first high- resolution 3D foetal brain images

Sudha Gopalakrishnan Brain Centre at IIT Madras has become the first research organisation in the world to release the most detailed 3D high-resolution images of the foetal brain.



The research was undertaken by scholars from India, Australia, U.S., Romania and South Africa, and medical collaborations with Chennai-based Mediscan Systems and Saveetha Medical College Hospital.

Why in the news?

This monumental work is the first time advanced human neuroscience data is produced from India. **The project was done at less than 1/10th of the costs in western countries.**

How it works

- 5,132 brain sections have been captured digitally using cutting-edge Brain Mapping Technology developed by the IIT-M.
- The Centre acquired over 200 brains of different types, ages (foetal, neonate, young adult, adult, old age) and diseases (stroke, dementia) from various medical institutions in the country.
- Then processed them into cellular resolution digital volumes through the Centre's high-throughput imaging platform.

Significance

- This data set, termed 'DHARANI', is available open source for all researchers world-wide.
- It is critical for India as the country accounts for nearly one-fifth of the world's childbirths at 25 million each year.
- To understand the brain development from the foetus to a child, adolescence and to a young adult and developmental disorders like learning disabilities and autism.

Smt Sandhya Nair

India's first glass sea bridge

Tamil Nadu Chief Minister MK Stalin unveiled India's first-ever glass sea bridge in December 2024, aligning with the silver jubilee of the unveiling of the Thiruvalluvar statue in Kanyakumari.

This architectural marvel, which spans over the stunning shores of the Arabian Sea connects two iconic landmarks, the Vivekananda Rock Memorial a revered monument dedicated to Swami Vivekananda and the towering 133-foot statue of Tamil saint poet Thiruvalluvar. The ₹37 crore project undertaken by the Tamil Nadu government adds to the region's tourism infrastructure, promising improved visual and travel experience for visitors.

HIGHLIGHTS

Dimensions and Design: 77 m long and 10 m wide, the bowstring-arch design ensures both aesthetic appeal and durability. The transparent glass surface provides breathtaking views of the Bay of Bengal, offering visitors a memorable experience of walking above the ocean.

Accessibility: The visitors do not have to rely on ferry services to travel between the Vivekananda Memorial and the Thiruvalluvar statue. The bridge now enables a leisurely walk, reducing travel time and enhancing convenience.

Safety: The bridge is designed to resist harsh coastal conditions, including high humidity, salty sea air and erosion, ensuring long-term structural integrity.

Economic benefits: This will bolster local tourism and provide new economic opportunities for associated industries.

Cultural appeal: By connecting two historic monuments, the bridge celebrates Tamil Nadu's rich heritage while showcasing modern engineering prowess.

The bridge not only serves as an architectural wonder but also as a symbol of India's growing reputation in the field of engineering and infrastructure.

With its combination of heritage, technology and awe-inspiring views, the Kanyakumari Glass Bridge offers an unforgettable experience for visitors, making it one of the most exciting new attractions in India.

DO YOU KNOW ?

- The world's highest and longest glass bridge is in Zhangjiajie Glass Bridge in the Hunan province of China.
- The longest cantilever glass bridge in India is in Vagamon, Kerala.

Following the emphasis on research as outlined in the NEP 2020 and the Prime Minister's 2022 Independence day address that touched upon the importance of R&D, GOI rolled out the One Nation One Subscription scheme (ONOS) from 1st January 2025. This scheme provides country-wide access to International scholarly research articles and journal publications, to students, faculty and researchers of all higher education institutions managed by the Central and State governments and Research & Development institutions of the Central Government. This is another important step in making India **Atmanirbhar** and **Viksit Bharat** by 2047.

It covers more than 6,300 institutions across the country, including those in Tier 2 and Tier 3 cities, and provides access to more than 13,000 scholarly journals from 30 major international publishers benefiting about 1.8 crore people.

Key objectives

- access to scholarly knowledge
- inclusion of diverse institutions
- global research participation

Implementation and allocation

The entire subscription process will be centrally coordinated by INFLIBNET (Information and Library Network), an autonomous body under the University Grants Commission (UGC). INFLIBNET will manage the distribution of digital access to these journals.

A total of ₹6,000 crore has been allocated for this initiative, covering three years—2025, 2026, and 2027. ONOS will also provide central funding support of ₹150 crore per year for beneficiary authors to publish in selected good quality Open Access (OA) journals.

Deliverables

ONOS is a key part of a broader vision to transform access to knowledge in the country. It is a game-changing scheme for India's research ecosystem. It is expected to bridge the gaps in research infrastructure across India and will significantly contribute to enhancing India's academic and research excellence, promoting innovation and helping the country emerge as a global hub for scientific research.

Sa Vidyaya Vimukthaye!

(Meaning : "Knowledge is that which liberates.")

Smt Archana Sundar

The grand halls of Rashtrapati Bhavan glimmered with pride and joy on 17th January 2025, as the nation's finest athletes were celebrated for their exceptional achievements. President Droupadi Murmu presented the prestigious Major Dhyan Chand Khel Ratna Award to four extraordinary individuals who have left indelible marks on the global sports stage.

Among the honourees was **Manu Bhaker,** a 22-year-old **shooting** star who created history at the Paris 2024 Olympics. With bronze medals in both the 10m air pistol individual and mixed team events, Manu became the first Indian athlete since Independence to win two medals in a single Olympic edition. Her journey was not without challenges. Controversies surrounding her nomination tested her mettle but Manu's performance silenced critics and etched her name in history.

Standing alongside her was **Harmanpreet Singh,** captain of the Indian men's **hockey** team. A pillar of strength and strategy, Harmanpreet has led his team to consecutive Olympic bronze medals, first in Tokyo and then in Paris. His leadership on and off the field has been instrumental in reviving the glory of Indian hockey, inspiring young players across the nation to pick up a stick and dream big.

The stage also belonged to **Praveen Kumar,** a **para-athlete** whose journey is as inspiring as it is remarkable. Born with a short left leg, Praveen turned adversity into strength, clinching gold in the men's **high jump** T64 category at the Paris Paralympics. His record-breaking performance not only earned him the title but also elevated India's standing in the world of para-athletics.

Adding a touch of intellectual brilliance to the evening was **D Gukesh,** an 18-year-old **chess** prodigy who stunned the world by becoming the youngest chess world champion. Gukesh defeated China's Ding Liren to claim the title, making him only the second Indian, after Viswanathan Anand, to achieve this feat. His accomplishment will bode well for the future of chess in India.

The ceremony was more than a recognition of talent—it was a celebration of perseverance, determination and the undying spirit of sportsmanship. The Major Dhyan Chand Khel Ratna Award, renamed in 2021 to honour the legendary hockey player remains a beacon of inspiration and this year's recipients embody its essence. Their stories will inspire generations to dream, strive and achieve greatness.

Kum Anu Narayan

Chattisgarh's Green GDP initiative

Chhattisgarh, a state in central India, has taken a ground-breaking step by linking the benefits provided by its forests directly to what is known as the Green Gross Domestic Product (Green GDP). In doing so, the state aims to show how conserving nature can go hand in hand in hand with economic growth.

Under this plan, services that forests naturally offer—like cleaning the air, saving water, protecting wildlife and storing carbon—will be officially measured and added to the state's economic calculations. The goal is to make sure that as the state's economy develops, it does so without harming the environment.

Chhattisgarh has an impressive 44% of its land covered by forests.

These forests provide many products, such as *tendu* leaves (used for wrapping tobacco), honey and medicinal plants. They also serve as a home for diverse wildlife, keep the climate stable by absorbing carbon dioxide and maintain the health of rivers and water sources. All of these benefits are important for the livelihoods of millions of people and for the fight against climate change.

Chief Minister Vishnu Deo Sai stated that this step aligns with Prime Minister Modi's vision of a "Developed India 2047". It will help the state better plan its budget and create policies that consider both economic success and environmental protection.

According to V. Sreenivasa Rao, Principal Chief Conservator of Forests (PCCF) and Head of Forest Force, measuring the value of forests in monetary terms will help policymakers see how vital these green spaces are. The India State of Forest Report (ISFR) recently found that Chhattisgarh's forest cover has gone up, which officials believe is due to focused efforts on protecting biodiversity and taking care of natural resources.

One major part of the new plan is recognizing that forests are worth more than just timber. They also hold cultural and religious importance, particularly for the tribal communities of the state. These forests support eco-tourism, such as jungle safaris and camping in national parks, creating jobs and recreational activities for both locals and visitors.

Scientists will now carefully measure the economic value of different forest functions. For instance, they will calculate how much carbon dioxide trees absorb, how much water flows from forested areas and how animals and insects help maintain a healthy environment. This information will be used to adjust the state's Green GDP, ensuring that Chhattisgarh's progress includes both economic prosperity and the preservation of its rich natural heritage.

Smt Meenakshi S

Z-Morh Tunnel inaugurated

Prime Minister Modi inaugurated the strategically important Z-Morh Tunnel in Jammu and Kashmir's Ganderbal district in January 2025. Situated at an altitude of over 8,650 feet above sea level, the tunnel provides an all-weather connectivity between Srinagar and Sonamarg and further to Leh. It also bypasses the landslide and avalanche routes ensuring safer and uninterrupted access to Ladakh region. The tunnel will enable the development of Sonamarg resort in Ganderbal district as a winter sports destination that is similar to the famous Gulmarg skiing resort town. Situated between the snow-clad Himalayan peaks, the tunnel is expected to unlock the full potential of the region's trade and tourism sectors.

Along with the Zojila Tunnel that is set for completion by 2028, the Sonamarg Tunnel will ensure seamless NH-1 connectivity between Srinagar and Ladakh. This enhanced connectivity will boost defence logistics, drive economic growth and socio-cultural integration across Jammu and Kashmir and Ladakh.

This was PM Modi's first visit to the Union Territory after the Assembly elections held last year. After inaugurating the ₹2,700-crore project, PM went into the tunnel and interacted with the project officials. He also met the construction workers who worked meticulously amid harsh conditions to complete the tunnel.

Smt Meenakshi S

GRAMEEN BHARAT MAHOTSAV 2025

Grameen Bharat Mahotsav 2025 was inaugurated by Prime Minister Modi on 4th January 2025 at the Bharat Mandapam, New Delhi. The theme of the Mahotsav is to build a resilient rural India for a Viksit Bharat 2047 and the motto is **"गांव बढ़े, तो देश बढ़े"** (means "Developing villages will develop the nation"). Celebrating Rural India's entrepreneurial spirit and cultural heritage, the Mahotsav was held from 4th to 9th January.

The Mahotsav, through various discussions, workshops and masterclasses, aimed to enhance rural infrastructure, create self-reliant economies, and foster innovation within rural communities. Its objectives included promoting economic and financial security among the rural population, with a special focus on North-East India, by addressing financial inclusion and supporting sustainable agricultural practices.

The focus of the mahotsav was to

- empwer rural women through entrepreneurship;
- bring together government officials, thought leaders, rural entrepreneurs, artisans and stakeholders from diverse sectors to build a roadmap for collaborative and collective rural transformation;
- encourage discussions around leveraging technology and innovative practices to enhance rural livelihoods;
- showcase India's rich cultural heritage through vibrant performances and exhibitions.

Addressing the gathering on the occasion, Prime Minister stated that the grand organization of the Grameen Bharat Mahotsav in the beginning of the year gave a glimpse of India's journey towards development.He congratulated NABARD and other associates for organizing this mega event.

DO YOU KNOW ?

Over 94% of rural households now have access to telephones or mobile phones, banking services and world-class technology like UPI.

Smt Silpa Nandakumar

A tribute to the doyens

Dr. Rajagopala Chidambaram

Dr. R. Chidambaram, a renowned Indian physicist played a pivotal role in **developing India's nuclear programme.** Born on 12th November 1936, in Tamil Nadu, Dr. Chidambaram's contributions to the field of physics have been instrumental in shaping India's scientific landscape.

As a key architect of India's first nuclear test, codenamed "Smiling Buddha," in 1974, Dr. Chidambaram played a central role in the country's nuclear development. "Smiling Buddha" marked India as only the sixth country to conduct a nuclear test after the United States, Soviet Union, United Kingdom, France and China.

Dr. Chidambaram's expertise and leadership were crucial in propelling India's nuclear capabilities. Throughout his illustrious career, he also held revered positions, including Chairman of the Atomic Energy Commission of India and Secretary to the Government of India, Department of Atomic Energy. His outstanding contributions to nuclear physics earned him several accolades, including the **Padma Vibhushan,** India's second-highest civilian honour.

He served as the Principal Scientific Adviser to the Government of India from 2001 to 2018, initiated the RuTAG project, bringing innovative technologies to rural communities and enhancing their livelihoods, launched the **Society for Electronic Transactions and Security (SETS)** and played a crucial role in establishing the **National Knowledge Network (NKN).**

The illustrious physicist passed away on 4th January 2025, at the age of 88. His lasting impact goes beyond scientific achievements, motivating future generations of scientists and engineers while cementing India's status as a major nuclear power.

K.S. Manilal

K.S. Manilal, an accomplished Indian botanist, has left an enduring legacy in the **field of plant taxonomy and conservation.** Born in Kerala in 1938, Manilal's childhood fascination with the plant world paved the way for a remarkable career.

Manilal's groundbreaking research led to the discovery of several plant species, including the critically endangered *Paphiopedilum druryi* orchid. His extensive study on the flora of India, particularly in the Western Ghats region, led to the publication of numerous papers and books, including the seminal work ***Flora of Kerala.***

His notable achievements include the translation of the Latin botanical treatise *Hortus Malabaricus*, making it accessible to English-speaking scholars. Apart from the translation, Manilal gave annotation, and modern botanical and historical interpretation for this much-revered text, which shed light on the life and culture of the Malabar coast. His work on the flora of Silent Valley led to the cancellation of a proposed hydroelectric project which saved the region's unique ecosystem.

Throughout his illustrious career, Manilal held esteemed positions, including Director of the Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) and President of the Indian Association for Angiosperm Taxonomy. He was also awarded the prestigious **Padma Shri** award in 2020.

Even after his passing on 1st January 2025, Manilal's impact lives on. As an advocate for environmental conservation and education, he continues to inspire students and activists alike.

Shri Arpith Vijayan

India's Metro Rail Network

The world's third-largest

India has achieved a milestone by having the world's third-largest Metro rail network. India's Metro Rail network has expanded over 1000 kilometres and is right behind China and the United States.

India had launched its first Metro in 1984 at Kolkata, West Bengal. Jumping forward to 2002, the DMRC (Delhi Metro Rail Corporation) launched the country's second Metro network during former Prime Minister Vajpayee's tenure. Since then, the nation has witnessed significant development of its Metro Rail projects across 11 other states and 23 cities.

Aside from Kolkata and Delhi, the other cities with Metro systems include Chennai, Bengaluru, Hyderabad, Jaipur, Gurgaon, Mumbai, Kochi, Lucknow among several others.

Since 2014, India has witnessed unprecedented growth in its Metro Network under PM Modi's leadership. The primary focus is to ensure ease of travel and seamless connectivity at an affordable price, thereby improving the quality of life for the country's citizens.

The Regional Rapid Transit System (RRTS) has transformed interstate travel, with Prime Minister inaugurating an extra 13-kilometre stretch of the Delhi-Ghaziabad-Meerut **Namo Bharat Corridor**, which connects Sahibabad in Uttar Pradesh to New Ashok Nagar in Delhi.

Along with the Namo Bharat Corridor, Prime Minister also inaugurated a 2.8-kilometre stretch of Delhi Metro Phase-IV, connecting Janakpuri to Krishna Park. This marks the first operational segment of Phase-IV, with an investment of ₹1,200 crore. The development will greatly benefit residents of West Delhi, including areas such as Krishna Park, Vikaspuri, and Janakpuri. The foundation stone has also been laid for the 26.5-kilometre Rithala-Kundli section of Delhi Metro Phase-IV, with an estimated cost of ₹6,230 crore. This new corridor will link Rithala in Delhi to Nathupur (Kundli) in Haryana, improving connectivity between North-West Delhi and Haryana, and benefiting key areas like Rohini, Bawana, Narela, and Kundli.

As India's urban infrastructure evolves, the extension of metro lines is expected to enhance travel options in the coming years, providing an efficient mode of transportation for people in their daily lives.

Kum Kavya R

Asia's largest Wave Basin

The Indian Institute of Technology Madras launched Asia's largest shallow wave basin research facility at its 'Discovery' Satellite campus in Thaiyur on 6th January 2025. This state-of-the-art facility has been designed to address critical challenges in the country's ports, waterways and coastal infrastructure.

A **wave basin** is a large tank of water used to simulate ocean waves. Researchers use it to study how waves interact with structures like ships, breakwaters or coastlines. By generating controlled waves, they can test designs and predict the impact of real-world wave conditions in a safe, controlled environment.

The Shallow Wave Basin at IITM is a multi-directional wave generating facility capable of simulating complex wave and current interactions. It features a mobile wave maker that can generate waves of varying heights and periods, allowing researchers to study the impact of different wave conditions on coastal structures, architecture, sediment transport and hydraulic performance. The basin also allows for the simulation of current circulation, enabling the study of complex wave-current interactions.

Highlighting the significance of this Shallow Wave Basin Research Facility to India, Prof. K. Murali, Department of Ocean Engineering, IIT Madras, said, “This facility will position IIT Madras in international arena as one of the institutes that operates the large scale shallow wave basin for research and industry applications.

We no longer need to depend on technology from other countries for the generation of waves in laboratory.” The facility was developed indigenously, with most of the components designed and fabricated in-house. This not only demonstrates the institute's technical prowess but also aligns with the Indian government's Make in India initiative.

This facility is a boon for coastal engineering research in India, as it provides a platform for researchers to study the impact of various factors on coastal structures and develop solutions to mitigate the effects of erosion, flooding and other coastal hazards. It can also be used to test the stability of offshore structures, such as oil rigs and wind turbines, and to optimise the design of ports and harbours.

Prof. Torsten Schlurmann from Leibniz University of Hannover, Germany, which is running the world’s largest wave-current flumes and basins at the university level, said that this new research facility marks a significant milestone in the pursuit of knowledge and innovation.

The Shallow Wave Basin at IIT M is a valuable asset and will help the country to better understand and manage its coastal resources, ensuring the safety and sustainability of its coastal communities and infrastructure.

Smt Shyamala Viswanathan

INDUS:FOOD 2025

The Union Minister of Food Processing Industries inaugurated the 8th edition of Indusfood, Asia's premier Food and Beverage (F&B) Trade Show at the India Exposition Mart Ltd in Greater Noida, Uttar Pradesh.

Indusfood is Asia's leading annual food and beverage trade exhibition. Launched in 2017, it is organized by the Trade Promotion Council of India (TPCI) (with support from the Department of Commerce). The event will feature the Asia President's Forum, held in India for the first time, in partnership with the Indian Federation of Culinary Associations (IFCA).

Indusfood 2025 hosts two concurrent events:

- **Indusfood manufacturing (4th edition):** Focuses on food processing, packaging and hospitality technologies.
- **Indusfood Agritech (Inaugural edition):** Dedicated to agricultural, fisheries, dairy and poultry farming technologies.

With about 2,300 exhibitors from over 30 countries, the event has evolved into a global platform, underscoring India's commitment to sustainable and comprehensive food systems. This landmark event brought together over 30 presidents of chef associations from across Asia.

Objectives

- To make India a major hub for the global food and beverage industry.
- To realize the concept of 'farm-to-fork'.
- To establish strong synergies between farmers, technology providers, manufacturers and global markets.
- To promote innovation and business opportunities in the agriculture and food sector.

Indus food 2025 is expected to deliver:

1. **Boosted exports:** Indusfood has played a pivotal role in increasing India's food and beverage exports, in turn leading to both domestic and foreign investment in India's food and beverage sector.
2. **Enhanced visibility:** The event has helped raise India's profile in global markets, positioning the country as a competitive player in the international food industry and attracting attention from global businesses and investors.
3. **Facilitated networking and collaboration:** Provide a platform for networking, fostering collaborations and partnerships between Indian producers and international buyers
4. **Business deals and trade growth:** The trade show facilitates on-the-spot business deals, accelerating trade and ensuring the quick global distribution of Indian food products.

Smt Anuradha V R

PARTH Yojana

Madhya Pradesh has launched the PARTH Yojana, aimed at empowering youth for careers in defence and law enforcement.

The PARTH Yojana (Police Army Recruitment Training & Hunar) is a pioneering initiative launched in Madhya Pradesh to offer pre-recruitment training to the youth aspiring to join the Indian Army, Police and Paramilitary forces. Introduced by CM Mohan Yadav during the State Level Youth Festival. PARTH yojana focuses on enhancing physical and mental preparedness.

Objectives

The primary objectives include encouraging patriotism, enhancing skill development, and improving employability. The scheme aims to channel the enthusiasm of the youth into productive career paths. It also seeks to reduce unemployment by preparing candidates for competitive examinations in defence and law enforcement.

Training components

Candidates enrolled in the PARTH Yojana will undergo comprehensive training. This includes physical fitness preparation to meet the rigorous demands of defence services. Additionally, training will cover written examination coaching, focusing on general knowledge, mathematics and proficiency in English.

District Sports and Youth Welfare Officers will manage the training centres with support from rural youth coordinators and staff from the department.

Personality development

An essential aspect of the training is personality development guidance. This component aims to equip candidates with the necessary soft skills for interviews and selection processes. Emphasis will be placed on communication skills, confidence building, and leadership qualities.

Establishment of Training Centres

The scheme will see the establishment of training centres at divisional levels across Madhya Pradesh. These centres will serve as hubs for training and preparation. District sports and youth welfare officers will oversee the implementation and management of these centres.

Support structure

Support for the PARTH Yojana will come from various stakeholders. Rural youth coordinators and departmental employees will be involved in the training process. Their participation is crucial for reaching out to potential candidates and ensuring effective training delivery. Subject matter experts will be hired on a part-time basis from government and semi-government educational institutions. The Sports Trainer Welfare Committee will decide on trainers and subject matter experts.

By providing structured training, the scheme aims to enhance the overall quality of candidates entering these crucial sectors.

Eligibility criteria

- A BPEd/BPE/NIS Diploma and state-level athletic experience are prerequisites.
- Written assessment and personality development.

Fee structure

The scheme is self-financed. Trainees will pay a fixed monthly fee, determined by the Sports Trainer Welfare Committee.

Col Shashidhar M V (Retd)

INS NIRDESHAK

REWIND

The contract for four Survey Vessels (SVL) was signed in 2018 between the Kolkata-based PSU Garden Reach Shipbuilders & Engineers Ltd (GRSE) and Indian Navy. The first ship, INS Sandhayak was commissioned in February 2024.

The SVL ships are designed and built to meet the highest standards of classification rules set by the Indian Register of Shipping.

INS Nirdeshak's keel was laid in December 2020 and it underwent a comprehensive schedule of trials in both the harbour and at sea before being launched in May 2022.

INS Nirdeshak is one of the three large survey vessels for which a contract was awarded to L&T Shipbuilding in March 2020 with deliveries mandated to start in December 2022.

26th May 2022 was a proud day for L&T as it saw the launch of INS Nirdeshak from its shipyard at Kattupalli in Tamil Nadu well ahead of its schedule.

About-INS Nirdeshak Yard 3026 Survey Vessel

- INS Nirdeshak is the reincarnation of the erstwhile ship of the same name which served the Indian Navy with distinction for 32 years before being decommissioned in December 2014.
- Facilitates precise hydrographic surveys and

supports maritime operations thus enhancing navigation safety across our extensive zones.

- Collects valuable oceanographic and geophysical data for both defence and civil applications.
- Has indigenous content of over 80% by cost.
- Showcases the collaborative effort of a large number of stakeholders including MSMEs and defence PSU.

A model of public-private partnership in shipbuilding, INS Nirdeshak is a harbinger of future successful collaboration for warship building.

Salient features

- Overall length- 110m.
- Displacement - approx. 3400 tons.
- Powered by twin diesel engines.
- Speed- excess of 18 knots.
- Endurance- over 25 days at sea.
- State-of-the-art hydrographic equipment including data acquisition and processing systems.
- Autonomous underwater vehicles (AUVs).
- DGPS long-range positioning systems.
- Digital side-scan sonar.
- Multi-beam echo sounders.
- Remotely Operated Vehicles (ROVs).

Unveiling of crest

The Navy also unveiled the crest of the INS Nirdeshak—' the Pathfinder of the Seas' which symbolises the virtues of India's maritime sovereignty and technological prowess.

It portrays the proud symbol of India's territorial integrity serving as the backdrop to a hydrographic survey ship cutting through waves, harnessing the advanced satellite-based navigation and communication systems, and state-of-the-art sub-surface sensors to chart the underwater terrain with precision.

Significance

INS Nirdeshak will not only serve as a modern cartographer of the seas but also support broader naval operations. Its commissioning marks a critical step in advancing India's maritime capabilities and reflects our nation’s growing expertise in indigenous shipbuilding besides contributing to both military readiness and regional maritime security initiatives like SAGAR (Security and Growth for All in the Region).

AI incubation centre for future wars

Col Shashidhar M V (Retd)

Bharat Electronics Limited (BEL) in 2024 signed an agreement with the Indian Army for Joint Technology Incubation through projects in AI domain. An Artificial Intelligence Incubation Centre for the Indian Army was established at the BEL R&D Centre as part of this agreement which aims at leveraging complementary strengths and capabilities of BEL and Army.

Inauguration

On 18th December 2024, the Army Chief General Upendra Dwivedi, virtually inaugurated the Indian Army AI Incubation Centre (IAAIIC) underscoring the commitment towards integrating Artificial Intelligence (AI) into its operations aligning with its broader vision of modernization and preparedness for contemporary security challenges.

As an innovation hub, the IAAIIC aims will serve as a collaborative platform that brings together academia, start-ups, industry leaders and domain experts to develop indigenous AI solutions tailored specifically for the Indian Army's unique needs.

BEL will provide essential infrastructure and IT support and this facility will be equipped with a 1-petaflop supercomputer from the Centre for Development of Advanced Computing (CDAC) enabling advanced AI modelling and training capabilities.

Significant benefits

By tapping into AI's potential, our Army aims to stay ahead of evolving threats by modernizing its capabilities in a rapidly changing technological landscape as under

- Indigenous capacity building- Nurture local talent and reduce reliance on foreign technologies by pursuing self-reliance in defence technology and cultivating skilled workforce of AI experts within the Army.
- Prepare for multi-domain warfare scenarios.
- Autonomous systems: AI for unmanned ground vehicles (UGVs) and drones for surveillance, reconnaissance and combat operations.
- Cybersecurity: AI algorithms for detecting and defending against cyber threats, improving the overall defence posture. enhancing cybersecurity, given the increasing role of digital systems in modern warfare. AI is being used to detect and mitigate cyber threats, analyse potential vulnerabilities and safeguard military infrastructure from hacking and cyber-attacks.
- Predictive maintenance: Solutions for maintenance of military hardware and vehicles, reducing downtime and increasing efficiency.
- Enhancing tactical operations and decision-making.
- Intelligent communication systems: Optimising communication networks and information flow on the battlefield.
- AI for military logistics: Develop AI-powered logistics systems that can optimize supply chain operations by using data analytics to predict supply demands, optimise routes for transportation and ensure timely delivery of critical material and stores.

Air Marshal Jeetendra Mishra is IAF's WAC Chief

Col Shashidhar M V (Retd)

Air Marshal Jeetendra Mishra assumed command of the Indian Air Force's Western Air Command (WAC) on 1st January 2025. WAC is a critical wing of the Indian Air Force (IAF) responsible for safeguarding the airspace the sensitive regions of Ladakh and other northern areas.

The Air Marshal was commissioned into the Indian Air Force as a fighter pilot in December 1986. He is an alumnus of National Defence Academy Pune, Air Force Test Pilots School, Bangalore, Air Command and Staff College, USA and Royal College of Defence Studies, UK.

Service milestones

Air Marshal Mishra's vast experience coupled with over 3,000 hours of flying time, demonstrates his expertise as a fighter combat leader and experimental test pilot. In his service career spanning over 38 years the Air Marshal has tenanted important command and staff appointments.

A recipient of **Ati Vishisht Seva Medal (AVSM)** and **Vishisht Seva Medal (VSM),** Air Marshal Jeetendra Mishra succeeds Air Marshal Pankaj Mohan Sinha who superannuated in December 2024 after putting in more than 39 years of distinguished service in the IAF.

Role of WAC

Located in New Delhi, WAC has more than 200 air bases under its operational command and has been involved in all operations since the time of our Independence. Its geographical location has been such that it has been in the epicentre of all operational conflicts beginning Operation Kashmir 1947-48 till Operation White Sagar (Kargil War).

WAC is a cornerstone of India's air defence system. It plays an instrumental role in monitoring and protecting the country's airspace in regions prone to geopolitical tensions, particularly the Ladakh sector. WAC also supports humanitarian and disaster relief missions, showcasing its versatility beyond military operations.

Under the leadership of Air Marshal Jeetendra Mishra, the command is expected to strengthen its operational capabilities and continue to adapt to evolving threats. His strategic vision and hands-on experience will be invaluable in addressing the challenges posed by advanced adversarial technologies and complex security dynamics in the region.

Appointment	Key responsibilities
Commanding Officer of a Fighter Squadron	Operations and training with a focus on combat readiness and efficiency.
Chief Test Pilot at Aircraft and Systems Testing Establishment (ASTE)	Critical testing of advanced aircraft systems and ensured technological advancements in aviation.
Air Officer Commanding of Two Frontline Air Bases	Operational readiness and administrative responsibilities of key IAF bases.
Director (Operational Planning and Assessment Group)	Strategic planning and operational assessments for IAF missions.
Assistant Chief of Air Staff (Projects)	Execution of critical projects aimed at modernizing the IAF.
Deputy Chief of Integrated Defence Staff (Operations)	Defence operations across multiple branches of India's armed forces.

Col Shashidhar M V (Retd)

Himkavach

Overview

The Defence Research and Development Organisation (DRDO) has made significant strides in military clothing technology with the development of its multi-layer clothing system, HIMKAVACH successfully clearing all user trials. **An innovative clothing system, it is specifically designed to operate effectively in extreme temperature ranges from +20°C to -60°C.**

Prior to HIMKAVACH, the Indian Army utilized the Extreme Cold Weather Clothing System (ECWCS), a three-layered attire created by DRDO's Defence Institute of Physiology and Allied Sciences.

HIGHLIGHTS

- HIMKAVACH consists of several layers, crafted for insulation, breathability and comfort.
- Its modular design enables soldiers to adjust the layers according to the weather conditions. This aspect is crucial for soldiers in the Himalayas, where temperatures can plummet quickly.
- Integrates multiple layers for optimal thermal insulation. Each layer has a distinct function, such as moisture-wicking, insulation and wind protection. The outermost layer is designed to resist water and wind, while still being breathable. The inner layers work to retain body heat, ensuring that soldiers stay warm even in freezing temperatures.
- It is effective in both hot and cold climates.

User trials and performance

The system underwent rigorous testing in real-life conditions to evaluate its performance. Soldiers tested the clothing in various military operation scenarios, providing valuable feedback. The results were highly positive, with users noting the system's comfort and functionality. The trials met the required standards for both performance and ease of use.

Military applications

HIMKAVACH plays a vital role in safeguarding soldiers against the dangers of cold-weather environments, such as hypothermia and frostbite.

The clothing allows for maximum agility while providing essential warmth and protection. This is especially critical for operations in the demanding terrain of the Himalayas.

Developments on the anvil

DRDO plans to explore further innovations in military clothing. Future developments include features such as improved camouflage and integrated communication capabilities. Additionally, there may be a focus on sustainability and the use of advanced materials, thus enhancing the performance of military personnel in diverse environments.

Pay offs

The launch of HIMKAVACH coincides with India's persistent security challenges along the Himalayan borders. This equipment aims to enable soldiers to function efficiently in extreme conditions and enhance military readiness. The rollout of the new clothing system is anticipated to commence shortly. It is projected to boost mobility, durability, and overall effectiveness for soldiers stationed in demanding environments.

Competition Law – Part 2

The Competition Act, 2002 ("Competition Act") seeks to achieve its primary objectives (outlined in the previous edition) by

(a) Regulating anti-competitive agreements, abuse of dominance and combinations (which may have potentially anti-competitive effects) and

(b) Promoting competition advocacy.

Anti-competitive agreements

Anti-competitive agreements entered into by entities, are a factor which could potentially hinder free and fair competition in the markets. The Competition Act imposes restrictions for scenarios where the Competition Commission of India concludes that an entity has indulged in practices resulting in 'appreciable adverse effect on competition' ("AAEC").

The Competition Act lays down descriptions/metrics for assessing AAEC of practices carried on by entities. For instance, some factors considered in assessing whether or not anti-competitive agreements could have a potential AAEC, are

(a) Barriers to new entrants;

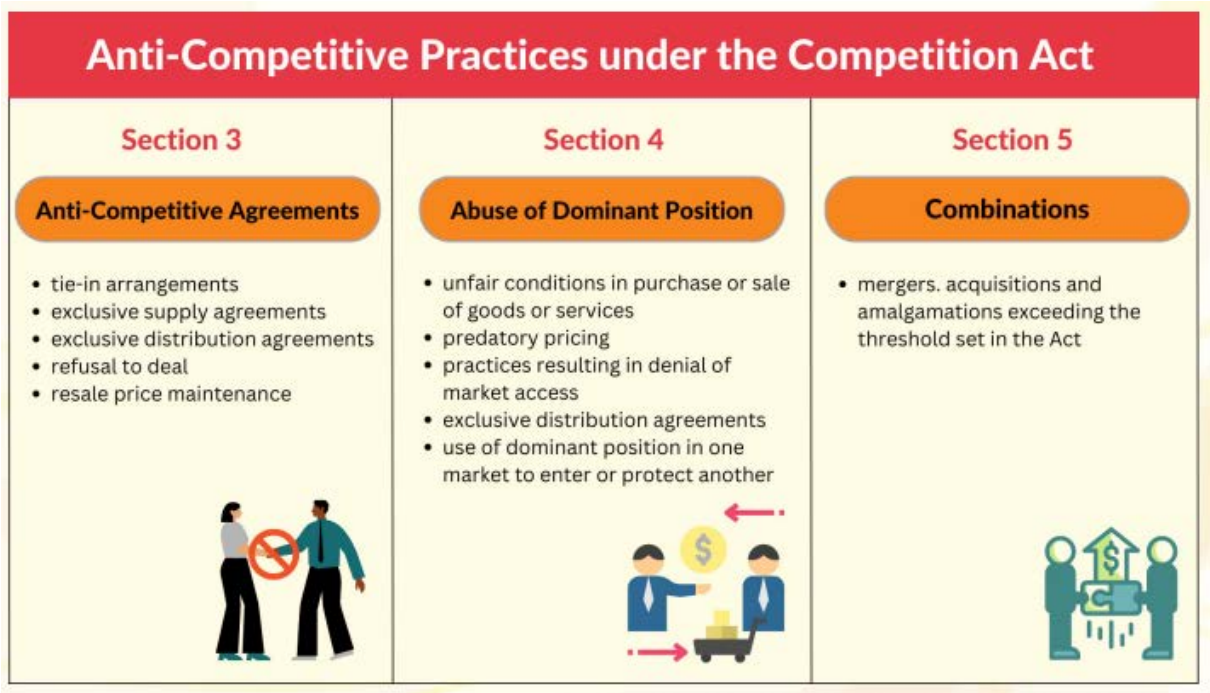
(b) Driving existing competitors out of the market;

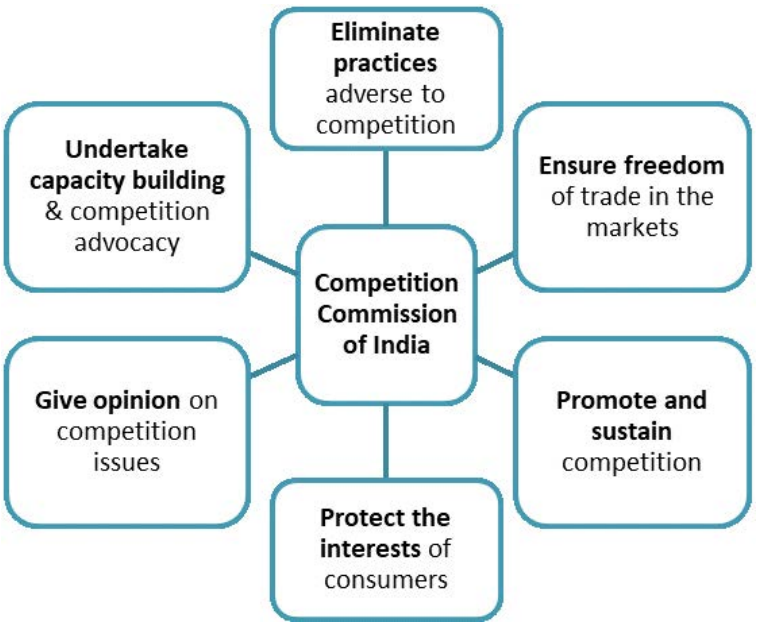
(c) Accrual of benefits to consumers; and

(d) Promotion of technical, scientific and economic development.

Abuse of dominant position

The Competition Act regulates scenarios where a dominant market player may abuse its market power by restricting competition or by imposing unfair conditions on customers. The Competition Act contains factors to define 'dominant position,' and broad metrics to assess when such dominance is abused by the relevant entities.





Some factors which may be considered in assessing whether or not an entity holds a dominant position, are

(a) Market share of the enterprise;

(b) Size and resources of the enterprise;

(c) Economic power of the enterprise;

(d) Relative power of the enterprise vis-à-vis the other market players,

(e) Dependence of consumers;

(f) Market structure and size of market, etc.

Combinations

'Combinations' refer to mergers, amalgamations or acquisitions of control, shares or voting rights of one entity by another entity or group. While certain combinations could lead to a business/operational efficiencies and savings to consumers. Certain combinations may cause specific entities to hold undue power to influence the market and the consumers.

The Competition Act aims to curb combinations which have been undertaken for or cause anti-competitive effects. It also specifies thresholds and conditions for combinations which could be scrutinised for potentially anti-competitive effects on the market.

Competition advocacy

Competition advocacy is another key component of the Competition Act. It focuses on creating awareness amongst key stakeholders such as market players and consumers, regarding

(a) The need for competition,

(b) The benefits of healthy competition,

(c) Rights available under the regulatory framework,

(d) The existence and role of the Competition Commission of India.

Natural supplements

The rising global awareness of health and nutrition has led to exponential growth in the market for dietary supplements, often sold as pills, syrups, powders or chewables. These products promise improved immunity, better growth and enhanced overall health, particularly for children. However, such synthetic or highly processed supplements should be approached with caution. Instead, the emphasis should be on natural, holistic alternatives.

Dietary supplements are products intended to complement the diet and provide nutrients, such as vitamins, minerals, amino acids and enzymes. While they can fill gaps in nutrition, the question arises: Are these supplements truly necessary, especially for children?

Concerns with synthetic supplements

1. Risk of overdose - Many supplements contain high concentrations of vitamins and minerals, which can lead to toxicity if consumed in excess. For example, excessive intake of fat-soluble vitamins like A, D, E, and K can accumulate in the body, leading to adverse effects such as liver damage or bone disorders.

2. Additives and artificial ingredients - Pills and syrups often contain artificial sweeteners, preservatives, colours and flavours, which may cause allergic reactions, hyperactivity or gastrointestinal issues in children.

3. Lack of regulation - The dietary supplement industry is not as rigorously regulated as pharmaceuticals. This lack of oversight can result in products with questionable quality, inconsistent potency or contamination with heavy metals and harmful substances.

4. Dependency and reduced natural absorption - Prolonged use of synthetic supplements can lead to dependency, where the body becomes less efficient at extracting nutrients from food. Moreover, isolated nutrients in synthetic form often lack the synergistic compounds found in whole foods that enhance their effectiveness.

Naturopathic health supplements for children

1.Amla - Rich in vitamin C, antioxidants and essential minerals, amla boosts immunity, supports

digestion and enhances skin and hair health. Amla can be consumed as fresh fruit, juice or dried powder mixed with honey.

2. Almond milk with turmeric - Almonds provide healthy fats, protein and vitamin E, while turmeric is a powerful anti-inflammatory antioxidant. Blend soaked almonds with warm milk and a pinch of turmeric for a nourishing drink.

3. Ragi - Ragi is a rich source of calcium, iron and dietary fibre, essential for growing children. Ragi can be made into porridge, pancakes or laddoos for a nutritious snack.

4. *Moringa* (Drumstick leaves) - *Moringa* leaves are a powerhouse of vitamins A, C and E, along with calcium and iron. They promote growth, enhance immunity and combat malnutrition. Add *moringa* powder to soups, smoothies or rotis.

5. Dry fruits and seeds -A mix of dates, figs, raisins and chia, flax and pumpkin seeds provides energy, omega-3 fatty acids and essential micronutrients. Prepare energy bars or balls using these ingredients with a base of jaggery or honey.

6. Herbal teas - Herbal infusions of *tulsi* (holy basil), ginger or fennel seeds aid digestion, reduce inflammation and build immunity. Brew a mild herbal tea and sweeten it with honey.

7. Seasonal fruits -Mangoes, guavas and papayas are rich in vitamins and minerals essential for growth. Serve as fresh fruit salads or blended into smoothies.

8. Sprouted grains and legumes -Sprouted grains are more bio available, providing protein, iron and B vitamins. Add sprouts to salads, curries or sandwiches.

Tips to enhance nutrient absorption in children

1. Include healthy fats: Vitamins A, D, E and K are fat-soluble, requiring healthy fats like ghee, nuts or seeds for absorption.

2. Promote gut health: A healthy gut ensures efficient nutrient absorption. Probiotic-rich foods like homemade yogurt and fermented pickles support gut flora.

3. Limit processed foods: Avoid junk food and sugary drinks that deplete nutrient stores in the body.

4. Hydration: Ensure you drink enough water, as dehydration can impact nutrient transportation and metabolism.

While synthetic supplements may seem like a quick fix, they often come with risks and drawbacks that cannot be overlooked. A naturopathic approach, emphasizing whole foods, traditional remedies and a balanced lifestyle, is a sustainable and effective way to support good health for people of all ages.

Nandivada Rathnasree

(26.11.1963 – 9.5.2021)

A researcher, trainer, mentor, educator, author, story-teller, science communicator, outreach person in the field of astronomy, institution builder and a leader who passionately shared knowledge, that is **Dr.Nandivada Rathnasree!**

She will always be remembered for her yeoman efforts towards preservation and upgradation of Jantar Mantar observatories and popularising these among the general public through myriad activities. Her passion combined with her creativity helped her break heavy concepts into capsules that the common public can assimilate and apply.

Born to a civil servant Nandivada Bhima Rao and Syamala, she showed inclination towards learning and sharing knowledge from her young age. Like many girls who don the role of nurturer of their younger siblings, she too bonded with her brother Som while teaching him. This probably helped her develop the urge to be a mentor, a good teacher and an excellent communicator in later years.

Rathnasree did her research in the area of stellar evolution and population synthesis under the guidance of Prof. Alak Ray in the theoretical astrophysics group at Tata Institute of Fundamental Research (TIFR), Mumbai. Later, she joined as a postdoc fellow at the University of Vermont, Burlington,

USA during 1992-1994, where she carried out pulsar observations using the **Arecibo radio-telescope** under the mentorship of Prof. Joanna Marie Rankin.

Later she returned to our country to join Raman Research Institute, Bengaluru. Her research included areas of study on massive binaries, particularly in the large magellanic cloud evolution of stars, stellar remains and on a range of aspects manifested in the pulsar radio emission and associated polarisation properties.

Dr. Rathnasree moved to Delhi in 1996 when her husband had joined the department of physics and astrophysics at the Delhi University. She took up the position of senior planetarium educator at Nehru Planetarium, of which she became Director in 1999. **She remained the fountainhead of activities that nurtured interests of thousands of students and public in astronomy for the next three two decades.** Under her leadership, Nehru planetarium started a range of initiatives and this became the hub for amateur astronomers around NCR and Delhi region to carry out their projects. She guided them on various topics, be it photometric observations of stars or new techniques for astrophotography.

Dr.Rathnasree designed her planetarium shows to reach-out different audiences, through her multi-faceted approach:

- provide information and create enthusiasm,
- deepen or widen knowledge,
- build technical facilities to explore further
- remove fear due to superstitions.

She captured every celestial event across the country, be it solar and lunar eclipse, annular and partial eclipses, planetary conjunctions and transits or any launching mission, meteor showers and converted them as an opportunity to drive the message.

A hands-on person who believed in experiential learning, she provided a floor to make these possible with low cost too, say by constructing pinhole cameras and solar projection boxes, so public and school children can learn by doing. Her networking abilities, willingness to travel across the country to meet people in small towns, share her expertise, training abilities, work long hours, ability to curate public demonstrations all came handy along with her vast knowledge and experience.

One can understand her leadership skills and how versatile she must have been through the list of programmes she organised. Even during COVID pandemic, before her last breath, she was actively engaged with students through online programmes like Astro Adda, Astronomy code camps, Virtual tour of cosmos from different planetariums, **Ask an astronomer** interactions, **Samanta Chandrasekhar Challenge** and so on. These online recordings are available as a treasure for anyone who aspires to enter the field of astronomy.

She could explain the radio pulsars and train students on handling online databases through Python coding and exoplanets; she could also take participants on a virtual tour of India to discuss various historical constructions with positional astronomy features. She was an expert in archeo-astronomy research. The Archaeological Survey of India had appointed her on the committee overseeing restoration of Jantar Mantar in Delhi (built around 1720-35 by Raja Sawai Jai Singh). She was of the opinion, “the four extant Jantar Mantar observatories at Delhi, Jaipur, Ujjain and Varanasi have tremendous potential as teaching laboratories of positional astronomy. These observatories consist of a variety of ingeniously constructed positional astronomy instruments, so that, the instruments give a feel of walking through spherical trigonometry.”

She restored the ***Samrat Yantra*** ('equinoctial' or 'equal hour' sundials), ***Nadivalaya Yantra***, ***Jaiprakas Yantra, Misra Yantra, Niyat Chakra*** to their glory and recalibrated them. ***Unnatamsa Yantra*** of the Jaipur observatory measures altitudes of celestial objects, while ***Digamsa Yantra*** measures azimuths of celestial objects and the ***Ram Yantra*** can measure both altitude and azimuth that has consistently shown accuracies of about 0.1 degrees.

During the Venus transit in 2012, in her call for careful quantitative observations, she wrote, "We have vast monumental heritage in our country and this is a unique opportunity to try and image this heritage as a backdrop for this unique celestial event. These images will remain of interest for hundreds of years to come!"

Dr. Rathnasree was a person who cherished nature and enjoyed beauty in all forms. She nurtured her garden as she did young minds. She was fond of travel, photography and food that are evident from her social media posts. Her love for aesthetics, language, music, heritage history and literature is apparent from her writings. She effortlessly wove a tapestry of these with astronomy topics.

In her paper on ***Inspiration of celestial phenomena in the works of Kalidasa***, she looks at this great Indian poet's literary works from an astronomical viewpoint. She looks for astronomical references in them - various celestial phenomena like eclipses, conjunctions, the occultation of Aldebaran around a lunar eclipse, annual motion of Sun, light pollution by Moon, North star and movement of a comet across the sky. She concludes "he had a keen interest in observing the skies, and some of these observations entered as contexts in his poetry. Most such references in the works of Kalidasa would indicate some actual observations of these events on his part. He was a poet, not an astronomer, but he would surely qualify as an amateur astronomer based on these observations."

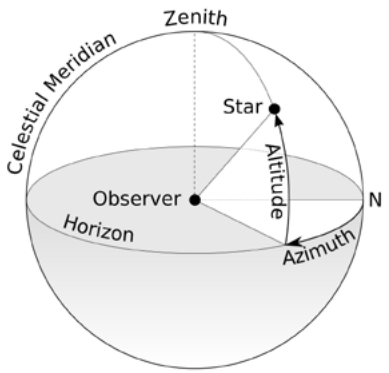
Dr.Rathnasree celebrated the 150th anniversary of Mahatma Gandhi in a very unique way through her very innovative project **Bapu Khagol Mela.** Through this initiative of Nehru Memorial Museum & Library in collaboration with B.M.Birla Science Centre and ASI POEC (Public Outreach Committee, Astronomical Society of India), she organised a over a year, sky watching events at 42 places that Gandhiji had visited or lived. This involved the setting up of telescopes and allowing people to enjoy the spiritual experience of celestial views—naked eye and telescopic. She helped the country know about Gandhi's interest in stars and how he used to gaze through telescopes while he was at Yaravada jail. She very beautifully integrated Gandhi's notes and sketches on these observations, how he later enthused his ashram inmates towards astronomy and his wish that more books were written for Indian readers on this subject into a short full dome planetarium show which left an indelible mark on the planetarium visitors.

Dr. Rathnasree took many efforts to further astronomical knowledge of the next generation through activities like **Vigyan Samagam,** e-classes like **Rad @home** under National Science Centre or NCSM or ASI POEC. When ASI formally set up its Public Outreach and Education Committee (POEC) in 2014, she was the unanimous choice to be its first chair.

Her efforts celebrating India's international collaborative efforts like **SKA (Square Kilometer Array of radio telescopes),** LIGO **(Laser Interferometer Gravitational Wave Observatory)** need a special mention. She worked with the National Council of Science Museums to advise them on astronomy related exhibits and activities at various science centres.

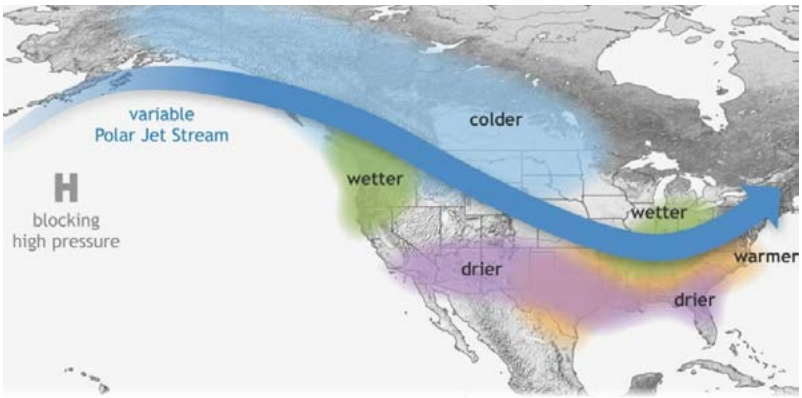
She was also the chief editor for class VI textbooks for NCERT. She was an exemplary astronomy outreach person of our country, connecting sky observers, amateur astronomers, educators, science clubs, students and the public.

This luminous star who led us from darkness to light through her knowledge will remain as a guiding star for generations to come!



Azimuth is the position of an object in the sky, expressed as an angle related to a distance on the horizon of the Earth.

Smt Vaishnavi V



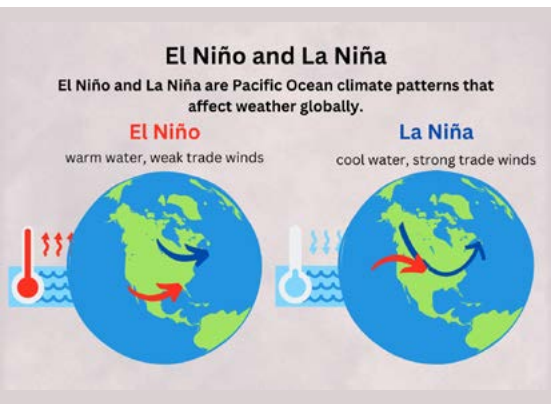
La Niña and India's weather patterns

La Nina means 'little girl' in Spanish is also known as *El Viejo* or 'cold event'. The trade winds (easterlies - permanent east-to-west prevailing winds that flow in the Earth's equatorial region.) become stronger than usual, pushing warmer waters towards the Indonesian coast and making the eastern Pacific Ocean colder than normal.

La Niña is a phase of *El Niño* Southern Oscillation (ENSO), a climate phenomenon, characterised by changes in sea temperatures along the central and eastern tropical Pacific Ocean, accompanied by fluctuations in the atmosphere. ENSO influences, alters and interferes with global atmospheric circulation which in turn influences the weather worldwide.

ENSO has three phases - warm (*El Niño*), cool (*La Niña*) and neutral - which occur in irregular cycles of 2 to 7 years. *La Niña* last occurred in 2020-2023 and *El Niño* in 2023-2024.

La Nina conditions are likely to develop in the next three months but the phase is expected to be relatively weak and short-lived, the World Meteorological Organisation (WMO) mentioned.



General impact

North America and Europe: Colder winters in the northern regions and warmer, drier conditions in the southern regions.

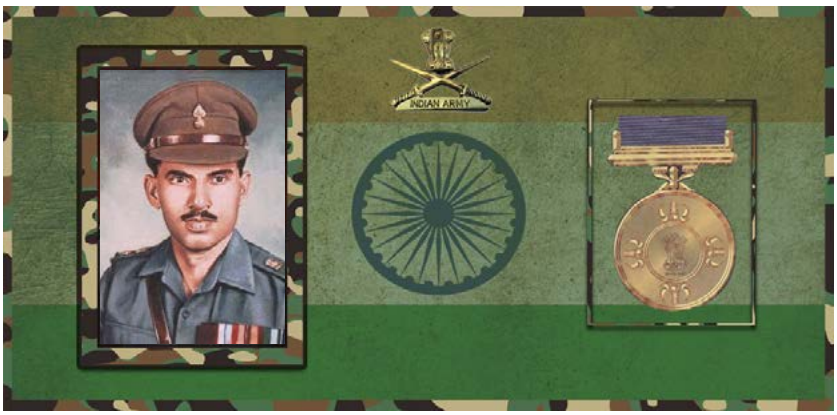
South America: Causes droughts in countries like Peru and Ecuador while bringing more rain to Brazil.

Asia and Oceania: Increased rainfall and a higher risk of flooding in countries like Indonesia, Australia and parts of Southeast Asia.

Effects of La Niña on India this year

1. **Monsoon season (June to September):** Indian summer monsoon will be enhanced, bringing stronger-than-normal rainfall, particularly over the western and central parts of India.
2. **Temperature changes:** Cooler-than-usual temperatures over parts of India, particularly in the northern and northwestern regions, although these effects are usually more noticeable during winter months.
3. **Cyclone activity:** La Niña years often lead to an increased frequency of tropical cyclones in the Bay of Bengal and the Arabian Sea, which could affect coastal areas, especially in the eastern and southern parts of India. These cyclones could cause heavy rainfall, strong winds and potentially significant damage to infrastructure.
4. **Agriculture:** The changes in monsoon rainfall could have mixed effects on agriculture. While enhanced rainfall could benefit crops in areas suffering from drought, excessive rainfall could also damage crops, especially in flood-prone areas.

The impact will also depend on the intensity and duration of the La Niña event, as these factors can vary from year to year. Climate models in the coming months will provide better forecasts, but it's worth keeping an eye on updates from meteorological department as the event develops.

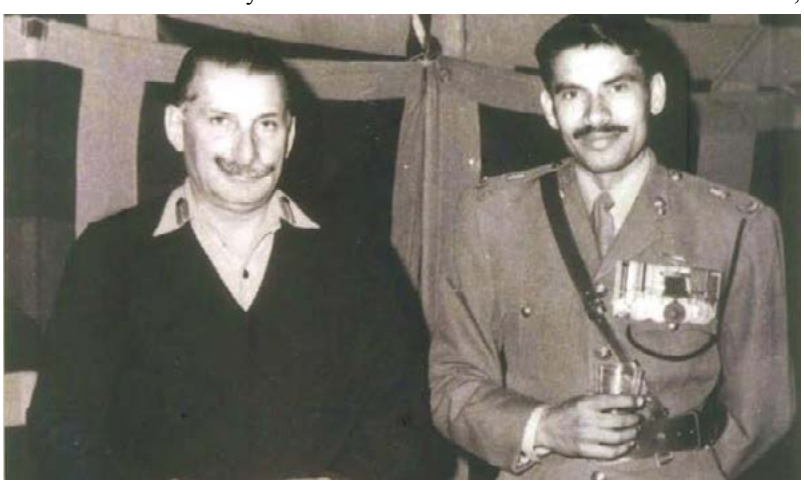


Major Hoshiar Singh

Major Hoshiar Singh (IC-14608), son of Hira Singh, was born on 5th May 1936, in Sisana, Rohtak, Haryana. He was commissioned in the Grenadiers on 30th June 1963. During the 1971 Indo-Pak War, the 3 Grenadiers led the advance of the 54 Infantry Division in the Shakargarh Sector, achieving quick victories in the first ten days. On 15th December, they faced the critical task of establishing a bridgehead across the well-fortified Basantar River, which was surrounded by deep minefields.

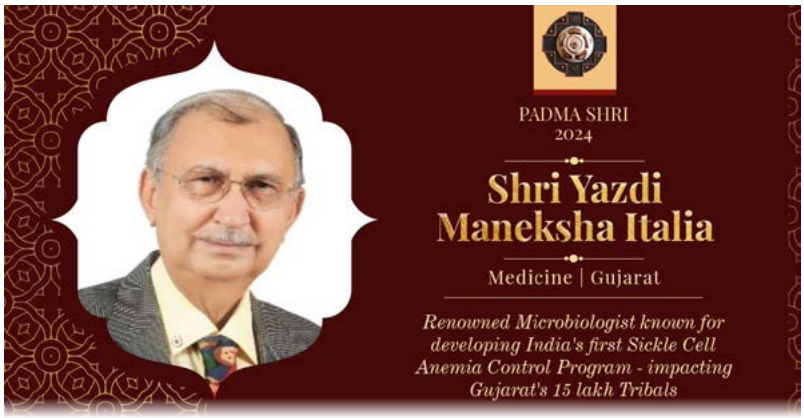
Under Major Hoshiar Singh's leadership, C Company boldly assaulted the enemy minefield towards Jarpal, a stronghold filled with adversaries. Despite heavy shelling and crossfire from machine guns, the Grenadiers demonstrated remarkable bravery and resolved to attain their objective. The battle, marked by fierce hand-to-hand combat, resulted in the clearing of enemy bunkers and showcased the unwavering spirit of our troops.

The enemy's reaction to the loss of Jarpal was fierce. On 16th December they launched determined counter-attacks, two of them backed by armour, in an attempt to dislodge the Grenadiers. Major Hoshiar Singh, undeterred by enemy shelling and tank fire, moved from trench to trench, instilling courage in his men to remain resolute. Inspired by his unwavering leadership, his company successfully repulsed all attacks, inflicting heavy casualties on the enemy. On 17th December, the enemy mounted another formidable assault in battalion strength, supported by heavy artillery. Despite being seriously wounded in the barrage, Major Hoshiar Singh bravely walked into view to reach his trenches.



When an enemy shell landed near his medium machine gun post, injuring the crew and disabling the gun, he understood the critical need for fire support. He rushed to the machine gun pit and took control, dealing heavy blows to the enemy. The enemy attack was thwarted, and they retreated in chaos, leaving behind 85 dead, including their Commanding Officer.

Major Hoshiar Singh was seriously wounded in battle but refused evacuation until the ceasefire. During this grim struggle, he displayed exemplary courage and bravery to beat back repeated enemy attacks. He was decorated with the Param Vir Chakra.



DR. YAZDI M. ITALIA

Dr. Yazdi M. Italia, Ph.D., is a notable Translational Scientist and alumnus of The Institute of Science (I.Sc.) in Mumbai, recognised for his work on Sickle Cell Disease (SCD-an inherited blood disorder where abnormal haemoglobin damages red blood cells, hindering their ability to carry oxygen throughout the body). Born on 10th November 1950, in Chikhli, Gujarat, he identified his first SCD patient in Valsad in 1978. This discovery drove his commitment to addressing hereditary blood disorders in underserved tribal communities. Since then, he has worked tirelessly to raise awareness about Sickle Cell Anemia (SCA) and improve the lives of those affected.

In 1984, Dr. Italia co-founded **Valsad Raktdan Kendra** (VRK), an NGO focused on community health. He established India's first Comprehensive Sickle Cell Clinic, providing free services such as diagnosis, counselling and prenatal diagnosis in collaboration with the Indian Council of Medical Research (ICMR). In 1991, he visited the United States to learn about the Sickle Cell Anemia (SCA) programme and returned to implement a similar initiative in India, utilising cost-effective methods for tribal communities with limited resources. **By 2006, he had developed India's first Sickle Cell Anemia Control Program (SCACP) for the Government of Gujarat, furthering his commitment to improving health outcomes for those affected by SCD.**

Dr. Italia collaborated with various institutes of ICMR, including NIIH-Mumbai and NIRTH-Jabalpur, on projects related to Hereditary and Iron Deficiency Anemia. One study found that 66% of Sickle Cell Disease patients had iron deficiency due to malnutrition. He recommended that the government provide iron-fortified rice and free essential medicines. The Gujarat State Programme won the Prime Minister's Award for Excellence in Public Administration in 2011, leading to the development of a nationwide program through the National Health Mission.

Dr. Italia and his team conducted training programmes for ASHA workers and initiated the Mass Sickle Cell Screening Program in Gujarat, identifying 30,000 Sickle Cell Disease patients and 770,000 individuals with the sickle cell trait from 9.9 million tribal individuals screened. He, along with scientists from the National Institute of Immunohaematology, established a newborn screening method using heel-prick tests and telemedicine follow-ups in Valsad.

Currently, he is working on universal antenatal screening to achieve a "Zero Birth-rate" of Sickle Cell Disease and Thalassemia Major. Dr. Italia has published extensively and presented the Gujarat Model on various international platforms, gaining global recognition. He is also involved in committees with the Ministries of Health & Family Welfare, Tribal Affairs and Consumer Affairs to eliminate Sickle Cell Anemia by 2047.

- **NIIH - National Institute of Immunohaematology.**
- **NIRTH - National Institute of Research in Tribal Health.**
- **Thalassemia major is a genetic blood disease that causes severe anaemia. It's also known as Cooley anaemia or beta-thalassemia.**
- **Hematology is the study of blood and blood disorders.**

Smt Vaishnavi V

Prayagraj

CURIOSITY CORNER

I Quick Five! Choose one or more options as appropriate.

1 Located in this state - _____ (Madhya Pradesh, Uttar Pradesh, Uttarakhand, Bihar)

2 Formerly known as - _____ (Allahabad, Ahmedabad, Lucknow, Awadh)

3 Rivers that flow through the city - _____ (Ganga, Brahmaputra, Yamuna, Narmada)

4 Most spectacular Ghat of the city - _____ (Saraswati, Tulsi, Ganga Mahal, Janaki)

5 Languages spoken here - _____ (Hindi, English, Awadhi, Urdu)

II Crossword

Across

5. Festival celebrated here once in 144 years.

6. A historic house museum in Allahabad, which belongs to the Nehru family, became the headquarters of the Indian National Congress.

7. Chandrashekar Azad Park (named after the revolutionary freedom fighter who was martyred here), was formerly known as_____.

Down

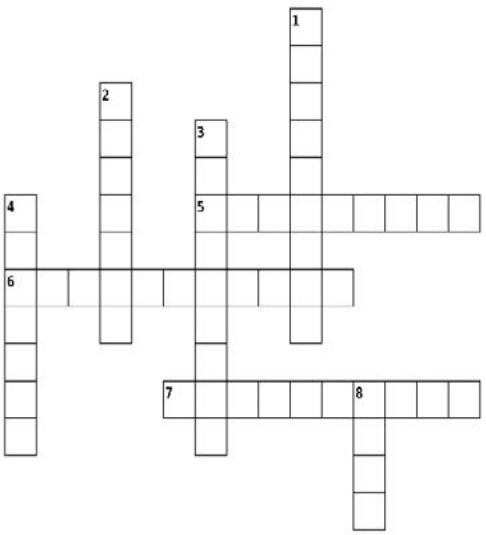
1. _____ Fort, an old fort in Prayagraj built by Emperor Akbar.

2. The confluence of the Ganges, Yamuna and Saraswati rivers in Prayagraj is known as the _____Sangam.

3. Festival celebrated here once in 12 years.

4. Ancient name of this city.

8. Famous sweet made from milk, a quintessential delight that captures the culinary essence of Prayagraj.



III Renowned people of the city

1. This famous Indian poet and writer of the *Nayi Kavita* literary movement of early 20th century Hindi literature was associated with Allahabad and wrote extensively about the city.

2. Regarded as the greatest field hockey player, this personality was born and brought up here.

3. A prominent leader in the freedom struggle, one who had a long term as the Prime Minister of India, was born here.

4. An English journalist, novelist, poet and short-story writer, born in British India worked in Allahabad for The Pioneer, the second oldest newspaper in India.

5. One of the founders of the Banaras Hindu University. A staunch nationalist, journalist, social worker, lawyer, statesman, educationist and learned scholar of ancient Indian culture who was born here was awarded the Bharat Ratna posthumously in 2014.

Answers on page 66

Bhimamandali

Bhimamandali, located in Odisha, is a site of historical and cultural significance, often associated with ancient mythology and intriguing archaeological importance. Though lesser-known compared to other landmarks in Odisha, Bhimamandali is believed to hold a wealth of history linked to its geographical and cultural setting.

Location

Bhimamandali is located in Angul District on the banks of the Mahanadi River, near the Satkosia Gorge. It is approximately 30 km from Angul town and around 150 km from Bhubaneswar, the capital city.

Highlights

- **Mythological connections** The site is believed to be associated with the Pandavas of the Mahabharata. The name "Bhimamandali" is thought to reference Bhima, one of the Pandava brothers, signifying the area's connection to epic legends.

- **Natural setting** Bhimamandali is surrounded by lush greenery and picturesque landscapes, making it not only a historical site but also a spot of natural beauty.
- **Cultural relevance** The local festivals and traditions in the area often highlight its connection to Odisha's rich cultural heritage.
- **Tourist attraction** For history enthusiasts and travellers, Bhimamandali offers a serene escape to explore the blend of myth and history, along with its tranquil environment.

The architecture of Bhimamandali reflects a blend of ancient Odisha's artistic and religious heritage. The site features remnants of intricately carved stone structures, possibly temples or monuments, showcasing exquisite craftsmanship. The carvings depict mythological tales, floral motifs and geometric patterns, hinting at its connection to the rich cultural traditions. The use of sandstone and laterite - materials commonly found in the region - is evident in the ruins. Bhimamandali's architectural style resonates with the classical Kalinga style, marked by elegance and attention to detail. Though partially in ruins, the site offers a glimpse into Odisha's glorious architectural legacy.

Best time to visit is October to February. The most pleasant time to visit, with cool temperatures ranging between 12°C and 28°C. Ideal for exploring the outdoors and enjoying the scenic beauty.

Smt Shubha T R

Pangot

India, blessed with diverse landscapes and rich cultural heritage, is also home to exotic geographical wonders.

Travelling to places in search of solace, to connect closely with nature and rejuvenate, away from the grind of daily life, is gaining ground. Pangot, an idyllic paradise, with incredible flora and fauna, packs a punch and is a dream come true with its offer of breathtaking experiences.

The locale

Pangot is a small, picturesque hillside hamlet in Kosiyakutoli tehsil of Nainital district, Uttarakhand. It is perched at an altitude of 6300 feet in the Kumaon belt and is an ideal location for summer getaway with temperature between 15°C to 25°C. The best season is between March and July with perfect bloom of Rhododendron trees giving a stunning spray of crimson red through the Himalayan greens.

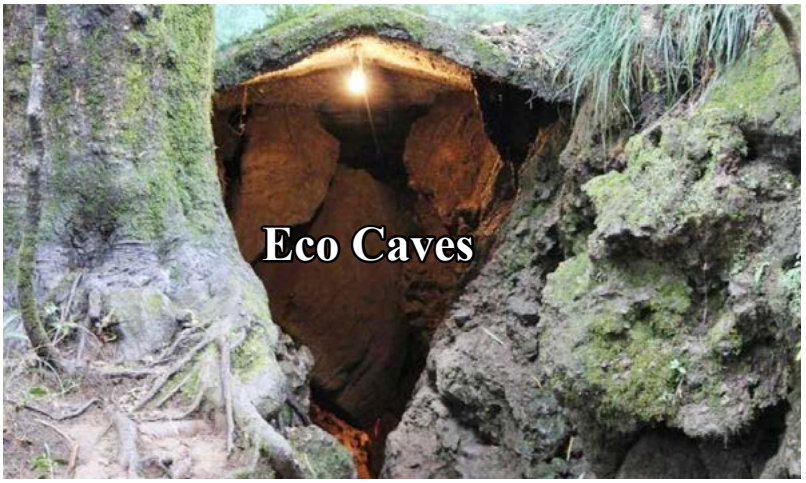
Pangot Hills

Surrounded by coniferous forests and little streams, this quaint village offers breathtaking panoramic views of Nanda Devi and Trishul peaks of the Himalayan Range and offers a secluded location for bird watching, mountain climbing, hiking, photography and trekking.

Jungle Lore Birding Lodge: A paradise for bird watching enthusiasts, the entire trip is through the Cheena Peak Range's forested tract via Snow View Point and Kilbury, whose primary habitats





are excellent birding sites with over 250 species of birds, including rare and exotic ones like the Himalayan griffon and the *Koklass* pheasant and over 500 species of butterflies.

SAT TAL is famous for its seven inter-connected freshwater lakes – **Nal Damyanti Tal, Garud Tal, Ram Lakshman Sita Tal, Purana Tal** and **Sukh Tal.** One must not miss out on **Subhash Dhara,** a majestic waterfall captivating the attention of the visitors.

Eco Caves offers a majestic view of 6 interconnected caves formed in the shape of animals. It's a fantasy come true and a must visit for children.

Reach Pangot by

- **Air** – Closest airport is Pantnagar, 50 km away;
- **Train** to Kathgodam station;
- **Road:** Drive from Delhi to Nainital via NH 24 and NH 87.

Pack your bags to Pangot. The hidden gem in the heart of Uttarakhand is all ready to embrace you!

DO YOU KNOW ?

- **Nainital is called the Lake District of India.**
- **Tourism accounts for 5% of India's GDP.**

Shri P Sridhar

Nobel Prize 2024

The Nobel Prize for Economics for 2024 has been awarded to American economists **Daron Acemoglu, Simon Johnson** and **James A. Robinson**, for their work on **quality of institutions and their importance in directing the economic prosperity of a country or failing to function, resulting in sub optimal development.** Their study was based on the effects of colonialism on the quality of institutions and the post-colonial growth of countries.

Institutions and economic growth

There is enough empirical evidence to suggest a direct relationship between empowered institutions and economic prosperity and growth. The availability of educational institutions, hospitals and medical teams, independent judiciary and legal access, police force, a functioning democracy - all contribute to a country's growth. Institutions affect growth in multiple ways like market regulation, maintaining law and order, good governance that offers political stability and ensures judicial resource allocation. Good institutional set up attracts investors and talent that will boost economic growth. Investors ranging from a marginal farmer to a big industrialist are likely to invest in funds and labour if they are sure about operational freedom, access to justice in case of conflicts etc. There are scores of examples to show that countries with abundant natural resources with poor institutional set up suffering economic hardship and poverty, in contrast to countries with very limited natural resources but good institutions and remarkable economic growth and prosperity. In fact, abundant natural resources sometimes have been a curse if not managed well and in the absence of institutions. Recent such examples are Nigeria and Venezuela. Institutions are often referred to as deep determinants of growth.

Nobel laureates' work

The laureates found that countries with institutions that secured the rule of law and

Kamer Daron Acemoğlu is a Turkish-American economist who has taught at the Massachusetts Institute of Technology since 1993, where he is currently the Elizabeth and James Killian Professor of Economics, and was named an Institute Professor at MIT in 2019.

Simon H. Johnson is a British-American economist who has served as the Ronald A. Kurtz Professor of Entrepreneurship at the MIT Sloan School of Management since 2004. He also served as a senior fellow at the Peterson Institute for International Economics from 2008 to 2019.

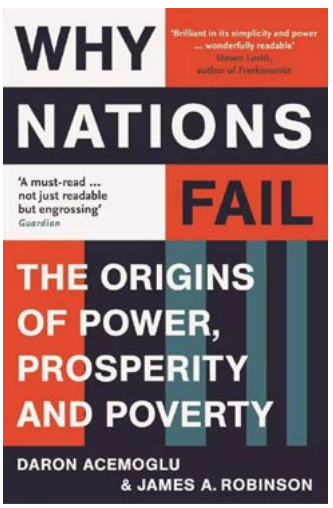
James Alan Robinson is a British-American economist and political scientist. He is the Rev. Dr. Richard L. Pearson Professor of Global Conflict Studies and a University Professor at the Harris School of Public Policy at the University of Chicago.

offered property rights, offered individuals a strong incentive to save and invest in the long run. The institutions can have explicit or implicit rules or social norms that govern human interaction in a society. The institutions may also include laws that protect citizens from expropriation by the government.

Compelling examples

The laureates quote the rapid economic growth of India and China. Since the economic liberalisation in the late 70's and early 90's these two populous economies did well after significant changes in their institutions or "the rules of the game" that governed their economies.

On the other hand countries with extractive institutions which concentrate power and constrains political freedom suffered deep economic pain. Thus, structural reforms that further improve the quality of institutions are crucial for economies to achieve living standards similar to advanced countries.

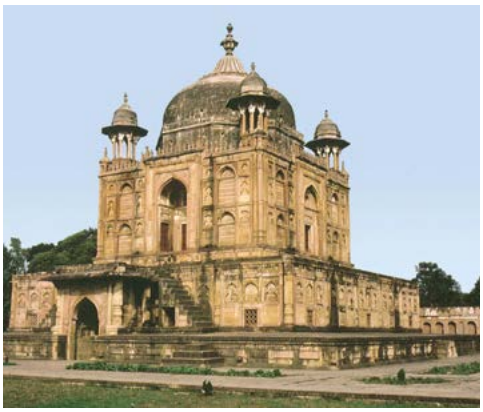


Answers of page 60

I Quick five!

1. Uttar Pradesh
2. Allahabad
3. Ganga and Yamuna
4. Saraswati Ghat. (The remaining are the Ghats of Varanasi)
5. Hindi, English, Urdu, Awadhi

II Picture quiz



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III Renowned people of the city

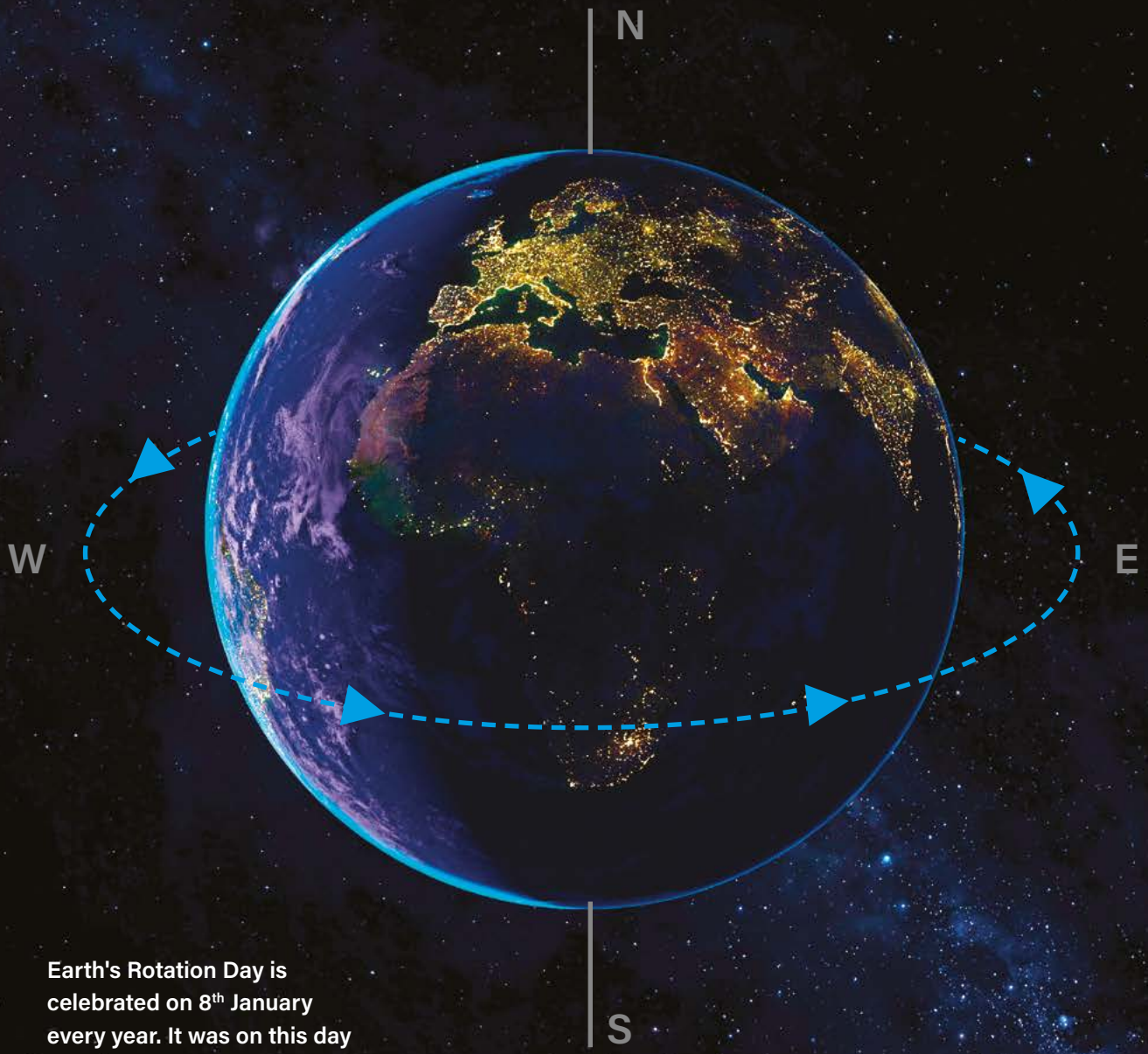
1. Harivansh Rai Bachhan
2. Dhyan Chand
3. Jawaharlal Nehru
4. Joseph Rudyard Kipling
5. Pt. Madan Mohan Malaviya

IV DID YOU KNOW?

The Kumbh Mela is the largest and most significant religious gathering in the world, where millions of pilgrims gather to bathe in the holy rivers, primarily the Ganga, Yamuna and Saraswati (believed to converge at Prayagraj). The event is based on astrological calculations and rotates between four pilgrimage sites in India: Prayagraj, Haridwar, Ujjain and Nashik. Each location hosts the Kumbh Mela once every 12 years, with Prayagraj being especially renowned for the massive scale and significance of the event.

Earth's Rotation Day

8th January



Earth's Rotation Day is celebrated on 8th January every year. It was on this day French in 1851 French physicist Leon Foucault proved that the Earth rotates on its axis. This fundamental phenomenon is not only crucial for defining time but also plays an essential role in shaping life as we know it.

National Bird Day

5th January

National Bird Day is celebrated on 5th January every year. It was established in 2002 by the Avian Welfare Coalition. The day is dedicated to raising awareness about the importance of birds and their conservation. To encourage people to appreciate the beauty and diversity of birds we celebrate as follows: Birdwatching, adopting rescued birds, building birdhouses, installing birdbaths, and participating in community projects.