

PRAJYA

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Gaganyaan Astronauts



MIRV



GROUP CAPTAIN
PRASANTH
BALAKRISHNAN NAIR



GROUP CAPTAIN
AJIT
KRISHNAN



GROUP CAPTAIN
ANGAD
PRATAP



WING COMMANDER
SHUBHANSHU
SHUKLA



One Missile - Many Weapons



Let us love whales and save them from the aquatic hunters to save this planet

Happy
World Pangolin Day

17th February



SAVE PANGOLINS

Let's celebrate this day by raising awareness about the endangerment of this beautiful and underappreciated mammal





Published by:

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Editorial Board:

Smt Mali Nandakumar
Educational Consultant

Shri Nandakumar V
Educational Consultant

Smt Nandhini S
Principal | D.A.V. Sec School, Mogappair

Student Contributors:

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Kum Adwaita B | Class X

Teacher Contributors:

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Smt Sarada Devi Ravutu
Kum Shrivaisnavi R
Smt Silpa Nandakumar
Smt Shubha T R

Independent Contributors:

Kum Anu Narayan
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Smt Archana Sundar
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Kum Deepasri
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Smt Sumathi Ramakrishnan
Kum Sunita D Behera
Smt Uthra Dorairajan
Smt Vaishnavi V
Smt Vanaja Shankar

Technical Editor :

Shri Guhaprasath Subramanian

Creative Design :

Shri Ram Manohar R
Sri Hari Digital Ventures P Ltd.
AVG Graphics

COMMENTS & SUGGESTIONS

prajya.magazine@davchennai.org

FROM THE EDITOR'S DESK

"The real voyage of discovery consists not in seeking new landscapes, but in having new eyes."

- Marcel Proust

A group of scientists researching in the Amazon forests have discovered the world's largest snake species - **Northern green anaconda**. The Australian professor who has been studying the anaconda species for 20 years had just chanced upon the fact that the newly discovered species split off from its closest relatives 10 million years ago, but looks identical to the other known species.

Astronomers working with the International Astronomical Union have spotted **new moons circling Uranus and Neptune**, the farthest planets of our solar system, using powerful land-based telescopes at various locations. This was possible because dozens of long-exposure photographs over many nights by a few of the largest telescopes provided the astronomers more detailed pictures of the surroundings of these distant planets than earlier.

After meticulous examination of its morphology, anatomy and molecular characteristics, the **head-shield sea slug with ruby red spot** along the coasts of West Bengal and Odisha, has been declared as a new marine species and even named after our honourable President Draupadi Murmu.

Over **840 million tonnes of iron ore** in Khoda, Dadaroli, Todupura and Liloti near Hindon in Karauli have been discovered by the Rajasthan Mines Department. These deposits are found to contain haematite and magnetite ores.

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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India sends sacred relics of Buddha to Thailand



DO YOU KNOW ?

- ♥ **Hard power** - military invasion and economic sanctions.
- ♥ **Soft power** - the capacity to persuade others to do what one wants.

India believes in '*Vasudhaiva kutumbakam*' (The world is one family) and this is evident in its diplomatic relations with other countries. As a measure to project soft power through Buddhist culture, the Indian government sent the relics of Lord Buddha and his disciples, Arahant Sariputta and Arahant Maha Moggallana, in February which were on display for 25 days in four cities of Thailand.

As the relics reached Bangkok, a guard of honour was given after which they were received by Srettha Thavisin, Prime Minister of Thailand, and his council of ministers. Their exposition in Thai cities was arranged to mark the 72nd birth anniversary of King Maha Vajiralongkorn. The King and his wife visited the sites and viewed the relics.

The relics of Lord Buddha are drawn from the National Museum in New Delhi and were excavated at Piprahva in Kapilavastu, while the relics of the disciples are from a monastery at Sanchi in Madhya Pradesh.

About 100,000 people visited the pagoda that was custom-built for the relics. Besides Thai devotees, people from Cambodia, Laos and Vietnam also visited the site in Bangkok to pay homage to the relics.





New Leaders across nations



Shehbaz Sherif



The new **Indonesian President** is **Prabowo Subianto** (72). His paternal grandfather Mogarno was founder of State Bank Negara Indonesia and father Sumitro was an economist who served under President Sukarno in the 1960s. Owing to differences with Sukarno, Sumitro lived in exile in different countries across Asia and Europe. Thus, Prabowo was exposed to international education.

He graduated from Indonesian Military Academy in 1970 and served mostly in Special Forces and led the strategic reserve command in 1998. During his military years he had led a team which freed hostages from the clutches of extremists. The hostages were soil study scientists from different countries. In 1983, Prabowo married Titiek Suharto, second daughter of Late President Suharto. Considered a right wing nationalist, he formed the Gerindra Party and contested in 2009 and 2019 but was unsuccessful. Serving as Defence Minister from 2019 to 2024, he was again nominated

as the Presidential candidate for 2024. Prabowo Subianto has taken Turkish military figure Atatürk as his role model.

Shehbaz Sherif (72) was sworn in as the new **Prime Minister of Pakistan** on 4th March 2024. He is the younger brother of former PM Nawaz Sherif. Shehbaz too was CM of Punjab thrice. The election results were marred by severe allegations of vote rigging.

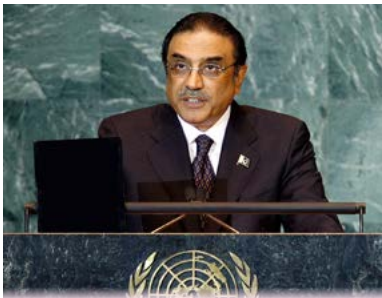
According to Sharif, the biggest challenge is Pakistan's economic situation, which is always dependent on foreign aid. Other problems include terror attacks, relationships with the neighbors, crumbling infrastructure, and year-round power outages.

Asif Ali Zardari (68), has taken over as the 14th **President of Pakistan**, serving since 10th March 2024 after coalition agreements with Sherifs, the other political dynasty.

He is the widower of PM Benazir Bhutto. During her rule, he had enmity with Bhutto's brother Murtaza, culminating in the latter's



Prabowo Subianto



Asif Ali Zardari



Feleti Teo



Tamás Sulyok



murder on 20th September 1996. Following this, Bhutto's government was dismissed by President Leghari and Zardari was arrested. He was in jail till 2004 and then self-exile in Dubai. Riding on sympathy wave after his wife Benazir's assassination in December 2007, Zardari led his party to victory in the 2008 general elections.

He also spearheaded a coalition that forced military ruler Pervez Musharraf to resign. In spite of public disapproval, Zardari was a staunch ally of the USA, especially during their war years in Afghanistan. The Pakistani presidency is largely a ceremonial role.

Former Attorney General **Feleti Teo** (61) has been appointed **Prime Minister of Tuvalu** without election, by the 15 law makers of the nation. Teo's predecessor was one of the very few heads of countries, to recognize and have ties with Taiwan. This angered China, which always considered Taiwan as belonging to them. Would be interesting to know whether the incumbent PM Teo follows the same policy.

Tamás Sulyok (67) is the new **President of Hungary**. He was president of the Constitutional

Court from 2016 until 2024 and represented the Fidesz-KDNP party in the February 2024 presidential election.

The earlier President Katalin Novak resigned following protests over her pardoning an associate in a sexual abuse case.

In his inaugural address, Sulyok assured that he would refrain from participating in Hungary's political life. He also denounced the sanctions and procedures initiated by the European Union against Hungary over concerns in the rule of law and democratic governance. The role of president in Hungary is largely ceremonial.

Tuvalu is one of the Pacific Ocean Islands about 5000kms approximately east of Australia.

The island nation has a population of over 11000, all of whom are followers of Christian religion. The languages spoken are Tuvaluan and English, the latter only for official purposes. With a land area of only 26sq. km. and the highest point just 4.6 metres above sea level, global warming and rising sea level has always been a threat for this and other similar island nations.





Singaporean boy beats Polish Grandmaster



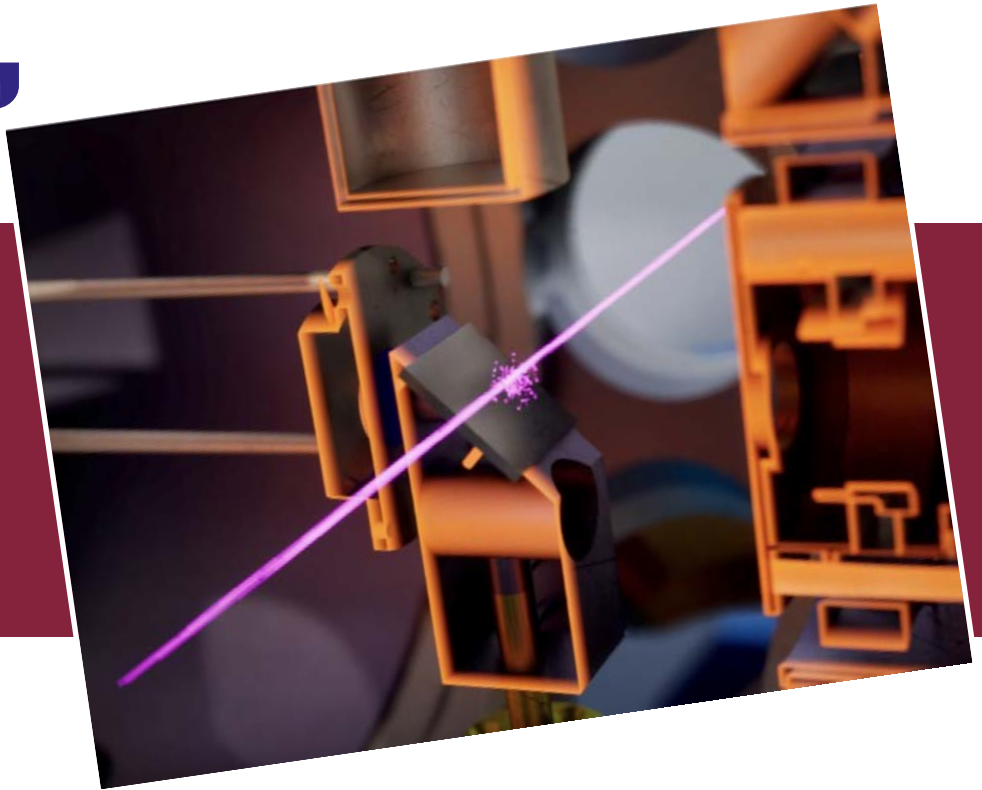
After a 3 hour game at the Burgdorfer Stadthaus-Open on 18th February, **Ashwath Kaushik** could not help but grin widely as he delivered the good news to his mother that he had just beaten Polish Grandmaster (GM) **Jacek Stopa**. At 37, Stopa is nearly five times older than Ashwath, but the boy, who represents Singapore, was unfazed en route to becoming the youngest player to defeat a GM in classical chess.

Ashwath said, "I felt proud of my game and how I played, especially since I was worse at one point but managed to come back from that." Ashwath made waves in 2022 after emerging as a **triple champion** in the chess variations - classic, rapid and blitz at the **under-8 Eastern Asia Youth Championship**.

Ashwath's next goal is to improve his ratings and earn the title of candidate master in chess.

Ashwath was four when his parents introduced him to the game. He plays chess about two hours each weekday, six to seven hours daily on the weekends. He also enjoys building Lego, completing jigsaw puzzles, cycling and going on family outings.

Ashwath is a part of a generation of prodigies that seem to be rewriting the norms of the game with extraordinary results that would be almost unheard of five to 10 years ago. Most kids barely know the chess rules at the age of eight, but now they seem capable of competing with strong titled players. "*8 is the new 12*," GM Anish Giri stated on X/Twitter.



Laser-cooled positronium for quantum research

Anti-matter is a substance composed of subatomic particles that have the mass, electric charge and magnetic moment of the electrons, protons and neutrons of ordinary matter but for which the electric charge and magnetic moment are opposite in sign. For example, an electron is a particle of matter and a positron is its antimatter twin. An electron has a negative charge while a positron has a positive one. A positron and an electron also exhibit opposite magnetic moments.

Researchers at CERN and the University of Tokyo have achieved a significant milestone in the realm of particle physics by laser-cooling clouds of positronium, a hybrid of matter and antimatter. This breakthrough holds the potential to revolutionize our understanding of antimatter and unlock new avenues for scientific exploration.

Positronium, composed of an electron and its antimatter counterpart, the positron, plays a crucial role in advancing modern physics. Scientists create positronium in laboratory settings to study fundamental properties of antimatter, which could offer insights into physics beyond the

Standard Model and the imbalance of matter and antimatter in the universe.

Traditionally, positronium is generated in "warm" clouds, which pose challenges for precise spectroscopic measurements due to the atoms' varying velocities. Laser-cooling, a technique employed by the researchers, involves using laser beams to slow down the motion of positronium atoms, enabling more accurate observations.

The laser-cooling process begins with trapping positrons in a Penning trap, followed by their conversion to positronium in a nanochannel silicon converter. Subsequently, the positronium atoms are collected in a vacuum





Anti-matter does not exist on earth except for the small fraction of antimatter which can be found in controlled lab environments and is produced by humans.

chamber, where they undergo laser cooling by absorbing and re-emitting photons from a laser.

Through this method, the research team successfully reduced the temperature of the positronium cloud from 380 K to 170 K, marking a significant achievement in antimatter manipulation. However, further advancements are necessary to reach optimal temperatures for precision spectral analysis.

Scientists anticipate that laser-cooled positronium could serve as a test bed for fundamental theories in

atomic physics, allowing for precise measurements of energy levels and investigations into the effects of gravity on antimatter. Despite the challenges ahead, researchers remain optimistic about the potential of this ground-breaking technology to unveil new frontiers in particle physics.

The pursuit of understanding antimatter continues to captivate the scientific community, with laser-cooled positronium paving the way for unprecedented discoveries and pushing the boundaries of human knowledge.





New species of Anaconda discovered



A research group, working on the anaconda population for the last 20 years, has chanced upon a new species of anaconda in the Amazon rainforest. Now named the **Northern green anaconda**, it has been found to show significant difference genetically from the known Southern green anaconda.

When the team was investigating the effect of oil spills on anacondas, they happened to take a few samples of the large snakes in the area. The health of anacondas indicates the cleanliness of an ecosystem. The studies involved working closely with these large reptiles. But unexpectedly, they found that there was, in fact, a different species from the single species originally thought to dominate the Amazonian landscape. The southern green anaconda (*Eunectes murinus*) was found to be distinct from the now discovered Northern green anaconda, named *Eunectes akiyama*. A lead researcher of the group, Dr. Freek Vonk has been seen online in a video swimming alongside the giant snake celebrating its discovery.

While the two snakes look identical, the difference lies in their genetic make-up. They show a difference of 5.5% in their DNA, which is a significant amount, since even closely related animals show a much smaller difference (for example, chimpanzees and humans are only different genetically by about 2%). Secondly, they do show a slight difference in habitat: *Eunectes murinus* is found in Peru, Brazil, Bolivia and French Guiana; while the new *Eunectes akiyama* is found in Ecuador, Colombia, Venezuela, Trinidad, Guyana, Suriname and French Guiana. The surprising fact here is the absence of a clear line of geographical divide, which may have led to the emergence of these two species. It has been estimated that these branched into two species from the green anaconda about 10 million years ago.

Dr. Bryan Fry, a renowned Bio-toxicology professor, says that the discovery is helpful in designing appropriate conservation strategies for the snakes, by taking into account their differences.

Techie Ashok Veeraraghavan gets top Texas Award



Upanishads talk about infinite nature of visible things originating from infinite invisible things.

*pūrṇamadaḥ pūrṇamidaṃ pūrṇāt pūrṇamudacyate |
pūrṇasya pūrṇamādāya pūrṇamevāvaśiṣyatell*

Indian American Dr. Ashok Veeraraghavan has done groundbreaking work in revolutionary imaging technology aimed at making the invisible visible.

In recognition of his contribution, **Texas Academy of Medicine, Engineering, Science and Technology (TAMEST)** bestowed on him the Edith and Peter O'Donnell Engineering award, one of Texas' top academic accolades.

Born in Chennai, he earned his B.Tech from IIT Madras in 2002; Masters and Ph.D. from the University of Maryland. He is currently serving as a professor in Rice University, Texas.

Dr. Ashok's study focused on developing solutions for imaging settings where the visualisation objective is hindered by scattering of light in the participating media.

"For example, when you're driving a car and it's foggy, we can't see too far out. Here, fog acts as the scattering medium. When doing biological imaging, the skin acts as the obscurant so you can't see blood cells or the structure of the vascular system," he explained.

His research facilitated in overcoming these challenges and help achieve significant breakthrough. He attributed this award to the innovative research conducted with numerous individuals in Computational Imaging lab at Rice University over the past decade.

DO YOU KNOW ?

Dr. Ashok Veeraraghavan's notable work includes co-developing **Flat-Cam**, a sensor chip with a mask that effectively replaces traditional camera lenses. This innovation can help in various applications like creation of flexible disposable cameras in the field of medicine, security applications etc.





Sweden joins NATO

Sweden formally joined NATO as the 32nd member of the transatlantic military alliance, ending decades of post-World War II neutrality as concerns about Russian aggression in Europe spiked following Russia's 2022 invasion of Ukraine.

Swedish Prime Minister Ulf Kristersson and U.S. Secretary of State Antony Blinken presided over a ceremony in which Sweden's instrument of accession to the alliance was officially deposited at the State Department.

While Stockholm has been drawing ever closer to NATO over the last two decades, the membership marks a clear break with the past, when for more than 200 years, Sweden avoided military alliances and adopted a neutral stance in times of war. After World War II,

it built an international reputation as a champion of human rights. However, increasing tensions with Russia following the annexation of Crimea in 2014 prompted Sweden to deepen cooperation with NATO. This focused on political dialogues, joint training and exercises, and more open sharing of information.

Sweden will add weight to NATO's current strategy of building stronger inroads in the Indo-Pacific through security partnerships. Moreover, Sweden's growing bonhomie with India will become extremely vital. In this context, Sweden's NATO entry will not directly impact its relations with India, but the NATO link will certainly enhance convergence in China as a common threat.

In areas like maritime security in the Indo-Pacific, Sweden has

immediate concerns due to the economic security impact of threats to sea lines of communication. China's aggression in the South China Sea and Taiwan Strait, as well as its growing footprint in the Indian Ocean region, is of global concern.

In the context of the complicated interconnectedness of global energy and goods trade it will necessitate NATO member Sweden to have a concrete security policy for the Indo-Pacific. In this context, Sweden's individual ties with India could facilitate a greater involvement in the longer term.

Looking at the aspect of international relations being in disarray, every effort is required, in revitalizing multilateral institutions for enabling a semblance of true peace and stability.

New moons around

Uranus and Neptune discovered

Astronomers at the International Astronomical Union's Minor Planet Center have found three new moons, **one of Uranus and two of Neptune**. This is the first new moon of Uranus discovered in over 20 years and most likely the smallest. Of the two new moons of Neptune, one is the faintest moon ever to be discovered using ground-based telescopes. According to Carnegie Astronomer Scott S. Sheppard, "it took special image processing to reveal such faint objects."

Uranus' moon

The new Uranian moon, temporarily titled **S/2023 U1**, was first spotted in November 2023 by Sheppard using the Magellan telescopes at Carnegie Science's Las Campanas Observatory in Chile. This moon is only 8kms in diameter and takes around 680 days to orbit Uranus. Including this moon, Uranus has 28 moons, and

this will eventually be renamed after a character from one of Shakespeare's plays like all the other moons of Uranus.

Neptune's moons

Both the Neptunian moons were first spotted by Sheppard in September 2021. The brighter of the two was discovered using the **Magellan Telescope**. Follow-up observations were done in October 2021, October 2022 and November 2023 using the Magellan telescopes to confirm the discovery. Provisionally named **S/2002 N5**, it is 23 kms in diameter and takes almost 9 years to orbit Neptune.

The fainter Neptune moon was discovered by Sheppard using the **Subaru Telescope** in collaboration with David Tholen of the University of Hawaii, Chad Trujillo of Northern Arizona University, and Patryk Sofia Lykawa of Kindai University.

In order to determine its orbit, they had to make special observations under pristine conditions at the European Southern Observatory's Very Large Telescope and on Gemini Observatory's 8-meter telescope. Provisionally titled **S/2021 N1**, it is 14 kms in diameter and takes almost 27 years to complete its orbit around this ice giant.

Both the moons will be renamed based on the 50 Nereid sea goddesses in Greek mythology like all of its 14 moons.





Satwik-Chirag win BWF French Open Men's Doubles Title



DO YOU KNOW



The **Badminton World Federation (BWF)** is the international governing body for the sport of badminton recognised by the International Olympic Committee.

Indian sports personalities are making an indelible mark in their chosen field of sport by winning medals and trophies at various world level tournaments. Adding their names in this coveted list of sportsmen are the Indian Badminton stars **Satwik Sairaj Ranki Reddy** and **Chirag Shetty** who won the 2024 Men's Doubles title at the BWF French Open held in Paris in March. The pair beat the Chinese Taipei's pair Lee Jhe-Huei and Yang Po-Hsuan scoring 21-11, 21-17 in just 36 minutes. This is their first title of the 2024 world Badminton tournament series.

The match was indeed exciting and interesting to watch, with both pairs exhibiting their exceptional skills.

The game was fast and furious with each pair trying to catch the opponent in their wrong foot and forcing them to make errors. Finally, it was the experience of the Indian pair that came in handy at crucial moments.

The champion pair progressed to the men's doubles final of the French Open Super 750 badminton tournament with a commanding straight-games win over the Korean pair Choi Sol Gyu and Kim Won Ho in the semi-finals.

Earlier they were the winners of the gold medal in the Commonwealth Games and bronze medal at the World Championships held in August 2023.



Panama officially joins International Solar Alliance



Panama, a small central American country has officially ratified International Solar Alliance, marking its entry as a member nation. Ambassador Yasiel Burillo presented the instrument of ratification to the Indian joint secretary (economic diplomacy),

paving the entry of his country to **International Solar alliance (ISA)** underscoring Panama's commitment to sustainable energy in years to come.

International Solar Alliance is an action-oriented, member driven collaborative platform for increased deployment of solar energy

technologies as a means of bringing access to clean energy, ensuring energy security and driving energy transition in its member countries. The first ISA was initiated by PM Modi at the United Nations Climate Change Conference in Paris alongside the then President of France in 2015. Since then ISA, headquartered in Haryana has grown in strength to 120 members. Most lie between the sunny regions of Tropic of Cancer and Tropic of Capricorn. ISA is impressively funded with a trillion dollars as investment so far.

Importance of **Solar photovoltaics (PV)** in renewable energy mix: It is now an undeniable fact that energy for the functioning of most economies will have to come from diverse forms of energy resources. Solar photovoltaics was once thought of as an exotic form of energy source, mostly used in space crafts. Impressive strides in production techniques of PVs



OPENING UP INTERNATIONAL SOLAR ALLIANCE (ISA) MEMBERSHIP TO ALL COUNTRIES

- isa** ISA was launched in New Delhi on March 11, 2018
- Rs. 175 Cr** committed for setting up of ISA
- PM Modi inaugurated the **first assembly of ISA** on October 2, 2018
- Cabinet approved resolution to open **ISA membership to all countries that are members of UN** on Nov. 1, 2018

FIFTH ASSEMBLY OF THE INTERNATIONAL SOLAR ALLIANCE

17 - 20 OCTOBER 2022 | NEW DELHI, INDIA



and its adoption has made it a leading, viable alternate renewable source. PVs come second in installed capacity addition after hydropower. The project cost of PV installations has reduced by 67% between 2014 and 2022 and cost of solar PV generated electricity by 89% between 2010 and 2022. Though solar generated electricity constitutes just 3.6% of the world wide energy mix, it is bound to sky rocket. Now PV generated power is competing with cheap fossil fuel generated power.

Why ISA is important:

Collaboration works wonders. Now with a globalised world and faster internalisation of technology, costly mistakes can be avoided. Perhaps the most important factor is the role of artificial intelligence in energy generation, because it is evident that that solar and wind are intermittent forms of energy. Hence AI deployment can be a predictive tool with respect to energy demand and supply. ISA can further drive down cost of solar generated power. **With individual commitments to Net Zero emissions the role of solar PV generated power is a crucial element in the renewable energy mix.**





Smt Anuradha V R



Van Mitra

Forests play an invaluable role in combating climate change and contributing to the prosperity and wellbeing of the existing and future generations - so long as they and their resources are sustainably managed.

In order to boost the green cover and move towards environmental conservation, Haryana Chief Minister Manohar Lal Khattar inaugurated the 'Van Mitra' scheme and its accompanying portal.

This innovative initiative is designed to foster community engagement in afforestation efforts, specifically targeting non-forest areas across the state. By leveraging the support of 7500 local volunteers from economically weaker sections, the scheme envisages promoting a culture of environmental stewardship and individual commitment towards tree planting and care.

Role and responsibility of the Forest Department

- ▶ Provide healthy saplings for the plantation to Van Mitra.
- ▶ Impart basic training to Van Mitra on techniques of plantation and its maintenance

/ protection and preparation of Standard Operating Procedures (SOPs) like requirements of weeding-hoeing, irrigation, measures for protection of plants from frost etc.

- ▶ Forest guards, foresters and range officers will provide advice concerning plantation to Van Mitras within their area of jurisdiction.
- ▶ Documentation of assessment of survival percentage of plantation done.

Eligibility criteria

- ▶ Members of families with an annual income of less than ₹ 1.80 lakh can participate in this green initiative.
- ▶ Eligible individuals aged between 18 and 60 can register to become Van Mitras.

Financial Structure and Exit Plan

1st year

- ▶ **Last week of June:** ₹20 per dug-up pit on geo-tagging and uploading of photographs of the pits by Van Mitra on the

mobile app.

- ▶ **Last week of July and August:** ₹30 per planted sapling after geo-tagging of planted sapling by the Van Mitra.

- ▶ **Last week of months from September onwards:** ₹10 per surviving sapling for maintenance and protection of plantation.

2nd year

- ▶ ₹8 per surviving sapling in the last week of every month.

3rd year

- ▶ ₹5 per surviving sapling in the last week of every month.

4th year

- ▶ ₹3 per surviving sapling in the last week of every month.

To register for the scheme and to observe and record the growth of the saplings and for geo tagging, the planters are required to download the Van Mitra App.

Should a Van Mitra decide to withdraw from the scheme, the Forest Department will assume responsibility for the trees, ensuring their continued growth and contribution to the state's green cover.





Folk festivals across India

Chapchar Kut to international puppetry



Sonu: Hey guys, have you heard about the **Chapchar Kut Festival in Mizoram**? It sounds fascinating!

Taru: Oh yeah, I've heard about it! It's this amazing celebration held during the bamboo-cutting season, right?

Kiran: Exactly! It's all about celebrating the anticipation of a bountiful harvest. Can you imagine the sight of everyone dressed in colourful traditional attire, gathering for a massive community fest?

Sonu: That sounds so enchanting! And I've read about this unique dance called **Cheraw**, where men tap bamboo sticks while women dance between them. It must be quite a spectacle!

Taru: Absolutely! And what's even more captivating is how people from different tribes come together to showcase their cultural heritage through dance and music.

Kiran: It's not just about entertainment though, it's about unity and preserving their traditions. Plus, leaving their footwear behind as a sign of respect before joining the festivities adds a beautiful touch of tradition.

Sonu: Wow, it seems like such a vibrant and inclusive celebration! I'd love to experience it someday.

Taru: Speaking of festivals, did you guys hear about the 11th **International Puppet Festival in Chandigarh**?

Kiran: Oh yes, I read about it! Chandigarh always hosts such unique events. Puppetry is such a fascinating art form.

Sonu: I agree! It must have been incredible to witness **puppeteers from around the world showcasing their skills**. The opening act was by the Novosibirsk Regional Puppet Theatre from Russia. I am just trying to visualize





the magic they must have created on stage. They also organized special morning shows for school students.

Taru: And the puppet exhibition must have been so interesting. Getting to see how these enchanting figures are made would be a one-of-a-kind experience.

Kiran: It's amazing how festivals like these not only entertain but also educate and inspire. They're a celebration of our cultural diversity and artistic heritage.

Sonu: Speaking of celebrating culture, did you guys hear about the *Medaram Jatara*, known as *Sammakka Saralamma Jatara* in Telangana?

Taru: Oh yes, it's this massive

tribal gathering, right? I've heard it's **one of the largest in the world!**

Kiran: That's right! It's held once every two years to honour the courage and resilience of Sammakka and Saralamma (mother and daughter, who struggled against unjust rulers). People from all over come to seek blessings and offer their prayers.

Sonu: It's wonderful how festivals like these bring people together, regardless of their backgrounds. It really highlights the beauty of our cultural diversity.

Taru: And the fact that it was **declared a state festival** just shows how significant it is in preserving and promoting tribal heritage.

Kiran: These festivals are not just about rituals, they're about celebrating our shared humanity and the richness of our cultural tapestry.

Sonu: Well said, guys! Let's make a pact to experience as many cultural festivals as we can together. It's not just about the festivities, but the memories and connections we'll make along the way.

Taru: I'm all in for that! Let's embark on a journey of cultural exploration together.

Kiran: Count me in too! Here's to celebrating diversity, unity and the beauty of our cultural heritage!





INSAT-3DS & YUVIKA

“Ok Google! What is the weather forecast for tomorrow?” To answer this simple question, we require data from a veritable fleet of satellites orbiting around various parts of the globe sending data to multiple research agencies. This data is collated, analyzed and interpreted at mind boggling speeds so that the voice assistant in the palm of our hands can tell us there is a less than 10% chance of rainfall in the next 3 days.

Joining these thousands of satellites on 17th February 2024 was INSAT-3DS. Launched by the Indian Space Research Organisation (ISRO), Indian National Satellite System-3D (INSAT-3DS) is a new generation meteorological satellite that is expected to greatly enhance our weather forecasting abilities.

Sitting in a geostationary orbit roughly 36,000 kilometers from earth, INSAT-3DS is positioned over a fixed point on the equator allowing continuous monitoring of a specific region.

Equipped with a state of the art six-channel imager, INSAT-3DS captures detailed images of cloud formations, weather patterns and environmental changes in real time. The satellite has a 19 channel sounder system that gathers highly accurate data such as temperature, pressure and humidity over a particular area.

The satellite is also designed to relay weather data to scientists from extremely remote areas that are often left unobserved, so that they can be combined to create much more accurate predictions; not just of everyday weather but also extreme weather phenomena such as cyclones, floods, tsunamis and so on. It is in this area that INSAT-3DS is expected to help the most - Disaster management and prediction. By understanding weather patterns at such a high level of detail, extreme disasters can be prevented. And because the satellite has a transponder, it can assist in search and rescue efforts after such climate disasters by detecting distress signals.

INSAT-3DS is a significant advancement in India's weather monitoring capabilities and disaster preparedness.

This was not the only recent development from ISRO, however. On 15th February, ISRO launched a special programme for School Children called "Young Scientist Programme" "**YUva Vigyani Karyakram**", YUVIKA, to impart basic knowledge on space technology, space science and space applications to young students.

The aim of YUVIKA is to provide students with a clearer understanding of the basics of the field so that they are better equipped to step into them during their higher studies.

With programmes like YUVIKA paving the way for future Indian scientists and tools like INSAT-3D to provide accurate research data, the future of our nation looks bright indeed.





Major Iron Ore

deposits uncovered

There is enough evidence to indicate that iron smelting had been taking place in India since 1400 BCE. Indeed, one of the first regions to flourish under the Iron Age was the Indian subcontinent.

Recently, a vital update took place in this 3000-year-old practice, with the discovery of iron ore in **Karauli district of Rajasthan**. The magnetite-rich area yielded deposits of more than 840 million tonnes of iron ore in the villages of Khohra, Liloti, Dedrauli and Todupura. This invaluable piece of land extends over 1880 hectares of area, and will be auctioned off by the Rajasthan Mines Department.

The proceeds from the ore block license auctions are expected to massively benefit the state. Experts predict a sharp rise in industrial investment in the area in the coming months. The district which has a history of underfunded education and social schemes will look to benefit massively from this finding and the resultant economic progress.

Industries such as iron ore, steel, cement and ceramic industries will likely have access to a prolific amount of raw material for years to come. Employment in Hindon and surrounding villages will certainly rise – another reason for celebration amongst the inhabitants of Karauli.

DO YOU KNOW



India is the **third largest supplier of iron ore in the world**, after Australia and Brazil with nearly 300 functional iron ore mines. China is the largest importer of Indian ore, with Odisha exporting the highest quantity amongst Indian states.





The first **Skill India Centre**

The first **Skill India Centre (SIC)** was inaugurated at Sambalpur, Odisha by Dharmendra Pradhan, Union Minister for Education and Skill Development and Entrepreneurship.

SIC will equip the youngsters with employable skills which will encourage entrepreneurship. It perfectly aligns with the vision of Prime Minister Modi to empower young Indians with skills essential for the evolving job market. The focus of SIC will be on many areas including media and entertainment,



leather, tourism, hospitality etc. **It will also play an important role in designing curriculum along with industry experts which will be in line with the requirement of industry needs, promote standardization and create employment opportunities for skilled talent across industries.**

It is imperative to upgrade the skills of the youth in demand-driven industries. The aim of SIC is to empower over 1200 students and prepare them for the 21st century job market requirements. **The centre will have quality infrastructure, cutting-edge technologies and modern facilities which will facilitate effective learning.** It will provide both classroom study and work-based learning to empower youth with the required skill sets of specific industries. It will surely help boost rural growth and make them self-reliant.

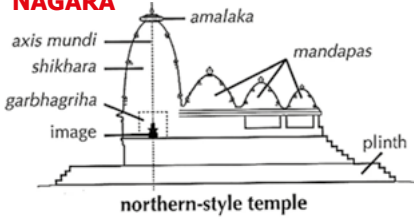
The inauguration of the SIC

marks a significant milestone in revolutionizing the skilling landscape in India. Enhanced accessibility, personalized learning experiences and improved career guidance will help learners contribute effectively to India's workforce development.

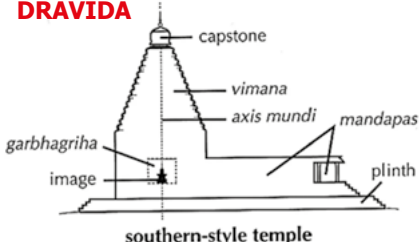
The **National Skill Development Corporation (NSDC)** will assist in ensuring seamless implementation of the training ecosystem. A designated Centre Manager will monitor the implementation of training programmes and ensure adherence to quality standards.

More centres are scheduled to be inaugurated in Angul, Bhadrak, Dhenkanal, Talcher and Deogarh. By targeting the high economic growth sectors, each SIC in Odisha aims to address the specific skill needs of industries that have the potential to drive regional development and create sustainable employment opportunities.

NAGARA



DRAVIDA



Badami Chalukyan period temples discovered

The earliest Chalukyas with their capital at Badami (Vatapi) in Karnataka known as the Badami Chalukyas were prominent during the 6th and the 7th centuries with Pulikeshin II as a renowned ruler. Archaeologists from the **Public Research Institute of History, Archaeology and Heritage (PRIHAH)** have announced the discovery of two temples dating from this era.

Dr Srinivasan (PRIVAH) said the discovery was very important as it would give more insight into the religious practices of the Badami Chalukyan period. He also added that these temples are exceptional as they are a fusion of three different styles and the only example of this kind that is evident today in Telangana. With minimal restoration and conservation work, these temples can serve as testimonies to the Badami Chalukyan period in this region.

Key artefacts found

- ▶▶ Inscription labelled as “*Gandaloranru*” dating back to 8th or 9th century.
- ▶▶ *Panavattam* (Base of Shiva Linga)
- ▶▶ Vishnu idol

Architectural Style

Badami Chalukyan and Kadamba Nagara influences. Some influence of **Rekha Nagara architecture** is also seen in the structure witnessed by a typical northern Indian *shikhara* with a slightly curved tower having four sides of equal length.

Insight into the Architectural styles

Badami Chalukyan style also known as *Vesara* (meaning: hybrid) style is a **mixture of Nagara and Dravida styles**. Vesara style distinguishes itself as a singular example, a distinctive

feature of Deccan architecture. This style originated and flourished at Aihole, Badami and Pattadakal of Karnataka from 5th century to 7th century and further enhanced by the Hoysalas. Examples: Durga Temple (Aihole), Pattadakal group of temples.

Such temples have a staggered base plan and consist of Nagara style *vimana* (tower) and Dravida style parts. They are created through a “subtraction” technique and are basically excavations, cut out of the living rock sites they occupy. Exteriors are plain but interiors are sculptural marvels consisting of a pillared verandah, a columned hall (*mantapa*) and the main shrine which encloses the deity.

Site: Mudimanikyam village of Nalgonda district, Telangana, along the banks of the Krishna River.

No.of temples found: 2
Age of the construction: 1300 years old



North India's first PIZZA ATM



We all love to eat our pizzas sometime or the other. Nowadays it is relatively cheap and easy to make and can be customized to suit different tastes. No wonder pizzas are so popular!

CITCO (Chandigarh Industrial and Tourism Development Corporation) introduced 'Pizza ATM' near Sukhna Lake, producing hot pizzas in three minutes, a first in North India. The founder and CEO of iMatrix World Wide, Dr Rohit Sharma, leads the project inspired by France. The machine is crafted at their Mohali factory, outperforming similar ventures, dispensing 100 pizzas daily.

How does it work, you wonder? Sharma explains, "Once your pizza preference is selected, a robotic arm springs into action, assembling the base with your desired toppings, baking it to perfection, and serving it up in a mere three minutes." And guess what? The machine can multitask, whipping up to seven pizza bases simultaneously!

Operational since early 2024, the Pizza ATM swiftly becomes a local favourite, offering both vegetarian and non-vegetarian options. Conveniently located near the lake's Food

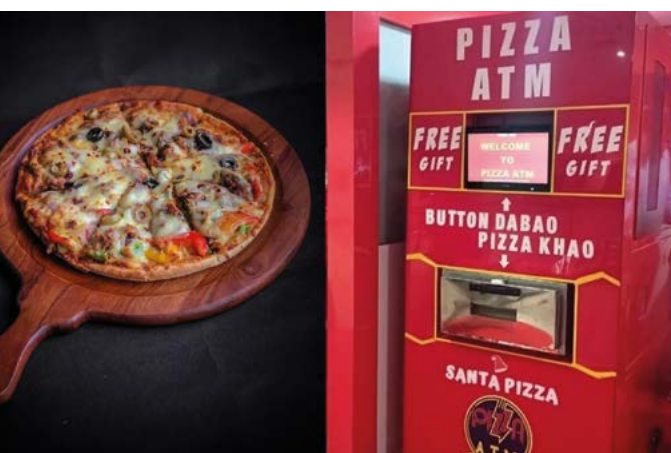
Court, it seamlessly integrates into the landscape. Affordable prices, with a 35% discount compared to competitors, signify a shift towards quality quick-service dining.

Sharma is responsible for the pizza ATM's day-to-day operations, from staffing and training to upkeep and maintenance. CITCO emphasised that the licensee must ensure a top-notch customer experience, right down to the ambience and cleanliness around the kiosk.

How to order Pizza of one's choice from the ATM

- ▶▶ Simply scan the QR code on the machine to select the pizza with the choice of toppings.
- ▶▶ Being user-friendly, the machine features integrated voice assistance, ensuring a seamless experience to place the order.
- ▶▶ Wow.....within three minutes the pizza is ready. It is that simple!

So next time you visit Chandigarh, explore the Pizza ATM!





Arunachal Pradesh achieves Har Ghar Jal saturation

Arunachal Pradesh has made a significant achievement by reaching 100 percent saturation in the 'Har Ghar Jal' scheme under the **Jal Jeevan Mission (JJM)**, announced by Chief Minister Pema Khandu. This milestone sets Arunachal Pradesh apart as the first state

in the northeast and the tenth in India to fully embrace the central government's initiative, aimed at ensuring clean and safe piped water for every household.

The successful implementation of JJM in Arunachal Pradesh received financial backing from the Centre, with ₹396,541.22 lakh released, along with a contribution of ₹45,551.18 lakh from the state. With all 28 districts covered, this boost ensures that every household in the state has access to clean and safe piped water.

The saturation of JJM in Arunachal Pradesh is commendable, as the team had to negotiate the tough and challenging terrains of

the state to reach clean tap water in all households.

JJM, a flagship programme of the Government of India, was launched on 15th August 2019, by PM Modi. **The programme is a crucial step towards achieving the United Nations' Sustainable Development Goal 6, which aims to ensure access to water and sanitation for all.**

The mission has witnessed substantial progress, reaching 13.91 crore households with tap water connections. Arunachal Pradesh's achievement in reaching the saturation mark showcases the transformative impact of the mission on health and hygiene in challenging terrains. In 2023, the mission crossed several milestones and progressed from 11 crore connections at the start of the year to nearly 14 crore tap connections by the end of the year. In 2023-24, so far, the GoI has released ₹45,841.39 crore to 26 eligible States for the implementation of Jal Jeevan Mission in the financial year 2023-24.





New age of mobility

Sudarshan Setu

PM Modi initiated the construction of Sudarshan Setu in October 2017, emphasizing its pivotal role in connecting the old and new sectors of Dwarka. On 25th February, he inaugurated this breath-taking bridge formerly referred to as “Signature Bridge”, now known as “Sudarshan Setu”. The construction incurred a total expenditure of ₹ 980 crore.

This is the longest cable-stayed bridge in India, spanning 2.32 km. The bridge links the Okha mainland with Beyt Dwarka Island. Its design incorporates a central double-span cable-stayed section spanning over 900 metres, accompanied by four lanes and footpaths measuring 2.50 m in width on both sides.

Additionally, solar panels have been installed atop the footpaths of the new bridge which will generate 1 Megawatt of electricity.

Currently, the bridge serves not only to enhance transportation but also to draw tourists, showcasing the cultural heritage and architectural excellence of Gujarat.

Sikkim's first railway station

Sikkim is getting its first railway project, costing around ₹41,000 crores approximately, in Rangpo. It's a 44.98-km railway line starting from Sivok in West Bengal to Rangpo in Sikkim, with five stations - Sivok, Riyang and Teesta Bazaar in West Bengal, and Melli and Rangpo in Sikkim, along the way.

PM Modi has emphasized that the design of Rangpo's railway station will draw inspiration from Sikkim's rich cultural heritage.

This project holds significance not only for tourism but also for defence purposes as it ensures smoother transportation of

military logistics by improving rail connectivity.

The construction unfolds in three phases:

- ▶ **Phase 1** focuses on connecting Sivok to Rangpo.
- ▶ **Phase 2** aims to link Rangpo with Gangtok, for which the area surveys and station location surveys have been initiated already.
- ▶ **Phase 3** will extend to the Nathu La region near the Sikkim-China border, and is expected to be completed by 2029.

Amar Jit Gautam, divisional railway manager (DRM), Alipurduar division in Rangpo, confirms that the first phase will be completed by 2025 while the second and third phases could be completed by 2029 since it involves the defence ministry.





- **Gaganyaan project envisions to demonstrate human spaceflight capability by launching a crew of 3 members to Low Earth Orbit (400 km) for a 3 day mission and bring them back safely to earth, by landing in the Indian sea waters. The launch vehicle for this mission will be the LVM3 rocket, which has been reconfigured to meet the requirements of carrying human beings.**

- **ISRO is conducting various tests such as Integrated Air Drop Test (IADT), Pad Abort Test (PAT) and Test Vehicle (TV) flights. There will also be unmanned flights before the actual manned mission to ensure the safety of the crew.**



ISRO's new projects

Indian Space Research Organisation (ISRO) has made leaps and strides in bolstering its space exploration endeavours with two new project launches in February. With the laying of the cornerstone for a second spaceport in Kulasekarapattinam, ISRO is aiming to enhance its launch capabilities. It also announced the potential crew members for the ambitious Gaganyaan mission.

Gaganyaan - Meet the crew

On 27th Feb 2024, ISRO announced the names of the astronauts designated for the Gaganyaan human space flight mission during PM Modi's visit to the Vikram Sarabhai Space Centre.

The designates are four Indian Air Force (IAF) pilots - **Group Captain Prasanth Balakrishnan Nair, Group Captain Ajit Krishnan, Group Captain Angad Pratap, and Wing Commander Shubhanshu Shukla.**

The four astronauts have been undergoing training in various aspects of space flight in Russia and at the Astronaut Training Facility in Bangalore. The final crew consisting of three members will be picked among the four. Prime Minister presented the four astronauts with 'astronaut wings' on this occasion.

He also reviewed the progress of the Gaganyaan mission and dedicated three

technical facilities developed at a cost of about ₹1,800 crore to the nation.

ISRO's second spaceport to be set in Tamil Nadu

ISRO's rocket launch port at Kulasekarapattinam will be dedicated exclusively for Small Satellite Launch Vehicles (SSLVs) developed by the private sector. PM Modi laid the foundation stone for this mega project on 28th February.

Budgeted around ₹986 crore, this sprawling launch centre being built on 2,292 acres of land will have facilities like launch pad, rocket integration facilities, ground range and checkout facilities.

With the Union government's recent policy announcing the opening of the space sector to the private sector, there will be a sharp rise in the number of commercial launches. The second port is being built to ensure the first launch port in Sriharikota is not overloaded.

Currently, all the rockets launched from Sriharikota Range (SHAR) have to take a longer trajectory to skirt around Sri Lanka before going southward. **But Kulasekarapattinam offers geographic advantage as it allows a direct southward and smaller launch trajectory for the light weight SSLVs carrying less fuel.**

ISRO Chairman S Somanath said that the spaceport will be completed in two years and will cater to 24 launches every year.





India unveils largest Solar-battery project

India has achieved a significant milestone in its renewable energy journey with the successful commissioning of the largest **Battery Energy Storage System (BESS)** by the **Solar Energy Corporation of India Limited (SECI)**, under the Ministry of New and Renewable Energy. Located in Rajnandgaon, Chhattisgarh, this project combines solar energy generation with battery storage, marking a monumental leap forward in the utilization of renewable energy sources. PM Modi dedicated this project to the nation via video conferencing on



24th February 2024, underscoring its importance in India's renewable energy landscape.

The 40 MW / 120 MWh BESS, alongside a solar photovoltaic (PV) plant with an installed capacity of 152.325 MW, provides a dispatchable capacity of 100 MW AC (155.02 MW peak DC). This integrated approach not only meets Chhattisgarh's peak energy demand but also fulfills its renewable purchase obligations, aligning with the state's commitment to sustainable energy practices.

Moreover, the project ensures power stability and reliability through an efficient power evacuation system via a 132 kV transmission line, seamlessly integrating into the existing power grid. By utilizing battery storage to capture solar energy during daylight hours and releasing it during evening peak demand, the project

optimizes energy management and enhances grid stability.

A notable aspect of this project is its strategic use of previously unused land, exemplifying a sustainable approach to energy project development.

The project has been constructed with **funding from the World Bank and Clean Technology Fund** under Innovation in Solar Power & Hybrid Technologies Project as well as leveraged financing from domestic lending agencies.

The commissioning of India's largest solar-battery project is poised to have a transformative impact on the renewable energy landscape, both domestically and globally.

By promoting responsible land utilization and advancing renewable energy technologies, this project represents a significant step towards a greener and more sustainable future.





World's first Vedic clock

Times are changing

About the clock

The world's first Vedic clock was unveiled virtually by the Prime Minister on 29th February 2024, the eve of the commencement of the 9 day 'Vikramotsav' that celebrates the glorious heritage of Madhya Pradesh along with the current developmental initiatives. This is located on an 85-foot tower at Ujjain's Jantar Mantar. The PM said that "the Vedic clock is proof of the Government taking heritage and development in tandem".

The 'Vikramaditya Vedic Clock' will display information related to Vedic **Hindu Panchangam**, planetary position, *muhurtham*, astrological calculations, solar eclipse and lunar eclipse. It will also indicate the Indian Standard Time(IST) and the Greenwich Mean Time(GMT).

A *panchangam* is a Hindu almanac that follows traditional Hindu timekeeping and presents

dates and calculations in a tabulated form. As the name suggests it has five *angas* or limbs (viz) *thithi*, *varam*, *nakshatram*, *yogam* and *karanam*.

The clock will calculate time based on one sunrise to the next. **The time period between the two sunrises is divided into 30 parts of 48 mins each.** A government press release said, "The Indian system of time calculation is the oldest, subtle, pure, error-free, authentic and reliable method in the world. This most reliable system is being re-established in the form of Vikramaditya Vedic Clock in Ujjain."

About Ujjain

Ujjain was once considered India's central meridian and it determined the country's time zones. It is the basis of time in the Hindu calendar. Throughout the world, the time prescribed and transmitted from Ujjayini (Ujjain) has been followed. **The shortest**

fraction of time is included in Indian time calculations based on the Indian astronomical theory and the motions of planetary constellations.

Restoration of tradition and heritage

The Vedic clock is an attempt to reassert and restore the tradition of Indian time calculation. For a major period in post-independence India, the Indian psyche has been conditioned to look down upon and dismiss anything that is native. In fact the word '*panchangam*' itself was often referred to in a pejorative sense to denote things that are regressive. But the world has now realised that the *panchangam* is created based on advanced scientific calculations. **The Indian nation has also shed the reluctance and inferiority that marked its approach to anything Indic and is openly reasserting itself.**

Times are indeed changing!





DO YOU KNOW ?

- Vitex negundo* (VN)** **L.** is a small aromatic plant native to China, Japan and India. All parts including leaves, flowers, twigs, roots and seeds have been commonly used for various applications in folk medicine. Both leaves and seeds are edible and are occasionally used as condiment and tea, and even as a famine food when all else fails.
- The essential oils from VN leaves and seeds have fantastic insecticide and antibacterial effects against food infestation and bacteria contamination; an ideal food protectant to facilitate food preservation.

Wound dressings with **Banana fibre**

Modern medicine owes its development to natural extracts from plants. Alkaloids derived from plant extracts formed the basis for development for medicines by drug companies. Later the development of synthetic chemistry expanded the field. Exploring the forests and the oceans remains an integral part of scientific activity, in search of novel extracts from plants for drug development. **It is well known that plants synthesize their own cocktail of drugs to ward off pests and infections.** No wonder plants harbour a treasure trove of natural products that can be of great use.

Banana fibres as wound dressing material: Scientists at the **Institute of Advanced Study in Science and Technology**, under the Department of Science and Technology have indigenously repurposed the pseudo stems of

banana tree into an eco-friendly wound dressing material. Under the guidance of Prof. Devashish Chowdhry, Prof. Rajalakshmi Devi and research scholar Mridusmita Burman combined banana fibres with bio polymers such as *chitosan* and *guar* gum, creating a versatile patch with remarkable mechanical strength and antioxidant properties. They went ahead and incorporated an extract from *Vitex negundo L* plant into the patch for drug release and antibacterial properties. All the materials use are abundant, non-toxic and cost effective.

Hence development of such a natural cost effective, non-toxic wound dressing represents a remarkable innovation, offering a sustainable solution for wound care. *Elsevier*, a reputed medical journal has published this achievement in its International Journal of Biological macromolecules.





First indigenous Prototype Fast Breeder Reactor

PM Modi marked a significant milestone for India's nuclear energy programme as he presided over the commencement of "core loading" at the country's

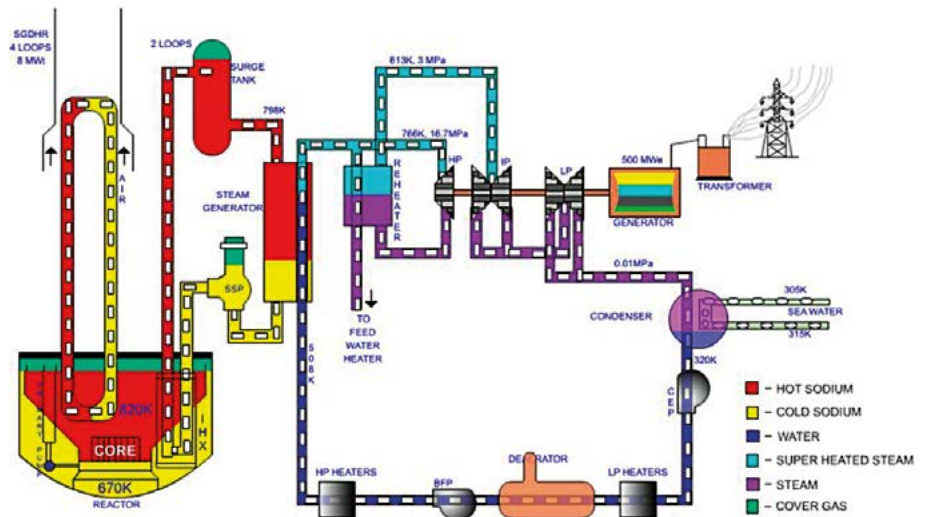
first indigenous **Fast Breeder Reactor (FBR)** on Monday. The reactor, boasting a capacity of 500 MWe, is located in Kalpakkam near Chennai.

A notable feature of the FBR is its utilization of **Uranium-Plutonium Mixed Oxide (MOX)** fuel, representing a crucial step forward in India's nuclear technology. The reactor's design includes a Uranium-238 "blanket" surrounding the fuel core, facilitating nuclear transmutation to produce additional fuel—a characteristic that earns it the title of a 'Breeder.'

The construction and operation of the **Prototype Fast Breeder Reactor (PFBR)** have been spearheaded by **Bhartiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI)**, underscoring India's commitment to domestic nuclear expertise. India's achievement is particularly noteworthy as it becomes the second country,

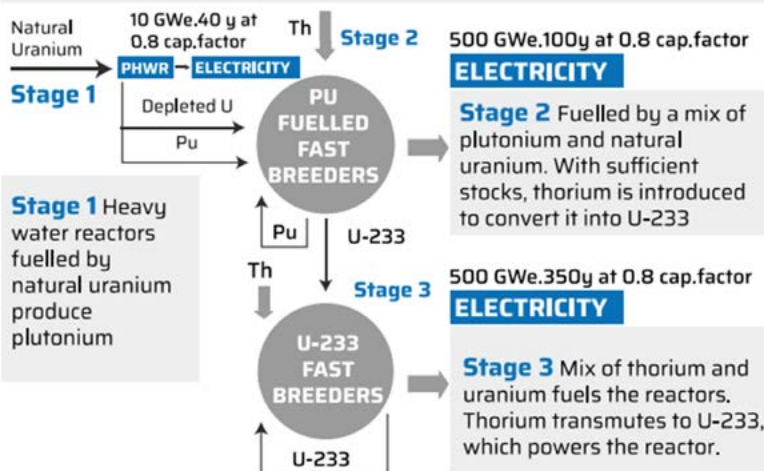


In terms of safety, PFBR incorporates advanced third-generation features, ensuring swift and secure shutdown procedures.



INDIA'S THREE-STAGE NUCLEAR PROGRAMME

Homi Bhabha envisioned India's nuclear power programme in three stages to suit the country's low uranium resource profile



- **Nuclear reactors generate energy** through fission, the process by which an atomic nucleus splits into two or more smaller nuclei. During fission, a small amount of mass is converted into energy, which can be used to power a generator to create electricity. In order to harness this energy, a controlled chain reaction is required for fission to take place. When a uranium nucleus in a reactor splits, it produces two or more neutrons that can then be absorbed by other nuclei, causing them to undergo fission as well. More neutrons are released in turn and continuous fission is achieved.
- **FBR** is a nuclear reactor that uses fast neutron to generate more nuclear fuels than they consume while generating power, dramatically enhancing the efficiency of the use of resources. Nuclear fission by fast neutron causes the increase in neutrons generated.

following Russia, to operate a commercially viable Fast Breeder Reactor.

PFBR, fully designed and constructed indigenously, is a testament to India's technological prowess, with contributions from over 200 Indian industries, including MSMEs.

In terms of safety, PFBR incorporates advanced third-generation features, ensuring swift and secure shutdown procedures during emergencies. Additionally, the reactor's design aims to minimize nuclear waste generation by utilizing spent fuel from the initial stage, thereby reducing the necessity for extensive disposal facilities.

India, as a responsible nuclear power, emphasizes the peaceful applications of nuclear technology while prioritizing the security of nuclear and radiological materials. The nation remains committed to expanding its nuclear capabilities in both the power and non-power sectors, furthering its position as a leader in nuclear innovation and sustainability.



Smt Shyamala Viswanathan

India's First Dolphin Research Centre



DO YOU KNOW ?

- ♥ The Gangetic river dolphin is essentially **blind** and finds its way and prey in river waters through **echolocation**.
- ♥ Bihar is home to around half of the estimated 3,000 Gangetic dolphins in India.
- ♥ Gangetic dolphins live in a zone where there is little or no current, helping them save energy. If they sense danger, they can dive into deep waters.

India's first centre for research on conserving the endangered Gangetic river dolphin, **National Dolphin Research Centre (NDRC)** was inaugurated on 4th March by Bihar Chief Minister Nitish Kumar.

This landmark facility, built at a cost of ₹30 crore, is situated on the banks of River Ganga within the Patna University campus. The concept behind this facility is to provide space for research with all equipment under one roof to study dolphin's behaviour in the river, including their food habit, the way they are adapting to changing environments and to train fishermen on how to avoid these dolphins while fishing.

The Gangetic river dolphin

- ▶▶ The Gangetic river dolphin is India's national aquatic animal and one of four freshwater dolphin species in the world. It is a Schedule I animal under the Wild Life (Protection) Act, 1972. It has also been declared an endangered species.
- ▶▶ Discovered in 1801, the species historically inhabits the Ganga-Brahmaputra-Meghna



- Dolphins are chatty animals. Bottlenose dolphins are one of the few species, along with apes and humans, that have the ability to recognise themselves in a mirror.
- They also use tools. In Shark Bay in Western Australia, dolphins fit marine sponges over their beaks to protect them from sharp, harmful rocks as they forage for fish.
- They sleep with one half of their brain at a time, and keep one eye open, possibly to keep an eye out for their group - to make sure they stick together - and to look out for predators like sharks.

and Karnaphuli-Sangu river systems in India, Nepal and Bangladesh.

- ▶▶ Recent studies in the Ganga River Basin show their presence in the mainstream and tributaries like Ghagra, Kosi, Gandak, Chambal, Rupnarayan and Yamuna.





Kerala's FIRST GENERATIVE AI TEACHER

As of 2023, Kerala topped the literacy rate chart in India with 96% across the state. This has been possible because of the historically progressive education system that sought to provide unfettered access to education to all learners. This level of literacy is not possible to maintain without innovation, however and it seems innovation is here in the form of Iris.

Iris, India's first generative AI teacher was unveiled at KTCT Higher Secondary School in Thiruvananthapuram.

The implementation of Iris aligns with the Atal Tinkering Lab (ATL) initiative launched by NITI Aayog in 2021. The goal with Iris, is to create a truly unique and

personalized learning experience tailored to the needs of each child.

NITI Aayog or the **National Institution for Transforming India** is a group of scientists and policy makers who work together to provide inputs regarding the different programmes and policies that can be implemented by the government for the growth of our nation in various aspects, such as economics, technology etc.

Developed in collaboration with **Makerlabs Edutech Private Limited**, Iris, despite looking like a toy robot wearing a saree, is built to be a humanoid looking teacher that leverages generative AI to create interactive lessons.

Iris works by converting a student's speech to text, processing the text through AI to obtain answers, and then converting the answers into speech, facilitating clear communication with students.

Iris can answer student questions on various topics, drawing from a vast knowledge base. This allows students to explore subjects in greater depth and clarify doubts at any time.

The use of Iris however raises some important questions.

Are we becoming too dependent on AI too soon? Does the inclusion of artificial intelligence in the classroom remove the human element so fundamental to education? What if the database Iris uses to answer questions becomes outdated? Will it account for biases in its knowledge base? Will Iris be anything more than just a sophisticated Google search?

These are all questions that do not have clear answers.

While Makerlabs have made it clear that Iris is not intended to replace human teachers but rather to provide them support, **a lot of testing and safeguards are required before widespread implementation of such a tool can be done in classrooms.**

As AI technology continues to evolve, a future where AI plays a more prominent role in shaping the educational landscape in India is inevitable. However the success of Iris will depend on its ongoing development and refinement.

The AI genie is out of the bottle and cannot be put back. We can only try our best to ensure the wishes we ask of it are asked with the utmost care.





Chakshu

platform to report cyber fraud

Anyone with access to any form of modern communication devices would have encountered a message like this – “Congratulations! You’ve won 20,000 bonus cash in your bank account. Enter the OTP to withdraw the money...”. Such kinds of fraudulent communications are on the rise and recently, Government

of India has rolled out a digital platform to flag and curb them. The new platform, Chakshu, provides protection against cybercriminals who rob money from innocent victims.

An initiative of the Department of Telecommunication, Chakshu, simplifies reporting on deceptive calls and messages. “Once such information is received, the platform will trigger re-verification, and failing re-verification the number will be disconnected,” said Union telecom and IT minister Ashwini Vaishnaw.

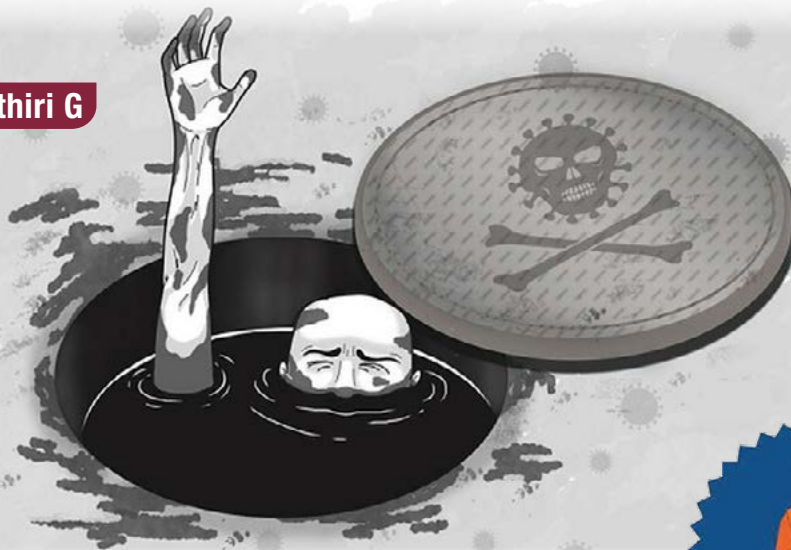
Many instances of scam activities have been happening, especially in this decade, with criminals impersonating bank or government officials calling individuals to update their details for their bank accounts or other home connections. Telecom Regulatory Authority of India (TRAI) is also



working on building an app for Chakshu, potentially with private firms such as Truecaller to improve the fraud protection for users.

Chakshu is currently not accessible to individuals but will act as an information exchange and coordination agency among telecom companies, law enforcement agencies, banks and financial institutions, social media platforms and authorities issuing identity documents. The platform will contain information regarding similar cases and will include a grievance redressal space in the near future.





NAMASTE scheme launched

The National Action for Mechanized Sanitation Ecosystem or the NAMASTE Scheme is a testament to the Government's human-centric approach where no sanitation workers have to manually engage in the hazardous task of sewer and septic tank cleaning operations. Jointly initiated by the Ministry of Social Justice and Empowerment and the Ministry of Housing and Urban Affairs, the NAMASTE scheme will be implemented by the National Safai Karamcharis Finance and Development Corporation (NSKFDC) for a period of three years from FY 2023-24 to FY 2025-26, with a budget allocation of ₹349.73 crores.

The scheme has a range of entitlements for sewer and septic tank workers or the SSWs. The SSW will be profiled through a digital application and will be provided with PPE kits, access to

safety devices, occupational safety training, health insurance coverage and livelihood opportunities in the sanitation sector through subsidized sanitation - related vehicles / machinery. Through proper capacity building they will be encouraged to take up their own sanitation enterprise (*sanipreneur*). Over a lakh SSWs will be profiled across 4800 urban local bodies in India.

The first component of NAMASTE is profiling of SSW that aims to create a national database for the identification of SSWs. A unique NAMASTE ID shall be given to all of them.

In order to initiate profiling an online training on the profiling process and demonstration of NAMASTE Mobile Application has been conducted for 30 States/UTs across all five zones.

Background of NAMASTE

The success of mass sanitation drives like the Swachh Bharat

Mission led to construction of over 18 crore toilets across India. This created a huge demand for skilled sanitation workers. However, sanitation workers are still marginalized irrespective of their selfless contributions. The true unsung heroes of our society, they are the backbone of the sanitation service delivery – maintaining the health and hygiene of our communities.

The intended outcomes of the NAMASTE scheme include zero fatalities in sanitation work, formalization and skilling of sanitation workers, elimination of direct contact with human faecal matter, establishment, strengthening and capacitating of **Emergency Response Sanitation Units (ERSUs)**, and empowerment of sanitation workers through self-help groups and entrepreneurship, access to alternate livelihood options, and occupational safety training to all SSWs.



Sahityotsav

World's biggest Lit Fest

In a testament to its enduring legacy, the esteemed Sahitya Akademi, India's National Academy of Letters, marked its 70th anniversary with grandeur. What was once an annual literary gathering, the Sahityotsav, transformed into the world's largest literary festival, drawing over 1100 renowned writers and scholars from across the nation.

The festival, spanning over 190 sessions, served as a vibrant platform

for cultural exchange and dialogue, showcasing India's rich linguistic diversity with representation from over 175 languages. Kicking off with an exhibition highlighting the Akademi's significant activities, the festival culminated in the prestigious Sahitya Akademi Awards 2023 presentation ceremony, graced by distinguished Odia writer, Pratibha Rai, as the chief guest.

Renowned Urdu writer and lyricist Gulzar, delivered the esteemed Samvatsar lecture.

The festival's diverse array of activities included multilingual poetry readings, short story readings and panel discussions on critical themes ranging from Bhakti Literature to the Novels of the Future.

Panel discussions and symposia delved into crucial topics such as the Cultural

Heritage of India, Science Fiction in Indian Languages, Ethics and Literature, Biographies in Indian Languages, Literature and Social Movements, Indian Literature Abroad and Post-Independence Indian Literature.

Moreover, the festival dedicated attention to marginalized voices through programmes like the All India Differently Abled Writers' Meet and the LGBTQ Writers' Meet. Seminars commemorating the birth centenary of Mir Taqi Mir and discussions on various literary genres and traditions further enriched the event.

Sahityotsav, in its expanded form, emerged not merely as a celebration of literature but as a dynamic platform for exploring diverse literary landscapes. The grand celebration underscored its commitment to nurturing the rich tapestry of Indian literature.





New marine species named after President Murmu

DO YOU KNOW ?

♥ The **head-shield sea slug** is a small invertebrate with a maximum length of up to 7mm, brownish-black in colour with a ruby red spot in the hind end. It possesses a shell as a head-shield.

♥ The first species ***Melanochlamy bengalensis*** was found along the coast from Digha and Dhamra in 2022.

India is a mega diverse nation. The Zoological Survey of India has named a new marine species of head-shield sea slug with ruby red spot as ***Melanochlamys droupadi***.

Scientists honoured the President of India Draupadi Murmu, renowned for her advocacy of environmental protection and dedication to preserving the planet's natural heritage and marine life by naming this species after her.

Melanochlamys droupadi was found in Digha (West Bengal coast) and Udaipur (Odisha coast). It stands out with its striking appearance and unique features, and belongs to a rare genus of deep-sea organisms.

Its vibrant tone of colour and intricate structure captivate scientists.

Features

- ▶ It is unique to India and is not present in any other part of the world.
- ▶ This is the 2nd species of head-shield sea slug found in India.
- ▶ Secretes transparent mucus, shielding it from sand grains while crawling beneath smooth sand, making its body rarely visible.

As humanity continues to explore, each discovery reinforces the importance of preserving our marine environments for future generations.





India's maritime strategy and initiatives

India is a peninsula surrounded by the Indian Ocean on the south, Arabian Sea on the west and the Bay of Bengal on the east. India is also one of the largest littoral states in the Indian Ocean Region (IOR) and Indo-China competition and threat in that region is intensifying. The total trade volume carried through the Indian ocean is nearly USD one trillion annually. **The Bay of Bengal is an economic highway for shipping routes between the eastern and the western hemispheres. About half of the world's container traffic passes through this region and its ports handle about 33% of world trade.** The Arabian Sea connects India to the Middle East, East Africa and beyond. It is a hub of economic activity. Thus from a security perspective and trade perspective a maritime strategy is very important for India.

For decades India's defense policy was centred on its land borders with Pakistan and China. For the past two decades, true to its

ambition of being a global power it has started focusing on naval power as well.

Evolution of the maritime strategy

India's first maritime doctrine was released in 2004. Primarily, this was focused on the "Freedom of use of seas". In 2009 this doctrine transformed from "Freedom of use" to "**Ensuring secure seas**" and the term doctrine was replaced by strategy. With China's rise and increased belligerence in the region, India updated the doctrine in 2015 with the explicit emphasis of becoming the "regional strongman" and countering China. This also takes cognizance of the shift in world view from Euro-Atlantic to Indo-pacific and the significant economic, political and social changes in the IOR. The transition from Asia-Pacific to Indo-Pacific indicates the centrality of India to the region. **India's role as a net security provider, offering security to other stakeholders in**

the region, was also in focus in this doctrine. However for any nation this cannot be a frozen document and it keeps evolving continuously.

Initiatives

In line with the strategy India has taken significant initiatives and post 2015 these have gained a lot of pace. India is ramping up the domestic defense industry and practises new tactics and technologies. India is also actively engaged in multilateral fora like QUAD, SAGAR and Indian Ocean Naval Symposium.

Multilateral naval exercises like the Malabar naval exercise, Goa maritime conclave and MILAN help enhance maritime security in the region.

The evolution of our strategy clearly brings out our ambition of emerging as the "regional strongman". The Maritime Vision 2030 document gives thrust to naval modernization. Acquisition of three aircraft carriers, modern warships,





Barak 1 and Barak 8 surface to air missiles, over 200 aircraft for naval use, six Scorpene-class submarines and five nuclear engine powered submarines and additional P-81 surveillance aircrafts are all part of the initiatives that are envisaged.

In pursuit of its strategy, India has entered into many bilateral and multilateral agreements for defense cooperation with the US and littoral states. Defense deals with other States like Singapore, Indonesia,

Oman, Australia and Seychelles are all strategically important. To enhance India's maritime domain awareness in the IOR, India has opened a military installation in the Mauritian island of North Agalega. This is part of our strategy to counter the dominance of China in the IOR.

India is executing its plan of increasing the naval presence in the ocean. **The plan is to create a 175 – ship force by 2035.** Out of the 43 ships under

construction, 41 are being built in Indian shipyards and another 49 ships and submarines shall also be built indigenously. Recently the Indian navy commissioned the first squadron of the newly inducted MH 60R Seahawk multi – role choppers. The INAS 334 ‘Seahawks’ would considerably enhance our surveillance and combat capabilities.

In all this, the focus is also on *aatmanirbharta* (indigenisation). The Indian Navy is expected to become *aatmanirbhar* by 2047. This in effect means that every ship, submarine, aircraft and weapon system will be made in India. A ship has three components (viz) Float, Move and Fight. Currently we have achieved 95% self-reliance in the Float component while it is 65% and 55% respectively in the Move and the Fight components.

In a big boost to **Make in India** the Indian Navy has signed a contract to purchase 220 Brahmos extended range missiles for its warships. This is a contract worth ₹20,000 crores and the missile system will also be exported to the Philippines.

In early March 2024 the first made in India ASTDS pull tug “Ocean Grace” was inaugurated. Tugs are special boats used to move larger ships by towing, pushing and guiding. Metaphorically speaking Indian Navy is firing on all cylinders. The proof of the pudding, though, is in its eating.

The Indian Navy's highly successful rescue of 17 crew members of MV Ruen and the surrender of 35 Somali pirates, off Somalia's coast in March 2024 was a demonstration of top class combat capabilities, on par with some of the best in the world. **The ‘strongman’ is certainly emerging.**





MISSION DIVYASTRA

Blast Off

- ▶▶ On 11th March, PM Modi announced the successful flight test of an indigenously developed Agni V ballistic missile integrated with Multiple Independently targetable Re-entry Vehicle (MIRV) technology by DRDO.
- ▶▶ “Mission Divyastra” was launched from a missile launch site on Abdul Kalam Island off the coast of Odisha in the eastern part of India.
- ▶▶ The MIRV have revolutionized the concept of ballistic missile payloads by enabling a single missile to carry multiple warheads, each capable of targeting enemies at different locations.
- ▶▶ Presently only USA, UK, France, China, Russia and India are among the elite group that possesses this missile technology.

the USA military, the MIRV technology was zealously guarded and not available in open market with missile powers jealously safeguarding this technology.

The Indian journey of MIRV technology was perfected and tested for a long duration on workhorse rockets of ISRO in their commercial launches which were geared towards launching a single rocket that placed several satellites in orbit.

Little wonder that our Mission Divyastra comes after years of dedicated research and development by DRDO scientists with the initial journey having begun with a maiden flight test in April 2012 and followed by periodic successful tests in 2013, 2015, 2018, and 2020 progressively validating its capabilities as under

- ▶▶ Propulsion
- ▶▶ Navigation
- ▶▶ Long-range accuracy
- ▶▶ Multiple target engagement
- ▶▶ Area saturation
- ▶▶ Penetration of advanced missile defence systems

Tracing the origin

Introduced first in 1970 by

DRDO tests Agni-5 missile with MIRV tech

- Operational range: **5,000km**
- Height: **17m**

What is MIRV tech?

- MIRV stands for Multiple Independently targetable Re-entry Vehicles
- This technology allows a single missile to carry multiple warheads, each capable of being aimed at a different target.

India joins select group of nations

- Only the US, UK, Russia, France and China have MIRV technology
- Development and deployment of MIRV tech is a closely guarded subject



India's MIRV punch

India has joined select group of nations that have Multiple Independently Targeted Re-entry Vehicle (MIRV) technology

Agni-5 missile uses a three-stage solid fuelled engine
5,000km range

USING MULTIPLE WARHEADS

- MIRVs can cause more destruction than missiles that carry single warhead.
- It will allow Agni-V to deliver multiple nuclear warheads against different targets across hundreds of kilometres

India completed its nuclear trial in 2018 when nuclear-powered ballistic missile submarine, INS Arihant, completed its first deterrence patrol

India's nuclear doctrine, promulgated in 2003, commits to a 'no first use' posture, with weapons to be used only in retaliation against a nuclear attack

Proud of our DRDO scientists for Mission Divyastra, the first flight test of indigenously developed Agni-5 missile with Multiple Independently Targetable Re-entry Vehicle (MIRV) technology."
—NARENDRA MODI, Prime Minister

Agni-V ballistic missile, with over 5,000-km range is now a part of the Strategic Forces Command and is equipped with indigenous avionics systems and high-accuracy sensor packages which ensured that the re-entry vehicles reached the target points within the desired accuracy.

Salient features

- ▶▶ MIRV allows a single missile to carry multiple warheads (3-4) each capable of targeting different locations independently.
- ▶▶ Enhances the missile's effectiveness by increasing the number of potential targets it can engage.
- ▶▶ Can be launched from both **land-based platforms** and **sea-based platforms**, such as submarines, expanding their operational flexibility and range.
- ▶▶ MIRVs were initially designed to enhance offensive

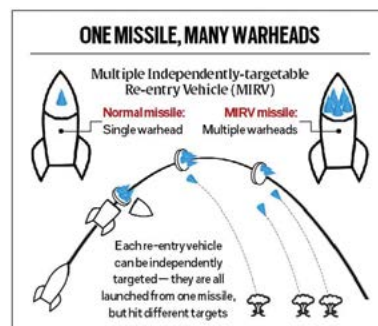
capabilities rather than to defeat ballistic missile defences.

- ▶▶ Ability to deploy multiple warheads independently makes them significantly more challenging to defend against compared to traditional missiles.
- ▶▶ Technology poses several challenges as it involves a delicate combination of large missiles, miniature warheads, precise guidance and a complex mechanism for releasing them sequentially during flight.

The strategic shift has enabled many nations to greater target damage and reduce the effectiveness of enemy missile systems thus altering the landscape of global nuclear deterrence due to its ability to defeat ballistic missile defences.

Strategic implications

The MIRV warhead launch capability has showcased to the



world India's political will to challenge any enemy as a real nuclear missile power and will strengthen our military muscle.

MIRV-armed Agni Inter Continental Ballistic Missile (ICBM) acquired under Mission Divyastra can deliver missiles on different target in different directions spread over a few hundred kilometres thus making the defender's task almost impossible to engage them. Agni MIRV can carry 4 to 12 missiles thus increasing the survivability of its nuclear tipped missiles.

With India's nuclear adversaries adopting the first use doctrine, our military will be able to strike a devastating response with MIRV Agni thus strengthening our "No First Use" doctrine by making enemy nations aware of the consequences of any misadventure.

Conclusion

The technology demonstration and testing of Agni-V MIRV has put India in a dominating position and will secure our position amongst the league of missile powers by emphatically conveying the message to rival nuclear armed nations that we cannot be cowed down and will desist any expansionist designs of our adversaries. It serves as an added fillip to our status as the fifth largest world economy thus quelling our strategic rivals from challenging our meteoric rise in the global arena.





INS JATAYU

commissioned

Minicoy is the southernmost island of Lakshadweep straddling the vital Sea Lines of Communication.

Backdrop

- ▶ Lakshadweep islands was under the control of Madras Presidency prior to 1947 and later became an integral part when our naval ships first landed at Kavaratti and hoisted the Indian flag on 1st October 1947.
- ▶ Lakshadweep became a Union Territory on 1st November 1956.
- ▶ Naval Detachment Minicoy with limited surveillance capacity was set up in early 1980s under the operational command of Naval Officer-in-Charge (Lakshadweep).
- ▶ Minicoy is the southernmost island of Lakshadweep straddling the vital Sea Lines of Communication (SLOCs).

- ▶ Indian Ocean Region (IOR) has seen upsurge in criminal activities.

Commissioning of INS JATAYU

On 6th March 2024, INS Jatayu was commissioned as a new naval base at Minicoy Islands in the Lakshadweep archipelago by Administrator Praful Patel and Chief of Naval Staff, Admiral R Hari Kumar.

The commissioning ceremony marked a pivotal milestone in India's naval capabilities by playing a crucial role in enhancing maritime domain awareness and lending additional operational reach by challenging unfriendly intrusions and to act as first responder to any SOS call from vessels in crisis.





With INS Baaz to the east in the Andamans and INS Jatayu in the west, both stations will serve as eyes and ears in safeguarding our national interest and security.

The strategic significance of Lakshadweep necessitated creating a vanguard naval base to strengthen own security infrastructure by enhancing the Indian Navy's sustenance and surveillance in the region.

Why is Lakshadweep strategically important?

Lakshadweep is just 130km north of Maldives (which has been cozying up to China recently and with the pull-out of Indian Army) and located on traditional trade routes. It is strategically important to recognise the pressing need for its heightened surveillance amidst the prevailing geopolitical developments in IOR and increased Chinese naval footprint.

In recent years, there has also been a perceptible increase in smuggling of narcotics while illegal, unreported and unregulated (IUU) fishing has been observed in Central Arabian Sea and Southwest Indian Ocean beyond the Indian EEZ with majority of trawlers being Chinese.

INS JATAYU

Located at Minicoy, INS Jatayu with its proximity to the busy Nine Degree channel will strategically straddle the vital

SLOCs by providing further teeth to India's maritime forces amidst new geopolitical challenges and facilitate much needed situational awareness to our Navy of the entire region to counter any Chinese expansionist behaviour.

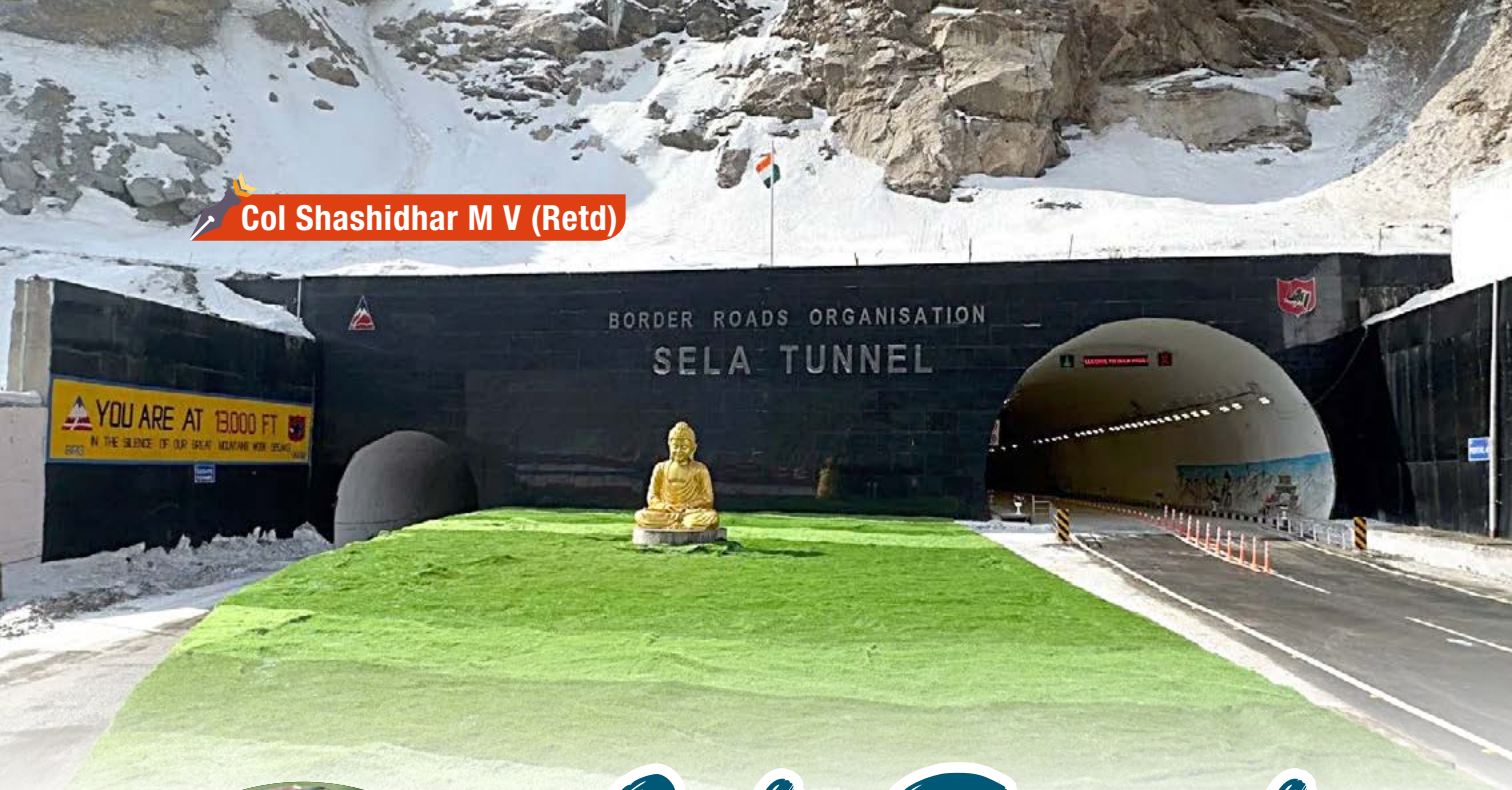
Situated at the tip of India's Exclusive Economic Zone (EEZ), INS Jatayu as a formidable static aircraft carrier will serve as a deterrent against any future adversarial presence with an array of equipment, radars, jetties, airfield and BrahMos supersonic cruise missiles. With INS Baaz to the east in the Andamans and INS Jatayu in the west, both stations will serve as eyes and ears in safeguarding our national interest and security.

Conclusion

INS Jatayu is the second naval base in Lakshadweep after INS Dweeprakshak in Kavaratti. With its commissioning it will not only strengthen our foothold in the Lakshadweep islands but also be able to extend operational surveillance, reach and sustenance of our Navy thus ushering in a new era of capacity building and comprehensive development of the island territories while embracing the vision of SAGAR (Security and Growth for All in the Region).



Col Shashidhar M V (Retd)



Sela Tunnel

gives an edge to

Indian Army

An imperative need for quick mobilisation of troops and weapon systems gained impetus in the wake of the 73- day-long border standoff between India and China in Doklam.

Rewind

February 2018 - Finance Minister Arun Jaitley announced the government's plan to build a tunnel through the Sela Pass located at an elevation of 13,700ft. This will ensure faster movement of troops in Tawang a strategically-located town in Arunachal Pradesh bordering China thus developing connectivity infrastructure in border areas to secure India's defence. An imperative need for quick mobilisation of troops and weapon systems gained impetus in the wake of the 73- day-long border standoff between India and China in Doklam.

October 2019 - The existing Balipara-Charduar-Tawang (BCT)

road climbs up the Sela pass and goes towards Tawang on the snow line. Roads get closed during heavy snowfall from December to February every year and it requires massive efforts to clear the snow.

The planning

The foundation of the project was laid by PM Modi in February 2019, with a cost estimation of ₹697 crore but work got delayed due to various reasons, including the Covid-19 pandemic.

▶▶ Executed by the Border Road Organisation (BRO), the project comprises two tunnels.

▶▶ The first is a single-tube tunnel 980 metres in length



and the second 1.5km long with an escape tube for emergencies.

- ▶▶ Main tunnel is a bi-lane tube with an overhead clearance of 5.5 metres.
- ▶▶ An escape tunnel with an equal length of 1.55km is being constructed parallel to the main tunnel in case of any emergency.
- ▶▶ While the ground breaking for tunnel-1 took place on 31st October 2019, the work

on the second tunnel began on 15th January 2022.

- ▶▶ A total of 3,000-4,000 vehicles are expected to use the tunnel every day.

Main Construction

The tunnel, constructed at a cost of ₹825 crores by the BRO is strategic as it is close to the Line of Actual Control (LAC) and will provide an all-weather connectivity to Tawang.

- ▶▶ Constructed by 650 personnel

and labourers every day for five years, consumed over 90 lakh man-hours for the execution of the project.

- ▶▶ A total of 162 plants and machinery were dedicated to the construction of this tunnel.
- ▶▶ Sela Tunnel has been constructed using the New Austrian Tunnelling Method (NATM) a widely accepted and used methodology in construction of tunnels worldwide, especially for Himalayan Geology.



Parameters

The Sela Tunnel Project has been constructed with the highest quality standards with a well-prepared Quality Assurance Plan and boasts of many state-of-the-art safety features including

- ▶▶ A ventilation system to maintain air quality
- ▶▶ An electro-mechanical system including a jet fan ventilation system
- ▶▶ Fire-fighting devices
- ▶▶ CIE norms-based illumination system
- ▶▶ SCADA-controlled monitoring systems

Implications

Situated 400 metres below the Sela Pass the tunnel offers a vital all-weather communication link even during severe winter season and will reduce the travel distance by more than eight km and travelling time by an hour for movement of troops, heavy equipment and supplies thus reinforcing our defence capabilities.

It will also herald a new era of economic prosperity for the region by fostering trade, tourism, employment, timely medical assistance and health care, education and essential services besides overall development of the region.

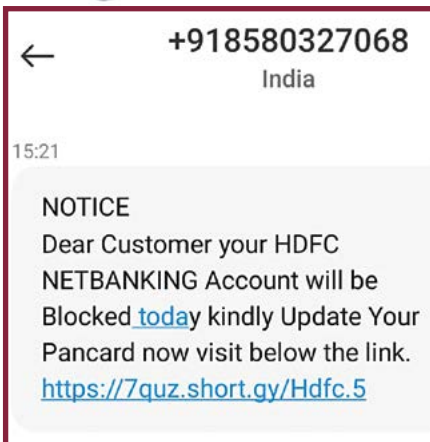




 Smt Vanaja Shankar

Know your CIBIL score

Part 2



Gita and Shravan sat on the bench in the park after a game of badminton.

“It is getting so hot,” said Shravan as they both wiped their faces with their towels.

Grandpa, who had gone for a walk came back with his friend Mr. Kumar.

He called to them. “Children, let’s go with Mr. Kumar to his house. He wants to discuss something with us.”

The children stood up and ran towards their grandpa. They greeted Mr. Kumar.

At Mr.Kumar’s house, they sat on the sofa for discussion.

Grandpa spoke, “Kumar, you said you have a problem with a bank. What happened?”

Mr.Kumar: “I had received some messages on my mobile from XYZ Bank a few months back. I ignored the messages thinking it must be either some fraud or some mistake because I don’t have any relationship with XYZ Bank.”

He showed his mobile messages to grandpa.

“You have been sanctioned a car loan of ₹5,00,000.”

After two weeks there was another message from XYZ Bank. “Your loan account has been debited with ₹.5,00,000/- for issue of DD favoring National Motors.”

Mr.Kumar continued. “See this message I received last week. “Interest on your loan account is due for payment. Please pay within the due date to avoid penalty.”

“I ignored this message also as some fraud. Then, yesterday, I got a call from XYZ Bank, following up for interest repayment and asking me to visit the bank.”

“I went to the bank to complain that I was receiving these messages by mistake. I was shocked when they said that there was a loan in my name. All the details were mine – Aadhaar, PAN and address were all matching. I gave a complaint letter to the bank.”

The bank officer said that the loan account was with another branch at the other end of our city. He said he will raise the complaint to that branch. However, he said, I could have detected this much



9 Steps To Get Your Free Credit Score



earlier If I had checked my CIBIL report.

Mr. Kumar: “I thought CIBIL score is important only for people who want to take a loan. I never take loans, so I never bothered to check my CIBIL report. I still can’t understand how the bank gave a loan in my name.”

Grandpa nodded. “This is an identity fraud. The fraudsters have taken your Aadhaar and PAN card copy to the Bank, forged the signature and taken a loan in your name. Did you give your Aadhaar and PAN card copy to anyone for some reason?”

Mr. Kumar sighed. “I had given only the copies to an agent for registering a lease deed when I rented out my flat.”

Grandpa nodded. “Whenever

you submit such copies with your signature, write the purpose for which you are submitting the document along with the date. Make it difficult for anyone to take a copy of your copy.”

Mr.Kumar nodded."How do I check my CIBIL report?"

Grandpa replied.

How to access our CIBIL report

1. Visit the website of CIBIL. <https://www.cibil.com>
2. Register on the site to create your login. (Your PAN number is the identifying factor.)
3. You can access your score and view one report per year for free. (All the loan accounts linked to your PAN number will be visible in this report.)

4. CIBIL has different paid subscription plans with enhanced features and benefits for users who would like to monitor and improve their CIBIL score.

Grandpa guided Mr. Kumar to create a login and view his CIBIL report.

What to do if you find some incorrect entry/record in CIBIL report

“Oh my God. This loan from XYZ Bank is shown here. I’ve not even used a credit card and here my CIBIL report shows a loan in my name. How do I get it corrected?” Mr. Kumar was disturbed.

Grandpa: “You can submit a dispute form online to CIBIL. Once you submit the dispute form, CIBIL will update the relevant record as “under dispute.” The issue will be taken up with XYZ bank and you will receive a solution within 30 days.”

With grandpa’s help Mr. Kumar submitted the dispute form on CIBIL site.

“Thanks so much for your help.”Mr. Kumar held Grandpa’s hands.

Back home, the children narrated the story to their mom. “I think I should check my CIBIL report immediately,” she sighed.

Grandpa nodded. “Whether you are applying for a loan immediately or not, it is better to check your CIBIL report to ensure that all the records are proper and there is no discrepancy. With a good CIBIL score and report, whenever you apply for a loan, the process will be smoother.”

Mom asked, “What factors affect the CIBIL score?”

Grandpa replied.



What factors affect CIBIL score?

There are four factors that affect the CIBIL score. They are:

- 1. Payment history.** You must pay your credit card outstanding and EMI dues within the due date. Payment beyond due date will affect your credit score.
- 2. High utilization of credit.**
 - If you regularly pay only the minimum due on the credit card, it shows that you are borrowing beyond your means. For e.g., if your credit limit is ₹3 lakhs and you regularly have a high amount outstanding on your credit card, say ₹2.8 lakhs, your credit score will decrease.
- 3. Multiple loans and credit cards** – If your report shows multiple loans and credit cards with different banks or

if there are multiple enquires on your CIBIL report because you have applied for loans with different banks, it will adversely affect your score.

- 4. Credit mix.** Too much reliance on unsecured loans like personal loans and credit cards lowers your score. It is good to have a mix of secured loans like home loans and car loans in your loan portfolio.

Mom: “Thanks. I just checked my report. I find some credit cards that I had taken long back are still not closed in this report though there is no outstanding. These cards were offered free to all the employees in my previous company. I hardly used these cards and after a year or two cancelled them.”

Grandpa nodded. “Having too many credit cards does affect the score. So, first get the discrepancies corrected.”

Mom asked, “Is it possible for us to improve our CIBIL score?”

Grandpa: “Follow these practices to improve your CIBIL score.”

How to improve our CIBIL score

- 1.** Always pay your dues on time.

- 2.** Keep your loan outstanding balances low.
- 3.** Maintain a healthy credit mix – Have some secured loans like home loan in your loan portfolio along with credit cards.
- 4.** Apply for new credit in moderation.
- 5.** Monitor your co-signed, guaranteed and joint accounts monthly: In co-signed, guaranteed or jointly held accounts, you are held equally liable for missed payments.
- 6.** Monitor your CIBIL Score and report regularly to avoid unpleasant consequences.

Grandpa continued. “Now you can also download CIBIL app in your mobile to check your score on the go. There are many people who take a paid subscription to monitor their CIBIL score regularly so that they can get their loan applications approved faster.”

Mom nodded. “Thanks for the inputs. I understood that it is important to safeguard our identity documents so that fraudsters do not use them to take loans. Secondly checking our CIBIL report will help us ensure that we have a clean credit record and get any discrepancy corrected.”

Grandpa: “This awareness is useful especially for youngsters who are new to credit i.e., those who are entering the job market and are ready to start their financial journey. **It is always good to adhere to financial discipline and maintain a clean credit record right from the beginning.**”

A good CIBIL score is a reflection of our financial discipline and clean credit record.





Introduction to Corporate Law **Part 2**

Piercing the corporate veil

In the earlier edition of this series, we had seen how a company is considered to have an identity that is distinct from that of its owners/managers. However, there are instances where people have tried to take undue advantage of this legal position by attempting to carry on unlawful activities or incurring debts through a corporate entity, to be shielded from personal liability and attribute the liability to the entity.

To address such malpractices, courts have evolved the doctrine of ‘piercing the corporate veil’ as an exception to the theory of independent corporate identity. This essentially means that the court will, in certain scenarios, ‘pierce’ or penetrate through the identity of a company (which may act as a ‘corporate veil’) to see if the company’s defaults are deliberate

actions committed by an individual or a group of persons.

Re. Sir Dinshaw Manakjee Petit [1927]

Facts of the case: The assessee had created four private companies and entered into arrangements to hold a block of investment as an agent for each company. The income received by the companies was handed back to him as a loan. This way, his income was divided in order to reduce his tax liability.

Legal issues: Whether the corporate veil could be pierced and whether the companies were formed for the assessee to carry on tax evasion.

Decision of the court: It was held that the company was formed by the assessee purely and simply as a means of evading tax and the company was nothing more than the assessee himself.





While the piercing of corporate veil has been undertaken by courts of different countries/jurisdictions, it is clearly an exception to the general rule. In India, the Companies Act 2013 takes into account the fact that the management of a company plays a significant role in its operations /mismanagement. Penalties for several defaults and non-compliance by companies under the Act, are levied on directors/officers



of such companies in addition to the companies themselves.

A brief of the Companies Act, 2013

The Companies Act 2013 is one of the primary legislations governing the various processes in relation to a company, from its incorporation until its dissolution. We will look into specific concepts and provisions under the Act.

Categories of companies under the Act

The Act categorises companies into various categories including public companies, private companies, one person companies, small companies, holding and subsidiary companies, dormant companies, Government companies, etc., based on factors such as:

- ▶▶ How the company is formed or ‘incorporated’ (i.e., by under a legislation, registered under the Companies Act, etc.).
- ▶▶ The number of members/directors present in the company.
- ▶▶ The quantum of share capital of the company.
- ▶▶ The type of limitation of liability of the shareholders (i.e., companies limited by shares, companies limited by guarantee, unlimited companies).

The Act, along with various other statutes and rules, prescribes requirements and processes to be complied with by each such category of companies.





Lance Naik Karam Singh

Lance Naik Karam Singh, a brave soldier from village Sehna, Barnala, Punjab, enrolled in 1 Sikh on 15th September 1941. He had previously earned a Military Medal in World War II.

During the summer operations in Jammu and Kashmir in 1948, the Indian Army made significant gains in the Tithwal sector. However, on 23rd May of that year, the enemy launched a strong counter-attack after recovering from their initial defeat. This forced the Indian Army to withdraw from their positions across the Kishanganga River. Still, the resilient soldiers did not give up. They gathered their forces and settled on the Tithwal ridge to challenge the enemy.

It is remarkable how Lance Naik Karam Singh and his fellow soldiers held their ground and defended their positions against the enemy for months during the battle of Tithwal. Despite facing a stronger and desperate attack by the enemy on 13th October, they managed to prevent the attempts to recapture the Richhmar Gali to the south of Tithwal and outflank the Indians by moving towards Nastachur Pass to the east of Tithwal.

During the military operation, there was a fierce battle that occurred in the Richhmar Gali vicinity on the night of 13th October. The attack started with a heavy bombardment of guns and mortars. The shelling was so intense that almost all of the bunkers in the platoon area were severely damaged. Lance Naik Karam Singh was in charge of a forward outpost when the enemy attacked with a significantly larger force. The position was assaulted eight times, but the Sikhs successfully repelled the enemy each time. With ammunition running low, Karam Singh joined the main company

position, fully aware that no help would be available due to the heavy enemy shelling. With the wounds, he assisted in bringing two injured comrades back with the help of a third mate. Surrounded by enemy fire, Karam Singh crawled from one trench to another, motivating his men to continue fighting and repel the enemy using grenades. Undeterred being wounded twice, he refused evacuation and continued to hold the first-line trenches.

Though heavily outnumbered, he and his men fought valiantly against the enemy, repelling their attacks time and time again. Karam Singh's heroic actions, such as bayonetting two intruders to death, played a crucial role in demoralizing the enemy and ultimately forcing them to break off the attack. **His unwavering determination to hold the first-line trenches, even after being wounded twice, earned him the Param Vir Chakra, India's highest military honour. Karam Singh's selflessness and dedication to his fellow soldiers will always be remembered as a shining example of bravery and heroism.**

DO YOU KNOW ?

Tithwal is situated on the banks of the Kishanganga River in Kupwara district, 82km from the district headquarters of Kupwara and close to the Line of Control with POK.



DO YOU KNOW ?

- ♥ The principles of **mixed cropping systems** include crop diversity, reduced pest and disease pressure, increased soil fertility and improved water use efficiency.
- ♥ **Assam Gaurav Award** entails a citation/ certificate/ medal and a monetary sum of ₹3 lakh.
- ♥ Assam occupies a geographical area of 7.8 million hectares of which the total cropped area is 4.0 million hectares. However, only 5.4% of the gross cultivated area is irrigated and the average cropping intensity of the state is 145.9%.

Sarbeswar Basumatary

Sarbeswar Basumatary, a 61-year-old tribal farmer from Chirang, was awarded the Padma Shri in the category of Others (Agriculture). He was a daily wager who turned into an inspirational agriculturist of Assam. His outstanding contributions to agriculture have earned him the title of "*Chirang ke Krishi Chiraag*", which means Chirang's agricultural lamp.

Basumatary's mixed-integrated farming approach has yielded remarkable results, overcoming various challenges and cultivating diverse crops including coconuts, oranges, paddy, litchis and maize. His journey is a testament to the resilience and determination of the human spirit, and he is a role model for the entire agricultural community not just in Assam.

Sarbeswar's community-focused approach and willingness

to share his agricultural knowledge with fellow farmers is inspiring. He has encouraged the younger generation to engage in farming, not only contributing to the sector but also generating employment opportunities. His success story is a shining example of willpower, focus and hard work. Despite facing financial insecurity and a lack of resources, he never gave up on his dreams. Instead, he continued to strive towards his goals, and his efforts have paid off.

It is commendable that Sarbeswar has been awarded the Assam government's third-highest civilian award, '**Assam Gaurav**' for the year 2022-23, further highlighting his remarkable achievements. His journey is a testament to the fact that with determination and hard work, one can achieve anything one sets their mind to.



Dr. Uma Ramakrishnan

The first Indian to receive

Parker Gentry Award

We try to understand how other species have been responding over the years, to make ourselves sustain predict our future and make amends with Nature.

We all know our natural habitats are shrinking, with the ever-increasing human population. News about climate change, global warming hit us every day. We try to understand how other species have been responding over the years to make ourselves sustain, predict our future and make amends with Nature. Evolutionary biologists work with ecologists, environmental scientists and other specialists work in tandem to achieve this.

These experts suggest conservation efforts and appropriate remedial measures based on genetic analysis. Dr. Uma Ramakrishnan, a molecular ecologist at the National Centre for Biological Sciences (NCBS, Bengaluru) leads a team of researchers chronicling of human populations in South Asia, as well on conservation of

threatened mammals of the Indian subcontinent. To achieve this, she has pioneered on "peering into the past" via ancient DNA. Her team is supporting conservation projects for tigers, Indian wild cats, leopards and macaque monkeys, a list that lengthens every day, thanks to her dedication and hard work.

Uma grew up in the IISc campus surrounded by academics and researchers, where her dad was a physicist. Flora and fauna around filled this little girl's mind with curiosity about Nature. Different species of snakes including pythons and nocturnal lorises were part of her environment. Keen on observation, jotting down the seasonal changes, variation in numbers, mating patterns, movements, young Uma was full of questions. Her parents, grandparents and a few others who understood her thirst for knowledge





allowed her to explore, which gave her confidence to trail into deep forests later. Among them, Prof. Madhav Gadgil, a great ecologist who was then teaching at IISc encouraged her and showed her the direction. She seized every opportunity to pursue her interest in animals, tagging along with his students on birding and herpetology surveys at his Centre for ecological studies. To hone her quantitative skills, she pursued her bachelor degree taking Mathematics along with Physics and Chemistry based on his suggestions. She fondly remembers how her grandfather, a great academician and institution builder Prof. V K R V.Rao suggested that she travel alone to Delhi by train to learn through experience.

Soon after completing her schooling, Uma took a break year to learn more about what she wanted to learn! Her father was then on a research sabbatical at Princeton University and she used the opportunity, taking up a variety of courses, including one on modern dance. She also assisted in a molecular ecology laboratory there and was part of a study that used DNA to investigate the relationships between lemur troops using samples obtained from field studies in Madagascar.

Blown away by the possibilities that DNA and the use of molecular methods offered, Uma felt, “I mean, the samples were collected across oceans, from the island of Madagascar. And here we were, sitting in a lab in the USA, figuring out the social lives of lemurs!” This gave her confidence to intern with Dr.Lalji Singh, one of the few scientists then working on DNA fingerprinting in our country at CCMB, Hyderabad. Her journey as a wildlife biologist started here in this lab probably, while studying buffalo dung from the nearby places to understand their behaviour. “No doubt those milkmen thought I was crazy, when I asked for cow dung. It didn’t matter! What mattered was what the dung would reveal”, recalls this molecular ecologist who uses faeces to decode wildlife mysteries through genetics.

Genetic materials, in addition to containing clues about the individual identity of a tiger, also help answer questions such as where that is animal from, what it eats, its health condition and so on. Data collection on rare, elusive species is a challenge, as wild animals lead secretive lives and are shy of people. At the same time, the key to all information lies in one of the most basic of nature’s products – poop aka scat!

Why did she choose poop to peep into their past? “Unlike drawing blood which requires capture and immobilisation which could potentially be harmful, collecting scat does not stress or disturb the animal. It is available in plenty and has the added advantage of being non-invasive. Like blood, scat contains DNA that scientists decipher to understand tiger (and other wildlife) populations and estimate their number.





- **The Parker/Gentry Award**, established in 1996 and presented annually by the Field Museum of Natural History, honours an outstanding individual, team or organization in the field of conservation biology for contribution to preserving the world's natural heritage.

- **DST Ramanujam Fellowship** The fellowship is meant for brilliant Indian scientists and engineers from all over the world to take up scientific research positions in India, i.e. for those Indian scientists who want to return to India from abroad.

Fascinated by nature in general and animals in particular, this DST Ramanujan fellowship awardee returned to India after her PhD in the United States and focussed on estimating tiger populations. **She is passionate about the need for tiger conservation in India, as it not only harbours the majority of the tiger population in the world, but it also has maximum genetic variation and hence maximum evolutionary potential.** In her words, “tigers are very charismatic, and I think we all agree we cannot afford to let them go extinct.”

A tiger’s history, how far it travels, its society and mating patterns can also be inferred from its DNA without actually seeing the animal. Her team did not see a single tiger in two months of fieldwork in Similipal, Odisha in 2018, yet they

could collect a lot of information about them through samples left. In the world of wildlife biologists, turd is treasure “almost like gold”, quips Dr.Uma. Sometimes they use hair scraped from scratch marks etched on trees or traces of saliva carefully retrieved from prey. Her studies have included census estimates from combined camera trap and genetic surveys, historical inferences from genetic data and museum specimens and demonstrations of gene flow impacting genomic variation and inbreeding depression.

Pursuing a career in conservation science requires determination! Dr.Uma has travelled thousands of kilometres to study the rich diversity of Western Ghats, Himalayas and other regions of our country. Understanding animals and knowing about their food preferences, genetic diversity, health and habitat are crucial to their conservation. She says, “There were no courses on ecology or evolution at that time in India. I knew I needed to develop quantitative methods, tools and techniques to find answers.” Her research has led to valuable conservation of wildlife corridors during highway expansions. “I think we have witnessed recovery of tigers, for example, over the last decade. That’s really cool and something to be happy about!” says Dr.Uma.

Recognising her research work on conservation of various species, she was awarded the coveted **Molecular Ecology Prize (2023)** and she is the first Indian to receive **Parker/Gentry award (2016)**.

Dr Uma’s immense contribution through science communication and community service is exemplary and she is an important role model to aspiring scientists around the world.



Bengaluru

How much do you know?



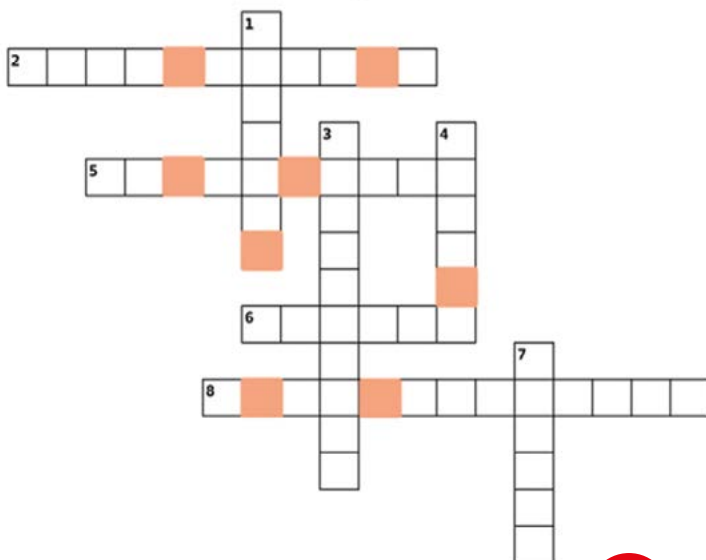
I

1. A chieftain under the Vijayanagara Empire is the founder of this city.
2. Sprawling over 240 acres in the heart of the city, this 200-year-old botanical garden has the largest collection of tropical and sub-tropical plants.
3. One of the biggest lakes in Bangalore, is located on the eastern side of the city. It derives its name from the locality. It is spread over 50 ha and has several islands.
4. Being the headquarters of National Cricket Academy, Bengaluru houses this famous stadium.
5. Spread across 300 acres, this park was renamed as Sri. Chamarajendra Park. It houses the state library, various historical buildings and statues.
6. 20 km from the city, known for its Safaris, this National park houses India's first butterfly park.
7. This magnificent building consisting of 300 rooms houses the legislative chambers of the state government.
8. A premier scientific institute, renowned for its research excellence is located here.
9. Noble Prize winner and Bharat Ratna awardee, this famous scientist was born here.
10. In 1985, this company was the first multinational corporation to set up base in Bangalore.

II

Across

2. Powered by Hydroelectric plant in 1906, Bengaluru was the first city in India to have this. This has become a basic need today.
5. Inspired by the Crystal Palace in London's Hyde Park, this huge structure is a primary attraction spot in the Botanical Gardens.
6. Once called a pensioner's paradise, Bengaluru is also known as the _____ city of India.
8. Bengaluru is known as the _____ of India because of its role as the nation's leading information technology (IT) exporter.



Down

1. With fortified watch towers and turrets, the Bengaluru palace is modelled on this castle of England.
3. Oldest and the busiest street in Bengaluru famous for clothing, footwear, electronics and food-joints.
4. Bengaluru is located on this Plateau in the south-eastern part of Karnataka.
7. Key water supply to this city is from this river.

III

What Am I?

Unscramble the highlighted boxes to find me.

Hint: Eco-friendly intricate wall paintings by tribal women of Karnataka, each carrying a meaning from yogic asanas to tribal people celebrating life.

ANSWERS ON PAGE 66





Healthy Indian alternatives to junk food

Childhood is a time of exploration, and taste buds are no exception. However, the allure of brightly coloured candies, instant noodles and sugary drinks can be detrimental to a child's health. In India, with its rich culinary heritage, there are a plethora of delicious and nutritious alternatives that can satisfy cravings while promoting well-being.

The first step is understanding the negative impact of high sugar on young bodies. Excessive sugar intake not only contributes to weight gain and obesity, but also increases the risk of developing Type 2 diabetes, heart disease and dental problems. These consequences can have a lifelong impact on health.

Thankfully, Indian cuisine offers a vibrant palette of natural sweeteners and healthy substitutes for sugary treats. **Dates**, with their inherent sweetness and fibre content, are a fantastic replacement for candies. These can be enjoyed on their own or stuffed with nuts and rolled in desiccated coconut for a delightful energy bar.

Fresh fruits like mangoes, bananas, and guavas provide a burst of natural sugars, vitamins, and minerals, all packaged in a fun and colorful way. For a creamy and refreshing dessert, try chilled *shrikhand*, made with hung curd (strained yogurt) and flavored with cardamom and honey.





or *uttapam*, made with fermented lentil and rice batter, providing protein and complex carbohydrates. These dishes are not only delicious but also keep kids feeling full for longer.

Sugary drinks are another culprit in a child's unhealthy diet. Instead, opt for the refreshing and hydrating power of homemade buttermilk. Flavoured with ginger, mint or cumin, it aids digestion and replenishes electrolytes. Freshly squeezed fruit juices, diluted with water, offer a burst of vitamins and a natural sweetness that quenches thirst. For a warm and comforting beverage, consider a cup of spiced milk (*haldi doodh*) made with turmeric, ginger and a touch of honey, boosting immunity and promoting good sleep.

The key to success lies in making these healthy alternatives fun and engaging for children. Children should get involved in the kitchen, to help select ingredients and prepare the dishes. Presentation is also crucial. For making any food look appealing, arrange fruits in colourful patterns, add a sprinkling of chopped nuts for texture, or drizzle homemade honey for a touch of sweetness.

By embracing the rich culinary traditions of India, we can ensure that children develop a healthy relationship with food. With a little creativity and a focus on natural ingredients, we can create a world where deliciousness and well-being go hand in hand, cultivating healthy habits that will last a lifetime.

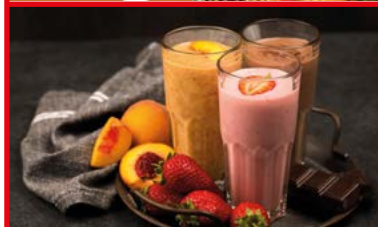
AVOID JUNK FOOD



Instant noodles, often laden with sodium and unhealthy fats, can be easily replaced with healthier options such as millet noodles.

Poha, a flattened rice dish flavoured with vegetables and spices,

TASTE INDIAN FOOD



is a quick and nutritious breakfast or snack. *Upma*, made with *semolina (sooji)* and vegetables, offers a similar taste and texture, but with a much higher nutritional value. For a South Indian twist, try masala dosa





Pooja Chathoth

India's first female ship surveyor



Lloyd's Register is known best for the classification and certification of ships. It also inspects and approves important components and accessories including life-saving appliances, marine pollution prevention, fire protection, navigation, radio communication equipment, deck gear, cables, ropes and anchors.

India's first and foremost female ship surveyor has broken barriers and become a trailblazer in a traditionally male dominated society. Wearing Lloyd's Register orange uniform, she symbolizes strides toward inclusivity in maritime careers

After completing her Bachelor's degree in naval architecture from the Sree Narayana Gurukulam College of Engineering in Kochi, Pooja tried to join the Indian Navy which was her "big ambition", but was unsuccessful. Not in favour of a desk job Pooja worked for a marine and offshore design firm in Kochi, which is fast emerging as a maritime hub.

Her attention then shifted to classification society prompting her to apply for a role at Lloyd's Register, the iconic British institution, one of the world's top providers of classification and compliance services to the maritime sector. They were on the lookout for hiring female ship surveyors in India, in line with the growing global emphasis on diversity and inclusiveness.

Pooja says donning the orange work attire of Lloyd's Register has been her "proudest moment". She is quick to credit Lloyd's Register for fostering a work atmosphere that is safe for women.

Her work involves inspecting and certifying ships for seaworthiness, ensuring adherence to international maritime regulations. Pooja's discerning eyes and rigorous training enable her to scrutinize every detail, from steel cutting to final ship delivery.

"It is our responsibility to support our clients (ship owners and shipyards) and if they are making some mistakes, to guide them and take it to the right path," says Pooja.

Physical fitness and stamina is very important as it is not a regular job with regular timings. Her work involves climbing high posts or crawling into small tanks. Pooja's appointment dispels the notion that surveying 'work' is not for women.

She embodies resilience, competence and the spirit of exploration. She is a beacon of hope for those who dare to dream beyond convention.





Nilgiri Marten



The rich biodiversity of India encompasses many fascinating species, and among them, the Nilgiri Marten stands out as an enigmatic carnivore. Endemic to the Western Ghats, this elusive creature, presents a captivating subject for study.

The Nilgiri Marten finds its home in the forests of the Western Ghats, a biodiversity hotspot renowned for its unique flora and fauna. These forests, characterized by their dense canopy cover and diverse scrub vegetation, provide the perfect habitat for the marten to thrive.

As predators, they have a diverse diet, preying upon a range of small mammals, birds, insects and fruits. Their carnivorous nature is evident in their consumption of rodents, squirrels and birds, while their omnivorous tendencies lead them to supplement their diet with fruits and insects. This dietary flexibility is crucial for their survival in the dynamic ecosystems of the Western Ghats, where food availability fluctuates seasonally.

Despite their ecological importance, they face threats from habitat loss and fragmentation, primarily due to human activities such as deforestation and encroachment. As a result, these elusive creatures are classified as vulnerable, demanding conservation efforts to safeguard their habitat and ensure their long-term survival. Initiatives focused on habitat restoration, protected area management and community engagements are crucial for the conservation of these animals and the preservation of India's rich biodiversity.

In conclusion, the Nilgiri marten emerges as a captivating species within the fauna of India, showcasing remarkable adaptations to its forest habitat. From its elusive behaviour to its diverse diet, studying the life of the Nilgiri Marten offers insights into the complex interactions between species and their environments. As agents of India's natural heritage, it is imperative that we prioritize the conservation of this animal ensuring that future generations have the opportunity to marvel at its beauty and resilience in the wild.

DO YOU KNOW ?

There are seven other types of Martens present across the world.

1. European Pine Marten
2. American Marten
3. Yellow-throated Marten
4. Japanese Marten
5. Beech Marten
6. Sable
7. Pacific Marten

History of

THE FIGHTER JET **PART 3**

In part 2, we saw how many excellent fighter designs were deployed in WWII. We also understood the strategic background and combat context in which fighter planes found themselves in.

In the war of the early 1950s on the peninsula in Northeast Asia, western fighter combat aircraft experienced more losses than expected against lighter, less sophisticated designs from the eastern bloc despite having an overall favourable kill ratio. This drove western militaries to invest more to achieve superiority in performance and technology of both aircraft and weapons. The western bloc attributed its losses less to piloting skill and tactics and more to perceived gaps in performance (range, speed...etc) and technological capability.

This is due, in part, to the (relatively) limited experience of

combat aviators on the eastern side and that western fighters had limited engagement times as they flew in from (relatively) far off bases. First generation fighter jets did not have the range and loitering capability we are accustomed to in present day. This war had jet fighters with guns engaging with each other within visual range of the pilot(s).

Numerical superiority in deployment, overall better skill level, largely from more combat experience among pilots deployed by the western bloc meant that more eastern fighter jets were lost. This in spite of the fact that the eastern designs were clearly lethal in the hands of a skilled aviator.

As the script of the planned war was developed in the following years, western militaries envisioned their fighter jets deploying radar guided missiles against enemy interceptors.

Advances in missiles and radar meant that increasingly, the radar guided air-to-air (A2A) missile could be a stand-off and a fire and forget weapon.

The missile, with increased range and greater degree of terminal guidance by on-board equipment or by third party radar illumination of intended target, could seek and reach its target while the launch platform could turn away much before the enemy could acquire a radar 'lock' distinct enough to guide its own radar guided missile (of lesser range). The era of Beyond Visual Range air combat had arrived and it was believed to be the future of fighter combat.

Most western Air Forces (and Naval air arms) invested in high value, long range, large and heavy fighter jets that could carry several A2A guided missiles and had powerful radar systems to detect



multiple targets from afar and provide concurrent navigational guidance to multiple missiles launched to reach several individual targets simultaneously.

The frontline flagship fighters

- ▶▶ were equipped with sophisticated radar and signals processing systems that could scan vast volumes of airspace rapidly,
- ▶▶ identify contacts as specific enemy aircraft types,
- ▶▶ provide adversary position and trajectory inputs hundreds of times each second

as the launched A2A missiles closed in onto their individual targets at net closure speed of 1500+ km/hr.

Such systems could eliminate a lot of background ‘clutter’ and

decoys from radar returns to keep track of identified targets while such targets rapidly change course and speed to shake the system’s hold on their track. The powerful radar transmissions that made this possible also made the host visible to sensitive receivers of the enemy.

A2A missiles of longer range gave some measure of advantage in air to air combat. Some A2A missiles had on-board radar (less capable) for mid-range to terminal guidance (when a smaller volume of air space needs to be scanned for a single predetermined radar signature in return), allowing their host to limit transmission time or turn away, giving true fire and forget capability.

In the mid-1960s when the western forces were warring in Southeast Asia, A2A radar guided missiles for beyond visual range engagement and infrared guided

missiles for engagements at short range were essential features of fighter jets. On the other hand the venerable cannons that had been the weapon of aerial combat thus far had been dropped.

Western combat aviators were in for some surprise and disappointment as their missiles did not work as effectively as expected. Despite the investment and technological progress, accuracy and reliability of both missile and targeting/guidance they were vulnerable to unexpected conditions. Some factors were peculiar to the region of operation (weather, atmospheric condition etc.); others were electronic jamming and counter measures by adversary and the general stress of the combat environment.

In a bid to arrest the unfavourable trend in wins: losses ratio, the western superpower retrofitted its fighters with guns.

The multifaceted scientific, technological institutional set-up and wide ranging industrial base of the west kept churning out advances across the entire spectrum of relevant areas from optics and electronics to propulsion systems and mass production of complex airframe structures.

Lacking these, the eastern bloc militaries as well as their counterparts in the developing world relied on combat aircraft that stuck to the core principles of fighter effectiveness. They employed tactics that brought the fight to flight regimes where their aircraft were at a relative advantage. Lower per unit cost meant that developing nations which were customers of jet producing members of the eastern bloc could hold a numerical advantage and replenish stock at lower cost in a long drawn war of attrition.





The guided missile had another implication for the fighter jet community. The superpower of the eastern bloc, had its vast landmass, population centres separated by thousands of miles of desolate landscape and substantial areas in the extreme cold of the far north where aircraft base operations would be tedious. Hence it adopted the guided missile for air defence as much as intercepting fighters.

Given the world's largest airspace to defend, having fighter jets on constant patrol or in bases spread out across its tremendous expanse was not always a viable option. Potential intruders included high speed attack aircraft of the western bloc, which were as fast as most eastern interceptors.

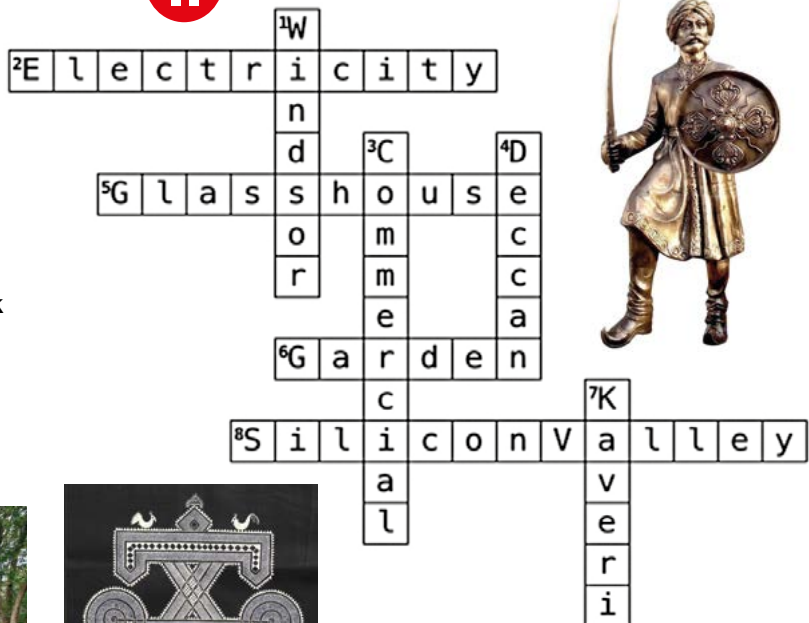
Intercepting, obtaining a firing solution and providing constant guidance to air launched missiles to reach and destroy such intruders may not be achievable consistently as the Air Force planners desired given the short windows available in most attack profiles.

It was more pragmatic to rely on very high speed Surface to Air Missiles for coverage of several regions. Hence the eastern bloc poured resources into development of an array of missile based air defence systems. Such missiles often had a consistent speed margin of Mach 1 or more over aerial threats. This substantially enhanced the probability of reaching the intruder within the limits of the firing solution and missile's motor run.

Solution



1. Nadaprabhu Hiriya Kempegowda a.k.a Kempegowda
2. Lal Bagh
3. Ulsoor Lake
4. Chinnaswamy stadium
5. Cubbon Park
6. Bannerghatta National Park
7. Vidhan Soudha
8. Indian Institute of Sciences
9. Sir C.V. Raman
10. Texas Instruments



ANSWERS OF PAGE 59



What am I ? Hidden word :

CHITTARA





jan aushadhi

Quality Medicines At Affordable Prices for All



7th March

Pradhan Mantri Bhartiya Janaushadhi Pariyojana is a flagship scheme of the Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India, which has made significant impact to the lives of common people by providing quality generic medicines at an affordable price.

Jan Aushadhi Diwas



**Even if there were a sword
in the hands of everyone, it is
willpower that establishes a
government.**



Shivaji

JAYANTI

19th February