

PRAJYA

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**1000th anniversary of Rajendra Chola's
naval expedition**

चठरीवे इवणइरगो वेद्यु

11th August

Sanskrit is an ancient Indo-European language from India, known for its connection to Hinduism, Buddhism and Jainism, and as the language of sacred texts like the Vedas and classical literature.





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FROM THE **EDITOR'S DESK**

**"स्वच्छता: सर्वधनं, स्वच्छता: सर्वरोगहरम् ।
स्वच्छता: सर्वसुखदं, स्वच्छता: सर्वलक्षणम् ॥"**

(Meaning: "Cleanliness is all wealth, cleanliness removes all diseases. Cleanliness provides all comforts, cleanliness is the sign of all qualities.")

This applies equally to individuals, households, villages, towns, cities, states and nations alike. Cleanliness is of importance as much from a health and hygiene perspective as from an aesthetic viewpoint. Cleaner cities and villages are economic assets to the nation boosting its economy.

Our Prime Minister rightly gave a clarion call in 2014 for creating a Swachh Bharat. Yet the nation as a whole has a long way to go in realising this vision. However there have been bright sparks here and there.

For the **eighth year in a row, Indore won the recognition as the cleanest city in India**, demonstrating continuous efforts in waste management and community involvement.

A major factor hampering cleanliness is poor waste management. Awareness creation, citizen participation, strict and consistent implementation of policies and rules are absolutely essential to maintain high standards. It is the duty and responsibility of every citizen to contribute to realising PM's vision of a truly Swachh Bharat.

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/>

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World's rarest blood group

CRIB



In a strange twist of events, a woman from Bengaluru was found to have a previously undocumented blood group – CRIB. What was supposed to be a regular day receiving treatment for her ailment, has taken the world of haematology for a spin.

Now dubbed the 'world's rarest blood group', the woman is now the only person known to possess this blood group. CRIB expands as follows: **CR** stands for **Cromer**, **I** represents **India** and **B** stands for **Bengaluru**. The name honours

the place this new blood group has been discovered in. The world is familiar with the ABO and Rh blood grouping systems (which are universally used to conveniently classify blood types). There are, in fact, 47 blood grouping systems in the world. Cromer is one such blood grouping system.

The Cromer blood grouping system involves antigens that are highly prevalent. It is very rare for a person to not have most of these antigens, which means that most people will not produce antibodies against these antigens. However, when someone lacks or loses these antigens, it can become very difficult to transfuse blood to this particular receiver.

Very rarely, some persons develop antibodies against these Cromer antigens. For example, pregnant women, people with rare genetic mutations or someone who has received blood transfusions before. Since the woman from Bengaluru has never received a transfusion before and she is not

pregnant, the only explanation would be that she has some mutation that has led her to have this extremely rare blood group.

Her doctors were not aware of this. Only when her body displayed a condition named **pan reactivity**, where her body rejected all kinds of blood during tests, did it arouse suspicion. This led to her team of doctors, along with researchers from the UK to perform tests to identify her blood group. What they found is a revelation – this rare blood group will now be used to study further about rare antigens and blood groups. The research will greatly benefit the field of medicine, especially for neonatal, emergency and surgical purposes.

What Is CRIB And Why Is It Special?

CRIB stands for Cromer India Bangalore: named after the blood group system (Cromer) and the location of discovery.

This woman's blood had a completely new antigen, never seen in any human before. Even 20 of her close relatives didn't match!

It was confirmed by a UK lab and presented at an International blood transfusion congress in Milan, 2025.

Pan reactive most commonly refers to blood typing, where a patient's plasma or serum reacts with all red blood cells on a test panel, indicating the presence of antibodies that react broadly.





Ukraine, the second largest country in Europe, has been in a conflict with Russia since 2022. Efforts are on to broker a peace deal with Russia and Ukraine thereby putting an end to the killings and the destruction. US, Europe and influential countries including India are making earnest attempts at ending the conflict.

Meanwhile, Ukrainian President Volodymyr Zelenskyy in a major wartime cabinet reshuffle, has appointed Yulia Svrydenko, a 39-year-old seasoned economist and experienced technocrat as the 19th Prime Minister of Ukraine. Incidentally Yulia has served as the first Deputy Prime Minister since 2021.

Early life and education

Born on 25th December 1985, Yulia graduated from Kyiv National University of Trade and Economics in 2008 with a degree in anti-monopoly management.

Career highlights

- » **2008** - Started as an economist at a Ukrainian-Andorran joint venture.
- » **2015** - Led Chernihiv Oblast's (municipality) Department of Economic Development.
- » **2018** - Acting Governor of Chernihiv Oblast region.
- » **2020** - Ukraine's representative in the Trilateral Contact Group (Ukraine-Russia negotiations).
- » **2021** - First Deputy Prime Minister & Minister of Economic Development.

Achievements

- » Yulia is notably credited



Yulia Anatoliivna Svrydenko New PM of Ukraine

with bolstering the relations between Ukraine and US, having brokered a deal, that gives US preferential access to Ukraine's mineral wealth.

- » She spearheaded economic reforms during the Russia-Ukraine war.
- » Led Ukraine's sanctions policy against Russia, negotiating with the UK and other nations.
- » Recognised in *TIME100 Next* (2023) for her resilience and leadership.

Newer priorities

Ukrainian PM's priorities for the military include reliable supplies for her army, expansion of domestic weapons production and boosting the technological strength of defence forces. On the economy front, Yulia wants to bring in stability and open up in the form of large scale privatisations and offer greater support for local entrepreneurs. She intends to address the ballooning budget deficit and scale up economic co-operation with allies.

DO YOU KNOW



- ♥ Ukraine has a **semi-presidential system** where executive power is shared between the elected President and the appointed PM. The President is the head of government and controls defence and security while PM with the cabinet takes care of implementing state policy. Under **Martial law** the President has complete control of external and internal policy formulations.
- ♥ **Martial law** is a temporary state where a civilian government is replaced by military rule, often to restore order in a crisis like war, natural disaster or widespread civil unrest, leading to the suspension of normal legal processes and the curtailment of civilian liberties.





Kenya is free from sleeping sickness

On 8th August, the World Health Organization (WHO) officially certified Kenya as free from **Human African Trypanosomiasis (HAT)**—commonly known as sleeping sickness—marking a significant public health victory for the nation. With this achievement, Kenya becomes the tenth country globally to eliminate the disease as a public health challenge.

Human African Trypanosomiasis

- ▶ It is transmitted by the bite of infected tsetse flies (vector) found in sub-Saharan Africa.



- ▶ The disease is caused by protozoan parasites *Trypanosoma gambiense* and *Trypanosoma rhodesiense*.

- ▶ The disease has two forms – the **chronic gambiense form** prevalent in West and Central Africa, and the acute **rhodesiense form** found in East and Southern Africa.

- ▶ Symptoms start with fever and joint pain and progress to neurological issues such as confusion and disrupted sleep, giving the disease its name.

- ▶ It progresses rapidly, invading vital organs such as the brain and is fatal within weeks if HAT is untreated.

Means of transmission

- ▶ Tsetse flies acquire the parasite from infected humans or animals and transmit it to others.
- ▶ The disease is focal, affecting specific villages or regions.
- ▶ Rural communities with limited healthcare access and those affected by poverty and displacement are the most vulnerable.

- ▶ Transmission can also occur from mother to child, through accidental exposure in laboratories and rarely by sexual contact.

Background and decades of effort

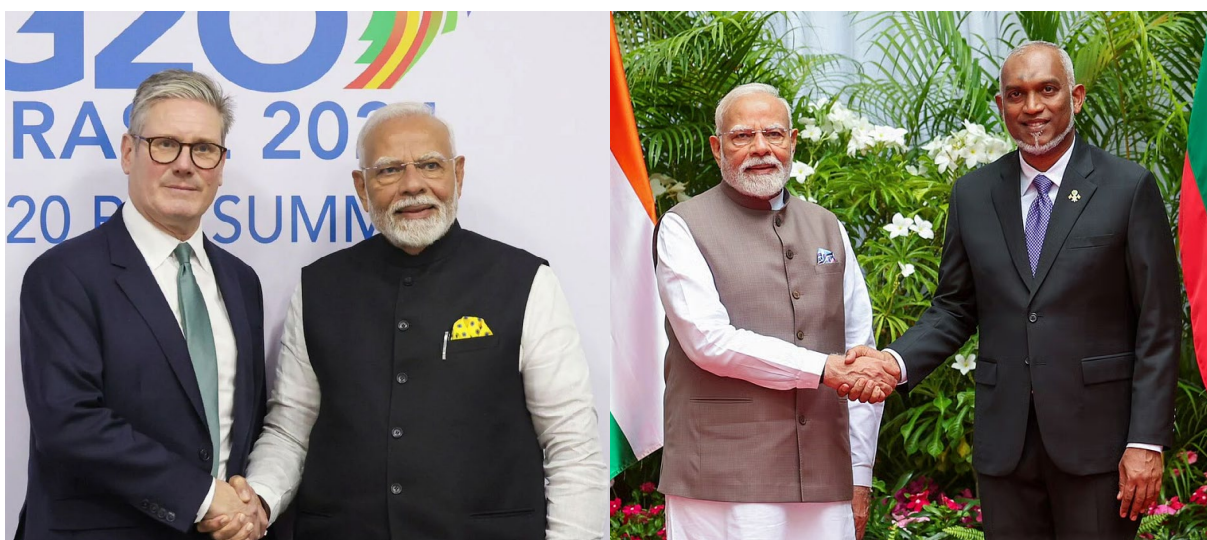
The disease was first detected in Kenya in the early 20th century. With sustained control measures, the country has recorded no indigenous cases since 2009.

Kenya strengthened disease surveillance in 12 health facilities across six historically endemic counties providing diagnostic tools and trained personnel.

It also stepped up control of tsetse flies and animal trypanosomiasis, with support from the national veterinary authorities and the Kenya Tsetse and Trypanosomiasis Eradication Council.

WHO and partners were instrumental in the elimination drive. Kenya's elimination status reflects sustained surveillance and effective public health interventions. Continued efforts aim at stopping transmission entirely by 2030.





PM visits UK and MALDIVES

PM Modi paid an official visit to UK at the invitation of the Prime Minister Sir Keir Starmer recently. He also undertook a state visit to Maldives subsequently on the invitation of the President of the Republic of Maldives, Dr. Mohamed Muizzu.

Highlights of UK visit

- » Signing of a landmark bilateral **Free Trade Agreement** (FTA) to boost two-way trade by eliminating tariffs on cars, textiles and a range of other products.
- » PM presented a tree sapling to King Charles III as part of his “**Ek Ped Maa Ke Naam**” environmental initiative.
- » 99% of India’s exports to the UK will face zero tariffs.
- » **Double Contribution Convention Agreement** will allow Indian workers temporarily living in the UK

not to pay national insurance contributions for three years.

- » UK exports to India will increase by almost 60%, while UK imports from India will increase by 25 %.
- » ‘**Vision 2035**’ strategy to expand ties in areas of defence, technology, education, clean energy and migration.
- » **Six UK universities will open campuses in India** after Southampton University became the first.

Highlights of visit to Maldives

- » PM participated in the 60th Independence Day celebrations of the Maldives, as the Guest of Honour.
- » A postage stamp was issued to mark 60 years of India-Maldives relations.
- » India gifted two units of **Aarogya Maitri Health Cube [BHISHM]** sets under India’s **Neighbourhood First** policy

and **Vision MAHASAGAR**, designed for rapid deployment in emergencies and disaster zones.

- » Inauguration of the building of the Ministry of Defence in Malé.
- » India handed over 3,300 social housing units in Hulhumale under India’s Buyers’ Credit facilities.
- » Inauguration of Roads and Drainage system project and High Impact Community Development Projects in Maldives.
- » Extension of Line of Credit (LoC) of ₹4,850 crores to Maldives.
- » Launch of **India-Maldives Free Trade Agreement** (IMFTA) negotiations.
- » Joint tree-planting under India’s “**Ek Ped Maa Ke Naam**” and Maldives’ “Pledge of 5 Million Tree Plantation” campaigns.





NASA's TRACERS mission

NASA's **TRACERS** (Tandem Reconnection and Cusp Electrodynamics Reconnaissance Satellites) mission was successfully launched in July 2025, aboard a SpaceX Falcon 9 rocket from Vandenberg Space Force Base, California. This twin-satellite mission will study magnetic reconnection—the process where Sun's magnetic field interacts with Earth's magnetosphere—to improve space weather forecasting and protect critical technologies like satellites and power grids. The satellites will focus on the polar cusps, regions near the poles where solar wind is channelled into Earth's atmosphere.

TRACERS will study

» Magnetic reconnection

This is a fundamental process where solar magnetic field lines merge with Earth's, releasing significant energy and sending high-energy particles toward Earth.

» Solar wind interaction

TRACERS will investigate how



the solar wind (a stream of charged particles from the Sun) interacts with Earth's magnetosphere.

» Polar cusps

The mission's primary targets are the polar cusps (vulnerable areas in the magnetosphere) where the solar wind can penetrate directly, making them ideal for observing reconnection.

Why it matters

» Protection from space weather

Understanding magnetic reconnection is crucial for predicting and mitigating the effects of space weather such as solar storms.

» Safeguarding infrastructure

The knowledge gained will help protect essential space-based assets like GPS and communication satellites as well as terrestrial power grids.

Mission details

» Twin satellites

The TRACERS mission consists of two small, closely flying satellites designed to observe magnetic reconnection events directly.

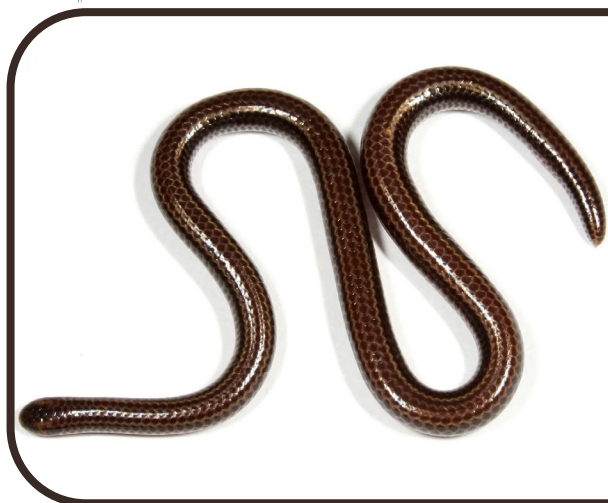
» Launch vehicle

A SpaceX Falcon 9 rocket launched the satellites from California.

» Initial operations

After reaching the orbit, the satellites entered a four-week commissioning phase to verify instruments and systems before beginning full scientific operations.





Elusive Barbados threadsnake spotted

The Barbados threadsnake, the world's smallest-known snake, was rediscovered in 2024 Barbados after being unspotted for nearly two decades.

In a remarkable rediscovery that has excited conservationists worldwide, the **Barbados threadsnake** (*Tetracheilostoma carlae*) — the world's smallest-known snake — has been found again in its native habitat after nearly two decades.

The event marks a major victory for conservation biology and highlights the fragile nature of endemic island species.

Scientific and conservation significance

Confirmation of survival

- ▶ The snake was feared extinct, having not been seen in the wild since 2006.
- ▶ It was among 4,800 species listed by *Re:wild* as “lost to science”.

Species rarity and challenges

- ▶ The Barbados threadsnake is blind, cryptic and extremely elusive.
- ▶ It has been misidentified in the past, including confusion with the Brahminy blind snake



(*Indotyphlops braminus*), a common invasive species.

Ecological role

- ▶ The threadsnake plays a role in controlling ant and termite populations.
- ▶ Serves as an indicator species of soil health and forest ecosystem integrity.
- ▶ It is a non-venomous snake known for its small size and harmless nature. The snake is not dangerous to humans and feeds on termites and their eggs.

Endemism and habitat loss

- ▶ Found only in Barbados, making it critically vulnerable to habitat destruction.
- ▶ Barbados has lost most of its original forest cover — among the worst in the Caribbean, second only to Haiti.

Scientific Name	<i>Tetracheilostoma carlae</i>
Discovered	First identified and formally described in 2008 by S. Blair Hedges, a professor at Temple University.
Named after	Carla, the wife of the discoverer
Size	Fully grown adults reach only up to 10 cm (4 inches) — small enough to rest on a coin.
Habitat	Burrows underground, prefers moist soils with leaf litter.
Diet	Feeds on ants and termites
Reproduction	Lays a single slender egg — unusual among snakes.





22nd International Linguistics Olympiad

The 22nd International Linguistics Olympiad (IOL) took place in Taipei, Taiwan, in July 2025. Hosted at National Taiwan University, the event saw participation from 227 contestants in 57 teams, representing 43 countries and territories.

IOL has its roots in "Traditional Olympiad on Linguistics", started in Moscow in 1965 and continued until 1982. Revived again by Russia in 1988, the competition as we know it today was relaunched in 2003 at Borovets, Bulgaria for the teams to compete and solve linguistic puzzles. One of the 12 internationally recognised science Olympiads, IOL is an annual event taking place in a different country each year.

The IOL challenges students to use logical and analytical thinking to solve problems related to the structure and patterns of language, without requiring prior knowledge of specific languages or linguistics.

Government of India through their Ministry of Education, established The Central Institute of Indian Languages (CIIL), in 1969 at Mysuru. CIIL objective is to improve teaching and learning of Indian languages.

Mumbai hosts largest ever International Olympiad on Astronomy and Astrophysics – IOAA 2025

Several countries felt the need to create and kindle interest in astronomy among high school

Linguistics is the scientific study of language and the core areas of study are

S.No.	Core Area	Study of
1.	Phonetics & Phonology	Speech sounds, their production and how they pattern within a language.
2.	Morphology	Word structure and their formation from smaller meaningful units (morphemes).
3.	Syntax	Words combination to form phrases and sentences.
4.	Semantics	Words and sentences meaning.
5.	Sociolinguistics	Language, society and influencing factors in their relationship.
6.	Psycholinguistics	Cognitive processes involved in language acquisition, comprehension and production.
7.	Historical linguistics	Relationship between languages and their change over time.
8.	Computational linguistics	Computational methods including natural language processing and machine translation.





children and came together to establish The International Olympiad on Astronomy and Astrophysics (IOAA). IOAA seeks its inspiration from International Physics Olympiad (IPhO) and the International Astronomy Olympiad (IAO). The first competition was held in Thailand in 2007.

The format involves teams of up to five high school students, accompanied by two team leaders, participating in theoretical, data analysis and night sky observation tests.

Mumbai hosted the 18th International Olympiad on Astronomy and Astrophysics (IOAA) in August, 2025, marking the largest edition in the competition's history. The event brought together over 300 high school students from 64 countries, including 12 first-time participants. Organised by the Homi Bhabha Centre for Science Education (HBCSE) of Tata Institute of Fundamental Research (TIFR), the IOAA 2025 featured theoretical exams, observational tasks, data analysis and team rounds, alongside cultural and educational exchange programmes. The event was keenly supported by Prime Minister's Office and by the Department of Atomic Energy.

At the grand closing ceremony, participants were awarded 145

medals (50 gold, 44 silver and 51 bronze) and 26 honourable mentions. The Indian national team won 4 golds and a silver medal.

The Gold medallists

Aarush Mishra	Bengaluru
Banibrata Majee	Delhi
Panini	Patna
Akshat Srivastava	Kolkata

The IOAA 2025 newsletter **Nakshatra** provided exciting updates of the event, featuring captivating photographs, behind the scenes glimpses and insightful interviews with participants, organisers and special guests. The international participants praised India's hospitality and PM Modi's motivational speech.

The event demonstrated India's growing leadership in astronomy education and its commitment to fostering global scientific collaboration.

India shines at the 57th International Chemistry Olympiad (ICHO) 2025

The 57th International Chemistry Olympiad (ICHO) was held in Dubai, UAE, in July 2025. All four Indian students who participated in the prestigious global competition won medals (2 gold and 2 silver) and brought laurels to India.

Gold medallists	Silver medallists
• Devesh Pankaj Bhaiya (Jalgaon, Maharashtra) • Sandeep Kuchi (Hyderabad, Telangana)	• Debadatta Priyadarshi (Bhubaneswar) • Ujjwal Kesari (New Delhi)

The International Chemistry Olympiad (ICHO) was first organised by Czechoslovakia. The idea was to foster international collaboration and exchange of information among nations. From a gathering of just three countries in the first edition of 1968, the Olympiad has now expanded to participation by 354 students from 90 countries in 2025.

The Indian contingent was mentored by a dedicated team of academic experts. Their efforts played a crucial role in India securing 6th rank in this challenging competition. In their 26 years of participation at IChO, Indian students have won 30% of the gold, 53% silver and 17% of the bronze medals. The last 10 editions have seen India's win increase to 38% and 58% of the gold and silver respectively.

Role of HBCSE of the TIFR

The Homi Bhabha Centre for Science Education (HBCSE), under the Tata Institute of Fundamental Research (TIFR), conducts The National Olympiad Examination for selecting Indian students for the various International Olympiads. Students owe their outstanding performances and success in the Olympiads to the Olympiad Cell at HBCSE. The Cell has a highly knowledgeable and resourceful pool of external teachers and mentors. They conduct intensive orientation and pre-departure training camps at HBCSE and ensure that the students



are competent to perform at the international platform. Supported by the National Steering Committee on Science Olympiads, the Departments of Atomic Energy, Sci & Tech and Space and the Ministry of Education consider themselves stakeholders and are funding the expeditions.

India gets 7th rank at International Mathematical Olympiad 2025

The International Mathematical Olympiad (IMO) originated in 1959 in Romania, with participation by seven countries. The primary goal of the IMO is to discover, stimulate and develop mathematical talent in school-aged children, fostering a passion for mathematics and problem-solving. The competition has since expanded and the IMO 2025 had 630 students from 110 countries and 5 continents.

India secured the 7th position at the IMO 2025 held in Sunshine Coast, Australia. **The Indian team earned three gold, two silver and one bronze medal, achieving a record-breaking cumulative score of 193 out of 252.** This marks a significant achievement for the Indian team, matching their best-ever performance from 1998 and 2001.

India's performance

Again, Homi Bhabha Centre for Science Education (HBCSE), which coordinates Olympiad programmes in India, played a crucial role in preparing and shaping the students

Gold	Silver	Bronze
• Kanav Talwar • Aarav Gupta • Adhitya Mangudy	• Abel George Mathew • Aadish Jain	• Archit Manas

for the rigours of the Olympiad. This year's IMO was a record score for India, the highest ever achieved by an Indian IMO team.

IIT Kanpur's Eshan Chattopadhyay solves 30-year-old puzzle on Random Data



Gödel was a logician, mathematician and philosopher. He is considered along with Aristotle to be one of the most significant logicians in history. He is best known for his **incompleteness theorems**, published in 1931, which demonstrate the inherent limitations of formal axiomatic systems.

Cornell University Associate Professor of Computer Science, Eshan Chattopadhyay and David Zuckerman of the University of Texas at Austin have been awarded the prestigious 2025 Gödel Prize for their collaborative work in theoretical Computer Science. Eshan is B.Tech alumnus from IIT Kanpur.

The problem

For decades, scientists struggled to find a way to reliably generate

true random numbers from two imperfect sources of randomness, even if both sources were weak. It is like trying to flip two unfair coins and still get a perfectly fair, unpredictable outcome.

Chattopadhyay's solution

Chattopadhyay and Zuckerman developed "two-source extractors" that can transform two weak random sources into a single, high-quality random output. This groundbreaking research provides a foundational method for creating strong randomness from potentially unreliable inputs, strengthening cybersecurity and cryptography systems. **Application of the breakthrough will be in crucial systems like online banking, cloud and military communications.**

Eshan's past awards and honours include the National Academy of Sciences Held Prize (2024), a Sloan Research Fellowship (2023), and a National Science Foundation (NSF) CAREER award (2021). Prior to joining Cornell in 2018, he completed postdoctoral work at the Institute for Advanced Study in Princeton and the Simons Institute for the Theory of Computing in Berkeley. He earned a Ph.D. in computer science from the University of Texas at Austin in 2016.

Chattopadhyay's win is seen as a source of pride for the Indian academic community and an inspiration for aspiring researchers, especially those of Indian origin, to pursue careers in mathematics and computer science. It underscores the importance of fundamental research and curiosity-driven exploration in driving technological advancements.





Indo-Burma Ramsar Regional Initiative

The Indo-Burma Regional Initiative (IBRRI) is a collaborative effort focussed on conserving and restoring wetlands in the Indo Burma region. It involves several countries like Laos, Cambodia, Myanmar, Thailand and Vietnam, with support from International Union of Conservation of Nature (IUCN).

It recently launched its Strategic Plan for 2025–2030 at the Ramsar Convention's COP15 meeting, providing a framework to halt and reverse wetland loss in Southeast Asia.

Wetlands

Wetlands are perhaps the least understood and appreciated biomes. They might lack the majesty of mountains or the mystique of forests or the sheer expanse and allure of water bodies or the inhospitable challenges of deserts, but they do serve with great gusto. Technically



wetlands are semi aquatic biomes and form a transitional zone between dry land and water bodies. They may be covered or saturated with water for most part of the year. Wetlands could be fresh water or brackish water with varying levels of salinity. Their contributions are enormous. Wetlands help in ground water recharge, pollution control and flood control. They are a source of valuable timber, spawning ground for fish and crustaceans.

Wetlands of Indo Burma region



The wetlands of Indo Burma region constitute the top 10 biological hotspots. The region has an estimated wetland area of 3,83,00,000 hectares. It provides a habitat for birds, reptiles etc. The region has 2,843 wetland endemic species. The region's loss of wetlands represents 20% of the global loss.

Action

The IBRRI strategic plan was launched in 2019. It was developed through extensive consultation with Ramsar authorities, national and international NGOs.

The strategic plan consists of 5 layers of operational objectives that align with the Ramsar convention, like conserving and restoring wetlands, mainstreaming wetlands in policy, promoting communication and creating awareness, leveraging sustainable financing and ensure that all are sustainable.





News from ISRO



● S-band radar

operates in the 2-4 GHz frequency range, compared to higher frequency bands. This enables it to achieve long-range detection and better penetration through adverse weather conditions like heavy rain and fog. Common applications include weather monitoring, air traffic control, maritime and airport surveillance.

● L-band radar

operates in the 1-2 GHz frequency range, penetrating obstacles like vegetation and light rain, making it suitable for applications such as long-range surveillance, air traffic control and satellite navigation like GPS. Its ability to penetrate ground and detect materials by their electrical properties also makes it valuable for earth observation, including monitoring land deformation and mineral exploration.

ISRO launches Earth Observation Satellite NISAR

India's space agency ISRO launched the NASA - ISRO Synthetic Aperture Radar (NISAR) recently, marking a historic moment in earth observation. The satellite, weighing 2,393 kilograms and costing USD 1.5 billion, took off aboard a GSLV rocket from Sriharikota's Satish Dhawan Space Centre.

NISAR combines ISRO's S-band radar with NASA's L-band radar, making it a pioneering

dual-frequency synthetic aperture radar. This technology allows NISAR to capture incredibly detailed images of Earth's surface, detecting changes as small as a few millimetres. It operates in a sun synchronous polar orbit, circling Earth every 97 minutes and sending images back every 12 days.

The satellite's mission includes mapping vast areas, measuring changes in vegetation, tracking crop growth, monitoring wetlands and studying polar ice sheets, seas and mountains.





It will also observe land deformation due to seismic activity, volcanoes, landslides and underground water sources.

Developed over a decade by ISRO and NASA's Jet Propulsion Laboratory, NISAR underwent rigorous testing and integration before its launch. It will now enter a 90-day operational phase to check and calibrate its systems. ISRO will manage satellite operations while NASA oversees orbit manoeuvres and radar operations.

NISAR's advanced capabilities promise ground-breaking contributions to global earth monitoring, helping scientists understand and respond to environmental changes. With an expected operational life of five years, NISAR is set to revolutionise how we study and protect our planet.



HOPE station mission to simulate Moon and Mars-like conditions

ISRO has set up the Himalayan Outpost for Planetary Exploration (HOPE) in Ladakh's Tso Kar Valley to simulate conditions like those on the Moon and Mars. Launched in July, HOPE aims to test life-support technologies and mission systems for future space exploration.

Led by ISRO's Human Space Flight Centre, the project involves collaboration with an industry partner and top research institutes. A 10-day trial mission isolated two crew members to evaluate their physical, mental and task-related performance.

Tso Kar Valley's Mars-like environment (featuring high UV radiation, low air pressure, extreme cold and saline permafrost) makes it an ideal testing ground. HOPE consists of an eight-meter crew habitat and a five-metre utility unit containing mission equipment.

Researchers from IIT Bombay, IIT Hyderabad, IIST Trivandrum, RGCB Trivandrum and the Institute of Aerospace Medicine are conducting experiments on isolation effects, health monitoring and surface operations. Their findings aim to improve safety systems for future missions.

Describing HOPE as "a rehearsal for the future," ISRO Chairman Narayanan emphasised its support for Prime Minister Modi's vision of increasing private sector involvement in space exploration.

Meanwhile, Indian researchers have discovered early Earth-like conditions in Ladakh's Puga Valley. A study by the Birbal Sahni Institute of Palaeosciences found organic compounds in the valley's travertine, suggesting possible origins of life. Reportedly, the high UV exposure and extreme conditions of the Puga Valley mimic those of early Earth and potentially, ancient Mars.

Travertine is a form of terrestrial limestone deposited around mineral springs, especially hot springs. It often has a fibrous or concentric appearance and exists in white, tan, cream-colored and rusty varieties. It is formed by a process of rapid precipitation of calcium carbonate, often at the mouth of a hot spring or in a limestone cave. In the latter, it can form stalactites, stalagmites and other speleothems.





Smt Shyamala Viswanathan

FIT INDIA cycles



The **Fit India Sundays on Cycle** is organised by the Ministry of Youth Affairs and Sports (MYAS), in collaboration with the **Cycling Federation of India (CFI)**, **MY Bharat**, **Indian Rope Skipping Federation** and **Yogasana Bharat**.

The weekly event, built on the earlier Fit India Cycling Drive which saw the participation of over 1.5 crore citizens across India, encourages citizens of all ages to take up cycling, a low-cost, eco-friendly form of exercise that improves cardiovascular health,

boosts mental well-being and fights obesity.

In line with the Prime Minister's call, "*Fitness ki dose, aadha ghanta roz*," cycling has become a popular fitness activity that blends health with sustainability.

The inaugural event was flagged off from Major Dhyan Chand National Stadium to Kartavya Path in New Delhi, setting the tone for what has now become a community-led fitness revolution. Since its launch, **Sundays on Cycle** has been celebrated every Sunday at thousands of locations across the

country. It brings together citizens of all age groups to take a stand against obesity and commit to a healthier, more active lifestyle.

More than 3000 Cycling Clubs are part of the movement and actively participate every Sunday. Local authorities, schools, colleges, Residents welfare associations and fitness groups are organising weekly cycling rallies that promote:

- ▶▶ Regular physical activity for all.
- ▶▶ Awareness about lifestyle diseases and preventive health.
- ▶▶ Eco-friendly mobility and reduced carbon footprint.
- ▶▶ People's participation (*Jan Bhagidari*) in national fitness efforts.

Sundays on Cycle is more than just a campaign. It is a weekly reminder that fitness can be fun, inclusive and community-driven. Cycling is one of the most accessible and effective forms of exercise.



It enhances stamina, reducing stress, improving cardiovascular health and promoting mental well-being. It is also a clean, eco-friendly mode of transport that contributes to reducing pollution and building a greener nation. One of its most successful initiatives, Fit India Sundays on Cycle, has evolved into a nationwide campaign blending health, sustainability and community spirit.

Activities beyond cycling

While cycling remains the centrepiece, Fit India Sundays on Cycle offers a range of engaging activities to make fitness fun and inclusive:

- » Yoga sessions
- » Zumba workouts
- » Street dance performances
- » Fun outdoor and indoor

games (Ludo, Carrom, Snake & Ladders)

- » Hand painting workshops

These activities also serve as platforms for spreading awareness on social causes including environmental conservation and drug abuse prevention.

HIGHLIGHTS

- » Over 7.5 lakh participants across more than 41,000 locations since launch.
- » Involvement of panchayat representatives from more than 50,000 villages nationwide.
- » Simultaneous events in State and UT capitals, SAI Regional Centres, National Centres of Excellence (NCOEs), Khelo India State Centres of Excellence (KISCEs) and Khelo India Centres (KICs).
- » Partners include Cycling Federation of India, Raahgiri Foundation, My Bikes, MY Bharat, and sports organisations such as ITBP, the Indian Army and FICCI.
- » Prominent personalities from Olympic medallists Mirabai Chanu and Lovlina Borgohain to actor and Rugby Federation of India chief Rahul Bose have participated alongside schoolchildren, doctors, government officials and senior citizens.

Want to participate?

Register via the MyBharat and FitIndia mobile apps or websites.

Cycles are often provided by the Sports Authority of India (SAI) at event venues, making the activity inclusive and accessible.





As part of India's 79th Independence Day celebrations, soldiers from the Indian Armed Forces were recognised for their bravery and exceptional service during Operation Sindoor.

Operation Sindoor is a defence attack where India retaliated for the 22nd April Pahalgam terror assault, which murdered 26 people, mostly tourists. Operation Sindoor targeted the military and terrorist sites in Pakistan and Pakistan-occupied Kashmir between 7th and 10th May. An all-India tri-services operation was carried out by the Army, Navy and Air Force targeting terrorist groups and military assets in Pakistan.

Operation Sindoor was the prominent theme of the gallantry medals and distinguished service awards that were approved by the President in the awards list. The awarded officers include four Group Captains, one Wing Commander,

three Squadron Leaders and one Flight Lieutenant.

The IAF officers and fighter pilots who showcased extraordinary courage and professionalism in neutralising high-value enemy targets, including terrorist group headquarters in Muridke and Bahawalpur, have earned accolades across the nation. During Operation Sindoor, the mighty IAF also downed 6 aircrafts of the Pakistani Air Force, including five fighter jets.

India's third-highest wartime gallantry medal the **Vir Chakra** was awarded to nine Indian Air Force officers, including fighter pilots who displayed remarkable courage. These brave heroes played a decisive role in shattering terrorist infrastructure and crippling key military assets, sending a strong message to India's adversaries.

The other awards included four **Kirti Chakras**, which is the

country's second-highest peacetime gallantry medal, sixteen **Shaurya Chakras**, fifty eight **Sena Medals**, six **Nao Sena Medals**, seven **Sarvottam Yudh Seva Medals**, nine **Uttam Yudh Seva Medals**, twenty six **Vayu Sena Medals**, twenty four **Yudh Seva Medals** and two **Bar to Sena Medals**.

The President had also approved 290 **Mention-in-Despatches** – 115 personnel of the Indian Army, five of the Indian Navy, 167 of the Indian Air Force and three of the Border Roads Development Board.

Three Agniveers were also awarded gallantry medals on this Independence Day for their roles in Operation Sindoor and other operations. The **Border Security Force** was also recognised for its frontline bravery with 18 gallantry medals including two posthumous **Vir Chakras**.



These honours not only commend individual bravery and skill but also mark Operation Sindoor as a milestone in India's counter-terrorism operations. The mission showcased the Tri-services' coordination and indigenous operational capability for strategic precision strikes without crossing international borders.



Bar to the Sena medal is awarded by the Indian government to a recipient who has already received the Sena Medal for a separate act of exceptional bravery or devotion to duty.

Mention in Despatches is an official acknowledgment of exceptional bravery or meritorious service during military operations. The name of the individual is included in a formal report ("despatch") submitted by a superior officer to the higher command. Recipients are awarded a certificate and entitled to wear a specific emblem such as a bronze oak leaf on their medal ribbon.

SARVOTTAM YUDH SEVA MEDAL

Air Marshal NARDESHWAR TIWARI	IAF
Air Marshal NAGESH KAPOOR	IAF
Air Marshal JEETENDRA MISHRA	IAF
Air Marshal AWADHESH KUMAR BHARTI	IAF
Lt General RAJIV GHAI	ARMY
Lt General PRATIK SHARMA	ARMY
Vice Admiral SANJAY JASJIT SINGH	NAVY



KIRTI CHAKRA

Captain LALRINAWMA SAULO
Lt SHASHANK TIWARI
Lance Naik MEENATCHI SUNDARAM A
Sepoy JANJAL PRAVIN PRABHAKAR



VIR CHAKRA

Col KOSHANK LAMBA
Lt Col SUSHIL BISHT
Naib Subedar SATISH KUMAR
Rifleman SUNIL KUMAR
Group Captain RANJEET SINGH SIDHU
Group Captain MANISH ARORA
Group Captain ANIMESH PATNI
Group Captain KUNAL KALRA
Wing Commander JOY CHANDRA
Squadron Leader SARTHA K KUMAR
Squadron Leader SIDDHANT SINGH
Squadron Leader RIZWAN MALIK
Flight Lt AARSHVEER SINGH THAKUR
Sub inspector MOHD IMTEYAJ
Constable DEEPAK CHINGAKHAM



127
gallantry
awards

SHAURYA CHAKRA

Lt Col NEETESH BHARTI SHUKLA
Major BHARGAV KALITA
Major ASHISH KUMAR
Major ADITYA PRATAP SINGH
Assistant Commandant MOHD SHAFIQ
Subedar SHAMSHER SINGH
Lance Naik RAHUL SINGH
Rifleman BHOJ RAM SAHU
Lt Commander SURAJ PRASHAR
Seaman II class RAM GOYAL
Wing Commander ABHIMANYU SINGH
Inspector LAXMAN KEWAT
Inspector RAMESHWAR PRASAD DESHMUKH
Constable SADDAM HUSSAIN
Constable FEDA HUSSAIN DAR
Constable SANJAY TIWARI





India's first Aqua Tech Park in Assam

Although Assam is blessed with rivers, it still depends on states like Andhra Pradesh to meet its fish demand.

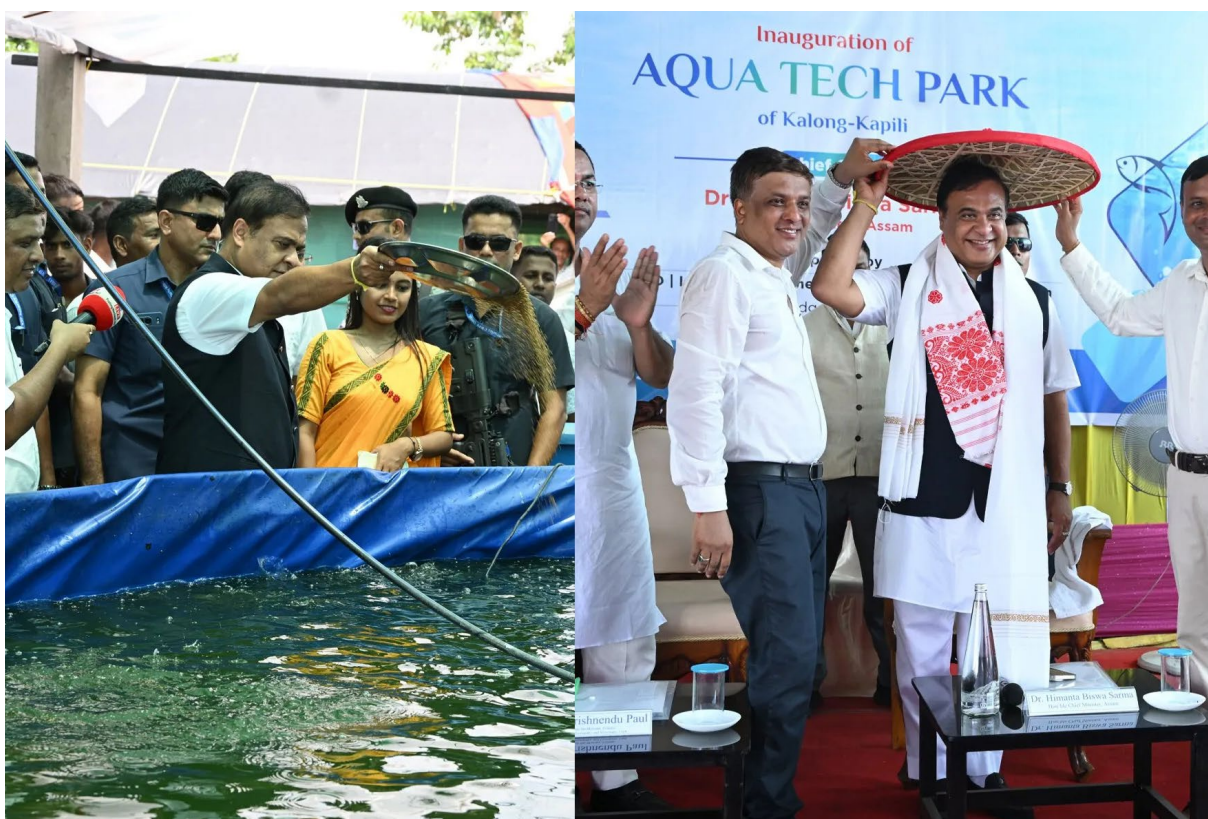
Assam has made history with the launch of India's first Aqua Tech Park at Bagibari, Sonapur, near Guwahati. The park was inaugurated on 12th July by Chief Minister Himanta Biswa Sarma, who said it will help farmers learn modern methods of fish farming and make the state self-reliant in fisheries increasing production and new opportunities for the youth.

The Aqua Tech Park is a joint effort of **Kolong Kopili**, an NGO working in fisheries for over 17 years, along with NABARD, ICAR-CIFA, Selco Foundation, GIZ and

the state Fisheries Department. It introduces new-age technologies such as **aquaponics** (growing fish and plants together), **biofloc systems** (improving fish growth and water quality), **ornamental fish breeding and recirculatory aquaculture systems** that use less water. Training on preparing sustainable fish feed and building direct market links is also part of the initiative.

Although Assam is blessed with rivers, it still depends on states like Andhra Pradesh to meet its fish demand. The Chief Minister expressed confidence that the





Aqua Tech Park will reduce this dependence. He also pointed out that Assam has already doubled its fish production between 2019 and 2024, reaching 4.99 lakh metric tonnes and now ranks as the fourth-largest fish-producing state in India.

The government has also launched 10 cluster fishery projects worth ₹8 crore and larger initiatives supported by ADB and JICA. Together, these efforts aim to modernise the fishery sector, provide jobs for youth and strengthen Assam's rural economy.

For students, farmers and young entrepreneurs, the Aqua Tech Park is more than just a training centre. It is a symbol of innovation and self-reliance. By combining science with traditional farming, Assam is taking a big step toward becoming a model state in fish production.

DO YOU KNOW ?

- **NABARD** (National Bank for Agriculture and Rural Development) is an Indian development financial institution promoting agriculture and rural development through financial and technical support.
- **ICAR-CIFA** (Indian Council of Agricultural Research - Central Institute of Freshwater Aquaculture) is a premier research institute dedicated to developing sustainable freshwater aquaculture practices for various finfish and shellfish species.
- **GIZ** is a federal German enterprise providing international cooperation services for sustainable development in over 130 countries, focusing on areas like economic development, environmental protection and peace-building.
- **SELCO** (Solar Electric Light Company) provides decentralised renewable energy solutions, primarily solar energy, to low-income households and businesses in rural India.





Gyanodaya

A centre for pedagogical innovation



Gyanodaya, literally translating to ‘the advent of knowledge’, is a Centre for Pedagogical Innovation and Publishing launched at IIM-Kozhikode. It is a pioneering initiative developed by the IIM-K faculty, aiming at creating a dynamic, inclusive and globally relevant knowledge system.

The Institute Director Debashis Chatterjee announced the new addition under ‘**Vision 2047**’ and said, “The future of education lies not just in delivering knowledge, but in reimagining how it is created, contextualised and shared.”

Gyanodaya tackles both short and long-term academic needs. In the short term, the focus is on

developing and circulating peer-reviewed content, including case studies, simulations, monographs, books and research notes. In the long run, the Centre aims to become a global hub for educational innovation, nurturing collaboration amongst institutions, faculty and practitioners worldwide.

The Centre already has a repository of over 30 original case studies with detailed teaching notes which have been published, gaining attention in fields varying from marketing and finance to the humanities and liberal arts.

Pandulipi, a home-grown online manuscript management platform, acts as a support to the Centre, facilitating seamless

submissions and a three-stage peer review from experts.

IIM Kozhikode is transforming management education with programmes like Gyanodaya, inspiring students with real-world learning. This is done by reshaping the role of educators to make learning more interactive and impactful, with a strong emphasis on Indian roots in business perspectives.

In this ever-evolving world, innovative teaching lies at the core of a dynamic learning experience because it transforms the traditional classroom into an engaging, adaptive and student-centered one. Rather than relying solely on rote memorisation or one-way instruction, innovative teaching methods under Gyanodaya leverage creativity, technology and interactivity to make learning more meaningful and relevant.

At the heart of a dynamic learning experience is the willingness to evolve and experiment with how knowledge is shared — making education not just informative, but transformative.





SWACHH SURVEKSHAN

2024-25



Ahmedabad, which was the 18th cleanest city last year across all categories, was declared the cleanest city in the million-plus cities (population of over one million) category in the Swachh Survekshan (Urban) 2024-25 Awards, even as past winners such as Indore were elevated a new league introduced this year.

President Droupadi Murmu presented the awards at an event organised by the Ministry of Housing and Urban Affairs in New Delhi. The Swachh Survekshan Awards, organised under the Centre's Swachh Bharat Mission-Urban, is publicised by the

government as the world's largest urban sanitation and cleanliness survey.

Ahmedabad was ranked 15th in the million-plus cities category in last year's ranking. The maximum score is 12,500 points.

Best-performing cities in the million-plus population category

Indore, which was the cleanest city in this category for the past seven consecutive years, has been elevated to a new category — the **Super Swachh League (SSL)** cities.

SSL features cities that have ranked in the top three at least once in the last three years and remain in the top 20% of their respective population category in the current year.

City	Points
Ahmedabad	12,079
Bhopal	12,067
Lucknow	12,001
Raipur	11,996
Jabalpur	11,989

Other than Indore, the league includes Surat (last year's joint topper), Navi Mumbai (second in last year's ranking) and Vijayawada — another consistent top performer in the million-plus population category.



City	Points	Rank
Delhi	7,920	31 st
Mumbai	7,419	33 rd
Bengaluru	6,842	36 th
Chennai	6,822	38 th





City	Award	Remarks
Prayagraj	Best Ganga Town	Exemplary sanitation efforts.
Secunderabad Cantonment	Best Cantonment Board	
• Visakhapatnam • Jabalpur • Gorakhpur	Best SafaiMitra Surakshit Shehar	Outstanding commitment to the safety and dignity of sanitation workers

It is seen that on account of these concerted efforts it has resulted in Indore's civic body earning ₹2.5 crore annually from wet waste processing plants and ₹1.5 crore from dry waste plants.

Megacities category

Meanwhile, Kolkata was not ranked among the top 40 cities in its category, and its report card was not available on the dashboard. West Bengal only had a single mention this year with Baidyabati, a municipality in Hooghly district, named as a promising city.

The secret to the sustained success of Indore is on account of segregation of waste at source and this was only possible with the change in behaviour of citizens, which was due to a sustained campaign by municipal officials. **It is imperative to note that citizen participation is the only reason for a high rate of segregation at source, which makes all aspects of reuse, recycling and extraction of energy.**

It is seen that on account of these concerted efforts it has

resulted in the city's civic body earning ₹2.5 crore annually from wet waste processing plants and ₹1.5 crore from dry waste plants. **Further, the smart city special purpose vehicle (SPV) in Indore was the first South Asian city to sell carbon credits through its biogas plant.**

A special recognition was accorded to State Govt. of UP, Prayagraj Mela Adhikari and Prayagraj Municipal Corporation, for its exceptional urban waste management during the Mahakumbh.

This year's Swachh Survekshan not only refined and streamlined the framework for big cities, but also simplified it for small cities, encouraging them to compete and climb the ladder of swachhata. The smaller cities found a level playing ground with big cities in the survey.





It is revealed that local nomads also provided inputs, helping the forces to narrow down the location of the terrorists.

Ever since the Pahalgam attack on 22nd April in which 26 people were horrifically killed, the security personnel in Kashmir had been on high alert and searching for any clues to find those involved in the heinous attack.

They finally received a breakthrough when they were in receipt of suspicious communication. The forces got a clue about a Chinese ultra radio communication being active, after which the operation was carried out. The LeT uses Chinese radio for encrypted messages and reportedly even used them during the planning and execution of the Pahalgam terror attack.

The group of terrorists activated the communication device once again, allowing the security officials to pick up their precise location — the Dachigam forest area. It is revealed that local nomads also provided inputs, helping the forces to narrow down

the location of the terrorists. Further reports from local communities and villagers in the Dara and Harwan regions indicated sightings of unfamiliar individuals. This prompted on-ground verification by security forces. Narrowing down their location, officials deployed several units in the area to further pinpoint their exact spot. The Dachigam forest has two sides — one extending towards Pahalgam in south Kashmir's Anantnag district and another connecting Ganderbal district.

The Dara-Harwan-Dachigam has thick forests, rocky slopes and barely any local community around. It is the kind of terrain that gives terrorists cover and time. The location is close to Srinagar and tourist spots like Pahalgam and Gulmarg.

Once the terrorists were located, the security personnel launched a drone in that area to get a clear visual of the terrorists.



MILITARY OPERATIONS & EXERCISES 2025



Operation SHIVA (2025)

Annual Indian Army exercise for Shri Amarnath Yatra security: involves 8,500 troops, C-UAS grid and disaster response



Operation Shiv Shakti

Ongoing Army-JKP operation in Poonch (July 2025 to thwart terrorist infiltration



Operation Mahadev

Joint anti-terror operation in Srinagar; eliminated 3 Lashkar terrorists including Pahalgam attack



Operation Sindoor

Tri-services strike (May 2025 on terror camps in PoJK after Pahalgam attack: over 100 terrorists killed



Exercise Drone Prahar

Tactical Army drill in Arunachal Pradesh validated battlefield use of drones for ISR and precision targeting

as Yasir and Abu Hamza. All three of them were foreign nationals affiliated with the Pakistan-based terror outfit Lashkar-e-Taiba (LeT).

After 45 minutes, a cleansing operation was launched in a two-kilometre radius of the encounter site and at 12:45 pm, the terrorists' bodies were identified and photographed. A coordinated force comprising personnel from the **24 Rashtriya Rifles, 4 PARA (Special Forces), Central Reserve Police Force (CRPF) and the Special Operations Group (SOG) of the Jammu and Kashmir Police** were positioned to Lidwas and its adjoining forested zones.

Operation Mahadev is a joint counter-terror operation launched by Indian security forces, including the Indian Army's Chinara Corps, the Central Reserve Police Force (CRPF), and the Jammu and Kashmir Police. The operation was initiated based on credible information that the militants involved in the Pahalgam terror attack had moved into the dense forest of Dachigam National Park and the nearby Dara area approximately 20 kilometres from Srinagar.

The name "Mahadev" draws from both the region's rugged mountainous terrain and the religious significance associated with the Mahadev peak in Kashmir. The choice isn't just symbolic but also tactical. That's because it took place near Mahadev peak, which is part of the Zabarwan Range and holds both strategic and spiritual value. Kashmiri folklore states that this is the path that Lord Shiva took to reach the Amarnath Cave, where he related the Amar Katha (the tale of immortality) to Goddess Parvati.

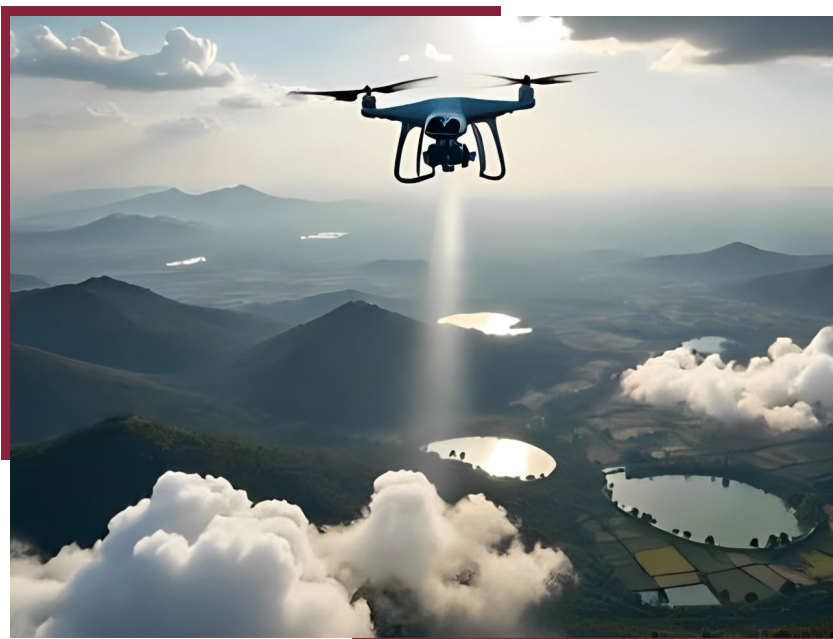


At around 11am, a joint team detected terrorist activity in Mulnar, Harwan.

The security forces established contact with three terrorists concealed in a heavily camouflaged hideout within the forest. It resulted in firefight and encounter of 3 heavily armed terrorists. A swift and intense exchange of fire ensued, leading to the neutralisation of all three terrorists.

Hours after the operation, the three slain terrorists were identified as Hashim Musa alias Suleiman, widely regarded as the mastermind behind the Pahalgam attack. The other two have also been identified





AI-powered artificial rains

The first successful cloud seeding experiment took place in 1946, in New York, USA. Just a few years later, in 1951, India carried out its own experiment to support agriculture during a drought.

India's state-run agencies are piloting artificial rain projects powered by AI. The science behind this technology is **cloud seeding**. But what exactly does that mean? Let's break it down.

How do we create rain from the sky?

Artificial rain is created through a weather modification process known as cloud seeding. In this method, meteorologists identify clouds that already contain moisture but are not yet ready to release it as rainfall. These clouds are then "seeded" with microscopic levels of compounds on which the moisture gathers around, forming larger droplets that eventually grow heavy enough to fall as rainfall.

The compounds used are harmless, such as silver iodide, which mimics the structure of

natural ice crystals or even sodium chloride (common salt). When released into the cloud, these particles give the infinitesimal water droplets something to cling to, helping them merge into larger drops that eventually become heavy enough to fall as rain.

When did we first make artificial rain?

Although artificial rain may sound futuristic, the practice has been around for decades. The first successful cloud seeding experiment took place in 1946, when Vincent J. Schaefer induced snowfall from a cloud over New York, USA. Just a few years later, in 1951, India carried out its own experiment to support agriculture during a drought, led by Dr. Homi J. Bhabha in collaboration with the Tata group.



ARTIFICIAL RAIN COMETH!

WHAT IS ARTIFICIAL RAIN?

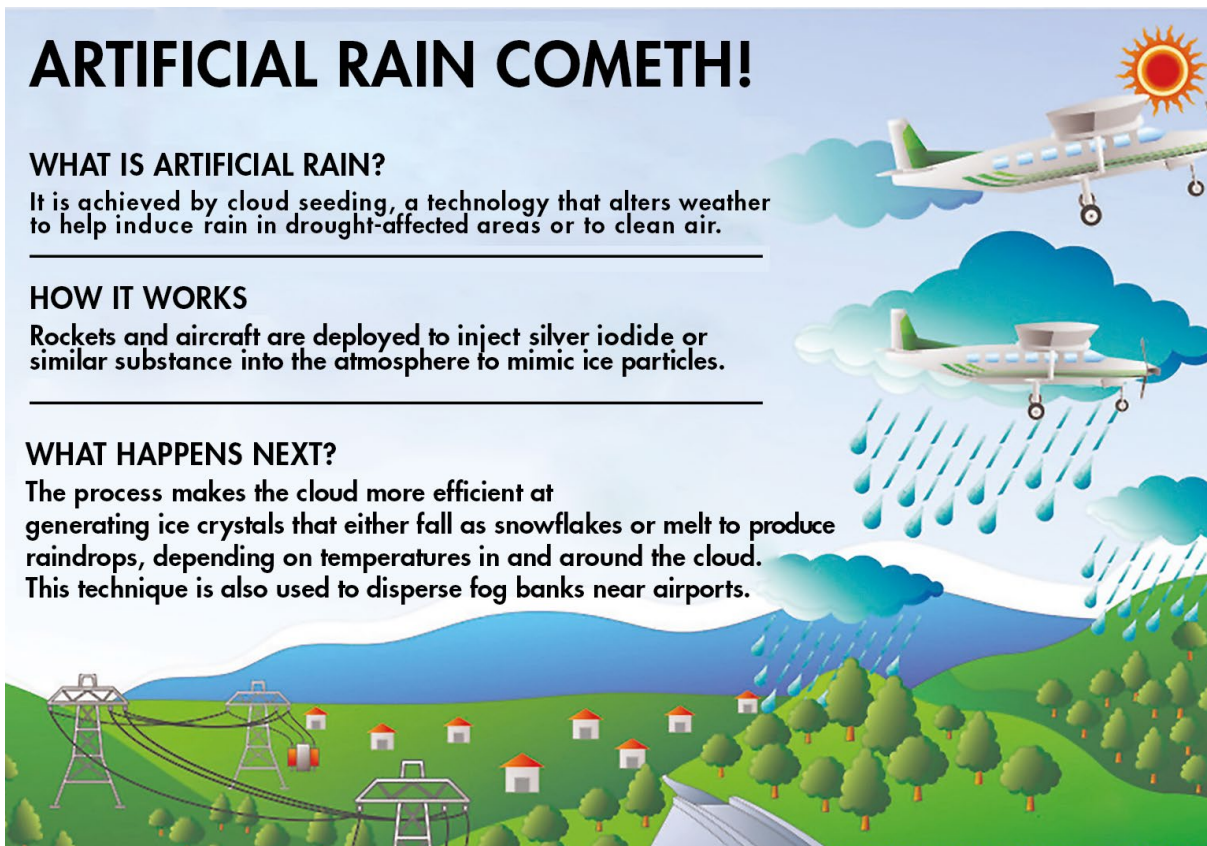
It is achieved by cloud seeding, a technology that alters weather to help induce rain in drought-affected areas or to clean air.

HOW IT WORKS

Rockets and aircraft are deployed to inject silver iodide or similar substance into the atmosphere to mimic ice particles.

WHAT HAPPENS NEXT?

The process makes the cloud more efficient at generating ice crystals that either fall as snowflakes or melt to produce raindrops, depending on temperatures in and around the cloud. This technique is also used to disperse fog banks near airports.



Is India deploying artificial rain technology?

Recently, India made headlines for deploying AI-powered drones to seed clouds over drought-hit regions of Rajasthan to trigger artificial rainfall. The project is being led by the Rajasthan Agriculture Department in collaboration with

GenXAI, a Bengaluru-based AI company and Accell, a US-based climate engineering firm.

Here's how the process works. Soil sensors are placed in the ground to track moisture levels and detect when rainfall is needed. This information is fed into their HydroTRACE platform, an AI

system that analyses satellite imagery, weather patterns, cloud types and evaporation data to identify the best opportunities for seeding. Based on these insights, GenXAI's drones are deployed. Equipped with AI guidance, the drones can reach high-altitude clouds and release seeding agents with precision, even over small, targeted areas. **This makes repeated operations not only possible, but also far more efficient and cost-effective than older methods.**

New Delhi is now preparing to pilot its own cloud seeding project to trigger artificial rain. Like many other fields, AI has become a powerful ally here - guiding drones, analysing cloud formations and identifying the best moment to seed them. Yet, despite these advances, the core principles remain the same as those first tested in India back in 1951.





Geologists confirm massive gold reserves in Jabalpur

Geologists have confirmed the presence of massive gold reserves in the Mahgawan Keolari area of Jabalpur, Madhya Pradesh. Preliminary estimates could be in lakhs of tonnes, potentially making Jabalpur a gold rich district. The discovery also includes copper and other metals within a hundred-hectare area. The results follow years of sampling and exploration in the Mahgawan region of Sihara tehsil. The area is already well known for its iron and manganese reserves.

Discovery of high value mineral deposits like gold always attracts new business. A sleepy dusty town suddenly becomes a boom town. Industry analysts believe that Jabalpur gold reserves discovery could attract significant investment in extraction and processing infrastructure, generating employment while



boosting the town's revenues. The presence of significant reserves of copper and other metals further

enhances the site's commercial potential, creating opportunities for integrated mineral development.



Chhattisgarh emerges as a major mineral belt

Significant deposits of Nickel, copper and platinum have been discovered in Bhalukona-Jamnidihi block of Mahasamund district, in Chhattisgarh by Deccan Gold Mining Company. The discovery is confirmed by Geological survey of India and Chhattisgarh Directorate of Geology and Mining. A developing country and the world's 4th largest economy has enormous need for critical elements like copper nickel, iron etc., and hence this massive

resource provides that vital security. Programmes like the massive push for green energy projects, Atmanirbhar Bharat mission will be secure with such discoveries. This Nickel copper platinum belt spans an area of 300 hectares. Preliminary findings were encouraging with a 700 metre long mineral zone. Geographical data further indicated the presence of sulphide mineralisation up to a depth of 300m, suggesting substantial mineral potential of the area.



AATMA-NIRBHAR
BHARAT



● **PGE - Platinum Group Elements** are a group of six precious metals: **platinum** (Pt), **palladium** (Pd), **rhodium** (Rh), **ruthenium** (Ru), **iridium** (Ir) and **osmium** (Os). These elements share similar physical and chemical properties, such as high melting points, corrosion resistance and excellent catalytic properties, making them valuable in medical, automotive (catalytic converters), electronics and jewellery industries.





'Pariksha Pe Charcha' sets Guinness World Record

What is Pariksha Pe Charcha?

- ▶ A unique global platform where Prime Minister Modi directly interacted with students, teachers and parents, encouraging stress-free preparation and holistic learning.
- ▶ The core idea is to reduce exam-related stress and promote a joyful and holistic learning experience.

This programme has entered the Guinness World Records for the **“Most people registered on a citizen engagement platform in one month.”** The recognition comes after the 8th edition of the programme, held earlier this year, received a record 3.53 crore valid registrations on the MyGov platform.

HIGHLIGHTS

- ▶ Alignment with the NEP 2020.
- ▶ Emphasises stress-free, experiential learning over rote memorisation.

- ▶ Addresses key issues such as time management, digital distractions, mindfulness and emotional resilience, offering practical guidance to students, parents and educators.

Kartavya Bhavan inaugurated

Prime Minister inaugurated Kartavya Bhavan, the first building under the ambitious Common Central Secretariat (CCS) project, a key element of the Central Vista redevelopment plan.

Why?

- ▶ Currently, many government ministries function from buildings such as Shastri Bhawan, Krishi Bhawan, Udyog Bhawan and Nirman Bhawan—structures that were built between the 1950s and 1970s.
- ▶ These buildings are now considered structurally outdated and inefficient,





making the need for modernisation urgent.

The Ministries of Home Affairs, External Affairs, Rural Development, MSME, DoPT, Petroleum and Natural Gas, along with the Office of the Principal Scientific Advisor to the Government of India will be housed in the Kartavya Bhavan.

Aim

- » To construct 10 common Central Secretariat buildings.
- » To blend modern infrastructure with administrative efficiency, creating a workspace that reflects India's ambitions for the 21st century.
- » To bring over 50 ministries and departments together, streamlining governance and reducing operational delays.
- » Two additional buildings—CCS 2 and CCS 3—are expected to be completed by next month, while CCS 10 is scheduled for completion by April 2026.
- » Construction for CCS 6 and CCS 7 is projected to be complete by October 2026.

Wider plan

- » A new Parliament building
- » Vice President Enclave
- » Redeveloped Kartavya Path

from Vijay Chowk to India Gate.

- » An Executive Enclave housing a new Prime Minister's Office (PMO), Cabinet Secretariat, India House and National Security Council Secretariat.
- » In a later phase, a new residence for the prime minister.

Nigerian Scientist gets M.S. Swaminathan Award for Food and Peace

PM Modi launched a global award — the M.S. Swaminathan Award for Food and Peace — aimed at recognising path breaking contributions to food security and sustainable agriculture across the developing world.



Highlights

- » PM Modi also released a centenary memorial stamp to commemorate Prof Swaminathan's life and contributions.
- » The first recipient of the newly instituted award is Dr. Arenare, a Nigerian scientist honoured for his transformative work in reducing hunger in Nigeria.
- » The award symbolises Prof Swaminathan's lifelong mission to combat hunger through science and innovation, not just in India but globally.
- » The award is expected to become a prestigious international recognition, celebrating those who further the cause of "food and peace".

Aim

- » To focus on climate-resilient agriculture.
- » To develop drought-tolerant seeds, water-efficient technologies and sustainable farming methods to secure global food systems against climate change.

Legacy of M.S Swaminathan

- » M.S. Swaminathan introduced the concept of bio-happiness, linking ecological balance with human well-being which led to environmental sustainability.
- » His leadership during Green Revolution of the 1960s and 1970s transformed India from a food-deficient nation to one of self-sufficiency.

He passed away on 23rd September 2023, at the age of 98 and was posthumously conferred the Bharat Ratna in 2024.



Pradhan Mantri Viksit Bharat Rozgar Yojana

- ▶ On 15th August 2025, during his address from the Red Fort, Prime Minister Modi unveiled the Pradhan Mantri Viksit Bharat Rozgar Yojana—a ₹1 lakh crore nationwide initiative to **boost employment opportunities for India's youth**.
- ▶ The scheme is a flagship component of the government's **Viksit Bharat 2047** vision, promising to create **3.5 crore jobs** and accelerate India's path toward inclusive economic growth.

HIGHLIGHTS

Direct financial support for first-time employees - Any young person securing their first private sector job will receive ₹15,000 directly from the government.

Incentives for employers

- ▶ Companies generating sustained employment will receive financial incentives.
- ▶ Employers hiring additional staff will be eligible for up to ₹3,000/month per new employee.
- ▶ Extended benefits are planned for the manufacturing sector to promote large-scale job creation.

Scale and targets

- ▶ **Total investment:** ₹1 lakh crore
- ▶ **Total jobs to be created:** 3.5 crore in the next two years
- ▶ **First-time workforce entrants:** 1.92 crore beneficiaries

Expected impact

- ▶ Boost to formal sector jobs, particularly in manufacturing and services.
- ▶ Encouragement for private sector expansion through wage support.
- ▶ Acceleration of youth economic participation, reducing underemployment.
- ▶ Strengthening of social security via EPFO enrolment.

'Mission Sudarshan Chakra' to promote indigenous technology

PM Modi announced a landmark national security initiative — 'Mission Sudarshan Chakra' on Independence Day.

Vision and objectives

- ▶ Establish a multi-layered security framework against evolving threats.
- ▶ Reduce dependence on foreign security systems.
- ▶ Integrate surveillance, cyber defence and physical protection in one comprehensive shield.
- ▶ Prepare India to anticipate and prevent threats rather than react to them.

HIGHLIGHTS

- ▶ **Advanced surveillance systems:** AI-enabled monitoring of sensitive sites.
- ▶ **Cyber protection framework:** Defence against cyber warfare and hybrid threats.
- ▶ **Physical security enhancements:** Fortified infrastructure and rapid-response systems.

- ▶ **Integrated threat response network:** Real-time coordination between security forces, intelligence agencies and research institutions.

- ▶ **Public-private collaboration:** Partnership with premier Indian R&D agencies, defence PSUs and private innovators.

The mission is part of a larger push for self-reliance in defence under the Aatmanirbhar Bharat framework.



Commemorative coin honouring Rajendra Chola I

As part of the Rajendra Chola's birth anniversary celebrations, the Prime Minister released a commemorative coin in his honour, paying tribute to the Chola king's enduring contributions to Indian history, architecture and maritime legacy.

- ▶ The celebrations were held at the Gangaikonda Cholapuram temple, a UNESCO-recognised monument built by Rajendra Chola I.
- ▶ The event also commemorated the 1,000-year anniversary of Rajendra Chola's maritime expedition, a landmark in Indian naval history.
- ▶ His expeditions extended the Chola influence to regions of Southeast Asia, showcasing India's maritime strength and cultural outreach during the medieval era.



- ▶ PM hailed Rajendra Chola as a visionary leader who combined military might, architectural brilliance and devotion to tradition.

'Gyan Bharatam Mission' to digitise ancient manuscripts

The Gyan Bharatam Mission is a nationwide digital preservation project that aims to conserve and digitise over one crore ancient manuscripts scattered across India. PM Modi celebrated UNESCO's recognition of 12 Maratha forts as World Heritage Sites. He described the forts as "pages of history", with 11 located in Maharashtra and one in Tamil Nadu.

Objectives

- ▶ **Digitisation of manuscripts:** To preserve fragile and rare texts by converting them into digital formats.
- ▶ **Creation of a national digital repository:** To provide a single platform where these manuscripts can be accessed globally.
- ▶ **Knowledge accessibility:** To allow students, researchers and historians to study India's vast traditional knowledge base.
- ▶ **Cultural legacy preservation:** To ensure that future generations remain connected to India's heritage and traditions.

Budgetary support and expansion

- ▶ The allocation has increased from ₹3.5 crore to ₹60 crore, highlighting the government's strong commitment to conserving India's knowledge traditions.

- ▶ The initiative also aligns with the vision of **Viksit Bharat**, focusing on reviving traditional knowledge systems through language revitalisation and cultural conservation.

New Airport Terminal at Tuticorin inaugurated

Prime Minister Modi inaugurated the new terminal building of Tuticorin Airport and laid the foundation for multiple infrastructure projects worth ₹4,800 crore in Tamil Nadu.

Background

- ▶ Tamil Nadu has been a critical hub for trade, industry and cultural heritage in southern India.
- ▶ Tuticorin, located near the V.O. Chidambaranar Port, serves as a gateway for maritime trade.

Objectives

- ▶ The primary objective of these initiatives is to strengthen multi-modal connectivity by integrating airports, highways, ports and railways. The government seeks to modernise Tamil Nadu's infrastructure, reduce logistics costs and ensure faster, more efficient transport for goods and passengers.

Significance

- ▶ The new terminal and infrastructure projects reflect the Centre's vision of **Viksit Bharat**.
- ▶ The projects aim to ease logistics, improve trade flows and connect cultural and agricultural hubs of Tamil Nadu with global markets.

- ▶ Enhanced infrastructure in the region is expected to boost tourism, port-led growth and industrial development, making Tamil Nadu a driver of economic expansion.

HIGHLIGHTS

Tuticorin Airport Terminal: Spread over 17,340 sq. m, with an annual capacity to handle 20 lakh passengers.

Highway projects

- ▶ 4-laning of 50 km Sethiyathope–Cholapuram stretch of NH-36, including three bypasses.
- ▶ A 1-km four-lane bridge over Kollidam River, plus four major bridges, seven flyovers and multiple underpasses.

Port projects: Inauguration of North Cargo Berth-III at V.O. Chidambaranar Port (₹285 crore).

Railway projects

- ▶ **Electrification** of 99 km Madurai–Bodinayakkanur line.
- ▶ **Doubling** of 21 km Nagercoil Town–Kanyakumari section (₹650 crore).
- ▶ **Doubling** of Aralvaymozhi–Nagercoil Junction and Tirunelveli–Melappalayam sections.

DO YOU KNOW ?

Gangaikonda Cholivaram temple is a replica of the Brihadeeswara Temple in Thanjavur constructed by Rajaraja Chola I.





Environmental news

Sikkim environmentalist gets global recognition

Orchids are plants with complex flowers that are often showy or bizarrely shaped. Famous for their spectacular appearance and colours, orchids display symbolic meanings associated with love, luxury and beauty. They are epiphytic (ability to grow on trees taking their moisture and nutrients) and show adaptability and resilience to survive in diverse environments like deserts and alpine meadows. *Vanilla planifolia* bears the edible fruit used in vanilla production. Orchids' presence reduces mental stress and find usage in ayurvedic medicine and aroma therapy.

Sikkim is known as **Orchid paradise of Himalayas**. The State has over 550 of the 1256 recognised orchid species.



Royal Horticultural Society, UK has officially named and registered a new hybrid orchid as *Cymbidium Kumar Yonzon* and conferred global recognition on the environmentalist. Kumar Yonzon, President of the Green Zone Society, is recognised for his long-standing contributions to environmental conservation and biodiversity management. The new find was featured at the Indian Orchid Festival 2025. GoI's ICAR has established National Research Centre on Orchids at

Pakyong, Sikkim. The Orchid Sanctuary houses a rare and extensive collection of orchids for conservation, including many native species.

Bibi Fatima Women's SHG wins UNDP Equator Prize 2025

The Bibi Fatima Women's Self-Help Group (SHG) from Teertha village in Karnataka's Dharwad district won the prestigious Equator Prize 2025.





Every year, United Nations Development Programme (UNDP) honours community-led nature-based solutions for sustainable development and climate resilience. The winners were announced on **9th August, International Day of the World's Indigenous Peoples** at New York. They were selected from a tough draw of 700 nominations across 103 countries. Each winner received USD 10,000 and global recognition, including participation in major UN events. **The 2025 theme focused on Women and Youth Leadership for Nature-based climate action.**

SHG's achievements

Formed in 2018 by 15 women,

the SHG now supports over 5,000 farmers in 30 villages. It promotes millet-based mixed cropping on rain dependent farms using eco-friendly natural farming methods. The group manages community seed banks that distribute free seeds to farmers and also one solar-powered millet processing unit producing value-added products like rotis and vermicelli. These efforts enhance food security, biodiversity conservation and women's economic empowerment.

The SHG received valuable support from GoI's Indian Institute of Millets Research and other organisations to successfully run the group and promote rural agribusinesses.

First "Make in India" hydrogen plant sets a new benchmark

Deendayal Port Authority (DPA), Kandla in Gujarat commissioned the country's first port based 'Make in India' one megawatt (MW) green hydrogen plant. The plant was inaugurated by Union shipping minister Sarbananda Sonowal in July.

Hydrogen production methods are categorised using a colour-coding system to differentiate between various processes and their associated environmental impacts.

The classification system covers the cost and environmental effect involved in the different production methods.

Fully indigenous and led by Indian engineers, the DPA project highlight was the speed, scale and skill with which it was completed in a short span of a few months. The initial 1MW phase will produce approximately 140 tonnes of green hydrogen annually.

S.No.	Colour Scheme	Production method	Remarks
1.	Green	Electrolysis of water through power generated from renewable energy sources.	Zero CO2 emission during production. Most environment friendly option.
2.	Blue	From natural gas. Transitional step towards low-carbon economy.	Reliance on fossil fuels and need for storage of CO2 emissions underground.
3.	Grey	Steam Methane Reforming (SMR).	Most common form of production. CO2 emission into atmosphere cause for greenhouse effect.
4.	Brown/Black	Coal gasification.	Most carbon-intensive. Contributes to greenhouse effect.
5.	Pink	Electrolysis powered by nuclear energy.	Considered low-carbon option.
6.	Turquoise	Pyrolysis of methane to hydrogen and solid carbon.	Potential for low carbon emission.
7.	White	Naturally occurring geological hydrogen found underground.	Potential for exploitation being explored.





Delhi Assembly : India's first legislature to run entirely on solar power

Union Minister Arjun Ram Meghwal recently inaugurated a 500-kW rooftop solar power plant at the Delhi Legislative Assembly. The Assembly is the first in India to operate entirely on solar energy. The event reflects a growing emphasis on sustainable infrastructure within government institutions.



The solar project is expected to generate a substantial portion of the building's energy needs. The annual power consumption is approximately 7,00,000 units costing ₹2 crores for the Assembly building. Electricity generated from a 3250 sq.m roof top solar panel installation is expected to be 8,20,000 units. This will entirely take care of the requirements; the power bill is expected to be zero and may even generate surplus energy for revenue. The solar system is also covered by a 30-year warranty. Officials noted that the system would cut down on the Assembly's carbon footprint, aligning with national goals for clean energy adoption.

India is the 3rd largest producer of solar energy ranking behind only China and United States. With 300 days of sunshine a year the country has approximately 1,08,830 GW solar energy potential but has realised only about 240 GW of the same.

This will be used to power 11 buses and streetlighting of the port. In the long term, all port operations will be fuelled by an expanded 10 MW facility, which will help in maritime decarbonisation of the port. The mission also has the ambition to make India a global hub for green hydrogen production and export.

'Samudra Prachet' - the game-changer

Indian Coast Guard launched on 23rd July 2025, 'Samudra Prachet', India's advanced Pollution Control Vessel (PCV), built by Goa Shipyard Ltd (GSL). The vessel was built as part of 'Atmanirbhar Bharat' initiative. Along with Samudra Pratap launched in 2024, Prachet will help in combating oil spills and other marine pollution that happen within our Exclusive Economic Zone (EEZ). The project for building the two vessels in GSL contributed to national capability-building, employment

generation and skill enhancement, through active engagement of the local industry and MSMEs.

Samudra Prachet is equipped with modern radar system to locate oil slicks and two side sweeping arms that collect the spills across full viscosity spectrum. The vessel is designed to pump in contaminated water, analyse and separate pollutants and has dedicated onboard tanks to store the recovered oil.

FEATURES

Length : 114.5 metres

Width : 16.5 metres

Displacement : 4170 tonnes

Crew : 14 officers and 115 sailors

Samudra Prachet is more than just a vessel; it represents India's dedication to safeguarding its maritime environment, fostering self-reliance in defence production and upholding its role as a responsible maritime nation.





Indians shine in sports

**Deepika
Sehrawat's solo
goal against the
world number
one Netherlands,
navigating
through
defenders with
microscopic
control before
delivering a
perfectly flicked
strike, was
immortalised in
hockey history.**

Deepika Sehrawat: A mesmeric moment in hockey

In an extraordinary showcase of athletic prowess, Deepika Sehrawat etched her name in Indian sporting lore by winning the **Poligras Magic Skill Award 2025**, a fan-voted honour from the International Hockey Federation (FIH) celebrating the season's most creative play.

Her solo goal against the world number one Netherlands, navigating through defenders with microscopic control before delivering a perfectly flicked strike, was immortalised in hockey history.

A first for an Indian, Sehrawat's feat speaks to individual brilliance and the rising stature of Indian women's hockey on the global stage.



From Hisar, Haryana, she emerged not just as a fierce forward on the field but as a national icon of technical skill on the hockey field.

Divya Deshmukh: India's new chess queen

At just 19, IM Divya Deshmukh ascended to extraordinary heights, claiming the FIDE Women's Chess World Cup 2025 in Batumi, Georgia, becoming the first Indian woman to do so.

In a masterful final against India's own legend, Koneru Humpy, she held firm through drawn classical games and seized victory in nerve-racking tiebreaks to emerge triumphant, becoming India's 88th Grandmaster in the process. She is also only **the fourth woman to attain the title of grandmaster.**

She earned her recognition from Bhushan Gavai, the Chief Justice of India, who gifted her with a bouquet and chessboard proclaiming "Her win is not just a proud moment for Nagpur or Maharashtra but for the entire nation. It reflects a rare blend of intellect, discipline and determination."



Divyanshi Bhowmick: Writing history with a paddle

Fourteen-year-old Divyanshi Bhowmick, from Mumbai, surged into the annals of Indian table tennis by winning the **U-15 girls' singles gold** at the 2025 Asian Youth Table Tennis Championships in Uzbekistan.

This made her the first Indian to achieve such a feat in 36 years.

Her strategic spins and clutch smashes carried her past more experienced opponents in a gripping final that reignited belief in India's grassroots table-tennis promise.

And all of this while she was tackling another sort of pressure, the looming Class 10 board exams. She admitted being "really scared," reminding us that champions can rise while juggling more than just medals.

Suhani Shah: India enchants the world of magic



Like a wizard among mere muggles, Suhani Shah, India's trailblazing mentalist and digital creator, **became the first Indian and first Indian woman to win the Best Magic Creator award at the FISM World Championship of Magic 2025.**



Often dubbed the “**Oscars of Magic**” the FISM championship is one where magicians showcase their incredible skills to expert judges.

Conjuring illusions and mind-reading feats on the grandest global stage in Milan, she cast a spell on the audience and the judges alike, earning herself the top prize.

Suhani’s ascent is nothing short of mesmerising, a reminder that Indian artistry isn’t confined to traditional arenas; it spills into realms where the real and magic intertwine.

Annu Rani: A javelin star in full flight

Veteran javelin ace Annu Rani added yet another golden feather to her cap at the **International Wieslaw Maniak Memorial** in Poland. Competing in the **World Athletics Continental Tour** (Bronze level), she hurled the spear to a season’s best **62.59m**, enough to **claim gold** ahead of formidable



U19 (Under-19) Highlights		
Gold Medallists	Silver Medallists	Bronze Medallists
Nisha (women's 54 kg),	Vini (women's 60 kg)	Yakshika (women's 51 kg)
Muskan (women's 57 kg)	Nisha (women's 65 kg)	Akansha (women's 70 kg).
Rahul (men's 75 kg)	Aarti (women's 75 kg)	Shivam (men's 55 kg)
	Kritika and Prachi (women's 80 kg)	Gaurav (men's 85 kg)
	Mausam (women's 65 kg)	
	Hemant (men's 90 kg)	

U22 (Under-22) Highlights		
Gold	Silver	Bronze
Ritika in the women's 80 kg division, defeating Kazakhstan's Assel Toktassyn to gold for Team India.	Yatri Patel (women's 57 kg)	Bhawna (women's 48 kg)
	Priya (women's 60 kg)	Parthavi (women's 65 kg)
	Neeraj (men's 75 kg)	Pranjal (women's 70 kg)
	Ishan Kataria (men's 90 kg)	Shruti (women's 75 kg)
		Harsh (men's 60 kg)
		Ankush (men's 80 kg)
		Rockey (men's 85 kg)
		Mayur (men's 90 kg)

opponents from Turkey and Australia.

Her triumph not only bolstered India’s presence in women’s field events, but also positioned her securely among the Asia’s elite. With that victory, she reaffirmed her role as a relentless force in javelin and raised hopes for further glory at upcoming global meets.

Boxing: 27 medals and a nation’s resolve

In Bangkok, at the Asian U19 & U22 Boxing Championships 2025, India’s young pugilists delivered a thunderous performance to clinch 27 medals, including multiple golds, across the board.

From U19 standouts to U22 contenders, their courage, poise and power under pressure painted a vivid image: Indian boxing is not just surviving, but thriving.

A new bar

These six victories are bound together by traits that define sporting spirit: innovation, unwavering focus, fearless ambition, consistency and raw determination.

Here’s to the Indian winners of 2025, each radiating brilliance in their own realm and collectively raising the bar for future athletes.





FLORA & FAUNA NEWS

Kaziranga's hidden voices

India's first ever Grassland bird census was conducted by Kaziranga National Park. This initiative has utilised passive acoustic monitoring and AI driven tools to track and identify bird species during their breeding season.

Spearheaded by forest officials, researchers and conservationists, the census recorded 43 species, notably including one critically endangered, two endangered and six vulnerable birds as listed by the IUCN.



Among the standdout findings was the discovery of over 85 nests of the Finn's Weaver, a rare and endangered species endemic to the Brahmaputra floodplains. This marks a significant conservation milestone.

Conducted across 29 locations using six recorders placed in three-day cycles, the survey relied on technologies like spectrogram analysis and the AI based BirdNET software which enabled the researchers to identify species that are often missed in traditional visual surveys.

The initiative was acknowledged by the Prime Minister in his 'Mann ki baat' address for its innovative use of technology and its crucial role in monitoring underrepresented grassland bird species, which often slip through the cracks of conventional forest and wetland bird censuses.

Grassland birds act as ecological indicators, much like a health check for ecosystems, making their monitoring essential for evaluating the overall condition of their habitats. However, the census also spotlighted serious challenges such as habitat loss from ecological succession and agricultural expansion, overgrazing by domestic livestock, and the adverse effects of climate change on rainfall and flood patterns in the Brahmaputra Valley.

As a UNESCO World Heritage Site already famed for its one horned rhinoceros, Kaziranga's



diverse ecosystems have now taken on a new role as a global benchmark for biodiversity monitoring by integrating traditional conservation efforts with modern, data driven approaches.

The census not only provides critical insights for habitat and species management but also lays the groundwork for future policies aimed at protecting India's fast vanishing grasslands and their specialised avian inhabitants. This first of its kind census represents a major leap forward in India's biodiversity tracking efforts, offering a model that can be replicated in other regions to ensure the survival of grassland birds and their ecosystems.

Fungal-tolerant variety of pineapple

A genetically modified pineapple variety has been developed by scientists Prof. Gaurab Gangopadhyay and Dr. Soumili Pal from the Bose Institute, to combat *Fusarium moniliforme*, a destructive fungus responsible for **fusariosis**, a disease that causes stem warping, blackened leaves and internal fruit rot, leading to severe crop losses. Traditional breeding methods have proven inadequate in addressing

this fast-evolving fungal threat. To develop a resistant variety, researchers used agrobacterium mediated transformation to insert the **AcSERK3 gene** into pineapple explants. This gene, when overexpressed, enhances the plant's innate defence systems, resulting in increased enzyme activity and greater tolerance to stress and fungal attacks. **The resulting transgenic plants exhibited strong resistance to fusarium and maintained the introduced genetic trait stably across generations, reducing the likelihood of gene loss over time.** Notably, this innovation marks the first reported case of using overexpression of an inherent gene to confer fungal resistance in pineapples.

Beyond its scientific achievement, the antifungal pineapple offers a **sustainable alternative to chemical fungicides, lowering environmental impact while improving crop resilience.** The approach also holds promise for developing varieties resistant to multiple fungal pathogens through continued research and long-term field trials. This breakthrough represents a major step forward in agricultural biotechnology, particularly for tropical fruit cultivation, where fungal diseases significantly impact productivity and farmer livelihoods.

Rare blue pinkgill mushroom discovered in Telangana

The Kagaznagar forest division in Komaram Bheem Asifabad district, Telangana, has reported a remarkable fungal discovery and that is the blue pinkgill mushroom (*Entoloma hochstetteri*), a species typically native to New Zealand. Renowned for its striking blue colour, this rare mushroom owes its pleasant colouration to the presence of unique **azulene pigments**, making it one of the most visually distinctive fungi globally. This was observed in bloom across locations such as the Kadamba Reserve Forest, reinforcing Kagaznagar's reputation for rich biodiversity. Forest officials observed that this year's monsoon has led to an unusually rich diversity of mushroom species, emphasising the region's remarkable mycological wealth. Kagaznagar Forest Divisional Officer confirmed multiple sightings of vibrant mushroom varieties across the division.

In a separate but equally notable discovery, researchers from Osmania University recorded the presence of the **rare shuttlecock mushroom (*Clathrus delicatus*)** in the Kawal Tiger Reserve. This marks the first confirmed occurrence of the species in the Eastern Ghats, significantly expanding its known range beyond the Western Ghats and the western Indian subcontinent. The find challenges existing assumptions about the mushroom's habitat preferences and points to the underexplored



Mycology is the study of fungi, a group that includes mushrooms and yeasts.





ecological uniqueness of the Eastern Ghats. Scientists emphasise that such findings are of considerable academic and ecological value, offering new insights into Telangana's fungal diversity and forest ecosystems.

These discoveries not only highlight the importance of preserving lesser-known habitats but also open up fresh avenues for research into fungal biogeography, adaptation and ecological interactions in the region's monsoon fed landscapes.

New species of primrose discovered

In a major botanical breakthrough, researchers have

discovered a rare and visually striking species of primrose called *Primula indica*. Located in the remote and mist-laden slopes of Arunachal Pradesh's Dibang Valley, this new species was identified near Mayodiya Pass at an altitude of approximately 2,550 metres. The finding that was recently published in the peer-reviewed journal *Phytotaxa* is being hailed as a significant addition to India's floral diversity and has drawn attention to the unexplored ecological potential of the Eastern Himalayas.

The discovery was made during a field expedition led by scientists from Bholanath College and CSIR-NEIST Assam (North East Institute

of Science and Technology, a constituent establishment of Council of Scientific and Industrial Research). The species stands apart from its closest relatives such as *Primula Vilmoriniana*, which occurs in parts of China and Myanmar. The closeness to its relatives are based on distinct morphological traits.

P. indica is characterised by shorter petioles, larger yet fewer flowers and a corolla marked by broad and obovate (egg-shaped with the narrower end at the base) violet petals. Each flower measures around 1.2 cm in diameter and blooms from April to July, lending a vibrant violet hue to the rocky landscape during the flowering season.

During the survey, scientists recorded approximately 200 individual plants at the type locality. However, the species' presence beyond this limited zone remains unconfirmed. Due to this restricted data, *Primula indica* has been preliminarily classified as "Data Deficient" under the IUCN Red List criteria, prompting calls for further research to determine its broader distribution and conservation needs. The new primrose species serves as a vivid reminder of the fragile and largely unexplored ecosystems that exist in the Eastern Himalayas.

Botanists say the discovery not only enriches the taxonomic understanding of Himalayan flora but also underscores Dibang Valley's status as a global biodiversity hotspot. It highlights the urgent need for continued scientific exploration and proactive habitat protection, ensuring that rare and endemic species are preserved for future generations.





SAWALKOTE HYDROPOWER PROJECT



Modern hydroelectric plants are increasingly designed with environmental considerations at their core. The Sawalkote Hydroelectric Project is a proposed run-of-the-river project on the Chenab River in the Ramban and Udhampur districts of Jammu & Kashmir.

The project was delayed for decades due to the Indus Waters Treaty (IWT) with Pakistan, which limits India's use of the western rivers (Chenab, Indus and Jhelum), but has been revived after India suspended the Indus Waters Treaty post the April 2025 Pahalgam terror attack.

Capacity: 1,856 MW.

Type: Run-of-the-river hydroelectric project.

Executing agencies: The National Hydroelectric Power Corporation (NHPC) and Jammu and Kashmir State Power Development Corporation Limited (JKSPDC).

Estimated cost: ₹22,704.8 crore.

Power availability

The project is intended to significantly boost the electricity supply in Jammu & Kashmir, particularly during the winter months.

Economic development

It is expected to generate local employment and can contribute to making J&K a power-surplus region for export to the national grid.

Water management

By regulating the Chenab's flow, the project can help with flood

mitigation downstream and support water management for agriculture and domestic use.

Challenges

The project was first conceptualised decades ago and has faced numerous hurdles, including environmental concerns, land acquisition and Pakistan's objections.

Forest clearance

The Forest Advisory Committee (FAC) has given in-principle approval for the diversion of forest land for construction. The project is expected to be commissioned in or after 2032.

A run-of-the-river (ROR) power plant is a type of hydroelectric facility that generates electricity by harnessing the natural, continuous flow of a river without the use of a large dam or reservoir. Water is diverted from the river, channelled through a penstock or canal and directed to turbines to produce power before being returned to the river downstream.





Akash Prime Air Defence System tested

Backdrop

- ▶ **September 2021-** A new version of the Akash Missile – ‘Akash Prime’ was successfully flight tested from Integrated Test Range (ITR), Chandipur, Odisha by intercepting and destroying an unmanned aerial target mimicking enemy aircrafts.
- ▶ **March 2023-** Our Army procured two additional regiments of the air defence system in a deal valued at ₹8,160 crore.
- ▶ **Exercise Astra Shakti 2023-** Firepower demonstration of Akash surface-to-air (SAM) weapon system.
- ▶ Akash system now being exported to Armenia and other nations like the Philippines and Vietnam with Egypt and Brazil reportedly evincing keen interest.

Akash Air Defence Missile System

Manufactured by the Defence Research and Development Organisation (DRDO), Akash is a short-range surface-to-air missile system built to protect vulnerable areas and vulnerable points from air attacks. It has been inducted and operational with the Indian Army and the Indian Air Force.

Features

- ▶ Configured on mobile platforms, the Akash missile system comprises a launcher, a set of missiles, a control centre, a built-in mission guidance system and C4I (command, control, communication and intelligence) centres. It also supports ground equipment along with a radar named **Rajendra** which accompanies each of the missile batteries.

- ▶ The weapons system can simultaneously engage multiple targets in Group Mode or Autonomous Mode and has a built-in Electronic Counter-Counter Measures (ECCM) features to deceive the detection systems.
- ▶ Two advanced versions of the Akash missile – Akash-NG (New Generation) and Akash Prime in service.
- ▶ Both have an operational range of 27-30 km and a flight altitude of around 18 km.
- ▶ Akash Prime has an additional indigenous active Radio Frequency (RF) seeker, with improved accuracy in hitting aerial targets with the system now capable of reliable performance under low-temperature environments at higher altitudes.



Successful trials in Ladakh

On 16th July 2025 Akash Prime weapon system achieved a significant milestone by successfully destroying two aerial high speed unmanned targets at high-altitude in Ladakh. The weapon system has now been customised to operate in altitude above 4,500 metres.

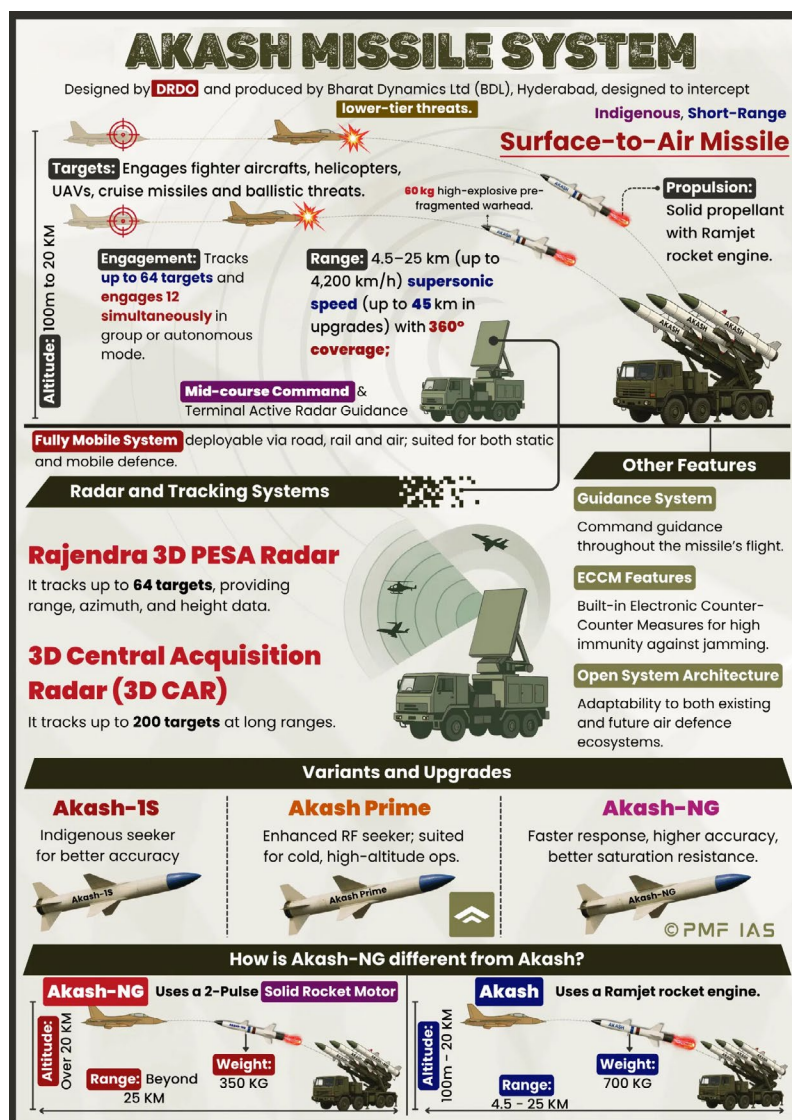
The trials conducted at an elevation exceeding 15,000 feet represents a significant stride in enhancing India's self-reliant defence infrastructure and operational readiness along sensitive border regions and is a transformative moment in its air defence capability having been rigorously tested under extreme weather and terrain conditions.

The surface-to-air missile system achieved direct hits on two high-speed aerial targets, underscoring its precision, reliability and advanced targeting capabilities even in the rarefied atmosphere of the Ladakh region.

Akash Prime incorporates significant technological advancements over earlier variants, notably an improved seeker for enhanced targeting of enemy aircraft and drones, making it a strategic asset for air defence regiments operating in mountainous and high -altitude terrain.

Successful trial validates that the system is an operationally viable in high-altitude deployments which are crucial given the prevailing status along the Line of Actual Control (LAC) and the Line of Control (LoC).

Demonstration of its battlefield relevance was witnessed during the recent Operation Sindoor where it



played a decisive role in countering aerial attacks by Pakistan's use of Chinese-origin fighter jets and Turkish-made drones.

Akash Prime system induction into the Army is the logical consequence and outcome with plans afoot to integrate it into the third and fourth Akash Regiments.

Conclusion

Army Air Defence and DRDO in conjunction with defence PSUs such as Bharat Dynamics Limited & Bharat Electronics Limited and other industry partners

have successfully validated the indigenously designed and developed Akash Prime Weapon System. The trials were done as part of First of Production Model firing trial and will further enable timely induction and enhance the air defence potential in high-altitude frontiers of the country.

The trial exemplifies India's growing expertise in advanced military technology and reinforces our preparedness to respond to evolving threats, marking a significant leap forward in the nation's quest for Atmanirbharatha and regional security leadership.





INS HIMGIRI inducted

Himgiri is equipped with BrahMos anti-ship and land-attack cruise missiles, along with Barak 8 anti-aircraft missiles.

Introduction

Himgiri (Yard 3022), the third ship of Nilgiri-class (Project 17A) and the first of the class built at Garden Reach Shipbuilders & Engineers (GRSE) was inducted into the Indian Navy on 31st July 2025.

Project 17A frigates are versatile multi-mission platforms designed to address current and future challenges in the maritime domain.

Designed by the Warship Design Bureau (WDB) and overseen by the Warship Overseeing Team (Kolkata), P17A frigates reflect a generational leap in indigenous ship design.

INS Himgiri, the second of seven Nilgiri-class Project 17A stealth guided missile frigate was launched at GRSE in Kolkata in 2020.

Himgiri is the 801st vessel to be built and delivered by GRSE. Of these 112 are warships – a record unmatched by any shipyard in the country till date.

HIGHLIGHTS

Himgiri is a 149-metre-long, 6,670-tonne warship and the largest and most sophisticated Guided-Missile frigates built by GRSE in its 65-year history.

Himgiri is equipped with BrahMos anti-ship and land-attack cruise missiles, along with Barak 8 anti-aircraft missiles.

The frigate is powered by a combination of diesel engines and gas turbines and is equipped with advanced AESA radar and modern combat systems.





An AESA (Active Electronically Scanned Array) radar is a sophisticated, computer-controlled radar system that uses a large number of individual transmit/receive modules (TRMs) to electronically steer its beam in different directions, eliminating the need for mechanical movement. It is capable of anti-air, anti-surface and anti-submarine warfare operations. The platform offers advanced survivability and improved operational capabilities.

It is fitted with MF-STAR radar systems by Israel Aerospace Industries, providing multi-

function surveillance and tracking capabilities. Additional armament includes 127mm main guns, 30mm close-in weapon systems and torpedo launch capabilities for comprehensive maritime warfare scenarios.

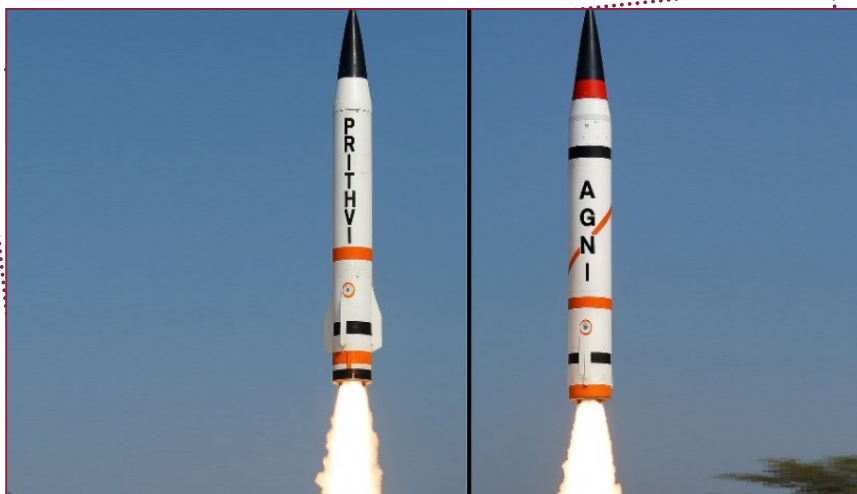
It houses a comfortable accommodation for 225 personnel and provides full aviation facilities for operation of helicopters onboard.

Conclusion

Project- 17 A demonstrates our nation's indigenous capabilities to design, build and integrate systems for modern stealth

combat ships, representing a shift away from foreign dependency in naval construction. The Cabinet Committee on Security approved the Project-17A programme in 2012, with total costs estimated at several billion dollars.

It represents a major leap in naval strike and defensive capabilities with high indigenous content and **the ship stands as a strong symbol of India's self-reliance in defence production.** Delivery of Himgiri reflects Indian Navy's focus on "Aatmanirbharta" in both ship design and shipbuilding.



SUCCESSFUL TESTS OF PRITHVI-II and AGNI-I BALLISTIC MISSILES



Parameter	Prithvi-II	Agni-I
Service entry	2003	2007
Range	250-350 km	700-1,200 km
Launch weight	4,600 kg	12,000 kg
Length	8.56 m	15 m
Diameter	1.1 m	1.0 m
Propellant	Liquid twin-engine	Solid single-stage
Payload capacity	500-1,000 kg	1,000 kg
Warhead options	HE, sub-munition, FAE, nuclear 15-20 KT	HE, sub-munition, nuclear 20-45 KT
Guidance system	Inertial, ring-laser gyro; CEP≤40 m	Inertial + micro-navigation; CEP ≈25-40 m
Launch platform	8x8 TEL	Rail/Road TEL-canister
Primary role	Tactical strike & limited deterrence	Strategic regional deterrence
Fuel prep time	≈2 hr (on-site fuelling)	≤ 15 min (canisterised)
Operational status	Operational; 2+ regiments	Operational; 1 regiment with rotation

Introduction

On 17th July 2025, India successfully conducted a test launch of

- » **Prithvi-II** missile from Launch Pad-3 in the mainland Chandipur, Odisha.
- » **Agni-I** missile from Launch

Pad-4 on Abdul Kalam Island (Wheeler Island).

The Strategic Forces Command (SFC) successfully fired both missiles within a two-hour window each demonstrating pinpoint accuracy well within their operational parameters.

The dual launch followed a day after the launch of Akash Prime Missile system in high-altitude trials in Ladakh underlining our military's capability for multi-domain operations.

Strategic significance

The missiles represent India's commitment to indigenous defence technology development and strategic autonomy.

The continued validation of nuclear-capable missiles is intended to reinforce deterrence in South Asia, assuring adversaries of India's ability to respond decisively to any threat. Both exercises highlighted our strategic resolve to safeguard our sovereignty amid complex security dynamics.



Missile tests: Technical overview

Prithvi-II

- ▶ **Range:** Approx 350 km
- ▶ **Payload:** Up to 500 kg
- ▶ Capable of carrying both conventional and nuclear warheads.

Agni-I

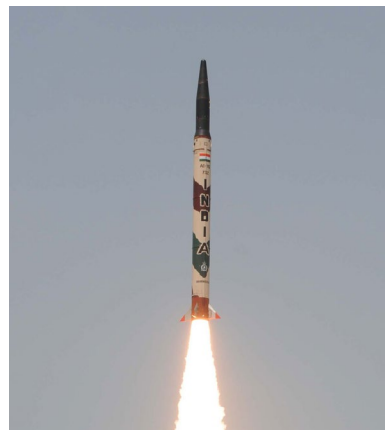
- ▶ **Range:** 700–900 km (approximately 435–560 miles)
- ▶ **Payload:** Up to 1,000 kg
- ▶ Nuclear-capable and designed for quick deployment.
- ▶ Bridges the operational gap between Prithvi-II and Agni-II.

Conclusion

Prithvi-II, India's workhorse tactical missile, emerged from

the Integrated Guided Missile Development Programme as the air force variant designed to bridge the gap between unguided rockets and medium-range systems. First tested in January 1996 and inducted into SFC service in 2003, it has logged more than 25 user trials, including multiple nighttime salvo launches.

Agni-I represents a different technological approach, conceived after the Kargil conflict to extend India's reach beyond the Prithvi's range while remaining shorter than the Agni-II. Repurposing technologies from the original Agni technology demonstrator, it achieved first flight in 2002, and entered service in 2007. The missile's rail and road mobility through canisterised transporter-erector-launchers provides environmental conditioning across India's varied climate zones.



● A **canisterised** missile is stored and launched from a sealed canister. This offers several advantages including protection from the elements, easier transport and a faster, more secure launch process compared to traditionally open-air launched missiles.



TWO CONSECUTIVE FLIGHT TESTS OF PRALAY conducted

Introduction

- ▶ The DRDO conducted two consecutive successful flight tests of the Pralay missile from Dr APJ Abdul Kalam Island off the coast of Odisha recently.

- ▶ The Pralay missile system development began in 2015, with multiple tests over the years proving its capabilities and leading to approval for acquisition by both the Indian Army and Air Force.

- ▶ The recent tests is a significant milestone for its operational induction and deployment.

Strategic necessity

The Pralay missile was conceived after an overarching thorough approach





- » To develop indigenous defence capabilities in response to emerging regional threats and the need for autonomy.
- » Reduce dependency on foreign military technology while building own capabilities.
- » Inventory of both our adversaries housing tactical ballistic missiles.

Technical specifications and advanced features

The Pralay missile differs from conventional ballistic systems with its quasi-ballistic trajectory, amid-air makeover to evade missile defence as it follows a low-altitude, depressed trajectory dramatically reducing its radar signature and detection time unlike traditional ballistic missiles that follow predictable high-arching trajectories.



Propulsion system: A two-stage solid-propellant rocket motor with a Manoeuvrable Re-entry Vehicle (MaRV) technology.

» **Speed:** Approximately Mach 6.1, making it very fast in the terminal phase.

» **Guidance system:** Equipped with an inertial navigation system and integrated avionics, high-precision targeting with a circular error probable (CEP) of less than 10 metres.

» **Launch platform:** It is a road-mobile and can be launched from an 8x8 BEML Tatra Transporter Erector Launcher, providing mobility and rapid deployment capabilities.

» **Weight:** Approximately five tonnes (about 4.9 to 5.5 tonnes).

» **Warhead:** Capable of carrying conventional

warheads weighing from 350 to 1,000 kilograms, including high-explosive fragmentation, penetration-cum-blast (PCB), and runway denial submunitions (RDPS).

» **Defence penetration, survivability and effectiveness:** Pralay is a versatile, high-speed tactical missile designed for precise and survivable battlefield strikes with enhanced mobility and evasion capabilities.

The Pralay missile's capabilities place it in direct comparison with some of the world's most advanced tactical ballistic missile systems.

Integration and employment

Pralay missile is expected to be inducted into our proposed Integrated Rocket Force alongside Nirbhay cruise missile, BrahMos supersonic cruise missile and Pinaka multi-barrel rocket launcher representing a significant evolution in our military doctrine, providing commanders with ladder strike capabilities across multiple range bands and target sets.

Our defence forces have already approved acquisition of significant quantities of Pralay missiles, with reports indicating orders for 250 units by the Army and 120 units by the Air Force. These missiles are expected to be deployed along India's northern and western frontiers in a dual role both in tactical battlefield employment and strategic deterrence missions.

Conclusion

Pralay system represents a landmark in our battlefield strike capabilities, embarking on self-reliance in advanced defence technologies and strengthening the nation's deterrence posture in a security environment filled with complexities.





Cooking Utensils

When we talk about health, diet or natural living, our minds often go straight to food — the grains, vegetables, spices, oils and fruits we consume. Yet, in this deep exploration of holistic wellness, we often overlook a crucial factor that silently influences our health: the **utensils in which food is cooked, stored and served**. From Ayurveda to everyday Indian traditions,

cooking vessels have always played a vital role not only in determining taste and nutrition but also in ensuring long-term health.

In the age of convenience, we see kitchens dominated by non-stick pans, plastic containers and disposable cutlery. While these may save time or effort, they come with invisible costs, toxic residues, nutrient loss and even long-term health risks. Ancient

India, however, placed as much importance on **choosing the right vessel** as on **choosing the right food**. Today, rediscovering these natural practices offers a way to live in alignment with both health and sustainability.

The modern challenge – Non-stick cookware and plastics

Non-stick pans, coated with Teflon, have become synonymous with urban kitchens. They are lightweight, easy to clean and require little oil. However, their dark side emerges under high heat, where toxic chemicals in the coating can seep into food. Long-term exposure to these toxins has been linked to respiratory issues, hormonal imbalance and even cancer.

Similarly, the modern craze for microwaving in plastic bowls





or sipping hot chai in paper cups lined with plastic has added to the invisible chemical burden on our bodies. Even so-called “microwave-safe” plastics can release **bisphenol A (BPA)** and other harmful compounds, especially at high temperatures. These not only damage nutrients in food but also leave behind residues that disrupt metabolism and immunity.

India’s natural living ethos reminds us that food must be pure not just in source, but also in preparation. Utensils matter because **food, heat and vessel together form a subtle alchemy that decides whether what we eat will heal us or harm us.**

Ayurveda and the science of metals

Ayurveda, India’s ancient science of life, has always emphasised the **therapeutic qualities of metals.** Every utensil was chosen with care, with knowledge of how it would interact with different types of food.

» **Iron vessels:** Cooking in iron skillets or *kadais* was once a household norm. Apart from their durability, they naturally leach



small amounts of iron into the food, thus helping prevent anaemia and strengthening the blood. In fact, curries cooked in iron vessels are still praised for their rich colour and deeper taste.

» **Copper and brass utensils:** Ayurveda valued copper for its antimicrobial properties. Drinking water stored overnight in copper vessels was said to balance the three doshas — *vata*, *pitta*, *kapha*. Brass too was considered beneficial, but both metals are unsuitable for cooking salty or acidic foods, as chemical reactions may occur. Their best use lies in **storing water or dry foods**, which stay purified and enriched.

» **Aluminium:** A modern entrant, aluminium gained popularity because of its light weight and quick heating properties. But Ayurveda and modern science alike warn against it. **Aluminium reacts with acidic vegetables and spices, potentially causing neurological and digestive disorders over long-term use.**

Thus, while metals have their benefits, the Indian approach was always discerning: **not all metals are fit for all foods.**

The wisdom of clay and earthen pots

Cooking in **earthen vessels** is one of the most beautiful traditions of India. Long before the term “eco-friendly” became fashionable, clay pots symbolised sustainable living. The clay is alkaline in nature and when heated, it interacts with the acidic components of food to balance pH and aid digestion.

Earthen pots also have a unique porous quality. They allow slow evaporation, which not only enhances flavour but also ensures that nutrients like calcium, iron, magnesium and sulphur are



retained. Food cooked in clay pots needs less oil, as the vessel helps hold natural moisture and aroma. Think of slow-cooked biryani or sambar in a mud pot — the taste is unmatched.

However, traditional clay cookware demands patience. It takes longer to cook, and cleaning is not as easy as scrubbing a steel pan. **More importantly, one must avoid glazed clay utensils**, as glazes often contain lead or chemical paints. True natural cooking lies in **unglazed, sun-dried and kiln-baked clay pots.**

Stainless steel – The modern ally



In contemporary times, **stainless steel** has emerged as a safe and practical alternative that blends tradition with convenience. High-quality stainless steel is non-reactive, meaning it doesn’t interact with acidic or alkaline foods. It retains nutrients, does not leach harmful chemicals and works across cooking methods — frying, steaming or boiling.

It is also durable, scratch-resistant and compatible with



induction stoves, making it suitable for modern homes. The only caution is to ensure the utensils are **food-grade**; poor-quality steel may release traces of nickel or chromium.

From an Indian perspective, stainless steel also resonates with cultural practices. Steel tumblers, plates (*thalis*), and bowls (*katoris*) are still used in countless households. They are easy to maintain, last for decades and are considered purer than plastic or glass in many rituals.

The danger of plastics and disposables

The convenience of **plastic containers, disposable cutlery and paper cups** hides long-term harm. At weddings, events and tea stalls, it is common to see hot liquids served in disposable cups. Most paper cups are lined with polyethylene (PE) or polylactic acid (PLA), which, under heat, release microplastics into the beverage. **Research shows a single paper cup of tea can release thousands of microplastic particles within minutes.**

The Indian perspective of *ahimsa* (non-harm) extends not only to people but also to the environment. Plastics are synthetic,



non-biodegradable and toxic to ecosystems. Thus, while using disposables may sometimes be unavoidable, the natural alternative lies in **eco-friendly cutlery made from sugarcane bagasse, banana leaves or areca nut palm. Bagasse-based plates and spoons, for instance, are biodegradable, safe and sustainable.**

Living Naturally – An Indian kitchen

To live naturally in the Indian way means choosing cookware that honours both body and environment. A traditional kitchen once combined the strengths of many materials:

- » **Clay pots** for gravies, rice and slow-cooked dishes.
- » **Iron *kadais*** for frying and curries rich in spices.
- » **Copper vessels** for storing water.
- » **Brass and bronze plates** for festive meals.
- » **Stainless steel** for everyday cooking and serving.
- » **Banana leaves or areca plates** for community feasts.

This diversity of utensils was not random but based on centuries



of observation, science and cultural wisdom. Each vessel added its own subtle “medicine” to food, creating a harmony of taste, nutrition and health.

In today’s fast-paced world, it is tempting to opt for quick solutions — a microwave dinner in a plastic box or frying parathas on a non-stick pan. But India’s wisdom teaches us that **health is not just about what we eat but how and where we cook it.**

Iron, clay, copper and high-quality stainless steel stand as allies of natural living, while plastics, aluminium and glazed pottery must be avoided. Choosing utensils with awareness allows us to reclaim the subtle power of cooking to transform raw ingredients into healing food.

By returning to traditional vessels, or at least balancing them with safe modern options, we can ensure our food carries not just flavour, but also life force. **In this way, the Indian kitchen becomes once again a place of nourishment, sustainability and sacred care — echoing the truth that in natural living, even the smallest choices, like a cooking pot, shape our health and future.**





Dr. Satyavati Motiram Sirsat

Holistic education along with arts, dance and culture rooted in our country's ethos widened Dr. Satyavati's outlook.

Satyavati was born in a Gujarati family in Karachi a hundred years ago. As her father was involved in shipping ventures, their family had to move and stay at different places. Though this was not easy, it helped little Satya to appreciate many cultures and learn many languages. As members of the Theosophical Society, her parents chose Besant Memorial School in Chennai founded by the vibrant visionaries Rukmini and George Arundale. Holistic education along with arts, dance and culture rooted in our country's ethos widened her outlook. "During my early teens, I read a fascinating book by Paul de Kruif, *The Microbe Hunters*, which left a lasting impression on me. Along with formal education, I

also had the advantage of a cultural heritage," reminisced Satyavati about her school days in her biography.

She earned a bachelor's degree in microbiology studying at St. Xavier's College in 1947. Recalling her laboratory days, "My first look through an optical microscope at a smear of a mixed gram-positive and negative culture of micro-organisms gave me an emotional thrill I can never forget," she exclaimed. After her graduation she went to meet Dr. Khanolkar, the chief of laboratories and the chief pathologist at the Tata Memorial Hospital for Cancer and Allied Diseases. "No phone calls, no appointment - I just stood there waiting to see him.

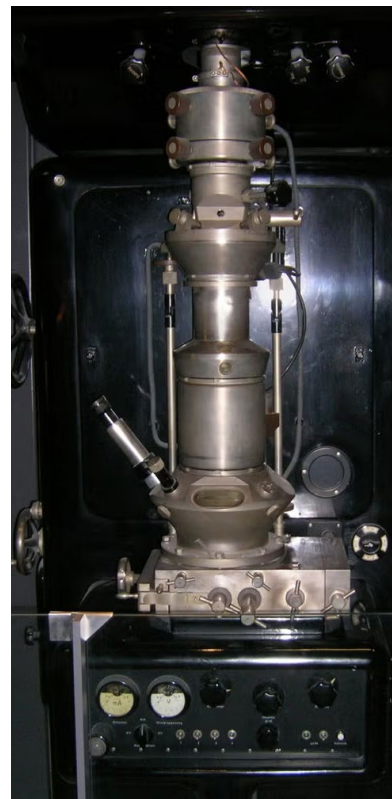


After a two-hour wait, he called me in and we had a long chat. I did not realise that this was his way of interviewing the young. I acquired a broad-based scientific and artistic vision from him,” observed Dr. Sirsat with gratitude. Thus started her research journey in the department of pathology, which made an impact in the life of millions.

In 1948, when the Department of Pathology was made into a full-fledged Cancer Research Institute, this senior doctoral student eventually became a founder-member of the new research centre. Three researchers were selected to go abroad to learn and bring back the then newly established techniques in genetics, tissue culture and electron microscopy. One among them, Satyavati recalled this enriching learning experience, “along with the methodology of science, I imbibed the scientific culture so vital to modern biomedical research. I worked and learnt in the laboratories of stalwarts of science - Hans Selye, Albert

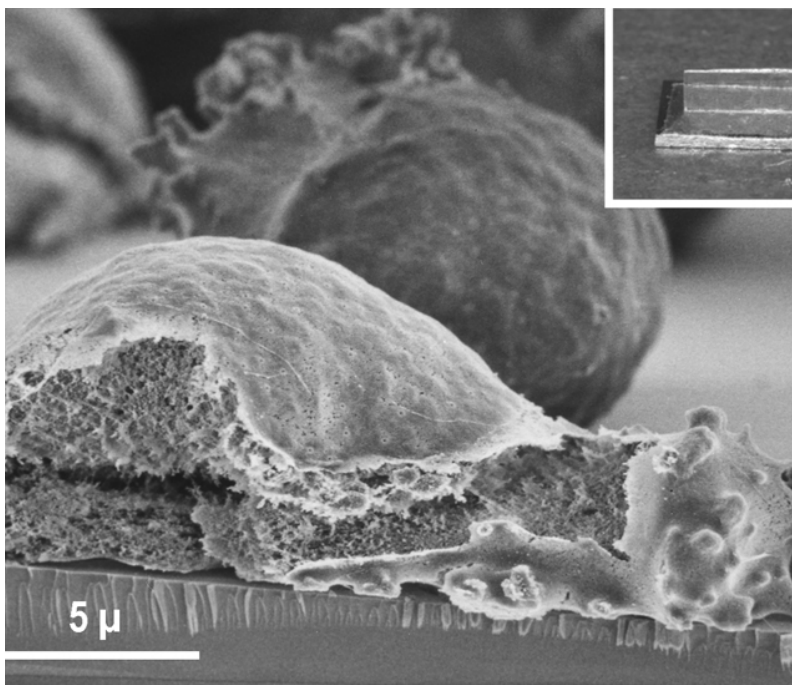
Szent-Gyorgyi, Linus Pauling, Alex Haddow, Charles Oberling and William Astbury.”

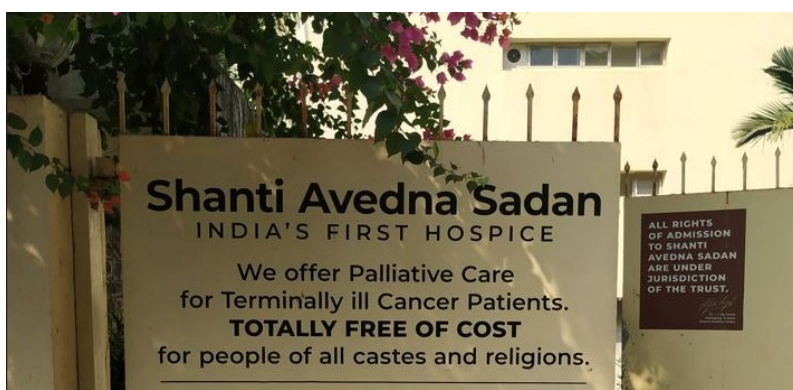
Dr. Satyavati founded the first biomedical laboratory at the Tata Cancer Research Institute which became globally famous for its work. She established an electron microscopy lab paving the way for ultrastructural cytology and diagnostic molecular pathology in our country. This helped researchers to get a thorough insight on the cellular structure and improved ways for disease diagnosis by examining the condition of molecules within organs. Her group focused on understanding the transformation of cell membranes from normal to abnormal and then into cancerous cells, the secondary spread of cancer, viruses and haematological, breast and nasal cancer. Her husband Dr. M. A. Sirsat, an internationally known onco-pathologist was supportive in their personal and professional life. “He was a very popular teacher of young aspiring pathologists. Whenever I had a problem with



the complexities of this dreadful disease, he solved it with patience and affection. It was a wonderful partnership.”

She founded the Electron Microscope Society of India and served as its President from 1967 to 1972. She did exhaustive study on fibre and tissue structures of human cancers. “Our main stress was on oral precancer - leukoplakia and oral submucous fibrosis — and frankly oral cancer rampant in our motherland due to the habit of lime-based paan and tobacco chewing. I was always aware of the teeming suffering humanity in the corridors of the hospital. Besides electron histochemistry, immune electron microscopy, electron auto radiography, cryoelectron microscopy, we were aware of the human aspect of our work,” wrote Dr. Satyavati. Driven by passion to serve the suffering, she founded the **Shanthi Avedna Ashram (Sadan)** - India’s first hospice to take care of the terminally ill cancer patients.





She worked for more than two decades with the Bharatiya Vidya Bhavan Ayurvedic Centre on ancient insights and modern discoveries. She took up research on **cancer**

nosology of the *Vridhdhatrayi*, the three foundational texts of Ayurveda- ***Charaka Samhita***, ***Sushruta Samhita*** and ***Astanga Hridayam***. “It is mind blowing how fully these ancient scholars’ descriptions tallied with modern ones. They had vast knowledge of different tissue tumours and their biological behaviour, benign vs. malignant, bone and haematological cancers. Their only tools were close observation of the human body, the deceased individual and their intuition,” notes Dr. Satyavati based on her extensive research.

Asked about extended hours of research, meeting terminally ill patients and counselling them, “It was not a job; it was a life of *sadhana*

and *tapasya* in the laboratories of Tata Memorial Centre, and indeed the world,” was how Dr. Satyavati summarised her entire life. After her superannuation, she continued to contribute as the chairperson of the Tata Memorial Centre’s medical ethics committee.

She was a great human being having multifaceted talent including proficiency in dance, classical music, humour, philosophy and great love for book collection. She was well versed with many languages including Gujarati, Tamil, Kannada, Marathi, Hindi, English and French.

A few final words from this great scientist to young aspirants, “Do you want the honoured label of a scientist? The tenets of life are strict! Be honest to your work and true to yourself. Be disciplined. Never disparage the work of your fellow scientists. Be observant - never distort your log or show records to fit a preconceived theory. **Above all, life is to learn - so learn, learn and learn! You are on the greatest adventure - exploration of nature’s secrets!**”



Yanung Jamoh Lego is a famous herbalist known for her remarkable achievements in healing patients through herbal and traditional medicine. They had been suffering from life-threatening diseases and lost hope in modern-day allopathic treatment.

Early life

Born on 9th July 1963 in Sika Tode village, East Siang district, Arunachal Pradesh, Lego showed her passion for the centuries-old legacy of herbal healing. After completing her B.Sc. and M.Sc. from Assam Agricultural University, Jorhat, Assam, she joined the Department of Agriculture, Government of Arunachal Pradesh in 1988, where she served as an Agriculture Inspector until her retirement in July 2023.

Journey into herbal healing

In 1981, inspired by her father, Lego embarked on a journey to become a herbalist. After a 15-year-long apprenticeship under her father's tutelage, in 1995, she began her practice as a herbal healer, drawing on the knowledge passed down through generations and guided by her father's wisdom.



YANUNG JAMOH LEGO

Over the past 29 years, she has cured more than 3,00,000 patients, including those suffering from many types of cancer such as blood cancer, lung cancer, breast cancer, stone problems, epilepsy, skin diseases, infertility, leprosy, Malaria, typhoid, dengue, Japanese Encephalitis, stroke, asthma, sinusitis, thyroid, heart and lung problems, gynecological problems, gastritis, gastric ulcers, cysts, tumors, etc., and various other life-threatening diseases. Her dedication to herbal healing has not only saved lives but also revived people's faith in traditional medicine.

Lego's impact extends beyond her practice. In 2009, she founded "**Indigenous Herbal Heritage**," an organisation that promotes the cultivation of medicinal plants. Through this initiative, she has educated over 1,00,000 individuals about the benefits of herbs, encouraging them to grow plants in their kitchen gardens. The organisation plants 5,000 medicinal plants annually, aiming to create a sustainable future for all.

Recognition and awards

For her exceptional contributions, Lego has received numerous accolades:

- » **SRISTI Samman Award** (2007)
- » **Paramparika Vaidya Ratna Award** (2013)
- » **Arunachal Pradesh State Award** (2019)

She inspires future generations to value and preserve the deep-rooted traditions of herbal healing.





Notable awards of India

I Choose the right option based on the description given below:

1. A series of Indian civilian awards conferred for acts of humane courage in saving the life of another person in various dangerous situations.
2. These awards recognise outstanding contributions from individuals/institutions empowering persons with disabilities and achievements of individuals with disabilities.
3. An annual Indian sports award given to recognise and honor the University with the best all-around performance in sports.
4. The highest civilian honour for children in India, awarded annually to recognise children aged 5-18 for their exceptional achievements in various fields.
5. Honouring this person, the National Adventure Award recognises individuals' spirit of endurance, risk-taking and teamwork in land, water and air adventures.
6. Honouring a great leader, the National Unity Award is given to recognise an Indian citizen who has contributed towards promoting national unity and integrity of India.

Sardar Patel	Maulana Abul Kalam Azad Trophy	Tensing Norgay	Jawaharlal Nehru
Pradhan Mantri Rashtriya Bal Puraskar	Divyangjan Award	Jeevan Raksha Padak	Edmund Hillary

II Are these statements correct about the Indian awards? If incorrect, justify your answer.

1. Padma Shri is ranked higher than Padma Bhushan.
2. The Bharat Ratna can only be awarded to Indian citizens.

III Praja readers are sure to have a good knowledge about the gallantry awards. Can you group the below given awards in to the two categories mentioned?

Recap : Wartime awards are for acts of bravery in the presence of the enemy, while peacetime awards are for acts of courage and self-sacrifice away from the battlefield.

Ashok Chakra	Vir Chakra	Shaurya Chakra
Param Vir Chakra	Kirti Chakra	Maha Vir Chakra

War Time Awards

Peace Time Awards

Match the following awards with the fields they are related to

Name of the Award	Field related to the award
1. Jnanpith Award	A. Sports
2. Shanthi Swarup Bhatnagar Award	B. Science
3. Nari Shakti Puraskar	C. Literature
4. Arjuna Award	D. Women empowerment

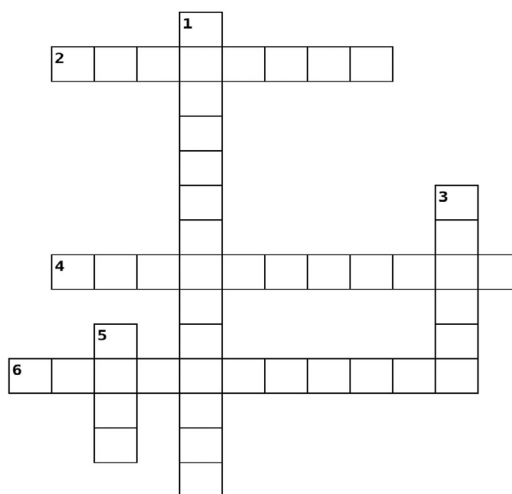
V Crossword

Across

2. Subhash Chandra Bose Aapda Prabandhan Puraskar recognises the excellent work done by individuals and institutions in India in the field of _____ management.
4. Highest Civilian Award in India.
6. A sports award presented to the coaches for their outstanding contribution to sports coaching.

Down

1. Highest Gallantry award.
3. Dada Saheb Phalke Award is given for outstanding contributions in which field?
5. Major Dhyan Chand Khel Ratna Award is given to outstanding performance in sports over a span of how many years?



Answers on page 66





[Two students are meeting during a break in the school premises.]



Ved: Hello Vyas, how are you doing?

Vyas: Am fine Ved. Long time indeed. Did you hear the buzz around? Everyone seems to be talking about genAI these days.

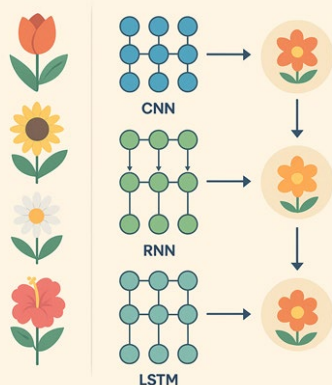
Ved: Yes Vyas. GenAI is the most happening thing now. Do you know what it's all about?

Vyas: Oh, not really. I'm eager to know.

Ved: Sure, my pleasure. GenAI stands for "Generative Artificial Intelligence".

HOW NEURAL NETWORKS LEARN TO RECOGNIZE FLOWERS

By training on a wide variety of flower images, models like CNN, RNN, and LSTM learn to extract common patterns and features, enabling them to identify new flowers.



Developments in Generative AI

Vyas: Oh, how did this all begin?

Ved: Artificial intelligence [AI] discussion began in late 1950s and has been a stream of education since 80s and 90s. Machine learning – commonly referred as ML – is a means to achieve AI. In ML – various algorithm like Convolutional Neural Networks [CNN], Recurring Neural Networks [RNN], Long Short-Term Memory [LSTM] play role in training the neurons – yes like the neurons humans talk about – with volumes of data and make sense out of them. At the end of the training, various models emerge which can help with reasoning, decision making, pattern matching etc.

Vyas: Sounds interesting, tell me a little bit more about ML.

Ved: The traditional ML algorithms mentioned above would work under – Supervised learning and Unsupervised learning. In supervised learning, a portion of the data – typically 80% is used for training and remaining 20% is used to test the efficiency of the model prediction based on the training done. In unsupervised learning, typically algorithms are used to identify pattern from huge volume of data and find correlation between

the data and make meaningful inference.

For example, by training the model with a wide variety of flowers, the model learns the features of flowers and gets the ability to identify any new flowers introduced to it. Even though each flower has a unique feature, the model will be able to recognise common feature/patterns across and develop the ability.

Vyas: So, is genAI some form of ML?

Ved: Yes, genAI goes one level above ML. Traditional ML models help you learn from your data and predict and reason, but genAI makes new data like image, video, audio etc., to be generated using the current data.

Vyas: That is interesting, do you mean totally new images, videos etc., can be generated automatically?

Ved: Yes, it is for this reason there is a lot of buzz and action around GenAI.

Vyas: How will things be in future?

Ved: I'll tell you little by little so you can understand it better. There goes the bell. We need to get back to our classes. Let's catch up again soon. Bye!

Vyas: Sure! Bye!





Early life and background

Kartar Singh was born on 24th May 1896, in Punjab, into a humble Sikh family. After losing his father early, he was raised by his grandfather. Growing up amid severe droughts, many Punjabis sought better opportunities abroad, leading to significant migration to the USA and Canada. In July 1912, Kartar Singh went to San Francisco, intent on pursuing education at the University of California, Berkeley.

American hostility

Kartar Singh faced significant hostility as an immigrant in America, particularly due to the prejudice against people from colonised regions. Working as a labourer in California, he became aware of the injustices of colonial rule. Many Indian immigrants gathered to discuss their struggles, fostering a sense of community and resistance.

In 1913, the **Ghadar Party** was established in Oregon, aiming to restore dignity and overthrow British rule in India through armed uprising. San Francisco served as the organisation's headquarters and Kartar Singh actively participated. He contributed to the Ghadar



newspaper's Punjabi edition to raise awareness and encourage support among Indians in America for the independence movement.

In July 1914, as World War I began, the Ghadarites saw a chance to attack the British. They planned to return to India to rally support for their cause. Kartar Singh was arrested by British authorities upon arrival.

Lahore Conspiracy Case

Undeterred, Kartar Singh and others, like Rash Behari Bose,

worked to organise soldiers in Punjab's cantonments. However, the British soon arrested many activists, leading to the Lahore Conspiracy Case, a series of trials against those involved in the planned uprising. Kartar Singh Sarabha stood firm during the trials and boldly expressed his commitment to mobilising the Indian people against the British.

Martyrdom and inspiration

Sarabha's patriotism made the judges severely antagonistic. Sarabha, along with his compatriot Vishnu Ganesh Pingle, was executed in the Lahore Central Jail on 16th November 1915. He was only **nineteen years old when he was hanged by the British authorities**. His bravery, activism and commitment to the cause of the freedom of the Indians were heroic. He became a source of inspiration and courage for the freedom fighters who came later, including Bhagat Singh.





Fort Hansi, also known as Asigarh Fort, is one of the most remarkable forts of North India. Located in Haryana, this fort has witnessed centuries of power struggles and is an exemplar of architectural brilliance. Among its most striking features is the threshold of its entrance, which once stood as the strong barrier between invaders and the rulers inside.

The threshold – A symbol of power

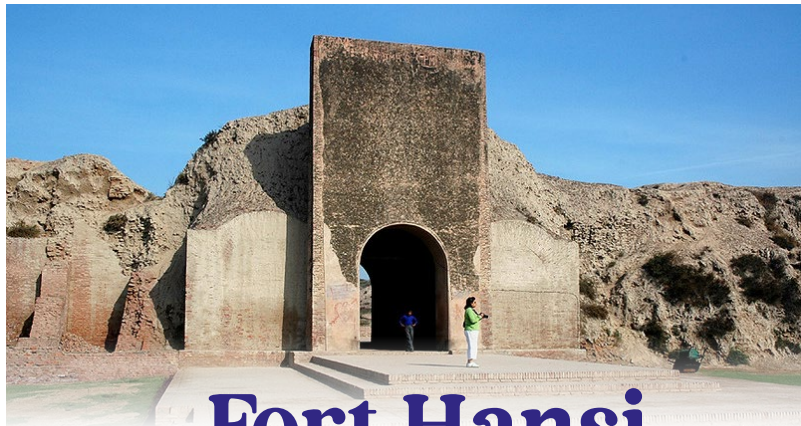
The threshold of Fort Hansi is not just a doorway but a symbol of the fort's military strength. Built with heavy wooden gates and reinforced by iron spikes, it was designed to stop elephants and enemy forces from breaking in. The gateway had multiple arches and supports on either side, creating a powerful first impression for anyone crossing into the fort. Crossing this threshold in ancient times meant entering a world of authority, safety and grandeur.

Architectural highlights

The grandeur of Fort Hansi lies in its strong defensive design and artistic touches.

Massive walls – The fort is spread across 30 acres, with walls nearly 50 feet high and 30 feet thick, built to withstand enemy attacks.

Main threshold gateway – The heavy arched doorway with iron-spiked gates also had guard chambers on both sides.



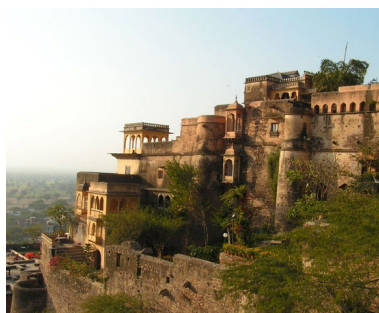
Fort Hansi

The Gateway of history

Bastions (watch towers) – The fort has more than 50 bastions, circular and semi-circular in shape, where soldiers kept watch and fired arrows or cannons.

Mixed architecture – While the base reflects Tomar Rajput style (stone masonry, temple motifs), later rulers like the Delhi Sultans added arches, domes and Islamic designs.

Even today, though partly in ruins, the threshold gateway and walls stand as living examples of medieval military engineering.



DO YOU KNOW ?

- Fort Hansi once housed 80 temples, which gave it the name “Asigarh” (Fort of Swords).
- The fort was so strong that it was called the “Gateway to Delhi” during medieval times.
- Archaeologists found ancient Jain idols and coins inside the fort, showing its rich cultural heritage.

Location	Hansi town, Hisar district, Haryana
Nearest airport	Indira Gandhi International Airport, New Delhi (about 150 km)
Nearest railway station	Hansi Railway Station (local), Hisar Junction (30 km away)
Best time to visit	October to March (pleasant weather)





Malti Murmu

A light in the hills

In the quiet, underdeveloped village of Jiling Seren, tucked away in West Bengal's Purulia district, a single act of determination is bringing a profound change. While the nearby Ayodhya hills attract tourists, this hamlet, located 25 km from the hilltop, has long been a place untouched by progress. Here, a simple homemaker named Malti Murmu is proving that one person's commitment can light the way for an entire community.

When Malti arrived in Jiling Seren in 2019, she was struck by the absence of formal education. A nearby primary school existed, but many students, who were first-generation learners, showed little interest. This lack of engagement became a full-blown crisis during the 2020 COVID-19 lockdown. For a community where daily labour was the norm, online classes were a farce, and children quickly fell out of the habit of studying. Recognising the long-term damage

this could cause, Malti, who had passed Class 12, decided to take action by starting a free education centre in her own home.

Her initiative was met with scepticism. Villagers doubted whether she could educate so many children, and she had to first convince her own family before going door-to-door to persuade others. Her unwavering resolve eventually won them over. With her husband Banka Murmu, now a proud supporter, her student count has grown to 45.

Malti's teaching style is both unique and effective. She often teaches with her two-month-old child in her arms, a testament to her dedication. Her lessons go beyond the curriculum, as she teaches in Bengali, English and the indigenous Santali language, while also working to dispel superstitions and foster a scientific mind-set among her students. Her passion has inspired the community to

rally around her, helping to build a thatched hut that serves as a proper classroom.

Despite this progress, the school still faces significant challenges. The lack of proper infrastructure—no benches, only two blackboards—is a major hurdle. Malti and her husband have also found it difficult to secure consistent support, as several NGOs that initially offered help eventually left.

Yet, Malti's story has not gone unnoticed. Chandrashekhar Kundu, a prominent educationist, has promised to visit the village to offer his support. He aims to help her introduce smart education, ensuring that Jiling Seren's children have access to the same opportunities as those in more developed areas. Malti's hope is that her efforts will inspire government bodies and voluntary organisations to join her noble cause, allowing the light of education to spread far beyond her small village.



Answers

Answers of page 61

I Awards

1. Jeevan Raksha Padak
2. Divyangjan Award
3. Maulana Abul Kalam Azad Trophy
4. Pradhan Mantri Rashtriya Bal Puraskar
5. Tenzing Norgay
(Award: Tenzing Norgay National Adventure Award)
6. Sardar Patel
(Award: Sardar Patel National Unity Award)



II True or False

1. False (Order: Bharat Ratna > Padma Vibhushan > Padma Bhushan > Padma Shri)
2. False (It can be awarded to foreigners too, e.g., Nelson Mandela, Khan Abdul Ghaffar Khan)
3. True



III Gallantry awards

War time awards - Param Vir Chakra, Mahavir Chakra, Vir Chakra (From the highest order)

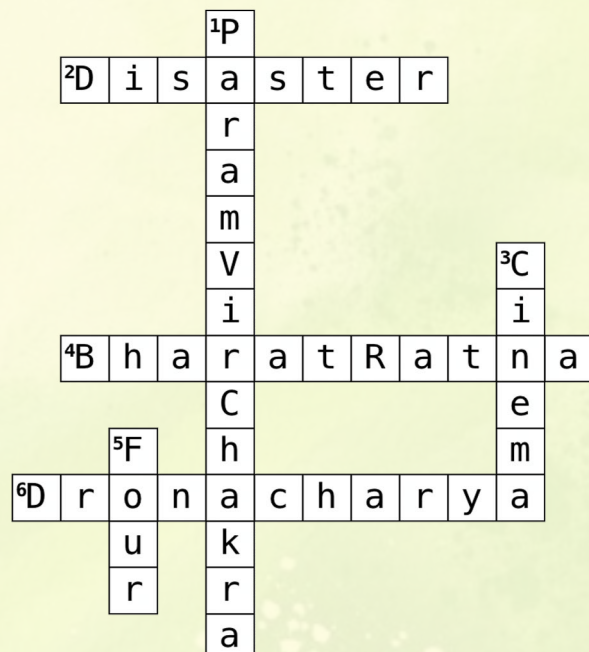
Peace time awards - Ashok Chakra, Kirti Chakra, Shaurya Chakra (From the highest order)



IV Awards and their fields

1. C. Literature
2. B. Science
3. D. Women empowerment
4. A. Sports

V Crossword



CRPF

Foundation Day



The old name for the Central Reserve Police Force (CRPF) was the Crown Representative's Police. It was established under this name and was renamed the Central Reserve Police Force with the passing of the CRPF Act in 1948.

27th JULY





12th August

World Elephant Day

Interesting facts about elephants

An elephant's trunk is a versatile tool made of tens of thousands of muscles, used for smelling, drinking, grasping and communication. The African bush elephant holds the title of the biggest land animal on Earth. The gestation period for an elephant is a remarkable 22 months, the longest of any mammal. Within about 20 minutes of birth, a newborn elephant can stand and keep pace with the herd in just a couple of days.

