PRAJYA

MONTHLY NEWS MAGAZINE FOR CHILDREN

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India's Advancing Port Infrastructure

- Mango seeds travelled with humans from Asia to the Middle East, East Africa and South America beginning around 300 AD or 400 A.D.
- The paisley pattern, developed in India, is based on the shape of a mango.
- A basket of mangoes is considered a gesture of friendship in India.
- The mango is a symbol of love in India.
- Legend says that Buddha meditated under the cool shade of a mango tree.
- Mangos are related to cashews and pistachios.
- A ripe mango is known to be 14% sugar by weight and 0.5% acid by weight, with a sugar acid ratio of 28.

THE PRAJYA TEAM

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FROM THE EDITOR'S DESK

"यत्र नार्यस्तु पूज्यन्ते रमन्ते तत्र देवता:"

(**Transliteration:** Yatra Nāryastu Pūjyante Ramante Tatra Devatāḥ)

(English Translation: Where women are worshipped, the gods reside there.)

7-year-old girl **Moksha Roy** and her actions pack a punch. From advocacy to volunteering to raising funds she has taken a huge responsibility on her young shoulders entirely of her own volition. She is the beacon of hope for saving the endangered planet.

Admiral Lisa Marie Franchetti, the first woman chief of US Naval Staff joins the elite group of eight people who advise the US President on military matters, marking a milestone.

Security of women is increasingly becoming a matter of concern. A women police station is not just about gender equality but also about women at the receiving end of crimes seeking redressal feeling safe. The newly opened station in Kargil should show the way.

S Phangnon Konyak, the first woman MLA from Nagaland breaking new ground in politics has become one of the Vice Chairpersons of Rajya Sabha.

Tenzing Yangki, the first woman IPS officer from Arunachal is a pathbreaker who deserves celebration.

When literacy in British India was less than 1%, **Janaki Ammal** broke the shackles and became the first female Indian botanist. Her expertise in plant breeding and cytogenetics was crucial in selecting plants for developing high yielding varieties of sugarcane, egg plant and magnolias. The world has celebrated her greatness by naming a few species after her.

Read, reflect and revert with your thoughts and feelings.

We look forward to your support and suggestions.

- Editorial Team

Dear Readers,

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

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

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

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

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

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

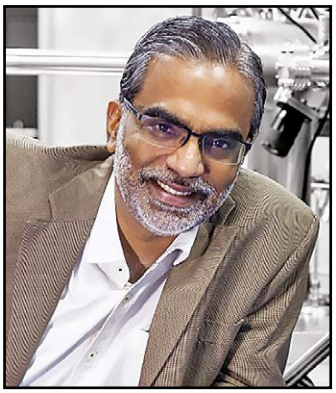
http://bit.ly/Prajya

Happy Reading !

Watch out for the Monthly Prajya Quiz online

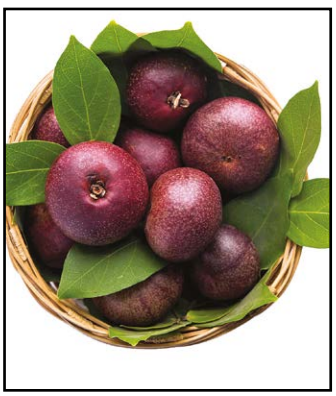
Visit https://davchennai.org/publications/prajya-news-magazine/

Content



International Current Affairs

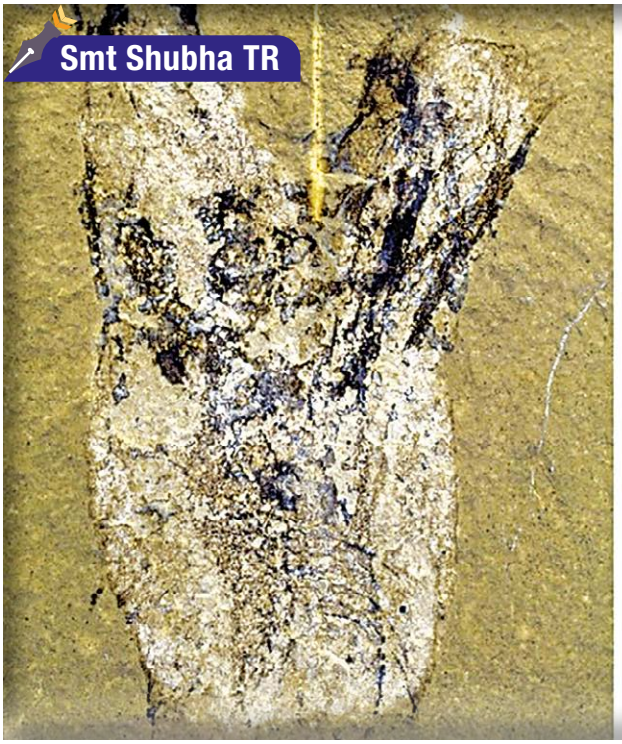
National Current Affairs

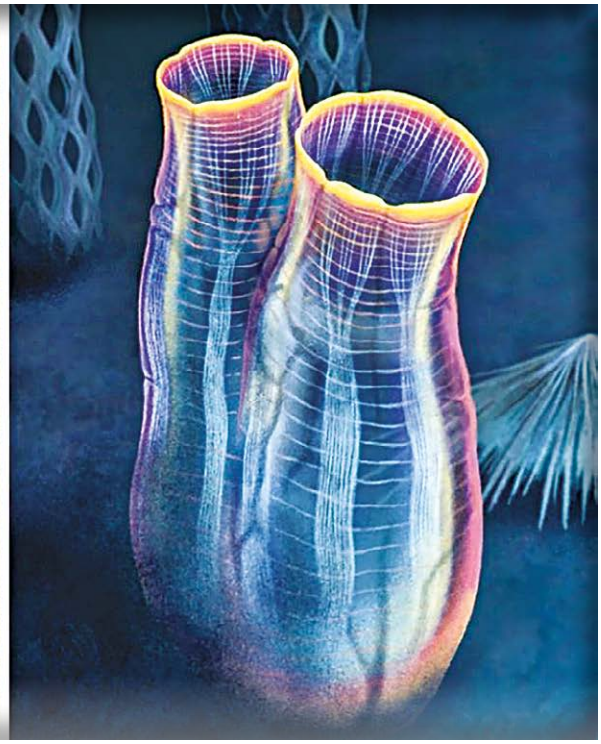


Defence Updates

General Knowledge

Smt Shubha TR





Megasiphon thylacos

A new fossil discovered

Image Source: The Harvard Gazette

DO YOU KNOW ?

Cambrian Period – Dating from 545 to 525 million years ago; marks an important point in history of life on Earth when most of the major groups of animals first appear in the fossil record. This event is called as **Cambrian Explosion** because of the short time over which the diversity of forms appears.

Oceans cover more than two thirds of the earth's surface. While almost every inch of the land has been tracked, mapped and photographed, the deep sea remains remarkably unknown.

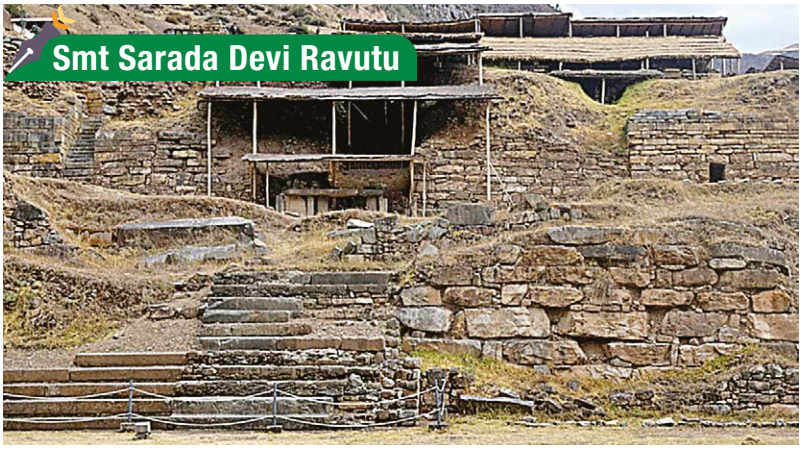
In Utah, US, **palaeontologists** have made an exciting discovery of a fossil, ***Megasiphon thylacos,*** a species of tunicates (a marine invertebrate animal), dating back to 500 million years. The fossil has represented the first-ever discovery with intact soft tissues and holds the distinction of being the oldest of its kind. The discovery suggests that the tunicate body plan was established shortly after the **Cambrian Explosion**.

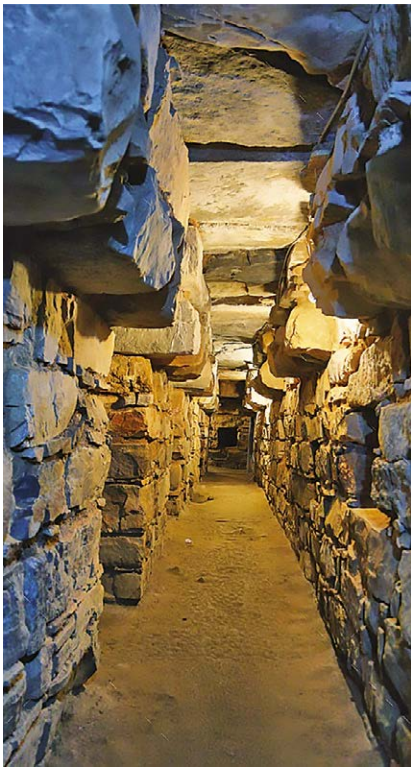
It is fascinating to know that tunicates begin as larve, looking like tadpoles. When ready to develop, a tunicate basically headbutts a rock, sticks to it and begins to metamorphose by reabsorbing its own tail and transforms into this being with two siphons.

Most commonly known tunicates are **sea squirts** living on the sea floor. The body of the adult tunicates is usually barrel shaped and have two siphons coming out of their body. Adult tunicates do not move and feed through their large siphons. One of the siphons draws water along with food particles using suction while the other expels the water. There are about 3,000 species of tunicates.

Early tunicates are the closest relatives to vertebrates. Hence, studying them is crucial for understanding our evolutionary origin.

Smt Sarada Devi Ravutu





Ancient temple corridor discovered

DO YOU KNOW ?

- The Inca Civilization flourished in ancient Peru between 1400 and 1533 CE.
- The condor, one of the largest birds in the world, was associated with power and prosperity in ancient Andean cultures.
- UNESCO declared Chavin de Huantar a world heritage site in 1985.

Civilization is the state of having an advanced level of social organization and a comfortable way of life.

Chavín de Huántar is a UNESCO World Heritage archaeological site in the Peruvian Andes where the Chavín people lived around 900 B.C.E.

Location: The Ancash Region (Western Peru, South America)

Elevation: 3,180 meters.

Who were the Chavín people?

Farming communities in the northern highlands of the Peruvian Andes, more than 2,000 years before the Inca Empire rose to power.

Archaeologists in Peru have uncovered a 3,000-year-old sealed corridor dubbed **"the condor's passageway"** that likely leads to other chambers inside a massive temple complex dating back to the ancient Chavin culture. The entrance to the passageway was first explored by Rick's team using cameras mounted on robots, seeking to avoid the risk of collapse of the ancient architecture.

The temple complex features terraces as well as a network of passageways.

A large ceramic piece weighing 17 kg decorated with what appears to be a condor's head and wings was found in the passageway, along with a ceramic bowl, in May 2022 when the entrance was uncovered.

Kum Anu Naryanan

World's first methane-fuelled space rocket

For the very first time, a methane-fuelled rocket has successfully made it to the Earth's orbit. Developed by Chinese company Landspace, the Zhuque-2 rocket was launched on 11th July from the Jiuquan Satellite Launch Centre in the Gobi Desert.

The concept of methane-fuelled rockets is not new. Many U.S. companies, such as SpaceX with its Starship system, United Launch Alliance with Vulcan Centaur, Blue Origin with New Glenn, Rocket Lab with Neutron and Relativity Space with its Terran line have been involved in this technology, but have suffered from many issues in recent months.

The Starship vehicle suffered several anomalies during its first fully stacked launch in April, and had to be issued a self-destruct command. Terran 1 failed to reach orbit on its debut launch in March, while Vulcan Centaur's liftoff was delayed after the testing of the rocket's upper stage caused an anomaly.

Most large liquid-fuelled rockets have used hydrogen, kerosene or hydrazine as fuel in the past. Chinese Long March rockets are still fuelled by hydrazine, despite it being toxic. The rocket fuel with the best efficiency is liquid hydrogen, but its storage requirements of -423°F and the small size of the hydrogen molecule make this fuel very difficult to handle.

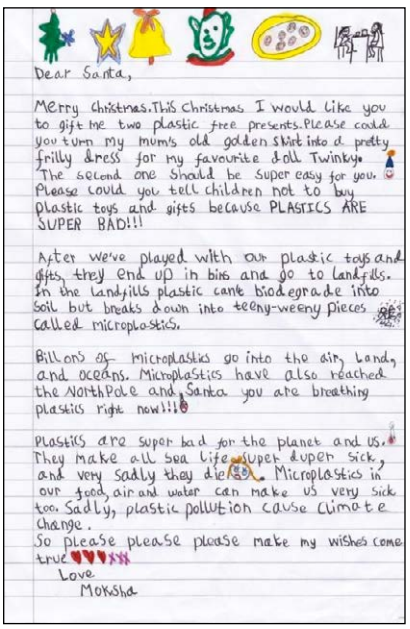
Despite it being a greenhouse gas, methane has been confirmed by advocates to be more environmentally friendly than the standard fuel used for rockets, RP-1 (kerosene). Liquid methane has a warmer boiling point and higher density than hydrogen. Its temperature is closer to that of liquid oxygen, used as an oxidizer in rockets fuelled by hydrogen, kerosene and methane.

Another reason SpaceX decided to move to methane was because kerosene deposits more soot inside their reusable rocket engines, which then requires cleaning and refurbishment between missions.

Compared to other methane-fuelled rockets in development, the Zhuque-2 (Vermillion Bird-2) rocket is small. The 162-foot-tall (49.5-meter) Zhuque-2 rocket can lift a payload of about 3,300 pounds (1.5 metric tons) into a polar sun-synchronous orbit.

Chinese private space companies took 54 missions to orbit in 2022 and are aiming for more than 60 in 2023. By comparison, the busiest U.S. Launcher, SpaceX has launched 61 rockets to space in 2022.

Indian – origin girl wins Points of Light award



Dear Santa,

Merry Christmas. This Christmas I would like you to gift me two plastic free presents. Please could you turn my mums old golden shirt into a pretty frilly dress for my favourite doll Twinky. The second one should be super easy for you. Please could you tell children not to buy plastic toys and gifts because PLASTICS ARE SUPER BAD!!!

After we've played with our plastic toys and gifts, they end up in bins and go to landfills. In the landfills plastic cant biodegrade into soil but breaks down into teeny-weeny pieces called microplastics.

Billons of microplastics go into the air, land, and oceans. Microplastics have also reached the NorthPole and Santa you are breathing plastics right now!!!

Plastics are super bad for the planet and us. They make all sea life super duper sick, and very sadly they die. Microplastics in our food, air and water can make us very sick too. Sadly, plastic pollution cause climate change.

So please please please make my wishes come true

Love

Moksha

Moksha Roy, a seven-year-old Indian-origin schoolgirl, who started volunteering for a United Nations' sustainability initiative against microplastic pollution when she was just three, has been awarded the British Prime Minister's Points of Light award.

"I am very happy to receive the Points of Light award. I hope both children and adults get to understand that caring for the planet and its people and making small changes to everyday life should not be just for a few," said Moksha.

In the Christmas of 2021, five-year-old Moksha Roy wrote a heartfelt letter to Santa Claus, asking for two plastic-free presents so that there is less plastic pollution on the planet. "Plastics are super bad for the planet and us. So please, please make my wishes come true," she wrote.

Now, at the age of seven, Moksha Roy stands tall as the youngest sustainability advocate, spreading hope, awareness and inspiration for a greener and more sustainable future. She has been recognised for volunteering for several sustainability campaigns, including raising funds to help children in need. Moksha has also assisted in educational sessions for deprived schoolchildren in India. She continues to raise awareness about environmental issues, including microplastic pollution, about which she aims to educate a billion children and their families through the '**Microplastic Free 2023'** campaign.

The mindful youngster has adopted an eco-conscious lifestyle, minimising the use of plastic toys and actively recycling and donating items to less fortunate children. Moksha uses her talent for art and writing to convey powerful messages about the environment. With her boundless energy and passion, Moksha Roy is inspiring millions to join the cause and work towards achieving the United Nations Sustainable Development Goals by 2030.

Smt Sandhya Nair

ADMIRAL LISA MARIE FRANCHETTI

First woman to lead US Navy

At sea, Franchetti has served aboard numerous warships. She has commanded USS Ross and Destroyer Squadron 21.

Admiral **Lisa Marie Franchetti** became the first woman to lead the military service and join the Joint Chiefs of Staff, a group of eight top uniformed service members who advise the President on military issues. This is a historic step that paves way to break the gender barrier in the US military. She was nominated by President Joe Biden.

A career surface warfare officer, Franchetti was recently head of the J5 Strategic Plans and Policy on the Joint Staff. She first commissioned into the Navy in 1985 through the Naval Reserve Officer Training Corps at Northwestern University. She holds a master's degree in organizational management from the University of Phoenix.

At sea, Franchetti has served aboard numerous warships She has commanded **USS *Ross*** and Destroyer Squadron 21 while the DESRON was embarked on **USS *John C. Stennis.*** She was also the commander of Pacific Partnership 2010, during which she was embarked on **USNS *Mercy*.**

She demonstrates operational excellence, strong character, diverse perspectives and resilience in all she does and is a recipient of numerous personal awards including:

- The Defense Distinguished Service Medal
- Distinguished Service Medal
- Defense Superior Service Medal (two awards)
- Legion of Merit (five awards)
- Meritorious Service Medal (six awards)
- Navy and Marine Corps Commendation Medal (four awards)
- Navy and Marine Corps Achievement Medal (two awards).

Shri Sampath D

UNESCO wants a global smartphone ban in schools

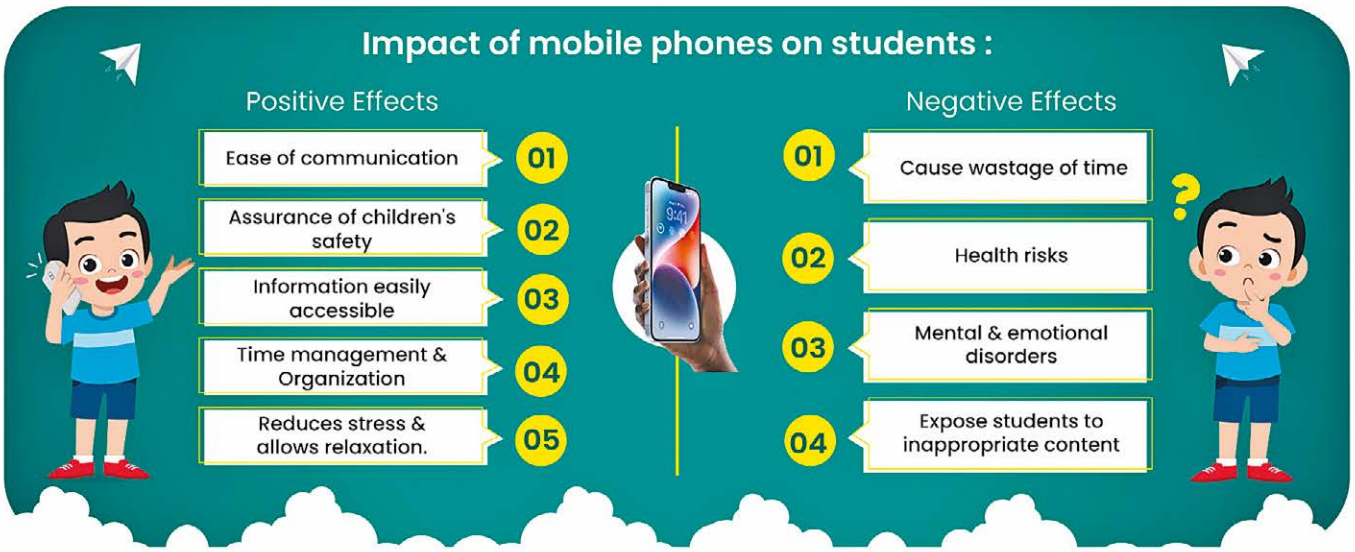
UNESCO has said that higher levels of screen time pose a negative effect on emotional stability of children.

A United Nations report has recommended that smartphones should be banned from schools to tackle classroom disruption, improve learning and help protect children from cyberbullying.

The United Nations science and cultural agency UNESCO has said that there was ample evidence that excessive use of mobile phone was linked to a reduction in educational performance; higher levels of screen time pose a negative effect on emotional stability of children.

It is seen that the digital revolution holds immeasurable potential, but care must be taken to ensure it is regulated in society and steps taken to see that it is used properly while being applied in education. It is to be reiterated that excessive use of technology in the classroom and or at home (smartphones, tablets, laptops) could be distracting and may even result in a detrimental impact on learning.

Technology could potentially open up opportunities for learning of millions, but it is seen that the benefits were unequally spread, with the economically weaker section of the society excluded from it. There is a social dimension to education while insisting on usage of mobile phones.



United Nations Educational, Scientific and Cultural Organization

Excessive screen time also affects their going out and playing which is necessary for mental and physical growth in children.

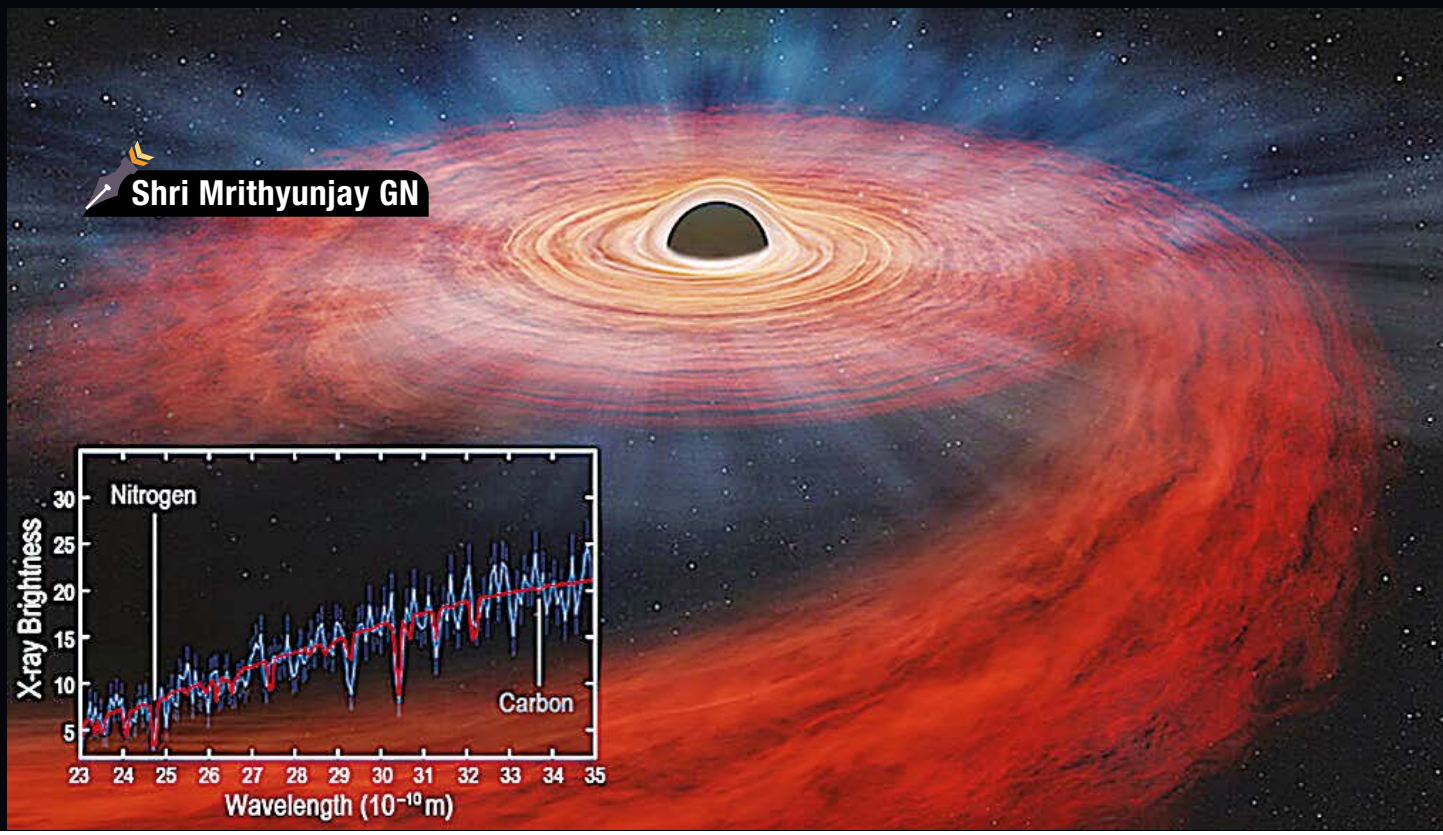
Further it is to be noted that there was little robust research done to demonstrate whether digital technology inherently added value to education.

We also need to understand that a blanket ban on mobile phones can raise practical issues like parents wanting to know about the children's safety when they are delayed in picking them from school. It is also evident that cyberbullying happens outside the gates of the school premises.

There are issues pertaining to damage to the vision on account of excessive screen time and also mindless eating or eating junk foods. They don't concentrate on what and how much is being eaten since they have the mobile to play with.

It also affects their going out and playing which is necessary for mental and physical growth. Deprived sleep is another reason why screen time should be cut down as the blue light emitted by screens interfere with the natural production of **melatonin,** a hormone responsible for regulating sleep.

Shri Mrithyunjay GN



James Webb Telescope captures stunning image of Ring Nebula

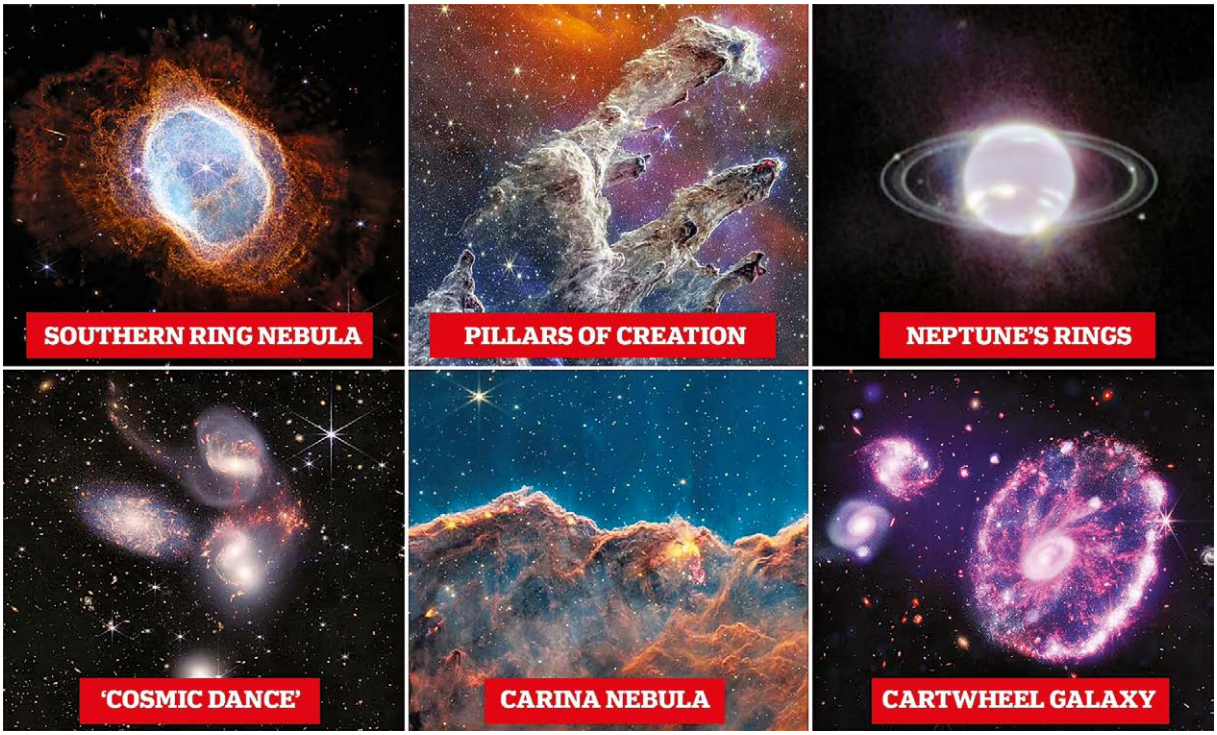
The image shows Messier 57, more commonly known as the "Ring Nebula".

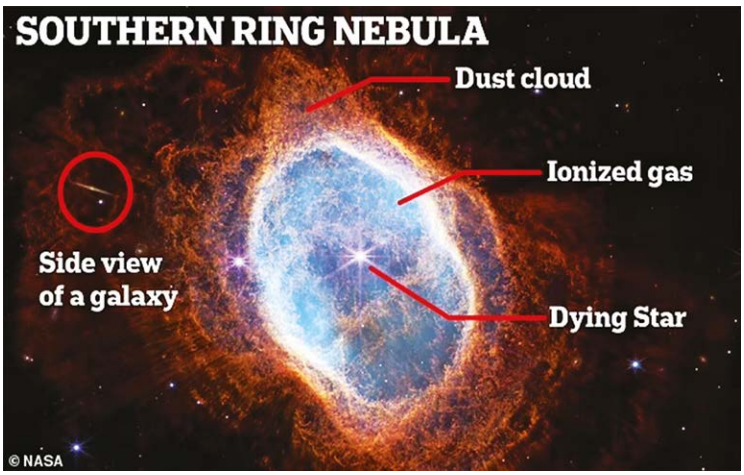
Launched as a collaboration between NASA, the European Space Agency (ESA) and the Canadian Space Agency (CSA), the James Webb Space Telescope (JWST) was used to capture an extremely detailed image of one of astronomers' favourite sights - The Ring Nebula.

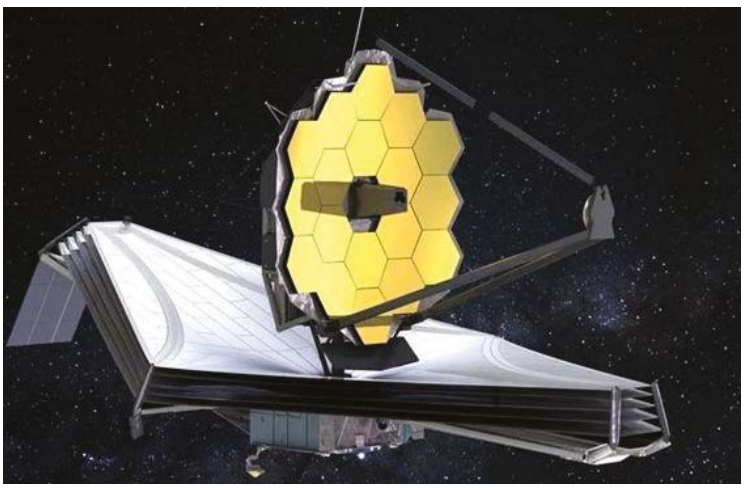
The image shows Messier 57. More commonly known as the "Ring Nebula" because of its distinctive appearance, Messier 57 is located in the constellation Lyra; 2,600 light-years from Earth.

Messier 57 is a planetary nebula, formed by a dying star. Like all things in the universe, stars begin small and grow over millennia. Over time, they expand and shed their outer layers of gas and dust, until they become a white dwarf. This gas and dust, illuminated by the remnants of the star's burning core, creates the nebula we are able to observe.

It is of particular significance because JWST's infrared sensors were able to penetrate the dust and gas, revealing the inner regions of the nebula. This also allowed scientists to see the nebula's complex structure, including its expanding shell and its central white dwarf.







James Webb Space Telescope

This is the first time that a telescope has been able to capture such detailed images of a planetary nebula, providing new insights into the life and death of stars. It will help astronomers to better understand the evolution of the universe.

Ever since the first images captured by the JWST in July 2022, scientists have marveled at the incredible revelation of mysterious interstellar phenomena.

Look at the original images of the Horsehead Nebula captured by the Hubble telescope and compare it to the new images from the JWST to realize the sheer increase in resolution. JWST also captures, alongside visible light, a significant amount of infrared and ultraviolet light also, offering a treasure trove of information to dive into.

Additionally, JWST has also captured images of the Carina Nebula, the Southern Ring Nebula and SMACS 0723, a galaxy cluster more than 4 billion light-years away.

Considering it is just beginning its mission, JWST is sure to reveal many more cosmic secrets and advance the field of astronomy.

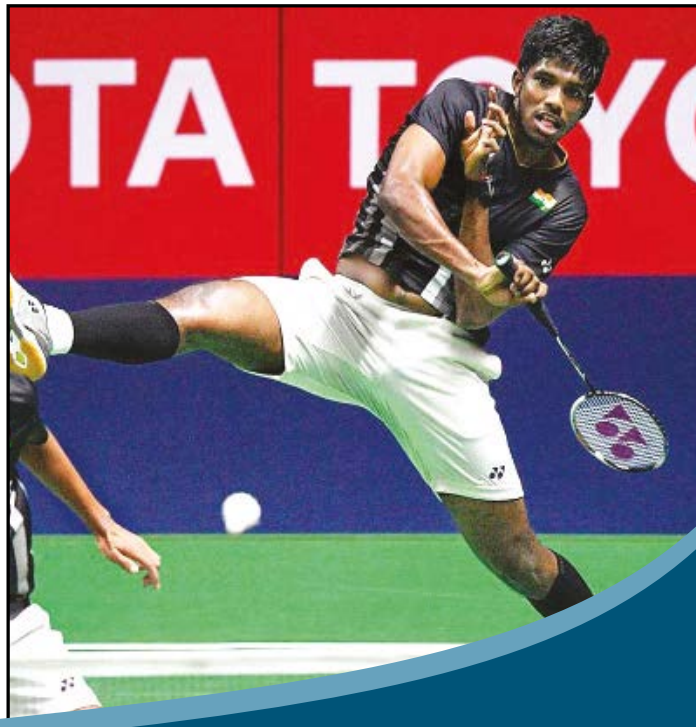
Kum Shrivaishnavi R

Rankireddy smashes world record

Satwiksairaj Rankireddy, an Indian shuttler, etched his name in the Guinness Book of World Records for his incredibly fast smash. His shot has broken the previous record which held the title for more than a decade, which makes his act a remarkable feat.

Rankireddy's shot was paced at an astonishing breakneck velocity of 565 km/h, with the previous record being clocked in at 493 km/h by Malaysian shuttler Tan Boon Heong in 2013. To put things into perspective, the velocity of the smash was substantially higher than the maximum speed that can be attained by a Formula One Race car, which is about 372.6 km/h. The fact that this shot was accomplished after more than a decade with a difference of more than 72 km/h is of notable pride to the player and the country.

Satwik, in a doubles match with his partner, Chirag Shetty, delivered this historical shot. The country is pinning their hopes on this duo for the next Olympics games to held in Paris in 2024.



Shri Sridhar P

Why Kaas plateau is in the news?

Kaas plateau is a UNESCO world heritage site blooming with exotic flowers post monsoon.

Eutrophication - the gradual increase in the concentration of phosphorus, nitrogen and other plant nutrients in an aging aquatic ecosystem such as a lake. Productivity or fertility can increase when organic content increases.

The contours of earth keep changing continuously due to the interplay of the elements like wind, tectonic movements, earth quakes, volcanic eruptions etc. Mountains, rivers, lakes and the bowels of earth always have a tale to tell and reveal them slowly. The fascinating history of Mother Earth can be understood from the tell-tale signs of the inanimate world for those who are perceptive. One such effort helped us understand how our climate behaved thousands of years back.

Kaas Plateau

Kaas plateau is located in Satara district of Maharashtra and is a popular tourist hotspot. It is a UNESCO world heritage site blooming with exotic flowers post monsoon. It has more than 850 species of flowering plants of which 39 are exclusive to the region and a further 39 species of the flowering plants are endangered.

Kaas plateau in the news

A recent study conducted in the Kaas plateau by ***Agharkar Research Institute***, Pune and ***National Centre for Earth Science*** Thiruvananthapuram revealed interesting data on how climate shifts occurred in that region in the mid Holocene period, some 8000 years ago. They studied the sediment profile of a seasonal lake. Through carbon dating techniques they established that the Kaas plateau had reduced rainfall from a weak south west monsoon during the Holocene period. It slowly moved to drier conditions. They also established the evidence of eutrophication of the lake that is suggestive of increased human agricultural activity. Lakes die due to eutrophication. Runoff from fields into the lakes results in algae boom, depleting the lake of oxygen. Hence other species, fishes die which alters the ecosystem.

Smt Sumathi Ramakrishnan

Project Gajah Kotha launched in Assam

Spearheaded by **Aaranyak**, a prominent wildlife NGO, Guwahati, in collaboration with the British Asian Trust and the Assam Forest Department, with support from the Darwin Initiative Assam has launched the **"Gajah Kotha "** campaign.

It involves more than 1,200 individuals and promotes coexistence in an effort to mitigate the escalating human-elephant conflict (HEC) issue. It aims to educate residents about the behaviour, ecology and cultural significance of elephants in the region, emphasizing the importance of conservation. This initiative demonstrates their dedication to fostering a harmonious coexistence between humans and elephants.

The urgency for sustainable coexistence

With a flourishing elephant population of nearly 5,000 Asiatic elephants, Assam holds the second position in India, just behind Karnataka. Nonetheless, the region faces escalating conflicts. The encroachment on natural habitats, fragmentation of forests and insufficient management of elephant corridors have all played a role in exacerbating these conflicts, highlighting the vital importance of initiatives such as "Gajah Kotha" in promoting a sustainable coexistence.

Aaranyak was founded by Bibhab Kumar Talukdar. It is an organization working all over

the eastern Himalayas on nature conservation, natural resources management, climate change, disaster management and livelihood enhancement of marginalized communities through research, education and advocacy.

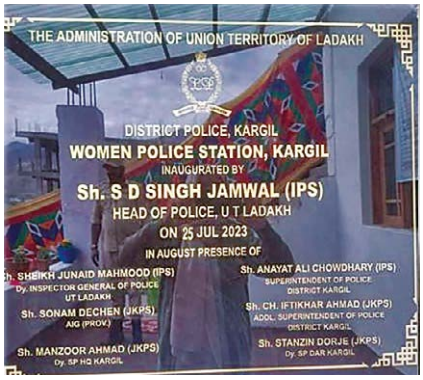
Advancement of the project

So far, the campaigns have taken place at different venues such as Haladhibari, Jaborchuk Kathoni, Gazera, Gazera High School, Jaborchuk Basa, Jopanchuk in Majuli and others.

Aaranyak has collaborated with various local organizations to actively involve community members and nurture future advocates in each area affected by human-elephant conflict (HEC). Through these partnerships, organizations and community members had the opportunity to engage with experts from Aaranyak, exchanging ideas on innovative approaches that promote harmonious coexistence between humans and wildlife.

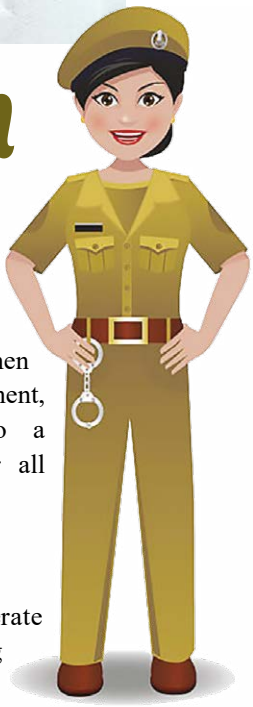
Smt Manju Aildasani

First All Women Police Station at Kargil



Union Territory Ladakh marked a momentous occasion with the establishment of its first-ever women police station at Kargil on 25th July 2023.

The police station inaugurated by ADGP Ladakh S.D Singh Jamwal, is a significant step towards addressing crimes against women, promoting gender equality and protecting women's rights so that women can feel empowered and protected. This initiative reflects the Ladakh police department's dedication to strengthening the relationship between the police force and the community. It is expected to foster trust and cooperation between women and law enforcement, ultimately leading to a safer environment for all residents of Kargil.



A SNAPSHOT

- Will operate 24 X 7, providing immediate assistance and support to women in distress.
- Will play a crucial role as a resource center, offering valuable guidance and counseling services to women facing difficult situations.
- Aims to create a safe and supportive environment for women in Ladakh.

Kum Pavithra S

PM MITRA Park launched in Amravati

PM Mitra Park is built on PM Modi's 5F concept (Farm to Fibre to Factory to Fashion to Foreign).

On 16th July 2023, the 'Pradhan Mantri Mega Integrated Textile Region and Apparel (PM MITRA) Park' was formally launched by Union Textiles Minister Piyush Goyal along with Minister of State of Textiles Darshana Jardosh, Maharashtra Chief Minister Eknath Shinde, Deputy Chief Minister Devendra Fadnavis.

Located in Amravati, the PM Mitra Park is built on PM Modi's **5F concept** (Farm to Fibre to Factory to Fashion to Foreign). This initiative is a significant step towards transforming India into a global hub for textile manufacturing and exports.

A collaboration of Maharashtra Industrial Development Corporation (MIDC), the Maharashtra government and the Indian Ministry of Textiles, the textile park anticipates to attract an investment of ₹10,000 crore and create both direct and indirect employment for approximately 300,000 individuals.

Sprawled across 1020 acres in Nandgaon Peth near Additional Amravati Industrial Area (MIDC), the park enjoys a strategic location, benefiting from its proximity to the Mumbai Nagpur Samruddhi Highway and the Wardha Dry Port. It enjoys its brownfield status with existing infrastructure like roads, water supply and electricity.

The PM Mitra Park, Amravati is the first of many being built to attract investments and promote international collaboration in the field of Textiles. Other locations include states like Tamil Nadu, Telangana, Gujarat, Karnataka, Madhya Pradesh and Uttar Pradesh. The inauguration in Maharashtra marks a milestone in India's journey toward becoming a global textile leader, emphasizing innovation and growth and could reshape India's textile industry.

This initiative's standout feature is its tailored infrastructure. It caters to the textile industry's needs, along with training and research resources. Collaborating between central and state governments, it aims to drive investments, innovation and job creation.

Smt Archana Sundar

SURAT DIAMOND BOURSE has the world's largest office

Arnav

Raya

Yash

Arnav: Hey, have you guys heard about the new office building in Surat, Gujarat? The Surat Diamond Bourse, it's now the world's largest office building, even bigger than the Pentagon in the US!

Raya: Seriously? That's amazing! Tell me more!

Yash: Yeah, it's pretty impressive. The Surat Diamond Bourse has this unique design with nine rectangular buildings connected by a central "spine" corridor. It's got a floor space of 71 lakh square feet. Can you believe that?

Arnav: And guess what, it's all eco-friendly too! The building has a platinum ranking from the Indian Green Building Council. They've got this radiant cooling system that circulates chilled water beneath the floors to keep indoor temperatures down.

Raya: Cool! That's some advanced technology. And I heard they're using solar energy for the common areas. It's great to see such a huge building being energy-efficient.

Yash: Absolutely! Each of the nine buildings is 15 stories tall, and they've got over 4,500 diamond trading offices in there. It's like a city within a building!

Arnav: And the offices range from 300 to 75,000 square feet! Plus, they've got this massive parking area in the basement, covering 20 lakh square feet.

Yash: Security is taken seriously too. They've got all sorts of measures in place, like CCTV surveillance, control rooms and even under-car scanners at the entry gates.

Arnav: The facilities inside sound pretty luxurious too. There are conference halls, restaurants, banking services and even a convention centre.

Raya: And I bet it's going to be bustling with activity. With 4,700 office spaces and 131 elevators, it's going to be like an office city on its own.

Yash: Well, all this grandness didn't come easy. The architecture firm **Morphogenesis** designed it, and it took around four years to build. There was a bit of a delay due to the pandemic, but it's finally getting inaugurated later this year.

Arnav: Right, PM Modi will be there for the inauguration. And by November, the first occupants will move in. It's a big deal for Surat and the diamond industry.

Raya: Definitely! I'm excited to see how this new gem of a building changes things in Surat!

Kum Kavya R

Prof. Thalappil Pradeep wins International Eni Award

The Eni Award is an international award for research and technological innovation in the energy sector given by the Italian oil and gas company Eni. The strict award guidelines and the notable members of the selection committee (including Nobel laureates) make Eni a coveted award.

Some of the distinguished scientists who have won this award include Nobel laureates Sir Harold W. Kroto, Alan J. Heeger and Theodor W. Hänsch.

Professor Thalappil Pradeep from the IIT Madras has won the prestigious Eni Award, one of the top global honours for scientific research in the field of energy and environment. Prof. T Pradeep has been recognised for his remarkable discovery that provides affordable clean water using advanced nanoscale materials. The President of Italy will soon present this award to him.

Prof. T Pradeep from IIT M's Department of Chemistry is a pioneer in nanotechnology applications for clean water. His research focused on sustainable and affordable methods to remove toxic contaminants from water using nanoscale materials. He and his team developed 'water positive' materials which remove arsenic, uranium and several other toxic contaminants from water. This technology has been approved for national implementation and helps more than 13 lakh people access clean water every day. His breakthrough work is now being expanded to other countries.

Eni Awards are given in three categories:

- Energy Transition
- Energy Frontiers
- Advanced Environmental Solutions.

Yu Huang, University of California (Los Angeles, USA) and Jeffrey R. Long, University of California (Berkeley, USA) were awarded under the first category. Under the second category, Matthew Rosseinsky, University of Liverpool (UK) was awarded. Prof. T Pradeep has been awarded for the third category, Advanced Environmental Solutions.

In a world where natural resources are becoming sparse with every passing day, it is important for us to recognise and celebrate ground breaking work like this. Youngsters should focus on ensuring water security and pursue it as their career.

Shri Krishnakumar C S

Lone Naga Woman MP is Vice-chairperson of Rajya Sabha

The appointment of S Phangnon Konyak as one of the vice chairpersons of the Rajyasabha is another testimony for India's commitment towards women empowerment.

Vice President of India is the ex-officio chairman of the Rajya Sabha. The current chairman, Jagdeep Dhankar, nominated Phnagon as per the 'Rules of Procedure and Conduct of Business' in the Upper House.

Phangnon hails from Oting village in the Mon district of Nagaland. Nagaland has a patriarchal social set up. Women's role in social and political life is traditionally restricted there. The state has never elected a woman representative to its legislature before 2023. In 2023 assembly elections two women candidates got elected. Women's reservation is not yet implemented in the local bodies. All these facts make her appointment a historic move. This would contribute towards promoting gender equality in the region.

Phangnon expressed her gratitude by tweeting that she would serve the nation with great humility and strive to do her best.

India, as a nation, is undergoing revolutionary transformations in all walks of human life. Women play a great role in the nation's progress. We have a woman from the underprivileged class as our President. Women scientists have played a vital role in the success of Chandrayan-3 mission of ISRO. Let us also strive hard to build an egalitarian society in this holy land.

Kum Kavya R

FIDE World Cup

Four Indian youths and their achievements

FIDE World Cup

It is a chess tournament featuring the best players from around the world competing for the prestigious title of FIDE World Champion. FIDE stands for Fédération Internationale des Échecs, which is French for International Chess Federation. The FIDE World Cup is part of the World Chess Championship cycle, which means that the top finishers qualify for the Candidates Tournament, where they can challenge the reigning world champion.

India's grandmaster (GM) Praggnanandhaa Ramesh babu finished second in the Chess World Cup 2023 after a valiant tie-breaker round with Norwegian GM Magnus Carlsen. The five-time world champion won his first World Cup on 24th Aug 2023 by defeating Pragg 1.5-0.5 in the rapid tiebreaker match.

Regardless of the final loss, the FIDE World Cup has been a life changing event for him as he is the youngest World Cup finalist ever at 18 years. He had also sealed his spot at the prestigious Candidates Tournament to find a challenger for world champion Ding Liren.

The 2023 FIDE World Cup was held in Baku, Azerbaijan from 12th July to 24th August. It was a knockout tournament with 128 players, who played two-game matches against each other. The winner of each match advanced to the next round, while the loser was eliminated. In case of a tie, tie-break games were played to decide the winner.

Aside from the amazing success of Praggnanandha, this year's match was an astounding success for India as 4 of the 8 players who qualified for the quarter finals were Indians. **GM Vidit Gujrathi** was the oldest at just 28 years. The other three players **GM Gukesh D, GM Arjun Erigaisi** and **GM Praggnanandhaa** are all under 20. Our players put up a valiant fight against some of the best players the world of chess has seen. This is no small feat for our nation and we should continue to nurture the young talents found in our country.

Kum Anu Naryanan

First PPP-Model Atal Tinkering Lab

Children with exceptional potential will be identified and nurtured through the ATL Marathon and Student Innovator Programme.

The first-ever Atal Tinkering Lab in Kerala has been established - based on the PPP (Public-Private Partnership) model - by OPPO India in collaboration with NITI Aayog's Atal Innovation Mission (AIM) as its knowledge partner.

The lab was inaugurated on 10th July 2023 by Rajeev Chandrashekar, Minister of State for Skill Development and Entrepreneurship and Electronics and Information Technology, at St Paul's CEHSS in Kuriachira, Thrissur. The primary objective of this initiative is to create an empowered future-ready workforce and nurture entrepreneurship and technological skills among the youth.

Until 2022, government grants allowed 10,000 ATLs to be established across 35 states and UTs in India. "Through this new modality of partner-established ATLs, we hope to democratize tinkering and make it available to many more students across the country," Chintan Vaishnav, MD, Atal Innovation Mission said. "I invite more partners to this new and exciting initiative to establish many more ATLs in India, thus empowering more young innovators."

The ATL aims to empower school children from grades VI to XII to develop innovative solutions. The students can harness cutting-

edge technology tools such as the Internet of Things (IoT), 3D printing, miniaturized electronics, robotics, space technology, drone technology and technology-inspired textiles.

With Learning Links Foundation as the implementation partner, this collaboration adapts the 'Hub n Spoke' strategy to create an innovative learning environment through regular training sessions and practical experiences.

The ATL in the nodal school will act as a 'Hub' for the students from neighbouring government schools to come and conduct experiments in the lab. This approach will also extend its assistance to three community schools.

Children with exceptional potential will be identified and nurtured through the **ATL Marathon and Student Innovator Programme** to provide them with mentorship opportunities from entrepreneurs and prepare them to compete in national/regional contests, fostering lifelong learning.

Smt Anuradha V R

National Martyr's Memorial unveiled

This memorial symbolises the nation's gratitude towards the brave men and women of the RPF.

The newly constructed National Martyr's Memorial and National Museum for Railway Security at Jagjivan RPF Academy Lucknow was unveiled on 24th July 2023 by Sanjay Chander, Director General, Railway Protection Force (RPF).

This memorial, spread over an area of 4800 square meters, has the names of 1014 martyred RPF personnel from 1957 till date inscribed. This museum provides a glimpse of the history, genesis, achievements, duties and responsibilities of the Railway Protection Force.

The motto of this museum is ***'Gyanvardhanaya-cha-Sanrakshanaya'*** ज्ञानवर्धनाय-च-रक्षणाय which continuously inspires the RPF to 'Promote Knowledge and Preserve Heritage'.

This memorial symbolises the nation's gratitude towards the brave men and women of the RPF who display unwavering dedication to their duty.

Highlights of the Museum

- Total area of **9000** square feet
- **37** thematic display panels
- **11** display cabinets
- Info-graphic history of the police system
- **87** artefacts
- **500** pages from the **National Archives of India**
- **36** weapons of the bygone era
- **150** railway objects related to security
- **15** representations of various ranks of the RPF and many other important items.

The memorial serves as a reminder of the challenges faced by the RPF in countering theft, vandalism and acts of terrorism. The RPF plays a vital role in maintaining law and order in the railways and safeguarding railway assets and passengers.

RPF is one of the security forces of India. It is the only Central Armed Police Force (CAPF) with powers similar to regular state police forces. The superior officers are recruited through the Civil Services Examination. Recruitment for subordinate officers is through examinations conducted by RPF.

Smt Shyamala Viswanathan

Byculla Railway Station gets UNESCO award

DO YOU KNOW ?

The Chhatrapati Shivaji Maharaj Vastu Sangrahalaya Museum, which is part the Victorian Gothic and Art Deco Ensembles of Mumbai World Heritage property in India, has received the Award of Excellence in this year's UNESCO Asia-Pacific Awards for Cultural Heritage.

Mumbai's Byculla Railway Station received UNESCO's Asia Pacific Cultural Heritage Award on 24th July 2023.

One of the oldest railway stations still operational, with a history dating back 169 years, the station holds an immense architectural and historical value as it is designated as a **Grade-I heritage structure.**

Initiators of Restoration Work

The restoration work was undertaken by the NGO 'I Love Mumbai,' in partnership with heritage conservation architect Abha Lamba and Minal Bajaj of Bajaj Trust.

Historical Significance

Byculla Railway Station was one of the original stations inaugurated when the Bombay-Thane railway commenced operations in 1853.

- Originally constructed as a wooden structure, it was later rebuilt as stone structure in 1857.
- Continued to evolve over the years, ultimately adopting its present form in June 1891.
- Historically intertwined

An objective of UNESCO is improved engagement of youth in protecting and promoting cultural heritage.

with the arrival of the first locomotive in Mumbai in 1852.

Since 2000, UNESCO Asia-Pacific Awards for Cultural Heritage Conservation have been recognising the achievement of the private and public sector initiatives in successfully conserving or restoring structures, places and properties of heritage value in the region.

Its objectives include

- Identification and promotion of exemplary practices in the heritage conservation with increased participation from under-represented area.
- Improved exchange of research and professional practice related to heritage & knowledge management of Asian Heritage.
- Capacity building in heritage conservation using the exemplars and standards of the UNESCO Awards.
- Improved engagement of youth in protecting and promoting cultural heritage.

Grade 1 Heritage structure - a building / architecture of exceptional, national, architectural or historical importance in terms of style, design, technology and material usage.

Shri Mrithyunjay GN

Ancient ocean water discovered

The scientists found the water droplets in the form of tiny bubbles trapped in carbonate rocks located in the western Kumaon region.

In a remote corner of the Himalayas, scientists from Indian Institute of Science (IISc) and Japan's Niigata University have discovered droplets of water that have been trapped in mineral deposits for over 600 million years.

The scientists, who published their discovery in the journal **Precambrian Research,** found the water droplets in the form of tiny bubbles trapped in carbonate rocks located in the western Kumaon region of the Himalayas. These rocks are thought to have formed from the sediment of an ancient ocean that once covered the region.

The researchers conducted their study across a vast stretch of the western Kumaon Himalayas, from Amritpur to the Milam glacier and Dehradun to the Gangotri glacier region. Through the analysis of the water using mass spectrometry and isotope analysis, methods which look at the constituent elements of the water, scientists have concluded that the water is very similar to what we find in modern oceans.

This suggests that the ancient ocean that once covered the Himalayas was very similar to the oceans that we see today. The discovery is significant because it provides a look into the earth's past.

It suggests that the Himalayas were once much lower than we previously assumed. This discovery also provides new insight on the formation of the Himalayas and the evolution of the earth's climate, since its formation.

The discovery also supports the **Snowball earth hypothesis,** which suggests that the earth's surface became entirely or nearly entirely frozen during the Neoproterozoic Era - between 720 and 635 million years ago. This happened because of a combination of factors, like changes in the earth's orbit and volcanic activity.

Eventually however, the earth recovered. While this is just a theory, the water discovered in the Himalayas could be remnants of the once frozen earth.

The discovery could also have implications for the search for life on other planets. The water found here is very similar to the water thought to be present on Mars. This suggests that Mars may have once had an ocean, and it could also be a potential habitat for life.

Shri Ramaswamy R

INDIA
A BAMBOO SUPERPOWER

Bamboo is versatile and can be grown in most parts of the world.

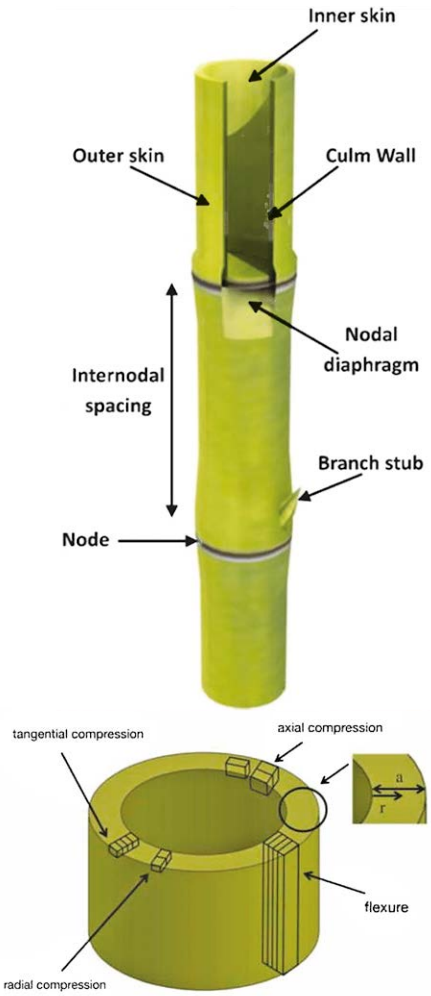
Bamboo is part of the evergreen grass family. Its physical structure consists of woody ringed stems called **culms.** They are hollow between the rings (nodes) and grow in branching clusters from a thick underground stem called **rhizome**.

Cellulose, hemicelluloses and lignin are the 3 major chemical compositions of bamboo associated in a composite structure. The remaining 10% are made up of pigments, protein, fat etc. They are the fastest growing; can grow more than 40" within 24 hours and reach heights of more than 40 metres.

The British, in 1927 amended the Indian Forest Act to give 'tree' status and prohibited cutting and transporting of the bamboo produce. This stifled cultivation and industry. Though India was the 2nd largest producer in the world, it had to import the wood. In 2017, the Forest Act was amended. Bamboo grown in non-forest areas shifted to the 'grass' category, opened up their cultivation and industry in India.

Bamboo is versatile and can be grown in most parts of the world. Compared to trees harvested for timber which takes 20 or 30 years, bamboo can be harvested in around 5 years. It is also light weight, flexible, tough, high tensile and

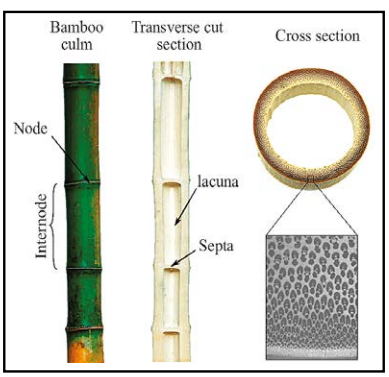
Major Exporting Countries (2021)		
Country	Value (Million USD)	% Share
China	78.00	69.00
Vietnam	9.19	8.09
Netherlands	3.46	3.04



Major Importing Countries (2021)		
Country	**Value (Million USD)**	**% Share**
India	**66**	**31**
Netherlands	**23**	**11**
USA	**21**	**10**

cheap when compared to other building materials like steel. Having earthquake resistant properties, it is used as reinforcement in various structural members.

Rich in cellulose, bamboo is used in construction, food, medicine, paper, biofuel, clothing, cutlery, jewellery and many other applications. There is no wastage from bamboo products. The stem is used for construction, leaves, roots and even the dust used for animal feed or as compost. Bamboo also checks soil erosion and can be used for fencing and against noise pollution.



As the most effective means of fighting climate change, bamboo can sink 2 tons of carbon dioxide in just 7 years, where a hardwood tree takes 40 years to isolate even half the quantity. Bamboo groves can absorb 5 times more carbon dioxide and release 35% more oxygen than an equivalent stand of trees.

Thus, Bamboo is a renewable, sustainable and bio-compatible green botanical specimen and material with social, cultural and economic benefits.

Shri Ramaswamy R

PM YASASVI Scheme

Pradhan Mantri Young Achievers Scholarship Award Scheme for Vibrant India, acronym for the above scheme was introduced this year by Ministry of Social Justice & Empowerment at the Centre. It seeks to award scholarships to 30,000 school children every year based on examination to be conducted by National Testing Agency, under Department of Education.

The objective is to provide financial independence and continuation of studies to school children entering Class 9 and 11 respectively. Main reason for school dropouts in India is financial difficulties experienced by families. YASASVI will address this problem among students in the higher classes. Dropouts experience many problems in later life like delinquency, exposure to drugs, crime and violence.

The intended benefits of the scholarship first will be exposure of students to examination of international standard and determination of the morale of the students for higher studies. The financial part is that 15,000 students are selected in each of Class 9 and Class 11 (totally 30,000) and paid ₹75,000 and ₹1,25,000 p.a. respectively for the next two academic years.

The test

- **Duration:** 2.5 hours
- **Type:** Multiple choice questions.
- **Date :**29th September 2023.
- Answer sheet will be pen and paper mode with Optical Mark Recognition (OMR).

The Examination structure

S.No.	Subject	No.of Questions	Marks
1	Maths	30	120
2	Science	20	80
3	SocialScience	25	100
4	General Awareness/ General Knowledge	25	100

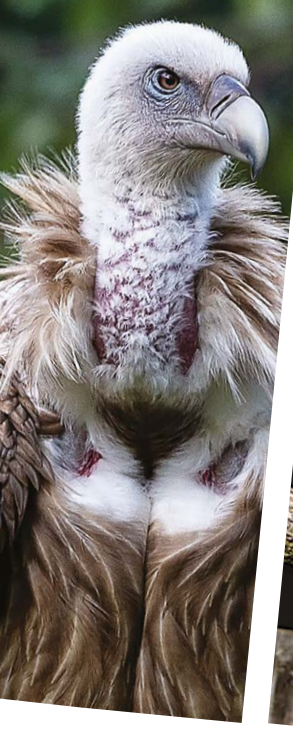
Eligibility

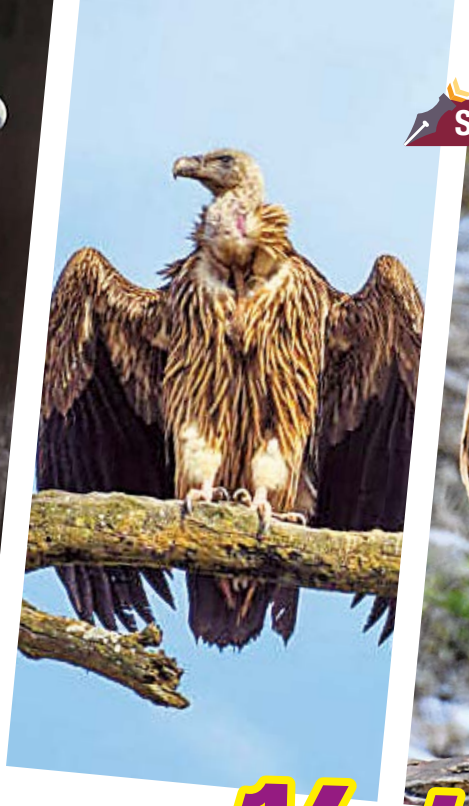
- Applicants must have permanent residency in India.
- They must fall into one of the following categories: OBC/EBC/ DNT/NT/SNT.
- Yearly income of the parents should not exceed ₹2.5 lakhs.
- Candidates must possess Class VIII or Class X passing certificate.

Age limit:

- **Class 9:** Born between 1st April 2007 and 31st March 2011.
- **Class 11:** Born between 1st April 2005 and 31st March 2009.

Further details from https://yet.nta.ac.in/






Smt Gaayathiri G

Himalayan Vulture bred in captivity

Captive breeding is the process of breeding animals outside of their natural environment in restricted conditions in farms, zoos or other closed facilities.

The captive breeding of the Himalayan vulture in India for the first time marks a significant milestone in vulture conservation efforts.

This pioneering feat at the Assam State Zoo in Guwahati was possible through a collaborative effort between the **Bombay Natural History Society** and the **Assam Forest Department.**

This represents only the second captive breeding of the species worldwide and the first in India.

The Himalayan vulture *(Gyps himalayensis)* is a near threatened species primarily found in the Indian Himalayans and rugged mountains of Asia. Its decline is attributed to various factors, including habitat loss, poisoning from veterinary drugs and collisions with power lines. It is one of the largest and

S.No.	Category	Name
1	Critically Endangered	1. Oriental White-backed Vulture 2. Long-billed Vulture 3. Slender-billed Vulture 4. Red-headed Vulture
2	Endangered	1. Egyptian Vulture
3	Near Threatened	1. Himalayan Vulture 2. Cinereous Vulture 3. Bearded Vulture
4	Least Concern	1. Eurasian Griffon

heaviest birds in the Himalayas.

These are often seen soaring at high altitudes, utilizing thermal currents for efficient flight. They prefer nesting on cliffs and rocky ledges which provide them with a vantage point for spotting carrion (decaying flesh of dead animals).

The captive breeding programme aims to establish a self-sustaining captive population. This involves carefully selecting breeding pairs, providing appropriate nesting and feeding conditions, and closely monitoring their reproductive success.

This programme emphasizes the importance of collaborative efforts between conservation organizations, government agencies and research institutions in ensuring the preservation of biodiversity.

Significance of vulture conservation

- Efficient disposal of organic waste
- Prevention of spread of diseases
- Identification of illegal poaching activity
- Ecosystem maintenance: vultures are nature's garbage disposers.

Shri Sridhar P

BHU – vision

Conventional soil testing methods could be time consuming, costly and requiring the service of trained personnel.

Internet of Things refers to the collective network of connected devices and the technology that facilitates communication between devices and the cloud, as well as between the devices themselves.

BHU- vision, also known as ***Krishi Raasta Soil Testing System,*** is a revolutionary IoT (internet of things) based automated soil testing and agronomy platform recently launched in India by a collaborative effort between ICAR **(Indian Council for Agricultural Research)** and IIRR**(Indian Institute of Rice Research)**. This is an extremely useful intervention that uses the power of modern technology in agriculture.

Diagnosis and therapy: Diagnosis and therapy is standard practice in the delivery of healthcare in humans. Every conceivable advance in technology that helps provide accurate diagnosis and therapy is always big news. A logical extension of such a practice is very appealing, more so if that can help farmers and Indian agriculture by minimizing ambiguity at affordable cost.

Why BHU-vision is path breaking: Conventional soil testing methods could be time consuming, costly and requiring the service of trained personnel. The BHU system is a portable device that can be carried to any location, operated with minimal training. It uses IoT (internet of things) technology, connected to a cloud-based server and mobile app. It can perform 12 soil testing parameters in 30 minutes using electrochemical sensors and colorimetry. The parameters include pH, organic matter, crucial nutrients like carbon, nitrogen, potassium, magnesium, boron zinc iron etc. This saves on time, cost and specialized training.

Way forward: BHU vision comes as a follow up after various useful schemes launched by the Indian government like strengthening institutional capacity, promoting climate resilient agriculture etc. The government has strengthened the supportive help by creating awareness through mass media campaigns, connected all the stake holders, establishing labs, training for adoption of new technology etc. This will certainly help increase agricultural productivity, reduce overuse of fertilizers while providing the apt nutrients, sharing knowledge and reduce ambiguity.

India's Advancing port infrastructure

Riding the High Wave

India has 12 major ports and 205 minor ports along its 7500 km long coastline.

India is now ranked 38 in the **Logistics Performance Index** (LPI) covering 139 countries. This is an interactive benchmarking tool developed by The World Bank Group to help countries identify the opportunities and challenges that they are facing in their performance on Trade Logistics and what they can do to improve. This is a significant climb from the 54th position it held in 2014 and the 44th in 2018. In the "International Shipments" category it has moved up from the 44th rank in 2014 to 22nd in 2023.

Indicators for the index are derived from the big data covering shipping containers, air cargo and parcels. As far as international trade is concerned it is the ports that play a major role and this improvement in India's logistics performance is largely due to the improvement in port infrastructure.

India has 12 major ports and 205 minor ports along its 7500 km long coastline. **About 95 % of our country's external trade by volume and 65 % by value are handled by the ports**. Over the past few years GOI has taken focused efforts to develop ports as hubs of economic activity through a number of initiatives and policy reforms. These have increased the operational efficiencies and productivity levels of our ports.

Initiatives

Maritime India Vision 2030

This document outlines various initiatives like developing world

The Public-Private Partnership model for managing port operations and infrastructure introduced in 1997 has been a game changer.

class mega ports, infrastructure modernization of ports etc., with ambitious targets for eleven key performance indicators, to be achieved by 2030. **Committed investment :** ₹1.25 lakh crores.

Sagarmala Project: This is to encourage port led development in the country by harnessing the potentially navigable water ways on key international maritime trade routes. It entails setting up and modernizing mega ports, creating coastal economic zones and making ports multimodal to boost merchandise exports to USD 110 Bn and to generate 10 Mn jobs. **Investment** - ₹ 8.5 Trillion.

The Harit Sagar Green Port guidelines: It aims to bring about a paradigm shift towards safe, efficient, and sustainable ports by implementing sound environmental practices.

National Logistics Portal (Marine): A single-window digital platform for all stakeholders including those engaged in cargo services, carrier services, banking and financial services, and government and regulatory agencies. This along with the Sagar Setu app, facilitates seamless movement of goods and services in ports.

Major Port Authorities Act, 2021: Grants greater autonomy to major ports.

Marine Aids to Navigation Act, 2021: Provides for increased safety and efficiency in vessel traffic services and training and certification at par with international standards.

The Indian Vessels Act, 2021: Brings uniformity in law and standardised provisions across all inland waterways.

GOI has also taken other initiatives like opening up 100% FDI for the ports and harbor development projects, under the automatic route. The Public-Private Partnership model for managing port operations and infrastructure introduced in 1997 has been a game changer. It has granted a 10 year tax holiday to companies that develop, maintain and operate ports, inland waterways and inland ports.

with four of them generating more renewable energy than their total energy needs.

FY 23 broke many records:

- Major ports collectively handled 795 mn tonnes of cargo; a growth of 10.4% year on year (yoy).
- Highest ever output per day of 17,239 tonnes; growth at 6% yoy.
- Best ever operating ratio of 48.54 % .
- Highest ever number (21,846 nos) of vessels handled.
- Fleet of ships under the Indian flag has also grown - 1205 (2014) to 1526 (2023).
- Number of seafarers has grown - 1,17,090 (2014) to 2,50,071 (2023) .

Results

- India has achieved an optimum level of three days dwell time which is commendable compared to many developed nations.
- The average Turn Around Time in India is 0.9 days which is amongst the best in the world.
- Indian ports' cargo handling capacity has gone up from about 1,560 MMT (2015) to more than 2,600 MMT in 2023 - an increase of 67%.
- PPP projects in the major ports have witnessed nearly 150% increase from about ₹ 16 K crores in FY 15 to ₹ 40 K crores in FY 23.
- On the sustainability front, there has been a fourteen-fold increase in the use of renewable energy in major ports over the last eight years,

Dwell time: Time spent by a container in the port before being gated out or loaded on to a vessel. Lesser dwell times indicate better efficiencies.

Turnaround time: Time spent by a vessel at a port (i.e.) the time between a vessel's arrival and departure.

The way forward

The Government should continue its capacity expansion initiatives in the ports along with automation and digitalization of the ports. India should at least have some "smart ports". The multi modal concept to ports should be further promoted for ease of connectivity and reduction of logistics costs. Improvements to policy and regulatory framework should continue along with an aggressive push to PPP projects.

The global recognition for the operational efficiencies of the Indian Ports and the Indian Maritime Sector, as brought out by the World Bank LPI Report 2023, is a shot in the arm for the country's shipping sector and it would certainly go a long way in accelerating the country's march towards becoming a global maritime power as envisioned in the Maritime India Vision, 2030.

Smt Meenakshi S

Crystal quartz weighing unit found in Keezhadi

Though stone-made weighing units were found earlier, they were not rock made but made of minerals.

The town of Keezhadi is located near Madurai in Tamil Nadu on the bank of River Vaigai and it reflects the culture of the Pre-Sangam Era. An excavation at Keezhadi site was initiated and carried out by the Archaeological Survey of India. It has now been taken over by the Tamil Nadu Archaeology Department.

Almost 48 square pits have been cut at the site and various structures, artifacts, frosts, brick walls, roof tiles, pottery, mimic accessories, skeletal tools, iron *Vel* and Tamil Brahmi letter-etched plates have been found. This place is considered to be a city in the Pandyan dynasty called ***"Perumanalur"*** which is supposed to be the pioneer of Tamil literature. The use of fired brick, the size of the building complex, placement of an array of pots etc., suggest that the settlement is of a more civilized population.

In a ground breaking discovery, archaeologists unearthed a crystal quartz weighing unit that dates back to the Sangam Period. This has stirred excitement among historians and archaeologists as weighing units in the past were primarily made of stones. Though stone-made weighing units were found earlier, they were not rock made but made of minerals. These weighting units were not used for paddy or vegetables but for weighing high-value items such as gold, precious and semi-precious stones. Crystals or mineral materials are used as weighing units because they give accurate results and do not depend on the climate. Found at a depth of 175cm beneath the earth's crust, the crystal adds a new dimension to our understanding of ancient measurement tools.

Smt Vaishnavi V

Meri Maati Mera Desh campaign

Azadi Ka Amrit Mahotsav

Panchayats/ villages/urban local bodies will renew Mother Earth by planting 75 saplings of indigenous species and develop the *'Amrit Vatika'*.

Azadi ka Amrit Mahotsav, the 75-week-journey of celebrating India reached its destination on 15th August 2023. As a culminating event, PM Modi initiated the *Meri Maati Mera Desh* campaign which celebrates India's soil and valour by connecting with the land and honouring our heroes. This campaign comprises the following activities:

Dedication of *Shilaphalakam* (Memorial)

Names of the brave-hearts will be inscribed on the *Shilaphalakam* which includes freedom fighters, defense personnel, personnel of Central Armed Police Forces and State Police who laid down their lives in the line of duty. This will be erected within panchayats /villages as well as urban sites in prominent locations.

'Panch Pran'

People will take a solemn pledge with soil or a mud lamp in hand to:

- Make India developed and self-reliant by 2047.
- Remove any trace of colonial mindset.
- Celebrate our heritage.
- Strengthen unity and respect those who protect the country.
- Perform the duties of a citizen.

The same can be uploaded as a video in the link https://yuva.gov.in.

Vasudha Vandhan

Panchayats/villages/urban local bodies will renew Mother Earth by planting 75 saplings of indigenous species and develop the ***'Amrit Vatika'.***

Veeron ka Vandan

Felicitation ceremonies honouring the afore-mentioned brave-hearts as per local traditions and customs.

Rashtragaan

Hoisting of the National Flag and singing of National anthem at the various sites.

Amrit Kalash Yatra

Youth volunteers and other people from all corners of the country would collect ***Mitti*** (soil) from Panchayats and bring it to the Block level, from smaller urban bodies to larger Municipalities / urban local bodies. Subsequently, ***Mitti Kalash*** having the soil from all these places would be carried to the National Capital to decorate the Kartavya Path.

The finale of the campaign was held in Delhi between 27th and 30th August 2023.

Kum Sunita D Behera

New Amravati

India's third 'Pink Station'

This ground-breaking concept by the Indian Railways strives to empower women by offering them opportunities.

On 9th August 2023, the Central Railway's New Amravati station became the first station within the Bhusaval Division of Maharashtra and the third station in the entire Central Railway network to be designated a "Pink Station".

A "Pink Station" is exclusively managed by women staff including station masters, ticketing staff, security personnel and other railway employees. Equipped with enhanced security measures around the location like security personnel, CCTV surveillance and well-lit areas along with women-friendly facilities like separate waiting rooms, clean and hygienic washrooms and dedicated help desks, these make the travel experience convenient and comfortable for women.

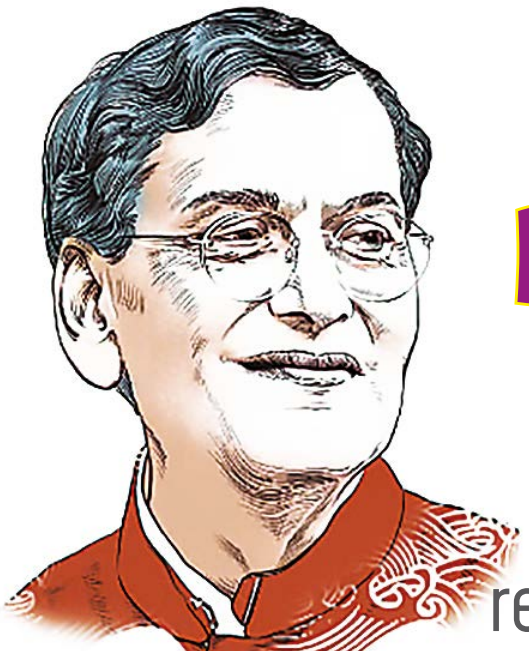
The station at Amravati has a team of twelve skilled and proficient women employees including four deputy station superintendents, four Points women, three railway protection personnel and one station ticket booking agent.

Entrusted with the responsibility of handling the intricate operations of a station, the team witnesses a daily traffic of 380 passengers and the constant movement of ten trains. Their collective efforts synergize to ensure the efficient management of the station, cultivating an environment of competence and inclusivity.

This ground-breaking concept by the Indian Railways strives to empower women by offering them opportunities to manage and operate railway stations and is a testament to the railway's determination to challenge stereotypes and promote inclusivity, creating a more diverse and equal workspace.

The "Pink Station" initiative extends beyond the New Amravati Station. It began with Matunga Station on the Mumbai Division, followed by Ajni Station on the Nagpur Division.

Shri Sampath D



Dr Bindeshwar Pathak

The man who revolutionised sanitation

Pathak introduced the concept of Sulabh Shauchalayas, which are eco-friendly public toilets that provide hygienic sanitation facilities to millions across India.

Social worker and the founder of Sulabh International Dr Bindeshwar Pathak died of a cardiac arrest at the All-India Institute of Medical Sciences in Delhi. He was 80.

Dr Bindeshwar Pathak spent a lifetime promoting sanitation and hygiene. One of Sri Pathak's most notable contributions has been his innovative approach to sanitation.

He introduced the concept of ***Sulabh Shauchalayas,*** which are eco-friendly public toilets that provide hygienic sanitation facilities to millions across India. This initiative not only tackled the problem of open defecation and manual scavenging, but also improved public health and reduced environmental pollution.

He founded Sulabh International in 1970 that has carried out extensive work on the conversion of dry latrines into modern toilets in over 17,00 towns and has helped build over 1,60,835 toilets.

He was conferred the **Padma Bhushan,** India's third-highest civilian award, in 1991. In 2009, he received the Stockholm Water Prize. The Sulabh International was conferred with the **Gandhi Peace Prize** for 2016, jointly with the Akshaya Patra Foundation.

Pathak was closely associated with his non-profit organisation and worked till the end. He was an ambassador for the government's **Swachh Bharat Mission**. The organisation, which has around 50,000 volunteers, also introduced the concept of maintenance and construction of pay-and-use public toilets, popularly known as Sulabh complexes.

Another significant aspect of his work has been the liberation of manual scavengers. Through his advocacy and efforts, he helped thousands of individuals break free

AWARDS AND RECOGNITION

1991
Padma Bhushan

1992
International **Saint Francis Prize** for the Environment

2007
Global Energy Award

2009
Stockholm Water Prize

2015
Pathak named amongst the top 50 icons recognised in **'The Global Diversity List'** by The Economist

2016
WHO Public Health **Champion Award**

2018
Nikkei Asia Prize

2016
Sulabh awarded the **Gandhi Peace Prize** for its contribution to the **Swachh Bharat Mission**

Bill De Blasio, Mayor of New York City, declared **April 14, 2016 as Bindeshwar Pathak Day.**

from the shackles of this degrading occupation. Providing them with skill development opportunities and alternative livelihoods, Sulabh International enabled these individuals to regain their dignity and self-respect.

PM Modi expressed his condolences in a post on X (formerly known as Twitter), saying, "The passing away of Dr Bindeshwar Pathak Ji is a profound loss for our nation. Bindeshwar Ji made it his mission to build a cleaner India. During our various conversations, his passion towards ***Swachhata*** was always visible. Om Shanti."

The initiatives of Pathak have extended beyond sanitation and livelihoods. His organization has been at the forefront of promoting social inclusivity and equality, championing the rights of marginalized communities and advocating for better living conditions for the underprivileged.

We can only hope that his legacy continues to inspire generations to come, encouraging them to strive for a more hygienic, equitable and inclusive world.

Col Shashidhar M V (Retd)

Ballistic Missile Defence Capability of Indian Navy

The BMD programme works at two levels; the **endo-atmospheric** (within Earth's atmosphere) and **exo-atmospheric** (beyond Earth's atmosphere).

Rewind

India's Ballistic Missile Defence (BMD) programme was launched soon after the 1999 Kargil war as our nation took note of the expanding missile arsenal of our adversary like the Shaheens, Ghauris and cruise missiles like Babur and the Exocet.

The BMD programme works at two levels; the **endo-atmospheric** (within Earth's atmosphere) and **exo-atmospheric** (beyond Earth's atmosphere).

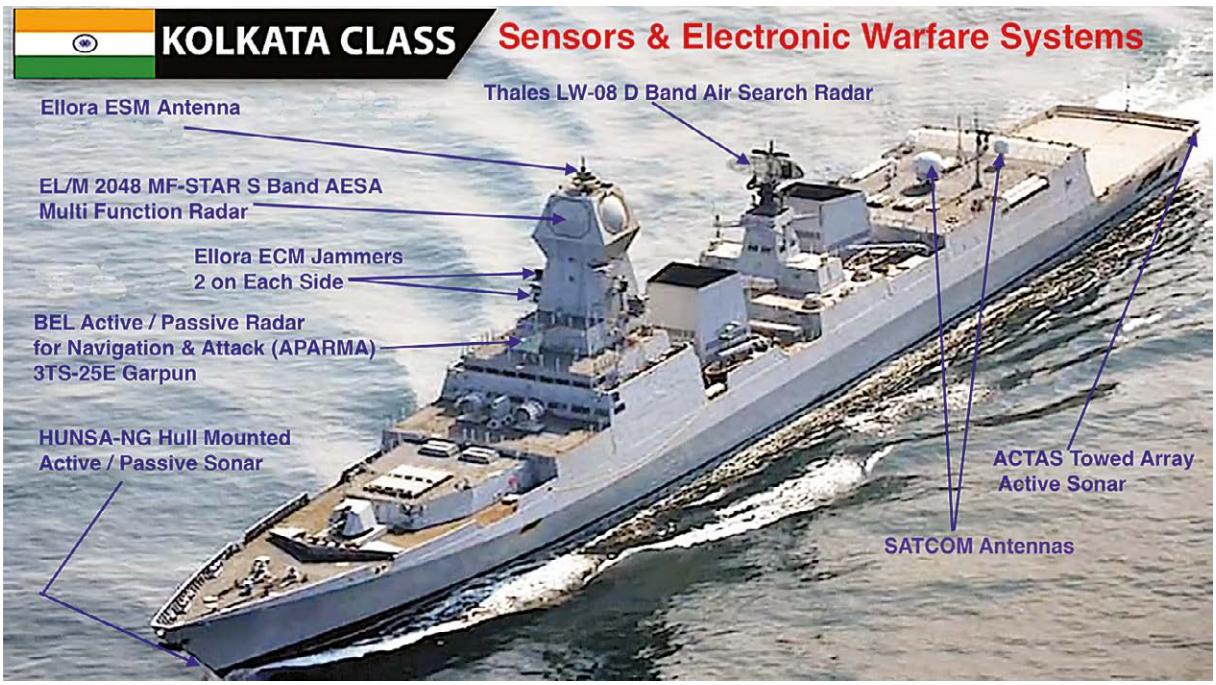
The homegrown BMD was two-tiered:

Prithvi Air Defence (PAD) / Pradyumna missile interceptor which could intercept and destroy missiles at exo-atmospheric altitudes of 50–180 kilometres.

Advanced Air Defence (AAD) Missile for lower altitude interception and designed to knock down hostile missiles in the endo-atmosphere altitudes of 15-40 kilometres. BMD Phase I was completed in April 2019.

Significant Milestones in BMD Capability Phase II

Phase II was designed to provide an air-defence shield from all types of hostile missiles including the nuclear ones in active collaboration between DRDO and Indian Navy. This will soon propel India into the big league of nations.



- **November 2022-** Successful maiden flight of an endo-atmospheric interceptor missile from a ship to counter enemy's long range ballistic missile and aircraft, particularly AWACS.
- Ascertaining the need for enhanced detection ranges over longer ranges, the over-the-horizon (OTH) target acquisition/tracking radars. Exo -atmospheric interceptors need to have hypersonic capability (speeds greater than Mach 5).
- Developing an OTH tracking radar by DRDO (S-band Ship-Borne Radar) based on the Swordfish **Long-Range Tracking Radar** (LRTR), a derivative of the Israeli EL/M-2080 Green Pine long-range radar presently employed with the Navy's Kolkata class stealth guided missile destroyer.
- **April 2023** - Successful maiden flight trial of sea-based endo-atmospheric interceptor missile which can engage the incoming weapon up to an altitude of 30 km carried out in the Bay of Bengal.

At the heart of this joint achievement lies INS Anvesh specially designed to pave the way for own future naval BMD capabilities.

The "Kolkata class" (Project 15A) are a class of stealth guided-missile destroyers constructed for the Indian Navy comprising three ships – Kolkata, Kochi and Chennai.

INS ANVESH

- A state-of-the-art missile range instrumentation ship designed by DRDO and constructed by Cochin Shipyard Limited (CSL).
- Commissioned on 11th March 2022 in a secretive ceremony.
- Also equipped to test radars, sonars, telemetry equipment and propulsion.

Naval AAAU Active Antenna Array Unit

DRDO's S-band Ship-Borne Radar (SBR) is soon to replace the Israeli Elta EL/M-2248 MF-STAR as the primary naval radar of the Indian Navy. MF-STAR is currently fitted aboard Kolkata-class destroyers and follow on Project 15 B destroyers and onboard INS Vikrant and Nilgiri class frigates.

It can detect multiple targets approaching in multiple profiles from multiple directions including fighters at high altitudes or low-flying missiles which skim the sea.

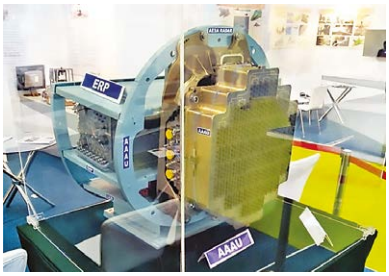
- **Nilgiri-class frigate (1972) - a class of frigates that served in the Indian Navy between 1972 and 2013.**
- **Nilgiri-class frigate (2019) - a class of frigates built since 2017.**

Role of destroyers and frigates is not just to fire offensive weapons but also to defend a fleet – especially the aircraft carriers. These radars offer essentially

Active Antenna Array Radars are a flexible technology platform capable of simultaneous and multi-target tracking.

significant force projection for any blue water navy.

Active Antenna Array Radars are a flexible technology platform capable of simultaneous and multi-target tracking. Nations making rapid advancements in technology makeover have all embraced AESA **(active electronically scanned)** radar for use by their defence aviation, ground and maritime platforms, missile defence programmes and in support of critical satcom systems besides in civilian aerospace market for air traffic control. Presently, India is developing an extremely advanced radar for a new class of warships and very soon S-band (SBR) will replace the Israeli MF-STAR as the Indian Navy's primary radar.



India's ***Atmanirbharth*** policy has ensured that public-private partnership will remain the cornerstone with private players like Astra Microwave Products Ltd now building the Active Antenna Array Unit (AAAU) for the SBR. Upon completion, the SBR will be tested onboard INS Anvesh thus bolstering our ability to track ballistic missile and surface combatants' capabilities to thwart endo-atmospheric ballistic targets in future.

Conclusion

With the theatre-level ballistic missile defence becoming the buzz word for large navies of the world today, the ability to detect, track and destroy targets by technological improvements with advanced radar technology will be a significant step. Warships now to be built by our Navy will be more potent to dominate larger sweeps of ocean with multiple, integrated layers of both offence and defence capabilities.

The S-400 Triumf is an anti-aircraft missile defence system developed by Russia's Almaz Central Design Bureau.

India contracts five S-400(Triumf) regiments from Russia in 2018 under a USD 5.43 billion or ₹40,291 crore deal, with the delivery of the third S-400 regiment completed and balance two more likely to be delivered by end of the year or early 2024.

Col Shashidhar M V (Retd)

Keeping the Dragon guessing

Security and Economics

Both India and Taiwan also both now seek stronger security ties with the US and its allies.

Summary of events

Keeping the Dragon guessing. Time for the Tiger to flex its muscles. The recent geo-politics and defence initiatives and cooperation undertaken be it the strengthening of troops deployment both along northern and eastern borders, show of strength in maritime waters, rapid advancement in ballistic missile capability, equipping own armed forces with cutting edge technology for modern day warfare and now bilateral relations with strategic nation states, India has now embarked on a journey like never before armed with a plethora of options to keep the policy makers at China on their toes as realities have changed in the Indo- Pacific region.

India's Position on One China Policy

On the 'One-China' policy, our government has neither formally discarded its original stated position nor willing to reaffirm it amidst the growing conflict with Beijing over territorial issues. India's renewed ties with Taipei is a clear message that a stable balance of power in Asia will be mandatory and that any Chinese misadventure to alter Asia's territorial status quo will be unacceptable. India and Taiwan also both now seek stronger security ties with the US and its allies.

India's military standoff with China since 2020 (Galwan clash) discourages us from compounding our military problems with it. India is open to greater public and political engagement with Taiwan

The visit by the Indian military chiefs will enable India and Taiwan to build-up trust, goodwill, interoperability and cooperation through joint training, technological cooperation, purchase of defence hardware etc.

preferably focussing more on economic engagement and avoiding high-profile political ties. Annual bilateral trade has steadily grown in recent years with additional investment into the manufacturing sector particularly in the semi-conductor industry.

Our former Defence Chiefs visit Taiwan

Former Army Chief Manoj Naravane, Navy Chief Karambir Singh and Air Chief RKS Bhadauria were all in Taiwan recently to attend the **Ketagalan Forum** on the invitation of Taiwan's Ministry of Foreign Affairs. The security event focused on the Indo-Pacific security dialogue, its threat and challenges and preparedness required in case situation deteriorates with China. Besides the three service chiefs from India, a former Prime Minister of Japan and fourteen other parliamentarians, political figures, scholars and experts from 12 countries attended the event.

The visit possibly classified more as military diplomatic domain will enable both countries build-up trust, goodwill, interoperability and cooperation through joint training, technological cooperation, purchase of defence hardware etc.

Spike family of missiles

A family of Israeli anti-tank missiles and its variants primarily differing in range has found its way

Spike is an Israeli fire-and-forget anti-tank guided missile (ATGM) and anti-personnel missile.

into the military inventory of many armies. Our Army has inducted a man-portable variant of the Spike (ATGM Fire and Forget Missile) which can destroy tanks and bunkers up to four kilometres away.

ATGM Fire and Forget Missile

Spike is an Israeli fire-and-forget anti-tank guided missile (ATGM) and anti-personnel missile. Brief characteristics include-

- It is fitted with a tandem-charged High Explosive Anti-Tank Warhead (HEAT).
- Developed and designed by the Israeli company Rafael Advanced Defence Systems.
- Available in man-portable with vehicle-launched and helicopter-launched variants.
- Its launchers lock the target through ' fire and forget ' technology.
- Some variants attack their target from above since considered the weakest area of any tank causing tremendous damage to the tank.

Spike NLOS Missile

- NLOS (Non - Line of Sight) indicates long-range capability.
- Presently 29 countries have different variants of Spike missile system.
- Most advanced variant of the Spike family.
- Range is about 32 km; almost four times that of the US AGM-114 Hellfire deployed on an Apache attack helicopter.
- Versions of the Spike also capable of "Fire, Observe and Update" operating mode.
- The air-launched NLOS ATGMs can carry out strikes at its ground targets from stand-off distances.

Spike NLOS Missile for IAF

The Spike NLOS is being marked for a significant upgrade for

In addition to targeting Chinese tanks, Spike NLOS can be used to engage command centres, mobile air defences and other equipment, effectively becoming a multi-purpose weapon for the IAF.

the IAF's Mi-17 (a medium-weight transport helicopter) fleet from the traditional Russian laser-guided anti-tank missiles which has a lesser range.

The decision is attributed to the aircraft's suitability for operations in high altitudes particularly in northern theatre such as Ladakh and Chushul.

In addition to targeting Chinese tanks, Spike NLOS can be used to engage command centres, mobile air defences and other equipment, effectively becoming a multi-purpose weapon for the IAF. **Prachanad light combat (LCA) multi-role helicopters with Army and IAF will also be equipped with Spike ATGM missile both in the northern and eastern theatre.**

Conclusion

Balancing the logic of expanding ties with Taipei is fraught with danger as bilateral relations with Beijing is slowly deteriorating thus calling for exemplary skills of a trapeze artiste.

India's stance therefore aims at protecting its sovereignty, maintaining stability in the Indo-Pacific and fostering economic growth. Thus, it is crucial for us to engage with Taiwan while avoiding unnecessary provocations escalating tensions with China.

Smt Vanaja Shankar

GOLD

The investment that glitters

Shravan and Gita were gazing at the glittering ornaments on display at a famous jeweller's shop while their mother was busy admiring the various designs in the "chains" section.

Shravan: "Wow, I am dazzled by the lights, the glitter of gold."

Gita added. "The shoppers also look rich. Look at the women wearing bright silk sarees in the bangles section. I didn't imagine that there would be a crowd of shoppers to buy such costly gold jewellery."

Their mom came to them carrying two chains, her face glowing with happiness. She tried them on one by one, and told their dad, " They are both very nice! The short one is in fashion but I also like the long chain with a pendant."

Dad nodded. Half an hour later, they were driving back home with their purchase - two gold chains.

The children sat and talked with grandpa that night. Gita asked. "Grandpa, is gold a good investment? Or is it an expenditure?"

Shravan: "That reminds me. I saw on the shop's notice board "Today's gold price." Does the gold price change every day?

Grandpa: "Yes. The market price of gold is quoted every day."

Dad smiled. "It's always high when you go for purchasing gold. You pay a huge price for buying gold jewels that you hardly wear, and then you have to pay annual fees for bank locker for safekeeping."

Mom: "It's auspicious to decorate Goddess Lakshmi with new gold jewellery during Lakshmi Pooja. Gold never loses its value. It is an asset that you can count on when you are in need."

Grandpa smiled. "People in India have a lot of emotional and sentimental attachment to gold. Gold jewellery is also passed on from generation to generation in families. Gold is considered as a store of value. Though it's not liquid like cash in a bank account, you can sell your gold jewellery and get money."

Gita: "Oh yes. We've seen advertisements by finance companies on how you can pledge your gold and get gold loan instantly."

Grandpa: "Yes. Pledging gold jewellery with jewellers, money lenders and finance companies is a very common method of raising

People in India have a lot of emotional and sentimental attachment to gold. Gold jewellery is also passed on from generation to generation in families.

Advantages	Disadvantages
Emotional satisfaction of wearing gold jewellery	Fear of theft, snatching
Store of value, an asset	Idle asset. Additional charges for locker.
Appreciation in value	Notional value unless we sell it.
Jewel loan in case of need	Interest charges are high in the unorganized sector. People end up losing their jewels if they are unable to repay.
Can sell jewellery in an emergency	Not a liquid asset like shares and mutual funds. The price is not transparent as jewellers deduct various charges when you go to sell jewellery.

Instead of buying jewels, you can buy gold coins and biscuits or bars. You can buy these from gold jewellers.

money. Even banks offer gold loans/ jewel loans to their customers."

Mom: "Owning gold gives me a comfort that I have assets to count on in an emergency."

Dad: "It's an idle investment that doesn't give you any returns unless you sell it. Even if you go to a jewellery shop to sell gold, they'll deduct wastage and other charges."

Mom argued, "Even after deduction of charges, we will get huge returns because gold price keeps increasing over the years."

Dad sighed. "You're not going to sell our gold jewellery. So, it's all notional."

Grandpa asked the children, "What's your understanding of gold as an investment now?"

Gita and Shravan put their heads together and shared their ideas with grandpa. With his guidance, they tabulated the advantages and disadvantages of gold jewellery as an investment.

Grandpa smiled. "That is a good summary of our discussion. Now there are other ways in which you can invest in gold. Any idea?"

Shravan: "Gold coins? I've read in history books that kings gave gold coins as prize money to poets."

Gita: "Gold bars and biscuits? I've seen in movies how the rich people have gold bars in their lockers."

Gold coins and bars

Grandpa: "Yes. Instead of buying jewels, you can buy gold coins and biscuits or bars. You can buy these from gold jewellers. You can also buy gold coins from banks. They come in standard sizes and weights.

Gita: "I think it is easier to sell than gold jewellery. I have a doubt. Is the quality of gold the same in shops as well as banks?"

Grandpa: "Excellent question, Gita!"

Certification of quality

Bureau of Indian Standards (BIS), a government body, certifies the purity of gold bought by you. The process of certifying the purity of gold called is **hallmarking**.

There are four components that one should look on the hallmarked gold jewellery to ensure the purity of gold:

1. BIS Mark
2. Purity in Karat and fineness
3. Assaying and hallmarking centre's identification mark/number
4. Jeweller's identification mark/ number.

Bureau of Indian Standards (BIS), a government body, certifies the purity of gold.

Any gold jewellery, which is hallmarked by the BIS, will bear the BIS logo indicating that its purity is verified in one of its licensed laboratories.

The karat system

In the karat system, pure gold is expressed as "24 karats fine" (24K). (Pure gold in commercial practice is 99.95 to fine, but is nominally considered 100%.) The gold content of any gold article depends on the proportion of pure gold it contains.

It is difficult to make jewellery with pure gold as it is very soft, so some metals are mixed with gold to make jewellery.

It is most common for jewellers to sell 22K916 (corresponding to 22 karats and fineness of 916) as the best quality jewellery.

Grandpa: "You can check for these certifications in gold coins as well. The main objective of the hallmarking certification by BIS is to ensure that the public are protected and to obligate manufacturers to maintain legal standards of purity and fineness.

How gold became money

Grandpa: "Do you know the story of how gold became an important part of the monetary system across the world?

There was always a fascination for gold but it was mainly used to make jewellery and precious items.

It is said that gold coins were first struck on the order of King Croesus of Lydia (now part of Turkey), around 550 BC.

Kings used gold coins for payments and gradually gold coins were used as currency by kingdoms across the world.

Gold was also considered a store of value. The treasury of a king was stacked with gold coins and bars to finance wars and other expenditure of the kingdom.

Gold as a reserve for paper currency

Later when paper currency was introduced, currencies still maintained an explicit link to gold (the paper being exchangeable for gold on demand).

Gold Standard Many of the countries maintained a link between their currency and gold under the gold standard.

The gold standard was a monetary system in which the standard economic unit of account, for example the U.S. Dollar, was based on a fixed quantity of gold. With this monetary system, an individual holding some amount of paper money could go to a bank and exchange that money for a fixed amount of gold. The gold standard has been abandoned completely by all countries; a process of abandonment that gradually began around the end of World War I."

Shravan: "Grandpa, it's very interesting to learn this story of gold and how it's important across the world."

Gita: "Yes. Are there not ways to invest in gold in electronic form so that we don't have to worry about safe keeping?"

Grandpa smiled. "Yes. There are investment options in gold where you don't hold it in physical form. We'll discuss these later."

Judicial perspective on AMENDMENTS to the CONSTITUTION - II

In this edition, we continue the trail of cases which established the jurisprudence regarding amendments to the Constitution. After the *Shankari Prasad* judgment came another judgment in the case of *Sajjan Singh v. State of Rajasthan.*

Strengthening the position in Shankari Prasad: Sajjan Singh v. State of Rajasthan [1965]

This case involved a challenge to the validity of the Constitution (Seventeenth Amendment) Act, 1964 on the grounds that it violated the fundamental rights guaranteed to the petitioner under the Indian Constitution.

Facts of the case

Sajjan Singh, the ruler of the princely state of Ratlam, challenged the validity of the seventeenth constitutional amendment before the Supreme Court, arguing that it violated his fundamental rights. This amendment focused mainly on the changes to the right to property, defining the term 'estate' as used in Articles 31-A and 31-B.

The petitioners contended that since Article 226 of the Constitution could potentially be affected by the Amendment, the special procedure outlined in the proviso to Article 368 should have been followed. Article 226 deals with the powers of the High Courts to issue orders or writs against any person.

Further, the petitioners claimed that the Amendment Act dealt with matters related to land and since the Parliament lacked the authority to make laws concerning land, the Act was invalid.

Legal Issues

1. Whether the Constitution (Seventeenth Amendment) Act is constitutional and permitted under Article 368.
2. Whether the term 'law' under Article 13 includes amendments by the Constitution?

Decision of the Supreme Court

In the case, the *ratio decidendi* (the rationale for the decision) of the Supreme Court's bench judges was that the Amendment Act, which abolished the princely privileges and privy purses of the rulers of the former princely states, was constitutional and valid.

The phrase 'amendment' of the Constitution was held to refer to changing all the clauses of the Constitution. The Court further said that the word 'law' in Art. 13(2) does not include a law passed by Parliament by virtue of its constituent power to amend the Constitution.

The Court further held that the Indian government was justified in abolishing the princely privileges and privy purses as a part of the process of integrating the princely states into the Indian Union.

The Court also held that the abolition of the princely privileges and privy purses did not violate the fundamental rights guaranteed under the Indian Constitution, as these were not considered as rights in the first place.

Smt Uthra Dorairajan

(4.11.1897 – 7.2.1984)

Janaki Ammal

The first Indian woman to get Ph.D.

Have you ever heard of a woman scientist on whose name National awards are conferred by two different ministries of our government? While the Ministry of Science & Technology confers DBT Janaki Ammal National Women Bio scientist Awards, the Ministry of Environment, Forests & Climate Change confers E.K. Janaki Ammal National Award for Taxonomy for outstanding contribution the fields of plant taxonomy, animal taxonomy and microbial taxonomy every year.

She is Edavalath Kakkat Janaki Ammal, to whom we owe for sweetness of sugar!!! Born in a Thiyya household, she grew up in an environment that respected Nature, practised medicine and it was a storehouse of knowledge on flora and fauna of their Malabar region. Her maternal grandfather John Child Cannyngton was a British officer who tried to preserve these at London Kew gardens. Young Janaki Ammal hence understood the need to use modern methods for preserving traditional varieties of plants, documenting, cataloging as well as creating new varieties to suit the needs.

Born to Diwan Bahadur Edavalath Kakkat Krishnan and Devi Kuruvayi, little girl Janaki aimed at reaching bigger heights through education and hard work.

Driven by her passion to acquire knowledge, she was bold to think of relocating to new places, adjusting to new culture, acquainting with new people or food. She obtained a bachelor's degree from Queen Mary's College and an honours degree in botany from Presidency College in Madras.

Influenced by teachers at the Presidency College, Janaki acquired a passion for cytogenetics. She taught for three years at the Women's Christian College, Madras before the opportunity of a lifetime presented itself. She was offered the prestigious Barbour Scholarship in 1924 to join University of Michigan's botany department to pursue her Master's degree.

Returning to our country, she continued teaching for a short while. In 1928, Barbour Fellowships carried with them a larger stipend, opening the door for many Asian women to engage in research.

This enabled Janaki to become one of the first women to become a Barbour Fellow in 1928. With her dissertation on "Chromosome Studies in *Nicandra physaloides*", she completed her Ph.D. in 1931. Ammal's research in plant cytology focused on the hybridization of plants, producing interspecific and intergeneric hybrids.

Here, she evolved a cross known as ***"Janaki Brengal".*** On her return, Maharaja's College of

Science, Trivandrum offered her the post of Professor of Botany where she taught till 1934.

From 1934–1939 she worked at the Imperial Sugarcane Institute at Coimbatore, along with Charles Alfred Barber. She studied the cytology of sugarcane plants in order to develop a sweeter hybrid that would allow India to reduce its import of the product from Indonesia.

Her cytogenetics research on interspecific and intergeneric hybrids involving sugarcane and related grass species and genera such as bamboo were epochal. Her contributions were critical to our country's effort towards increasing its agricultural independence.

Sir. C.V. Raman saw the spark in her research work and invited her to be founder member of the Indian Academy of Sciences, a society with the main objective of promoting the progress of science. She was the first woman fellow of this academy.

In 1940, she was invited to work at the John Innes Institute, England alongside geneticist C.D. Darlington. They completed cataloging the Chromosome Atlas of Cultivated Plants in five years which remains a monumental work to botanists even today. This atlas recorded the chromosome number of about 10,000 plants, providing knowledge about breeding and evolutionary patterns of botanical groups.

During this period, bombing in London due to World War II made her stay very tough, but her perseverance won! When the Royal Horticultural Society at Wisely offered her a position as a cytologist, she became its first salaried woman staff member.

In 1951, PM Nehru invited Janaki Ammal to return to India. A Gandhian by nature, she immediately accepted. Ammal was appointed as government supervisor of the Botanical Survey of India (BSI), established in 1890 by Kew Gardens to collect and survey India's flora. The plants collected in India till then have been chiefly by foreign botanists and often sponsored by institutions outside our country.

Janaki Ammal believed a truly systematic study of India's flora could not be done if the specimens were collected by foreign botanists and then studied only in British herbaria. **She traveled extensively across the country to record indigenous knowledge of plants and of their role in tribal culture.**

This extraordinary feat was possible because of her wisdom on ethnobotany and her updated knowledge in the field of cytology. Her research on the hybridization of plants to India's tropical climate sped the country's recovery from a decade of brutal famines, including the Bengal famine.

She continued to be in government service in various capacities including heading the Central Botanical Laboratory at Allahabad and officer on special duty at the RRL, Jammu and Kashmir. She worked for a brief spell at the Bhabha Atomic Research Centre.

Following her retirement, Ammal settled down as an emeritus scientist at the Centre for Advanced Study in Botany, University of Madras in 1970. She continued to work with special attention on medicinal plants and ethnobotany at Maduravoyal near Madras, until her demise.

She was a quiet, unassuming, and unobtrusive but active and a dynamic personality. When foreign countries focused on mass-production of cereals, it turned to be a threat to the existence of native plants. She became alarmed by the level of deforestation to grow more food. She was bold to voice against it; she spoke her mind about our country's subsistence economy, the significance of tribal cultures and their cultivation of native plants, and the importance of Indian matrilineal traditions that valued women as managers of property, including a family's plants.

She spearheaded the chromosomal survey of the Silent Valley plants in an effort to preserve the botanical knowledge held there. **Save Silent Valley campaign** caused the government to abandon its plan to flood the ancient forest for a hydroelectric project and eventually dedicate it as a national park.

She was awarded the **Padma Shri** in 1977. Indian Institute of Integrative Medicine, Jammu a constituent unit of CSIR maintains a digitised collection of more than 21,500 voucher specimens representing 3254 species, primarily of medicinal, aromatic and economic plants.

Recognising her seminal work in this field, this is named as **Janaki Ammal Herbarium** which all of us can access digitally. To honour her work in plant breeding, Royal Horticultural Society has named a variety of Magnolia she created as '**Magnolia Kobus Janaki Ammal'.**

A few species named after her

- ***Janakia arayalpathra***
- ***Sonerila janakiana***
- ***Dravidogecko janakiae*** (a species of geckos)

Dr Preethy S P

Fasting

A healthy and essential practice

Interestingly, not having any food for a short period of time, i.e., 'fasting' is a great way to promote good health. We all intrinsically fast every day – the break between the night and morning meal is usually much longer than between morning-lunch or lunch-dinner. The morning meal is indeed known as 'breakfast'.

The digestive system in our body aided by ***Jatharagni***, is a machine that cannot keep working 24X7. It definitely needs its periodic breaks for internal repair and maintenance. Fasting is believed to rekindle ***Agni,*** because a rested digestive system can better metabolize food and absorb essential nutrients.

In Ayurveda, fasting is considered an effective way to detoxify the body and eliminate accumulated toxins. It allows the digestive system to rest, giving the body an opportunity to focus on removing waste and restoring equilibrium.

Fasting is not only viewed as a physical practice but also as a spiritual one in Ayurveda. It is believed to promote mental clarity, discipline and mindfulness. Some people engage in fasting as a means of self-purification and to cultivate a deeper connection with their inner selves.

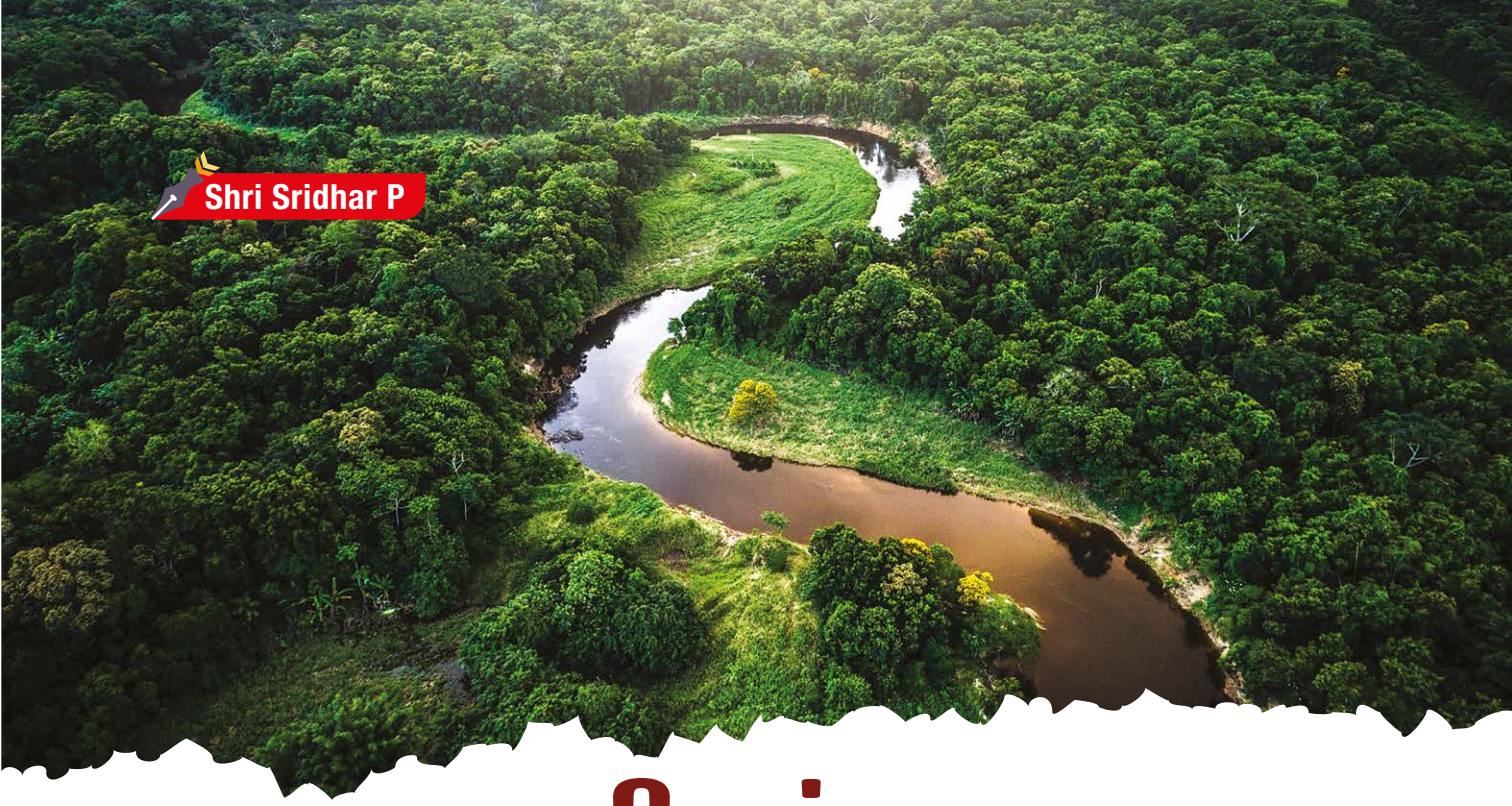
It is better to practice moderation in all aspects of life, including fasting. It is essential to undertake fasting with a balanced approach, considering individual needs and capacity. Extreme or prolonged fasting may lead to imbalances and adverse effects on health.

It is recommended to follow the most appropriate fasting method based on one's constitution and health conditions. Gradual transitioning into and out of a fast is also advised to avoid any shocks to the system. While some forms of fasting involve limited water intake, it is essential to stay adequately hydrated during the fasting period. Drinking warm water or herbal teas can support the body's natural detoxification processes.

There are various practices of fasting which may be adopted based on individual body acceptance and health condition. For instance, some people may fast for days together or some for a day per week or month or may be just for one meal in a week. Also, some may have only water during fasting; others may have juices apart from water; some may also have milk and fruits during fasting.

It is recommended to fast at least one day per week, skipping any one meal – breakfast, lunch or dinner.

Here are some juices that can be commonly consumed during fasting:



Shri Sridhar P

Saving The Amazon Rainforest

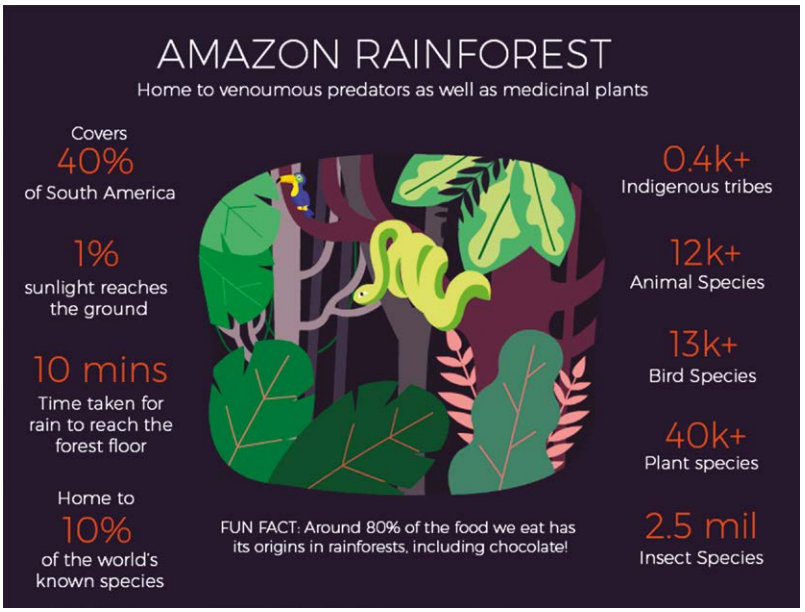
Oxisols - Very highly weathered soils containing few weatherable minerals, often rich in Iron and Aluminiumoxide. These occur in tropical rainforest within 25° north and south of the Equator.

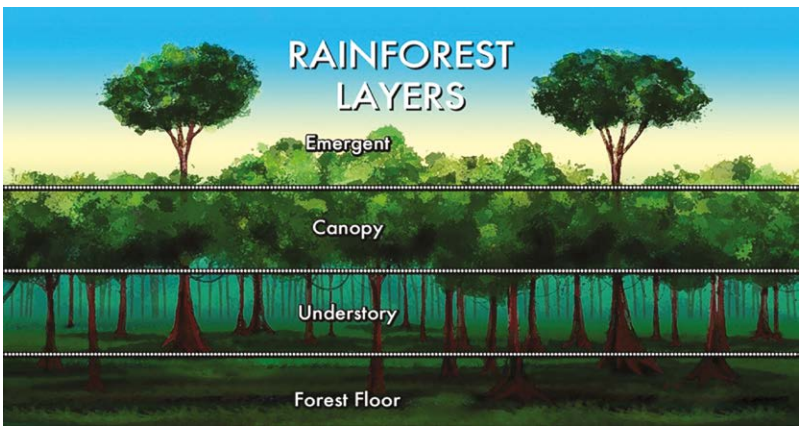
The Amazon Rainforest covers an area of 6.7 million sq km which is more than twice the size of India's land mass.

The Amazon Rainforest that straddles half a dozen countries like Brazil, Bolivia, Venezuela, Ecuador and Columbia is the largest tropical rainforest in size and richness of flora and fauna. It covers an area of 6.7 million sq km and is close to 4.1 % of the world's land area, with 10% of its wild life. It is a remarkable heterogenous rainforest consisting of tall thick wooded trees, grasslands, swamps, mangrove forests, dry deciduous forest, flood plains etc.

Amazon Forest's influence on world climate: The Amazon Forest is a unique ecosystem by itself. Its sustainability and growth are intricately linked to its flora and fauna and the Amazon River running most of its length through it. The forest creates its own climate over its vast area. The transpiration, cloud formation, humidity and heavy precipitation is essentially a closed cycle. Its influence on world climate is significant, sequestering 2 billion tonnes of carbon annually which is 5% of the 36 billion tonnes that we spew into the atmosphere annually and holding close to 76 billion tonnes in its soil. This extraordinary ecosystem is also responsible for rainfall patterns in the rest of South America.

Why is Amazon targeted? Organised illegal clearing of rainforests keeps happening throughout the world, but the scale and dimensions with which it happens in the Amazon cannot be matched elsewhere. World demand for timber has kept brisk pace with the growth in world economy which grew 13 times since 1950. The taste for red meat namely beef has grown exponentially.





Annual per capita meat consumption has moved to 36 kg since 1980.

Interestingly industry style meat production with **feedlots** (places where livestock are bred or fattened up) is how the beef industry goes by. 70% of the corn and soya that fills these feedlots come from plantations which was once thick rainforest. This is the reason for denudation of amazon forest … just to cater to the world demand for red meat.

Why should the Amazon be saved: The Amazon Forest deserves to be protected and saved for several reasons. Sustainable forestry is one thing but rampant deforestation is something else. Better understanding of soil chemistry of a tropical rainforest reveals that the soil of a tropical rainforest is largely infertile called "oxisols", yet supports a very rich forest and a dazzling array of life forms. The forest's biotic and abiotic components, coupled with high precipitation and temperatures work to produce a deeply weathered and leached soil that produces this unique ecosystem. If this is altered beyond a certain point the original forest can never grow back. Amazon's role in creating its own climate and its impact on world climate is too important to be ignored. Further its role in flood control is just too crucial. Any change in the rainforests can reduce rainfall and hit hydropower generation across these countries and that is very important in the growth of renewable energy in that part of the world and in keeping carbon emissions under control.

Action: Concerted action just got stronger when leaders from Peru, Columbia, Venezuela, Bolivia and Suriname met with Brazilian delegates as part of the Amazon Cooperation Treaty Organisation (ACTO) in Belem and finalized the draft on action to save the Amazon rainforest, referred to as the **Belem Declaration.** It called for intensification of the debt for climate action, to be financed by the developed countries. Its agenda includes arresting deforestation, arresting illegal mining, protection of rights of the indigenous tribes whose lives are intricately linked to the rainforest.

The Brazilian President's initiative is crucial for it was during his period deforestation fell from 25000 sq km in 2004 to less than 5000 sq km in 2012. Action from the developed countries is also commendable. A recent EU law requires European based companies to declare that their imports are deforestation-free. Laws and sensitive consumers of forest produce should jointly protect a truly amazing treasure.

Shri Nagarajan R

Tenzing Yangki

First IPS officer from Arunachal Pradesh

Tenzing Yangki's exceptional performance not only brought laurels to the state but also made her the first female IPS officer from Arunachal Pradesh.

Arunachal Pradesh takes pride in the remarkable achievement of Tenzing Yangki, who secured the 545th rank in the prestigious UPSC Civil Services Examination-2022. Her exceptional performance not only brought laurels to the state but also made her the first female IPS officer from Arunachal Pradesh, an inspiring milestone for aspiring women in the region. While her cadre allocation is yet to be disclosed, her accomplishment has already garnered much recognition and admiration.

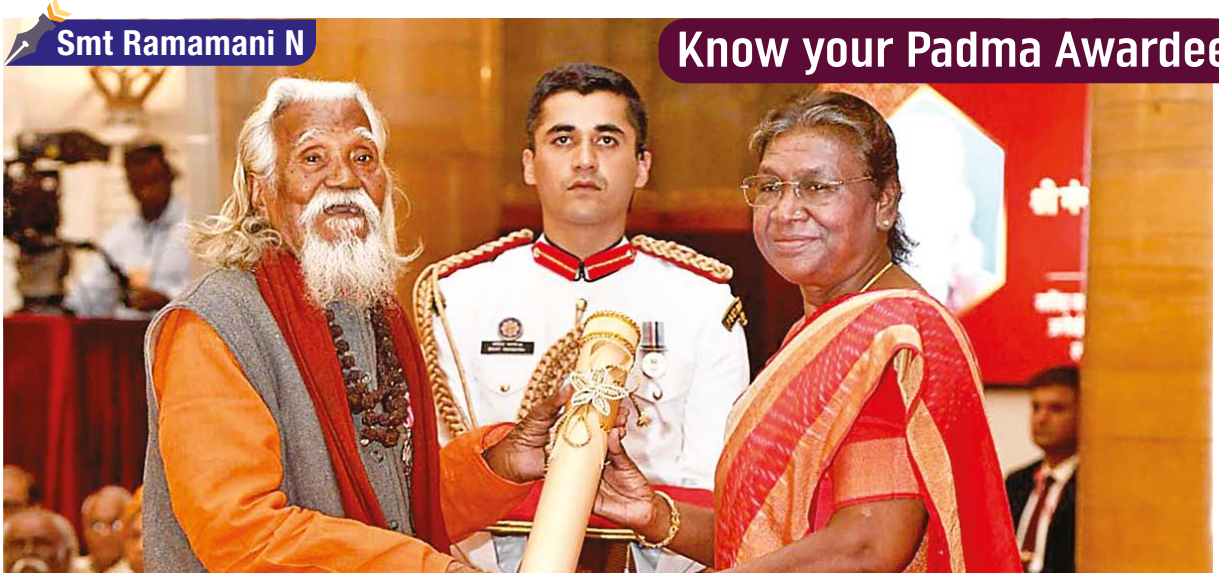
Yangki had previously cleared the Arunachal Pradesh Public Service Commission (APPSC) exam in 2017, displaying her commitment and dedication to public service from an early age.

Despite a thinly populated state with only 72.55% literacy rate (female literacy is 57.70%), most of the Arunachalee IAS, IPS and IRS officers have distinct career graphs for the new entrants to emulate.

Yangki, undoubtedly justifies the proverb "like father, like daughter" as her father former minister, late Thupten Tempa, was an officer of Indian Revenue Service and Indian Administrative Service. Following footsteps of his father late Nyerpa Khow, he entered politics. He was the first political assistant in Tawang, who was instrumental in bringing Tawang region under Indian rule with the help of Major Bob Khathing.

Tempa won from Tawang constituency for three consecutive terms (1990-2004) and served as cabinet minister for all three terms in chief ministers Gegong Apang and Mukut Mithi ministries. He has left behind an unparalleled development legacy.

He would have been the happiest person, had he been alive! But, Yangki hopefully would pick up a few chapters of success stories of her father which she knows pretty well to prove to rest of India. So the legacy of service to the community continues with the daughter entering public service.



Mangala Kanta Roy

Roy is passionate about teaching future performers who are interested in the Sarinda so that the song of life can continue, regardless of caste, culture or creed.

Mangala Kanta Roy, also known as "***Morag Dadu of North"***, is a legendary folk musician who has gained recognition for his unique bird calls and his role in pioneering through the musical instrument '***Sarinda***'. He is one of the oldest folk musicians, having taken folk music to a new level inspiring others to think differently about this genre.

Born on 1st January 1921, in Gadhayar Kuthi, Jalpaiguri District, West Bengal, Roy received his primary education from Gadheyar Kuthi Primary School. As a child, he lost his parents and took shelter at a neighbor's house. Rather than studying, he was captivated by the Sarinda and was inspired by Tolmohan Roy, a ballad singer who was playing the instrument. The tune immediately touched Roy's heart, and he became determined to learn the Sarinda from him. He eventually purchased the Sarinda from Tolmohan and chose it as his profession out of his deep love for the instrument.

At 90, Roy was invited to perform at Pragati Maidan in Delhi, where he won the hearts of everyone. Even at 102, he continues to produce mesmerizing performances that keep Sarinda music alive.

He is passionate about teaching future performers who are interested in the Sarinda so that the song of life can continue, regardless of caste, culture or creed. His patience, tenacity and devotion to Sarinda music are enormous and his Sarinda tunes transport listeners to another world where spiritual delight reigns supreme.

Accolades

- '***Bangaratna***' award (2017) from the Chief Minister of West Bengal
- '***Shilpi Samman***' award conferred on behalf of the WB Government.
- Prestigious medals and awards from various cultural institutions.

Smt Ramamani N

BAL PURASKAR AWARDS

Shambhab Mishra

He designed a logo that won the international top rank in the NASA CISM(Centre for Integrated Space Microsystems) Patch design contest.

Sambhab Mishra, a 16-year-old student from Odisha, has achieved a remarkable height in the **Art and Culture category** by winning the prestigious ***Pradhan Mantri Rashtriya Bal Puraskar*** Award. Undoubtedly, Sambhab's hard work and dedication have paid off, and he must be feeling immensely proud of his achievement.

Sambhab's exceptional abilities are not limited to his artistic talents; he has **authored three books** as on the date of announcement of the award namely, **T*he Policy of Kaliyug Brahmin, Vijayi Bhava Bharat*** and ***Mahabharata Part I***. He received a fellowship from the Royal Asiatic Society of Great Britain and Ireland, making him the youngest fellow in the society's history.

Moreover, he **designed a logo that won the international top rank in the NASA CISM (Centre for Integrated Space Microsystems)** Patch design contest. The logo was even sent to space in 2021.

Sambhab draws inspiration from spirituality and spends his valuable time reading the Vedas, Bhagavad Gita and Upanishads. His parents and school have provided him with unwavering support and he aspires to become a cancer researcher in the future to help eliminate cancer in India.

It is evident that Sambhab is a gifted individual who has accomplished so much at such a young age, and he undoubtedly has a bright future ahead of him. Shambhab Mishra's story removes the myth from all our minds that only aged people would be spritually inclined. It is quite interesting to listen to him say that Vedas are our origin and we can move on in life only by understanding the importance of Vedas.

Smt Ghana Saraswathy M

Geographical Wonder

RANN OF KUTCH

Location :
Western India, primarily in Gujarat

Size : 7,500 sq kms

Famous Festival :
Rann Utsav

Wildlife :
Migratory birds, Indian Cobra, Rusell's Viper, Desert Fox

Best time to visit :
November to February

Nearest airport :
Bhuj – Rudra Mata Airport

The word "Rann" means battlefield in English.

Imagine a place that feels like it is from another world – that's the **Rann of Kutch.** It is like a huge painting on the ground, located in western India. Imagine an area as big as many cities put together, covered in a layer of salt. During the dry months, the salt makes the ground look white and seems to extend interminably. This becomes the stage for a super colourful festival called ***Rann Utsav,*** where people celebrate their culture against the white backdrop.

But when the rainy season comes, something magical happens. The salt desert becomes a shallow marshland, like a big, shallow pool. Rainwater paints the ground with a thin layer of water, and it appears enchantingly beautiful! This amazing view is called the **"Great White Rann."** Birds like flamingos come to this watery wonderland too, making it even more special.

This place shows us how nature and people can live together. The changing landscapes and all the different living things remind us how strong our planet is. Going to the Rann, you'll see how everything fits together and it's a big lesson about how amazing our world can be.

Smt Archana Sundar

CURIOSITY CORNER

1. When was ISRO formed?
2. Which satellite is responsible for Communication, Meteorological Services, and Television Broadcasting in India?
3. When was the first rocket launched from India?
4. What was ISRO known before 1969?
5. Who is the Father of the Indian Space Programme?
6. Name the first Satellite built by India.
7. Which satellite made India the first nation to succeed on its maiden attempt to Mars?
8. Who is called the Moon Man of India?
9. Which is the only Indian island where ISRO has set up a Space Centre?
10. What is YUVIKA?
11. What is BHUVAN?
12. Which Indian state has the highest number of Space Centres?
13. How much did the Chandrayaan 3 mission cost?
14. What is the total weight of Chandrayaan 3?
15. What feature is unique to Chandrayaan-3 compared to Chandrayaan-2?

ANSWERS ON PAGE 66

Smt Vaishnavi V

Kokum

Kokum is indigenous to the tropical forest regions of India. There are a total of 35 species found in our country.

DO YOU KNOW ?

The kokum variety from the Ratnagiri and Sindhudurg districts of Maharashtra has received the GI tag.

Kokum squash, a summer coolant finds a place in every household of Maharashtra and Goa. Kokum is a solitary tall tree grown in the coastal areas of South western part of India. The round purple fruits are juicy and contain light seeds.

Distribution

Kokum is indigenous to the tropical forest regions of India. There are a total of 35 species found in our country, 7 are native to the Western Ghats, 6 to the Andaman and Nicobar Islands and 4 to the northeastern region of India.

Harvesting

Seedling trees starts fruiting after 7-8 years while grafted/ budded. Plants bear fruits after 4-5 years. Flowering starts in October-November and continues up to February-March.

Fruits are ready for harvest during April-May. On an average individual trees yield 30-50 kg ripe fruits per year. The fruits are highly perishable and need utmost care after harvesting.

Benefits

This summer drink contains various types of useful acids, vitamin B, manganese, magnesium, potassium as well as dietary fibre.

- Kokum is used to treat digestive issues such as bloating, constipation and flatulence.
- Helps in tackling body heat.
- Aids in reducing cholesterol and excess weight.
- An immunity booster that guards against various infections and promotes healthy hair and skin.

Uses

- The outer cover of fruit is dried in the sun to get aamsul which is used as a souring agent (like tamarind).
- The fresh fruit is preserved with sugar to make Kokum Sherbet.

Scientific Name	***Garcinia indica***
Grows in	**Forest lands, riversides and wastelands**
Suitable climate	**Warm and humid but thrives in areas of low rainfall too**
Suitable soil	**Laterite and alluvial**

- The seeds contain 23% to 26% fat which is used as a replacement of cocoa butter.
- Kokum butter is used in ointments and in skin and hair products.

ANSWERS OF PAGE 64

1. **15th August 1969**
2. **INSAT (Indian National Satellite)**
3. **21st November 1963 (Sounding rocket launched from Thumba, Kerala)**
4. **INCOSPAR (Indian National Committee for Space Research), A National Space Programme**
5. **Vikram Sarabhai**
6. **Aryabhata**
7. **Mangalyaan (Also known as Mangalyaan-1)**
8. **Dr Mayilsamy Annadurai**
9. **Port Blair**
10. **YUva VIgyani KAryakram ("Young Scientist Programme") organised by ISRO for school children to impart basic knowledge on Space Technology, Space Science and Space Applications.**
11. **A web-based 3D satellite imagery tool; the Indian version of Google Earth**
12. **Karnataka (16)**
13. **615 crore**
14. **3900 kg**
15. **Laser Doppler Velocimeter (LDV)**

World Nature Conservation Day
(27th July)

Save Earth, save a life, save us all..!

World Tribal Day
(9th Aug)

World Tribal Day is observed to promote and protect the rights of the world's indigenous population while acknowledging the achievements and contributions that indigenous people make to improve world issues including environmental protection.