PRAJYA

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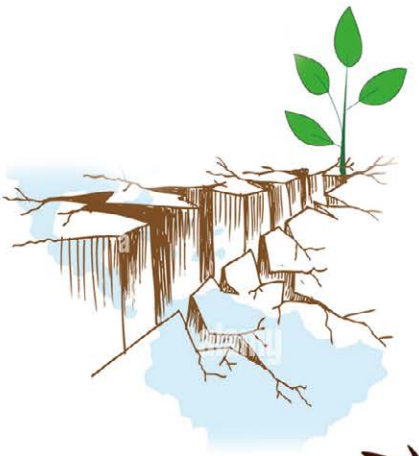
India has the 2nd largest road network



WORLD DAY TO COMBAT DESERTIFICATION AND DROUGHT

JUNE 17th

THE PRAJYA TEAM

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FROM THE EDITOR'S DESK

"Once a new technology rolls over you, if you're not part of the steamroller, you're part of the road."

– Stewart Brand

The launch of a new operating system by China is an assertion of self-reliance. This sends a loud and clear message about its capability to fulfil its needs.

The launch of **Threads**, an online social media and social networking service by Meta Platforms has created a buzz.

By launching **xAI**, a new artificial intelligence company, Elon Musk seems to be positioning himself as a competitor to market leaders like OpenAI, Google and Anthropic with their respective chatbots ChatGPT, Bard and Claude.

With an ever-increasing problem of air pollution, monitoring and control is essential. IIT Madras' **Project Kaatru** is a positive development using IoT based technology. It simplifies air quality measurement and analysis with advanced technology.

The use of AI to filter out fake beneficiaries of governmental schemes will go a long way in preventing leakages of benefits meant for the truly underprivileged.

Lisa's introduction as the **AI news anchor** is a ground-breaking development. "She" is the first in the field of free-to-air regional TV broadcasting.

Indian Air Force has been undergoing modernisation to challenge the best.

We must also heed the advice of Omar Bradley:

"If we continue to develop our technology without wisdom or prudence, our servant may prove to be our executioner."

Read, reflect and revert with your thoughts and feelings.

We look forward to your support and suggestions.

- Editorial Team

Dear Readers,

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

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

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

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

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

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

http://bit.ly/Prajya

Happy Reading !

Watch out for the Monthly Prajya Quiz online

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

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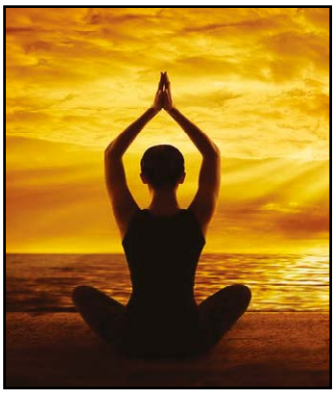

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Shri Sampath D

Prime Minister's three-nation visit

PM Modi addressed the Indian diaspora and announced an agreement for the use of UPI in France, opening a huge new market for Indian innovation in cashless instant payment.

PM Modi successfully concluded a three-nation state visit of France, USA and Egypt.

He arrived in France on a two-day official visit. He was the Guest of Honour at the French National Day celebrations on 14th July 2023 and was conferred the **Grand Cross of the Legion of Honour** by President Emmanuel Macron. This notable distinction aligns him with esteemed global figures including former South African President Nelson Mandela, King Charles (then Prince of Wales), former German Chancellor Angela Merkel and Boutros Boutros-Ghali, the former UN Secretary-General.

The Order, established by Napoleon Bonaparte in 1802 has been presented for the past two centuries on behalf of the French Head of State to the most deserving in all fields of activity. The motto of the Order is ***Honneur et Patrie***, French for **Honour and Fatherland.**

PM Modi addressed the Indian diaspora and announced an agreement for the use of UPI in France, opening a huge new market for Indian innovation in cashless instant payment. In his speech at the La Seine Musicale he outlined India's fast-paced development and asked the diaspora to invest in India, noting that global experts are recognising the country's attractiveness as an investment

destination and the country is taking rapid strides in development.

Our PM announced the opening of a new Indian consulate in Marseille in France and told the cheerful audience that Indian students doing masters in France will now get five-year-long post-study work visas.

During his visit to the USA, he addressed the US Congress for the second time, which only a few illustrious international leaders had done before. During the visit, GE Aerospace announced signing of an agreement with state-owned Hindustan Aeronautics Limited (HAL) to produce fighter jet engines for the Indian Air Force. It is a major milestone since it would be a key element in strengthening defence cooperation between the two countries. **The agreement includes the potential joint production of GE Aerospace's F414 engines in India.**

The US administration has on its part completed the executive approvals for the manufacture of F414 jet engines in India and has begun the process of notifying the US Congress about the impending MoU to be signed between General Electric (GE) and Hindustan Aeronautics Limited (HAL).

Further, this is the first time that the US will share what it is known as a "crown jewel" in its defence capabilities with a non-ally. Moreover, it is the first time that there will be co-production of jet engines with a country with which USA does not have a treaty. Also, it is the first time that the US system is sharing a substantial share of sensitive jet engine technology with a provision for tech transfer.

PM Modi addressed the Indian diaspora and one of the most important talking points from the event was that of the changes being introduced in the H1-B visa process. **He said that Indian Americans will not have to travel outside India to renew their H1B visas which is a major step and relief for the Indians working there.**

Besides the visa, he also announced a new Indian consulate would be opened in Seattle this year, with two more in other US cities. Additionally, America's new consulates would be opened in Bengaluru and Ahmedabad.

PM Modi concluded his tour with a visit to Egypt. This is the first bilateral visit by any Indian prime minister in 26 years. President Abdel Fattah al-Sisi and PM Modi discussed a strategic partnership between the two countries. PM Modi was conferred the **'Order of the Nile'** award, Egypt's highest state honour, in Cairo by the Egyptian President.

Later, PM also visited the Heliopolis War Grave cemetery to honour the Indian soldiers who laid down their lives fighting for Egypt during the First World War and signed the visitor's book at the cemetery.

It is the first time that there will be co-production of jet engines with a country with which USA does not have a treaty.

Smt Anuradha V R

Oman promotes country through YOGA

The collaboration not only promotes tourism but also highlights the role of wellness practices in fostering cultural exchange between the two nations symbolizing the power of holistic well-being.

On the occasion of the International Day of Yoga 2023, the Indian Embassy in Oman introduced a ground breaking video titled 'Soulful Yoga, Serene Oman.'

This unique production showcases yoga enthusiasts from around the world, performing serene yoga poses against breathtaking backdrops in Muscat, including mountains, beaches and sand dunes.

The Indian Embassy has been actively engaged in promoting yoga in Oman through various initiatives, such as the **'Muscat Yog Mahotsav'** in 2022, featuring over 75 yoga events across major cities in Oman as part of the 'Azadi ka Amrit Mahotsav' commemorating India's 75 years of independence. This year, they launched the 'Oman Yoga Yatra,' a five-month-long journey culminating in a grand celebration of the International Day of Yoga 2023.

Moreover, the embassy has extended yoga's benefits to specific segments of Omani society, including organizing dedicated sessions for the Men's and Women's National Hockey teams to emphasize its relevance in sports, as well as curating yoga sessions for children with special needs to showcase its therapeutic advantages.

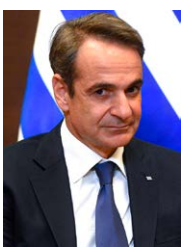
By visually blending the serenity of yoga with Oman's stunning landscapes, the collaboration between the Indian Embassy and the Government of Oman not only promotes tourism but also highlights the role of wellness practices in fostering cultural exchange between nations, symbolizing the power of holistic well-being.

New Heads of State and Some remarkable changes

Kyriakos Mitsotakis has been credited with the modernization and digital transformation of the country's public administration.

It takes a strong and a visionary leadership in countries across the world to steer changes in various fields for the sustenance of life on this planet. It becomes the responsibility of the citizens of a nation to cautiously elect such personalities and put them in the forefront.

People of Finland and Greece have made their choices and elected their leaders. Finland is a parliamentary democracy and **Petteri Orpo**, the leader of the conservative party has been elected as the Prime Minister. Orpo will lead a coalition government comprising four parties, including the far-right Finns Party, which intends to implement strict measures on immigration.



On 25th June 2023, **Kyriakos Mitsotakis** won a second term as the Prime minister of Greece after a historic victory for his **New Democracy** party. He was PM from July 2019 to May 2023. Kyriakos Mitsotakis promised to rebuild Greece's credit rating, create jobs, raise wages and boost state revenues after he was sworn in. He has been credited with the modernization and digital transformation of the country's public administration and has been remarked for his overall management of the Greek economy.

New Zealand is making big news for becoming the first country to ban single-use plastic bags at grocery stores. Shoppers already were expected to bring their own shopping bags to supermarkets.

New Zealand's latest measure takes plastic waste reduction efforts a step further by banning recyclable, biodegradable, or plant-based plastic.

This latest measure takes plastic waste-reduction efforts a step further by banning recyclable, biodegradable or plant-based plastic. Instead, customers are encouraged to bring their own mesh, paper or canvas bags. The country also banned the manufacture, sale and distribution of single-use plates, bowls and cutlery, and stores will only be allowed to offer single-use plastic straws to people with disabilities or health needs.

The Rupee: The Reserve Bank of India has permitted the settlement of international trade between India and Malaysia in Indian Rupee in addition to the current modes of settlement in other currencies. This initiative aims to facilitate the growth of global trade and to support the interests of the global trading community in the Indian Rupee. India International Bank of Malaysia based in Kuala Lumpur has operationalised this mechanism by opening a Special Rupee Vostro Account through its corresponding bank in India i.e., Union Bank of India.

Kum Shrivaishnavi R

Special Olympics World Games 2023

The organization and event stand a testimony to the limitless abilities of the people with intellectual disabilities.

Sport brings people together like nothing else. Taking it a step further, is the Special Olympics organization, which stands for inclusion of people with intellectual disabilities in the sporting arena.

Their flagship initiative is the Special Olympics World Games, which is conducted every two years. Athletes from over 200 countries participate in the event, representing their nation.

This year marked the 16th edition of the event, which was held in Berlin, Germany between 16th and 25th June 2023. The first Games were held in 1968 in Chicago, USA. The first year saw 1000 athletes from the United States.

Since then, there has been an increasing number of athletes attending the Games, with close to 6500 in 2023.The torch lit at the Games is named '**Flame of Hope**' honouring the community of people with intellectual disabilities.

The Games saw athletes participating in close to 30 games and sporting events – from tennis and volleyball to gymnastics and swimming.

The logo of the event, which was co-created with the athletes themselves, represents cheer, vibrance, colour and unity.

Additionally, the logo also has important symbols of Berlin, such as the Berlin Wall and TV Tower. The organization and event stand a testimony to the limitless abilities of the people with intellectual disabilities.

UNOOSA

AARTI HOLLA-MAINI

Director of UNOOSA

DO YOU KNOW ?

UNOOSA works to promote international cooperation in the peaceful use and exploration of space and in the utilisation of space science technology for sustainable economic and social development.

Indian diaspora across the globe have been excelling in a broad range of career spectrums. Here is yet another instance. Aarti Holla-Maini of the United Kingdom who has her roots in Punjab has been appointed as the Director of the **United Nations Office for Outer Space Affairs** (UNOOSA) in Vienna by the United Nations Secretary-General Antonio Guterres. She will succeed Simonetta Di Pippo of Italy.

EDUCATION

- A bachelor's degree in law (Kings College, London).
- A master's degree in business administration from HEC Paris, France.
- An alumna of the International Space University.

CAREER

- Over twenty-five years of experience in the space sector.
- Member of the advisory board of the Satellite Industry Association of India.
- Over 18 years as the Secretary-General of the Global Satellite Operators Association.
- One of the chief architects of the Crisis Connectivity Charter established in 2015 for emergency telecommunications via satellite with the UN World Food Programme's Emergency Telecommunications Cluster.

Shri Mrithyunjay GN

OpenKylin

China's new Operating System

Linux is extremely safe, stable and adaptable. If there are any issues, developers worldwide can come together and solve it by finding the root of the problem.

OpenKylin 1.0 aims to be an open-source desktop OS primarily developed by a group of Chinese companies led by China Electronic Corp. It is a Linux operating system developed by a community comprising around 4,000 developers.

Without exaggeration, we can say the world runs on Linux. The infrastructure of the servers that run the internet, Android smartphones and the smart appliances use the Linux operating system as a base.

This is because Linux, first developed by Linus Torvalds in 1991, is an open-source operating system. **Developers from all around the world can access every single part of Linux and change the code to suit their specific needs. Linux is completely free to use and edit even down to the very core level, called the kernel.**

Consequently, this also makes Linux extremely safe, stable and adaptable. If there are any issues, developers worldwide can come together and solve it by finding the root of the problem.

In spite of this however, the operating system we are most familiar with is Windows.

First developed by Microsoft in 1985, Windows is the most popular OS among average consumers for everyday tasks.

Windows 10 has the greatest market share, with 69% of PC users using it. Windows is so ubiquitous

Openkylin will provide reliable fundamental software services to support the country's IT industrial chain and also ensure security in critical areas including government affairs, communications, energy and transportation.

that the next most used operating system is Windows 7, with 17% of PC users still using it as of 2022.

Unlike Linux, Windows is a closed source software. This means that the kernel of the operating system is owned by Microsoft and cannot be edited or changed in any manner by a user. This allows Microsoft to have a certain level of control over its users.

Over the last few years, especially with Windows 11, Microsoft has begun to integrate many online features with the OS. It has also added many components that collect user data, which is then used to provide advertisements tailored to the user. This level of access also means less privacy. Essentially files stored on your computer might not just be accessible by you but by Microsoft too. **Being closed source also makes it vulnerable to security threats, as any exploit or error can only be fixed by Microsoft and no other developer.**

China's OpenKylin is an alternative to Windows, thereby restricting the level of user data collection by Microsoft from Chinese users. The release of OpenKylin is seen as the newest step in creating software within the country. This is essential for building new infrastructure and promoting the growth of the digital economy.

Openkylin will provide reliable fundamental software services to support the country's IT industrial chain and also ensure security in critical areas including government affairs, communications, energy and transportation.

Meta launches Threads

Shri Mrithyunjay GN

Threads aims to provide robust tools that will enable positive and productive conversations.

On 5th July 2023, Meta launched Threads, an alternative to Twitter, designed to share text updates and join public conversations.

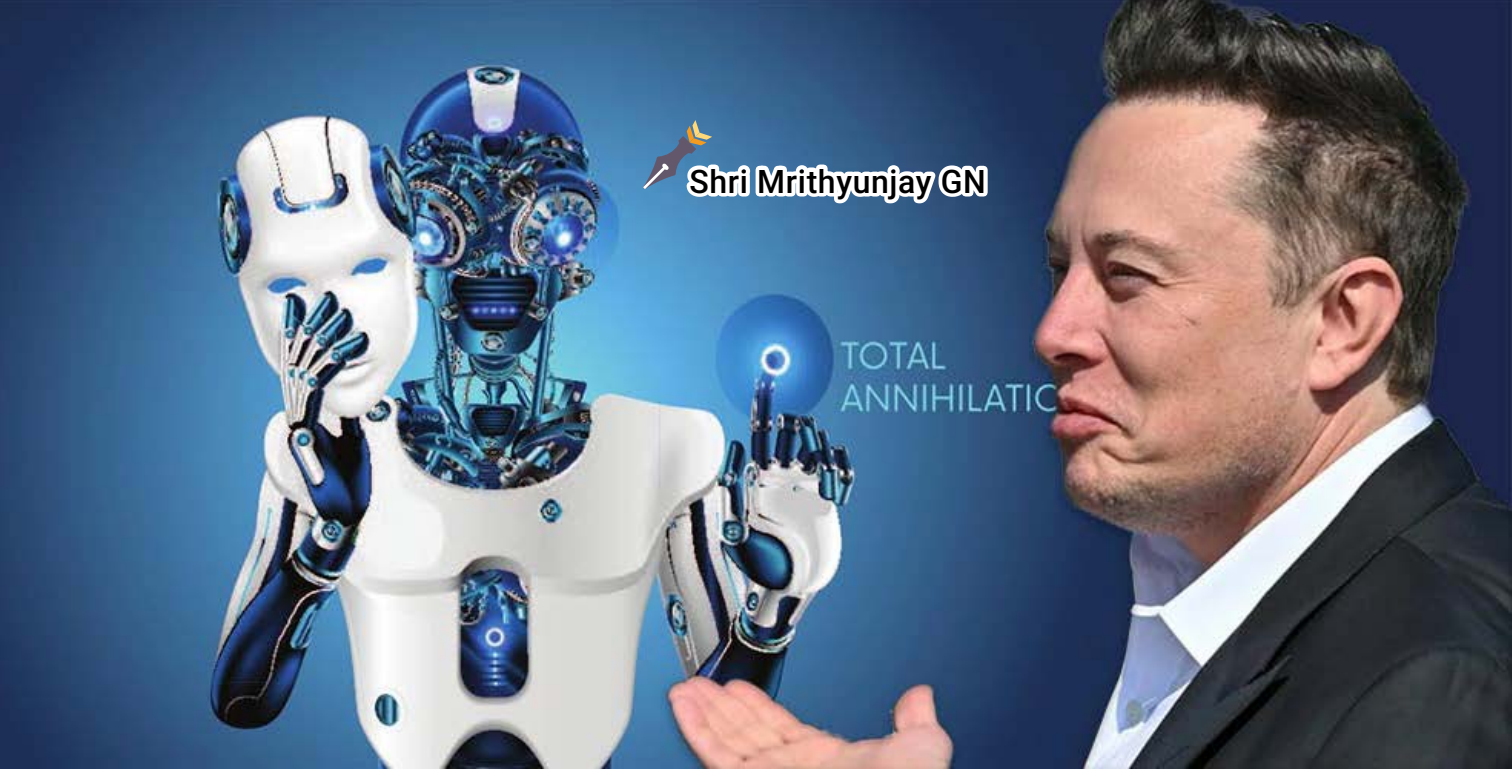
Elon Musk, upon his controversial takeover of Twitter, implemented certain policies and requirements that generated much ire from its users. Features such as paid verifications, daily limits on the number of posts that can be viewed, lax moderation of potentially harmful content and, in general, a greatly reduced level of temperateness have all been received with much backlash.

Built on the same framework as Instagram, with similar layouts and features, Threads is poised to be a much more functional alternative to Twitter. Users can login using their Instagram account details and create posts up to 500 characters long, much like Twitter's 480-character limit and share photos, videos and links to their followers.

Unlike the complete lack of apparent moderation in Twitter, Threads aims to provide robust tools that will enable positive and productive conversations. It also provides controls on who can reply to a post and also has tools that can filter out replies that contain specific words that may be deemed harmful.

Twitter has dominated the short form public conversation space since its launch in 2006. Post its takeover by Musk, multiple competing apps sprung up as an alternative to Twitter. But none has been able gain similar levels of engagement.

Meta, with extensive experience running Facebook and Instagram, is poised to be the best chance for a different company to dethrone Twitter. However, with its active user numbers plummeting from 44 million in early July just after its launch, to just 13 million users, only time will tell which social media app will come out on top.



Shri Mrithyunjay GN

Elon Musk reveals xAI

A new Artificial Intelligence company

Musk explained that xAI will aim to solve complex scientific and mathematical problems across the world.

Of the many changes that Elon Musk has implemented upon his acquisition of Twitter on 27th October 2022, the biggest has been its rebranding as X. While the rebranding may seem sudden, Musk's connection with the letter seemingly goes all the way back to 1999 when he co-founded PayPal, which before it was rebranded, was called X.com.

xAI, however, seems to be the newest focus of the tech billionaire. Announcing the formation of a new artificial intelligence company through a tweet, **the stated objective of xAI is to "understand the true nature of the universe**." On 14th June, through a live audio session on Twitter, he expanded upon the goals of his newly formed company.

Musk explained that xAI will aim to solve complex scientific and mathematical problems across the world and by doing so, attempt to gain a better understanding of the universe and our reality. He considers his newly formed company as a direct competitor to OpenAI, the company behind ChatGPT.

Like any AI, xAI must be trained on large amounts of data. It only seems fitting then that, as the Executive chair and Chief Technical Officer of Twitter, Elon Musk plans to train xAI on publicly available tweets on Twitter, now called X.

The details of what Musk has planned with xAI still seem vague. With a track record of creating companies that make incredible promises that take a long time to come to fruition, one can only wait and watch to see what xAI will truly be used for.

Kum Silpa Nandakumar

India wins big in ASIAN ATHLETICS Championships 2023

India has marked a historic milestone by finishing with 27 medals - six gold, twelve silver and nine bronze.

Curtains have fallen over the one event that athletes and sports-lovers around the globe had been glued to – the event that brings together talents from all over the continent – the Asian Athletics Championship 2023. India has marked a historic milestone by finishing with 27 medals - six gold, twelve silver and nine bronze.

Rank	Country	Gold	Silver	Bronze	Total
1	Japan	16	11	10	37
2	China	8	8	6	22
3	India	6	12	9	27
4	Sri Lanka	3	2	3	8
5	Qatar	2	1	1	4
6	Philippines	2	0	0	2
6	Singapore	2	0	0	2
8	Kazakhstan	1	2	1	4
8	Uzbekistan	1	2	1	4
10	Thailand	1	1	4	6

The Asian Athletics Championships 2023 was held at the Suphachalasai National Stadium in Bangkok, Thailand, from 12th to 16th July.

This year saw India showcase their best-ever performance at the Championships in terms of medals count. The country secured the third position overall, surpassing the previous record set in 2017 at Bhubaneswar, where they secured nine gold, six silver, and 12 bronze medals. Japan finished on top with 37 medals, including 16 gold medals, while China finished second with 22 medals, including 8 gold medals.

AAC was held after a gap of four years after the 2021 edition in Hangzhou, China was cancelled due to COVID-19.

The previous edition, Doha 2019, saw India finish with 16 medals - two gold, seven silver and seven bronze. The exceptional performance by Team India, this year, has again put the country back on the limelight of the world sports arena.

India secured the third position overall, surpassing the previous record set in 2017 at Bhubaneswar.

Athlete	Event	Medal
Jyothi Yarraji	Women's 100m hurdles	Gold
Abdulla Aboobacker	Men's triple jump	Gold
Parul Chaudhary	Women's 3000m steeplechase	Gold
Ajay Kumar Saroj	Men's 1500m	Gold
Tajinderpal Singh Toor	Men's shot put	Gold
Mixed 4×400m relay team (Rajesh Ramesh, Aishwarya Kailash Mishra, Amoj Jacob, Subha Venkatesan)	Mixed 4×400m relay team	Gold
Shaili Singh	Women's long jump	Silver
Anil Sarvesh Kushare	Men's high jump	Silver
Murali Sreeshankar	Men's long jump	Silver
Swapna Barman	Heptathlon	Silver
Priyanka Goswami	Women's 20km race walk	Silver
Chanda	Women's 800m	Silver
Parul Chaudhary	Women's 5000m	Silver
Krishan Kumar	Men's 800m	Silver
Abha Khatua	Women's shot put	Silver
DP Manu	Men's javelin throw	Silver
Jyothi Yarraji	Women's 200m	Silver
Amoj Jacob, Muhammed Ajmal, Mijo Chacko Kurian, Rajesh Ramesh	Men's 4×400m relay	Silver
Abhishek Pal	Men's 10000m	Bronze
Aishwarya Kailash Mishra	Women's 400m	Bronze
Tejaswin Shankar	Men's decathlon	Bronze
Tamilarasan Santhosh Kumar	Men's 400m hurdles	Bronze
Vikash Singh	Men's 20km race walk	Bronze
Ankita	Women's 5000m	Bronze
Manpreet Kaur	Women's shot put	Bronze
Gulveer Singh	Men's 5000m	Bronze
Rezoana Mallick Heena, Aishwarya Kailash Mishra, Jyothika Sri Dandi, Subha Venkatesan	Women's 4×400m relay	Bronze

Smt Shubha TR

IoT – based method for mobile pollution monitoring

DO YOU KNOW ?

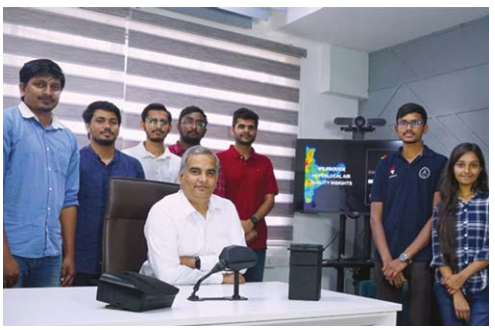
Internet of Things (IoT) is a system of inter connected objects that can exchange data over the internet. e.g., Health care systems, security systems etc.

Data Science is the study of data for advanced analytics, statistics and to gather meaningful insights from the data.

Air Quality Index (AQI) measures how safe the air around us is for breathing.

Eight pollutants namely Particulate Matter (PM) 10, PM2.5, ozone, sulphur dioxide, nitrogen dioxide, carbon monoxide, lead and ammonia act as major parameters in deriving AQI of an area.

Chennai researchers at the Indian Institute of Technology (IIT) Madras under Prof Raghunathan Rengaswamy, have developed - **Project *"Kaatru"*** ('air' in Tamil) - a mobile based air-pollution monitoring framework, that can be mounted on buses, cars and two wheelers, to gather spatio-temporal air quality data.



The project uses low-cost pollution sensors, data science technology and Internet of Things (IoT) to monitor the air quality. This approach enables the creation of a detailed air quality map for the entire city at a high resolution while costing no more than a single reference monitoring station.

Limitations of traditional air quality monitoring

- Fixed monitoring stations and limited coverage.
- Measures air quality in small geographic area.
- Offers generalized view of pollution levels.
- Expansion of monitoring stations is expensive and impractical.

Highlights of 'Kaatru' project

- Data collection, aggregation and predictive modelling using Big Data analytics and data science.
- Enhanced understanding of air pollution in the city.
- Insights for policy making and mitigation strategies.
- Pan India – Hyper local air quality (comprehensive) map.
- Personalized exposure assessment.
- Targeted interventions of pollution hotspots.

Air Quality Index - Particulate Matter	
301 – 500	Hazardous
201 – 300	Very Unhealthy
151 – 200	Unhealthy
101 – 150	Unhealthy for Sensitive Groups
51 – 100	Moderate
0 – 50	Good

Smt Manju Aildasani

GITA PRESS
awarded
GANDHI PEACE PRIZE 2021

"I congratulate Gita Press, Gorakhpur, on being conferred the Gandhi Peace Prize 2021. They have done commendable work over the last 100 years towards furthering social and cultural transformations among the people."

- PM Narendra Modi

A jury headed by PM Modi unanimously selected Gita Press for the award after due deliberations for promoting Gandhian ideals of peace and social harmony.

Established in 1923, Gita Press is one of the world's largest publishers, having published 41.7 crore books in 14 languages, including 16.21 crore Shrimad Bhagavat Gita. The institution has never relied on advertisement in its publications for revenue generation.

The award carries an amount of ₹ 1 crore, a citation, a plaque and an exquisite traditional handicraft/ handloom item. However, Gita Press said it was a matter of great honour to be conferred the Gandhi Peace Prize, **but the publisher would not accept the cash component of the award in keeping with its tradition of not receiving any kind of donations.**

DO YOU KNOW ?

- **Gandhi Peace Prize is an annual award given by the Government of India, instituted in 1995 on the occasion of the 125th birth anniversary of Mahatma Gandhi.**
- **Past Gandhi Peace Prize awardees include:**
  - **Indian Space Research Organisation (ISRO)**
  - **Ramakrishna Mission**
  - **The Vivekananda Kendra in Kanyakumari**
  - **Akshaya Patra**
  - **Sulabh International**
  - **Baba Amte**
  - **Late Dr Nelson Mandela**
  - **Grameen Bank of Bangladesh**

Smt Sumathi Ramakrishnan

Madhya Pradesh tops the National Water Awards

Madhya Pradesh's achievement serves as an inspiration for other states to prioritize and enhance their efforts in conserving this vital resource and emphasise on the need to adopt the mantra of the three Rs - Reduce, Reuse & Recycle.

On 17th June 2023, Vice President Jagdeep Dhankhar awarded Madhya Pradesh, the first National Water Award in the Best State Category for its outstanding work in the field of water conservation, management and utilization at the 4th National Water Awards Ceremony at Vigyan Bhawan in New Delhi.

The award ceremony was organised by the department of Water Resources, River Development and Ganga Rejuvenation (DoWR, RD &GR), Ministry of Jal Shakti (MoJS).

The event started with the traditional 'Jal Kalash' ceremony. As many as 41 winners in 11 different categories were felicitated at the event. **In the last 18 years, the area under irrigation in the state has increased to 45 lakh hectares, which is further expected to increase to 65 lakh hectares by the year 2025.**

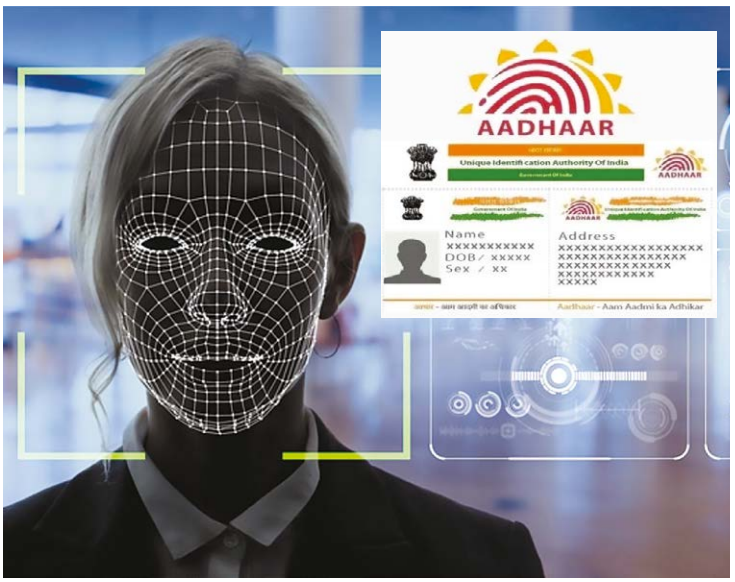
The State has come up with an innovation to deliver water directly from the dam to the fields through an underground pipeline. State's Mohanpura and Kundalia project, whose irrigation capacity is 2,25,000 hectares, has been established as an exemplary irrigation project in the field of water use efficiency upgrade.

Madhya Pradesh's achievement serves as an inspiration for other states to prioritize and enhance their efforts in conserving this vital resource and emphasise on the need to adopt the mantra of the three Rs -- Reduce, Reuse & Recycle to revive the country's ancient water harvesting systems like ponds.

Each award winner was conferred with a citation, a trophy along with cash prizes. As part of the ongoing nationwide drive to realise the Government's vision of a water-prosperous India, the awards seek to create awareness among people about the importance of water and motivate them to adopt the best water use practices.

Shri Krishnakumar C S

Record high Aadhaar-based face authentication transactions



"Aadhaar is the most sophisticated ID programme in the world."

- Paul Romer

World Bank Chief Economist

Aadhaar is a 12-digit individual identification number issued by the Unique Identification Authority of India (UIDAI) established in January 2009 by the Government of India. It is the world's largest biometric ID system. It can be used as proof of identity and address, anywhere in the country. Every resident of India can enrol for Aadhaar after completing the verification process. Enrolment is free and voluntary for all the residents of India.

Each individual is allotted a unique Aadhaar number. It is valid for a lifetime. This number can be used to avail various services that government and non-government agencies provide.

The Aadhar-based face authentication for service delivery was introduced in October 2021. Since then, usage has increased gradually and touched a record-breaking 10.6 million last May. The number has increased by 38% compared to January 2023.

Face authentication is a great help for senior citizens and all those who have issues with the quality of their fingerprints.

UIDAI has developed an in-house AI/ML-based face authentication solution. It is currently being utilized by 47 institutions. The technology captures live images during the authentication process, ensuring increased security. It is designed to counter video replay attacks and prevent unauthorized usage of static photos by individuals with malicious intent.

Aadhaar-based face authentication is one of the several examples of how technology is utilised for making the lives of people comfortable. Our nation is growing faster in the field of science and technology and its benefits are gradually trickling down to each and every citizen of the country. Very soon our nation will join the elite group of developed nations. Every one of us should strive hard to achieve excellence in our fields so that we can also contribute towards the development of our nation.

Shri Ramaswamy R

AI helps identify fake beneficiaries of schemes

Machine Learning (ML) is a sub set of AI. The set of instructions for accomplishing a task is known as algorithm.

Artificial Intelligence (AI) is the science of making machines think like humans. AI technology can process large amounts of data in ways unlike humans. Goal of AI is to do things such as recognize patterns, make decisions and judge like humans.

Machine Learning (ML) is a subset of AI. The set of instructions for accomplishing a task is known as **algorithm**. **Deep Learning** as further advancement are models made for specific tasks. Fraud and fake beneficiary detection is one such task.

Fake Beneficiaries in ABPM – JAY

Ayushman Bharat Pradhan Mantri Jan Yojana, the flagship scheme implemented in 33 States and UT provides health assurance cover up to ₹5 lakhs per annum per family for 55 crore beneficiaries from poor families.

Owing to cash rich content, the scheme is prone to scams. Since inception in Sept 2018, the scheme has detected 0.18% of medical treatment claims as fraud and penalty of 29.17 crores collected, 398 hospitals suspended and 5.3 lakhs AB cards were disabled.

AI helped in cross verification of claims through Aadhaar, address proof, admission and discharge time and date and photograph of the patient undergoing medical treatment.

Crackdown by GST

Nationwide crackdown by GST authorities uncovered evasion to the tune of ₹30,000 crores,

As early as 2018, linking of Aadhaar card numbers with ration cards helped unearth 2.62 crore bogus ration cards across the nation and save ₹17,000 crores annually.

allegedly carried out using stolen ids including as many as 18,000 PAN and Aadhaar cards.

That ids of beneficiaries of PM Kisan and other social security schemes were used to operate over 4000 shell companies and 16000 fake registrations, could also be found out by application of AI across different schemes. For this purpose, GST roped in other agencies like Income Tax department, Enforcement Directorate and Corporate Affairs Ministry.

PM Kisan Yojana

Under this scheme 100% funded by Centre and beneficiaries identified by State governments, poor small and marginal farmers are provided ₹6000 per annum by direct benefit transfer (DBT). Launched in 2019, more than 11 crore farmers have received ₹2.42 lakh crores into their account.

Till 2022, there were about 32 lakhs fake beneficiaries who were ineligible government employees, pensioners, IT payers or non-farmers. That they received a whopping ₹4000 crores from the scheme, was found out by cross checking various schemes. Centre has now gone in for e-KYC through facial authentication mobile app.

Bogus Ration Cards

As early as 2018, linking of Aadhaar card numbers with ration cards helped unearth 2.62 crore bogus ration cards across the nation and save ₹17,000 crores annually.

Thus, AI is used for a comprehensive fraud analytics solution to detect fraud proactively. Algorithms are developed and used on a large volume of data to identify suspect transactions and entities.

Kum Kavya R

India's first indigenous Nuclear Reactor is operational

On 30th June 2023, India's first indigenously built 700 MW nuclear power reactor opened in Surat, Gujarat. The 3rd unit of Kakrapar Atomic Power Project (KAPP) is now operating at 90% of its total capacity. This is an important milestone for India, especially since the "Make in India" initiative launched by PM Modi. He called KAPP-3 a trailblazer after it reached criticality.

On 22nd July 2020, KAPP reactor achieved its first criticality. **A nuclear reactor is said to achieve criticality when the nuclear fuel inside a reactor can sustain a fission reaction, which is the first step towards power production.**

Built by the Nuclear Power Commission of India Limited (NPCIL), KAPP-3 has a **Pressurised Heavy Water Reactor (PHWR)** which has advanced safety features such as steel lined inner containment, passive decay heat removal system, containment spray system and hydrogen management system, among others.

Currently, KAPP is home to two other 220 MW power plants. NPCIL is also building two 700 MW reactors in Kakrapar. These reactors are highly significant for India as they will be the backbone of a new fleet of twelve reactors to which the government gave approval and financial sanction in 2017.

The **PWHR** design uses heavy water (deuterium oxide), a chemically different form of water, to cool and control the nuclear reactions. By using heavy water, it is possible to use naturally-occurring uranium as fuel, rather than the enriched fuel used in other types of reactors. Heavy-water reactors are mostly associated with Canada, but they are also used in India, Argentina, Romania, Pakistan and China.

Passive heat removal in nuclear reactors - When a reactor encounters an emergency, such as loss of coolant flow, it will be able to shut itself down safely without human, electrical or mechanical intervention.

Containment spray system is a gas-tight shell or other enclosure around a nuclear reactor to confine fission products that otherwise might be released to the atmosphere in the event of an accident. Such enclosures are usually dome-shaped and made of steel-reinforced concrete. The containment spray system maintains the containment fission product barrier by reducing containment pressure following a loss-of-coolant accident or steam line break.

Smt Gaayathiri G

India launches Bharat 6G Alliance

Telecom sector is continuously evolving with high technological obsolescence. It has seen transformation from wire-line to mobile services, which has become lifeline of the people. Mobile services have also seen transformation from 2G to 3G to 4G to 5G and now 6G is in horizon.

- Formation of the Bharat 6G Alliance (B6GA), a collaborative platform consisting of public and private companies, academia, research institutions and standards development organizations.
- The website for Bharat6G Alliance was also launched, the link for the same is **https://bharat6galliance.com.**
- B6GA will forge coalitions and synergies with other 6G Global Alliances, fostering international collaboration and knowledge exchange.

The primary objective of B6GA is to understand the business and societal needs of 6G beyond technology requirements, foster consensus on these needs and promote high-impact open research and development (R&D) initiatives to offer enhanced capabilities such as improved reliability, ultra-low latency and affordable solutions.

B6GA aims to bring together Indian start-ups, companies, and the manufacturing ecosystem to establish consortia that drive the design, development and deployment of 6G technologies in India. By accelerating standards-related patent creation within the country and actively contributing to international standardization organizations such as 3GPP and ITU, B6GA seeks to position India at the forefront of 6G innovation.

One of the key goals is to facilitate market access for Indian telecom technology products and services, enabling the country to emerge as a global leader in 6G technology. To achieve this, these efforts shall promote technology ownership and indigenous manufacturing, create a culture of technology co-innovation, reduce imports, boost export opportunities and augment creation of intellectual property.

One of the key goals is to facilitate market access for Indian telecom technology products and services, enabling the country to emerge as a global leader in 6G technology.

Kum Anu Narayan

National sickle cell anaemia elimination mission

Announced in the Union budget 2023, the National Sickle Cell Anaemia Elimination Mission was launched to address the health challenges posed to the tribal population from the sickle cell disease. In Madhya Pradesh's Shahdol, PM Modi stated that the aim of this mission is to eliminate the disease as a health concern by 2047.

Healthcare facilities are being upgraded to provide tertiary care to sickle cell patients. Arrangements for bone marrow transplants and screening of such patients are also being revamped, while blood banks are being established in hospitals. Recently, in a meeting of the National Technical Advisory Group on Immunization, pharmaceutical companies along with the Central government discussed the possibility of developing a vaccine against this hereditary blood disorder.

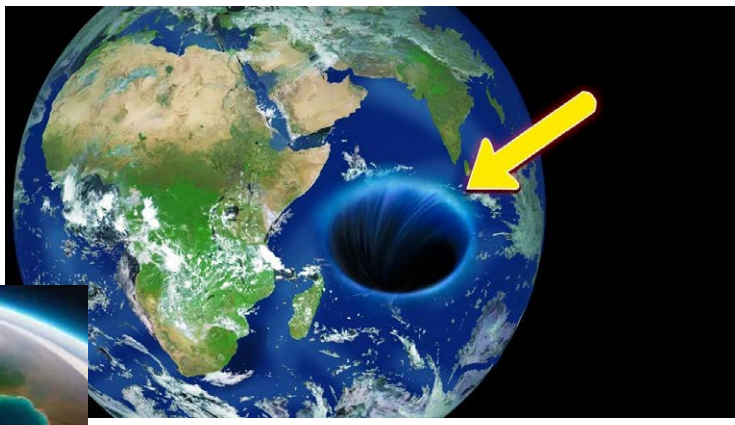
The mission focuses on universal screening in affected tribal areas of approximately seven crore people in the 0-40 years age group, awareness creation and counseling through collaborative efforts of central ministries and state governments.

278 districts of 17 states in India, namely Gujarat, Maharashtra, Rajasthan, Madhya Pradesh, Jharkhand, Chhattisgarh, West Bengal, Odisha, Tamil Nadu, Telangana, Andhra Pradesh, Karnataka, Assam, Uttar Pradesh, Kerala, Bihar and Uttarakhand will benefit from this mission.

Sickle Cell Anemia (SCA) is defined by the National Heart, Lung and Blood Institute (NHLBI) as **a collection of inherited red blood cell conditions impacting hemoglobin that transports oxygen throughout the body. This defective hemoglobin results in red blood cells turning hard, sticky and deforming into a C-shaped structure similar to a sickle.**

This deficiency of red blood cells causes anemia and exhaustion. Patients may also experience swelling in their extremities as the sickle cells harm the spleen and make people more susceptible to infections. Nearly 20% of affected tribal children die before reaching the age of two, and 30% children die before reaching adulthood.

Kum Anu Narayan



What Caused The Gravity Hole In the Indian Ocean?

Mystery of 'GRAVITY HOLE' in Indian Ocean unravelled

DO YOU KNOW?

The planet's gravity is not even across its geographical regions, since Earth isn't a perfect sphere and bulges towards the equator. Also, depending on the mass of crust, mantle and core layers immediately beneath, different regions on Earth exert different gravity.

A massive section of the Indian Ocean seafloor strangely sinks into a hole with a much lower depth than the global average sea level. The gravity hole covers almost three million square kilometres in the Indian Ocean seafloor and is located about 1,200km southwest of India's southern tip.

The Indian Institute of Science in Bangalore claims that while many theories have been suggested for this anomaly, none has been proven so far. However, the journal Geophysical Research Letters published a new study that suggests this giant depression is due to the Earth's gravity being very low in this region.

In order to trace the origin of this 'gravity hole', scientists ran computer simulations by reconstructing the last 140 million years of plate tectonic movements. The study found that some sections of the tectonic plates sank through the mantle under Africa almost 30 million years ago. To counteract this depression, plumes of lesser dense, and hot mantle sprang up from under the Indian Ocean about 20 million years ago, thus leading to the formation of this gravity hole.

According to the scientists, this anomaly is likely to last for many more millions of years and may stop once the mantle material flows cease.

Anti-Bribery Management System certification for ONGC

The Oil and Natural Gas Corporation Limited (ONGC) is an Indian central public sector undertaking under the ownership of Ministry of Petroleum and Natural Gas, Government of India. Founded on 14th August 1956, ONGC is the largest government owned oil and gas explorer and producer in the country and produces around 70 % of India's domestic production of crude oil and around 84% of natural gas.

It has made history by becoming the first Central Public Sector Enterprise (CPSE) in India to receive certification for its **Anti-Bribery Management System** (ABMS), awarded by the internationally accredited certification body InterCert USA.

Central government established Maharatna Companies in 2010. Central Public Sector Enterprises (CPSEs) are classified as Maharatna, Navratna and Miniratna companies. depending on their degree of financial independence. These were founded with the intention of giving businesses more financial freedom and supporting their entry into the global market.

There are 12 Maharatna companies in India now.

Anti-Bribery Management System and how it functions

It is a system which guides organizations on how to eradicate bribery-related incidents and concerns. Aimed to address one of the world's most challenging issues, it advocates a committed approach to eradicating corruption (bribery) in a way globally recognized, like

- adopting an anti-bribery policy
- appointing person(s) to oversee anti-bribery compliance
- Training, conducting risk assessments and due diligence on projects and business associates
- implementing financial and commercial controls
- instituting reporting and investigation procedures, amongst other frameworks.

Incidentally, ONGC was the first organization in India that adopted the Integrity Pact (IP) by Transparency International in 2005. This ABMS Certification, thus, becomes another significant milestone in the journey of this Energy Maharatna towards strengthening its stature as a preferred business partner.

Shri Nagarajan R

'Lisa'

India's first regional AI news anchor

The introduction of Lisa is proof that the boundaries of AI in the media industry continue to be pushed, opening new possibilities.

In a significant milestone for the AI industry, Odisha TV (OTV), an Odia-based news station, has unveiled "Lisa", India's first regional AI news anchor. Lisa's introduction marks a groundbreaking moment in TV broadcasting and journalism, with the potential to revolutionize the industry. In a video shared by OTV on Twitter, Lisa confidently introduces herself, expressing excitement for this historic occasion.

The news station revealed that she would soon host new updates, showcasing her capabilities as an AI news anchor. Lisa possesses the remarkable ability to speak multiple languages, including Odia, English and others.

OTV acknowledged the challenge of training Lisa in the Odia language and disclosed that efforts are underway to enhance her proficiency further. The platform's goal is to develop her interactive skills, enabling seamless communication with others. The news station also encouraged viewers to connect with Lisa on social media platforms like Instagram and Facebook.

An AI anchor collects, tracks, and categorizes what is said and who said it and then converts that data into usable and actionable information. Automatically generated searchable action items keep vital points in mind, ensuring you never miss a beat.

The introduction of Lisa is proof that the boundaries of AI in the media industry continue to be pushed, opening new possibilities for engaging and dynamic news presentations in different languages and regional contexts.

AI bots have a human-like appearance. This makes the audience connect with them easily. This also does not break the habit of the viewers to listen to the everyday news from the mouth of a human. **As an AI anchor, bots are capable of reading news in local languages fluently.** The launch of ChatGPT has made this idea speed up.

Kum Kavya R

Historic journey

Chandrayaan-3 lifts off

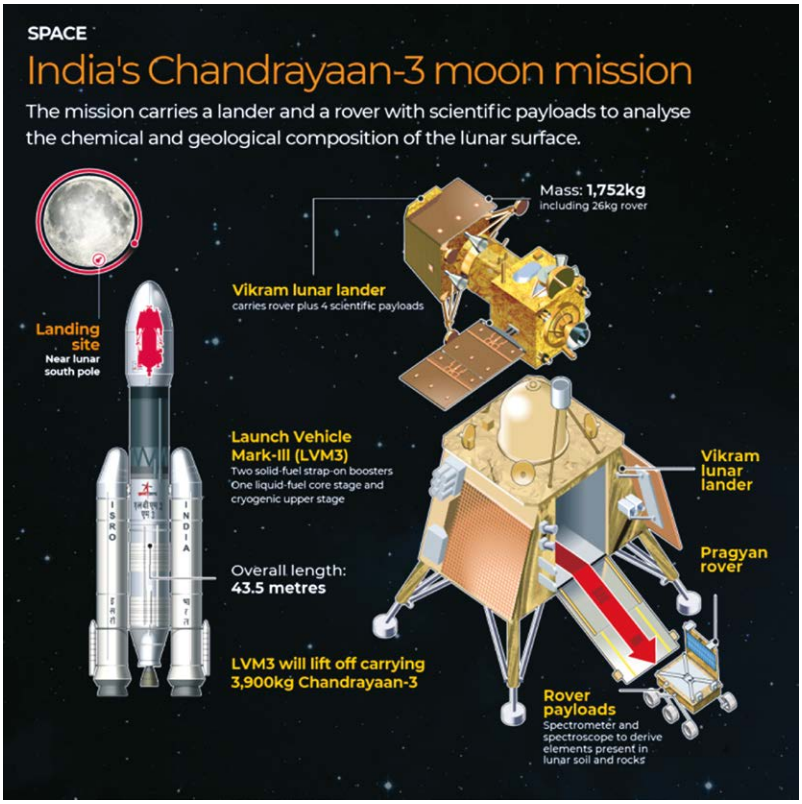
Around 16 minutes after the LMV3 lifted off, the spacecraft separated from the rocket.

India's third moon mission, Chandrayaan-3 was successfully launched on 14th July 2023 from the Satish Dhawan Space Centre in Sriharikota. Amidst thousands of people watching from the viewers gallery, the 642-tonnes Launch Vehicle Mark-3 (LMV3) lifted off majestically at 2:35 pm on Friday.

Around 16 minutes after the LMV3 lifted off, the spacecraft separated from the rocket. The 3.9 tonne lunar spacecraft entered a highly-elliptical orbit, where the spacecraft is 170 km above the earth at its closest approach (perigee) and 36,500km above the earth at its farthest approach (apogee).

The lunar spacecraft consists of an indigenous lander module (LM), propulsion module (PM)and a rover. The lunar lander and rover are named Vikram and Pragyan respectively. The primary function of the PM is to carry the lander from the launch vehicle injection into the orbit till final lunar orbit and separate from it. The module will execute a series of maneuvers to raise the orbit till it can be caught by the moon's gravity. After this, the lander will try to soft-land near the moon's 80-degree latitude, roughly 600 km away from the lunar south pole, on 23rd August 2023.

It is crucial that the landing happens at the start of a lunar day, as sunlight is essential to charge the solar panels and batteries onboard the lander and rover. One lunar day



The rover will derive the elemental composition in the vicinity of the landing site.

is equal to 14-15 days on Earth. And under ideal conditions, the lander and rover are supposed to work for one lunar day. In case the landing is delayed, ISRO believes that the rover and lander could survive the lunar night and revive its activity once the sun is up.

Upon landing, the lander has multiple instruments to measure thermal conductivity, temperature, the occurrence or frequency of earthquakes around the landing region and estimate plasma density and variations. The rover will derive the elemental composition in the vicinity of the landing site. If successful, the mission will help us develop and demonstrate new technologies required for inter-planetary missions.

Chandrayaan-3 is India's second attempt at soft-landing robotic instruments at the lunar surface. The first attempt in 2019, Chandrayaan-2, failed when the lander ceased communication to the ground stations at an altitude of 2.1 km from the surface of the moon. And so far, only three countries, US, Russia and China have soft-landed on the moon.

"Chandrayaan-3 scripts a new chapter in India's space odyssey. It soars high, elevating the dreams and ambitions of every Indian. This momentous achievement is a testament to our scientists' relentless dedication. I salute their spirit and ingenuity!" said PM Modi.

Shri Ramaswamy R

Amrit Bharat Station Scheme

The railways carry around 24 million passengers and also 204 million tonnes of freight daily.

Amrit Bharat Station Scheme (ABSS) was launched by Indian Railways (IR) in December 2022 for beautifying and modernizing our railway stations. For the continuous improvement project, 1300 railway stations from their 70 divisions have been allotted ₹13,000 crores from IR FY24 capex outlay, 240% year on year.

Indian Railways

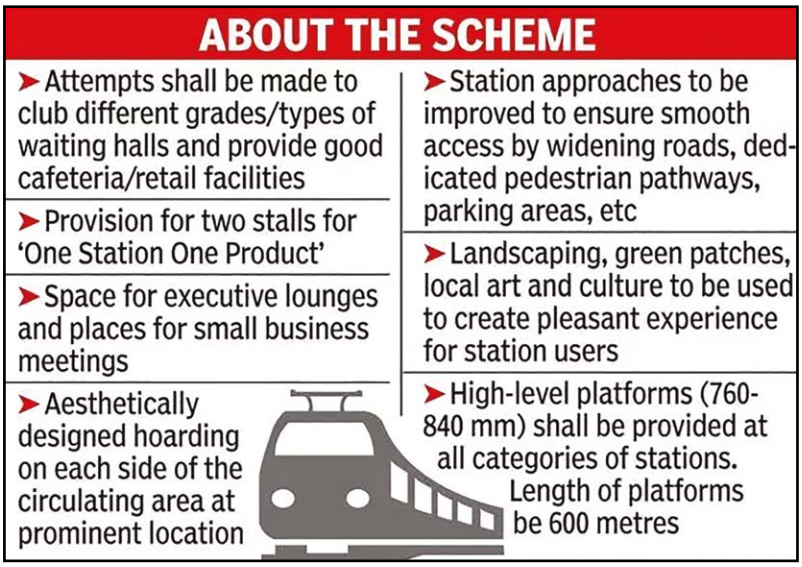
Indian Railways have the 4th largest railway network in the world. They have about 22,600 operating trains, of which 13,200 passenger trains are operated daily, covering 7325 railway stations and 68,000 kms across India. The railways carry around 24 million passengers and also 204 million tonnes of freight daily. Railways have staff strength of 13 lakh employees and earn an annual revenue of ₹2.4 lakh crores.

ABS Scheme

This scheme focuses on

- Construction of elevated platforms that will lessen passenger mishaps.
- Design of better platform drainage system.
- Construction of lifts/elevators, terraces, cafeteria, town centres and stations.

The Railways have planned to ensure with special care that the facilities and ease of movement are available for Divyangjans or differently abled persons.



- Kiosks for "one station one product" schemes.
- Executive lounges, nominated spaces for business meetings and landscaping.
- Broadening approach streets and installing unique platform crossings.
- Removing undesirable structures and creating well planned parking areas.
- Appropriate signage and illumination. Better passenger information.
- Access to free Wi-Fi and location of 5G tower.
- Spacious and better furnishings for waiting halls and sufficient number of restrooms.

The Railways have planned to ensure with special care that all the above facilities and ease of movement are available for Divyangjans or differently abled persons.

Smt Sandhya Nair

India secures 9th title

India was awarded a cash prize of USD 50,000, equivalent to ₹41 lakhs. The Kuwaiti team received USD 25,000.

The South Asian Football Federation Championship, also known as the SAFF Football Championship, is a biennial international football tournament contested by the national teams of South Asian countries. The championship aims to promote and develop football in the region.

The 2023 Bangabandhu SAFF Championship - the 14th edition of the SAFF Championship was held at the Sree Kanteerava Stadium in Bangalore, India from 21st June to 4th July 2023. India secured its ninth title by defeating Kuwait in a thrilling match. The team was awarded a cash prize of USD 50,000, equivalent to ₹41 lakh. The Kuwaiti team received USD 25,000.

The Indian football team has been the most accomplished side in the SAFF Championship. They have claimed the championship eight times: 1993, 1997, 1999, 2005, 2009, 2011, 2015 and 2021.

Lebanon participated as a guest nation.

The participants:

1. Bangladesh
2. Bhutan
3. India
4. Kuwait
5. Lebanon
6. Maldives
8. Nepal
9. Pakistan

SAFF was formed in 1997 by founding Member Associations from Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka.

The SAFF Secretariat currently operates from Dhaka, Bangladesh.

Smt Archana Sundar

World Archery Youth Championships 2023

India's contingent, comprising 24 promising archers, left an indelible mark on the World Archery Youth Championships, claiming six gold, one silver, and four bronze medals.

In a thrilling display of skill and determination, young archers from around the globe converged in Limerick, Ireland, from 3rd to 9th July for the highly anticipated 2023 World Archery Youth Championships. With more than 500 archers representing 58 countries, the event was a true celebration of the sport. It proved to be a fiercely competitive and prestigious platform for young archers to showcase their talents both individually and in the team events, witnessing the culmination of years of hard work and dedication from the participating athletes.

Among the participating nations, India emerged as a powerhouse, securing an impressive total of 11 medals, showcasing its potential as a rising force in international archery. India's contingent, comprising 24 promising archers, left an indelible mark on the World Archery Youth Championships, claiming six gold, one silver, and four bronze medals. Their remarkable feat solidified their position as the second most successful country at the competition, standing shoulder to shoulder with giants like Korea who finished first with a total of 10 medals including six gold and four silver.

The success of India's young archers at the 2023 World Archery Youth Championships speaks volumes about the nation's growing dominance in the sport. It reflects the dedication of the athletes, the unwavering support of their coaches, and the infrastructure that nurtures budding talents.

List of Indian Medallists at World Archery Youth Championships 2023

Member(s)	Category	Medal
Parth Suhant Salunkhe	U-21 recurve men's individual	Gold medal
Bhajan Kaur	U-21 recurve women's individual	Bronze medal
Ridhi, Parth Suhant Salunkhe	U-21 recurve mixed team	Bronze medal
Priyansh	U-21 compound men's individual	Gold medal
Avneet Kaur, Parneet Kaur, Pragati	U-21 compound women's team	Gold medal
Avneet Kaur, Priyansh	U-21 compound mixed team	Gold medal
Ujjwal Dhama, Goldi Mishra, Agastay Singh	U-18 recurve men's team	Bronze medal
Aditi Gopichand Swami	U-18 compound women's individual	Gold medal
Manav Jadhao, Pawan Gat, Ganesh Thirumuru	U-18 compound men's team	Silver medal
Aishwarya Sharma, Aditi Gopichand Swami, Ekta Rani	U-18 compound women's team	Gold medal
Aishwarya Sharma, Manav Jadhao	U-18 compound mixed team	Bronze medal

Kum Pavithra S

India wins 34th International Biology Olympiad

The 34th International Biology Olympiad (IBO) 2023 held in Al Ain, United Arab Emirates, saw 4 students from India securing 4 gold medals.

The competition took place from 2nd to 11th July 2023, and 293 students from 76 countries participated. Only one other nation, Singapore, managed to win four gold medals. In total, 29 gold medals were awarded.

With sheer hard work and determination Dhruv Advani, Ishan Pednekar, Megh Chhabda and Rohit Panda did exceptionally well and won four gold medals for the first time.

Helping and guiding the students were Prof. Madan M. Chaturvedi (Former Senior Professor, Delhi University), Dr. Anupama Ronad (HBCSE, TIFR), Dr. V.V. Binoy (National Institute of Advanced Studies, Bengaluru) and Dr. Rambhadur Subedi (NIRRH, Mumbai). They are experienced leaders who provided support and encouragement to the students throughout the competition.

In the International Biology Olympiad (IBO), students have to face two kinds of exams - theoretical and practical. In the theoretical exam, they answer around 100 questions about different aspects of Biology. The practical exam involves doing experiments and analysing data in laboratories.

It is a huge achievement for India to win all four gold medals at IBO for the first time. In the past, India has topped the medals in the following categories:

- **Junior Science** (2014, 2019, 2021, 2022),
- **Astronomy & Astrophysics** (2008, 2009, 2010, 2011, 2015, 2021)
- **Physics** (2018).

It is a huge achievement for India to win all four gold medals at IBO for the first time.

The Development Highway

"If you want to be wealthy, build roads first."

- Chinese Proverb

India's National Highways account for 2% of the road network while handling 40% of the total traffic.

The Chinese seem to have realized quite early that the path to prosperity for a nation is laid with roads. That is how villages and towns get connected to the outside markets triggering trade. No wonder China is a role model for developing highways. Till very recently China had the second largest road network in the world, next to the USA.

In June 2023, Nitin Gadkari the Minister for Roads Transport and Highways announced that India now has the second largest road network in the world, pushing China to the third slot.

India's road network measures 6.37 Million kms comprising National Highways and Expressways, State Highways, District and Village roads. This is a significant achievement that India should be proud of and stands testimony to the focus, thrust and the consistent effort that the Modi government has put into building infrastructure in the country. National Highways account for 2% of the road network while handling 40% of the total traffic.

Commendable growth : Some numbers and feats

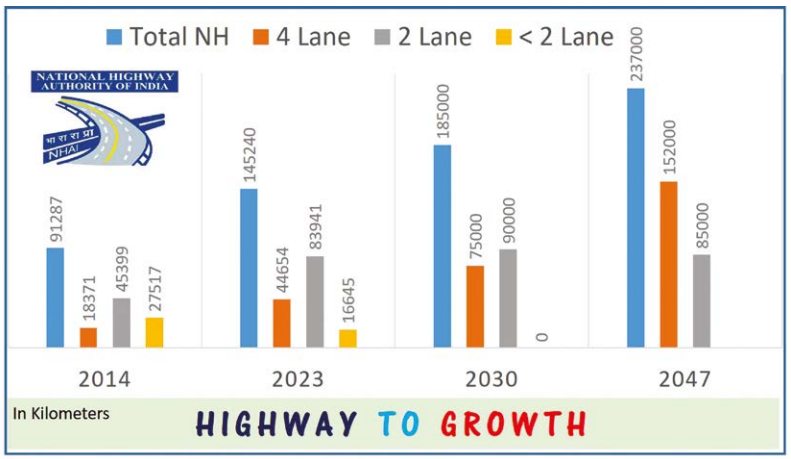
India is fortunate to have an efficient and performance-oriented minister in Nitin Gadkari who has personally driven the highways development. He is fondly called the **"Highway King of India"**.

In the last 9 years the total length of the national highways increased by 59%, from 91,287 kms in FY 14 to 1,45,240 kms in FY 23.

HIGHWAY TO GROWTH

Year	Total NH Length	Four lane and above	2 lane with Shoulder	Less than Two Lane
2014	91,287 Kms	18,371 Kms (20%)	45,399 Kms (50%)	27,517 Kms (30%)
2023	1,45,240 Kms	44,654 Kms (31%)	83,941 Kms (58%)	16,645 Kms (11%)
2030*	1,85,000 Kms	75,000 Kms (41%)	90,000 Kms (49%)	0
2047*	2,37,000 Kms	1,52,000 Kms (64%)	85,000 Kms (36%)	0

Note: In 2030, India will also have 20,000 Kms (10%) of high-speed corridors



Note: In 2030, India will also have 20,000 Kms (10%) of high-speed corridors

The target for the year FY 24 is 12,500 kms. This is well on track to hit the target of 2 lakh kms by 2025. Since FY 20 the achievement has been upwards of 10,000 kms annually with the peak being 13327 kms in FY 21.

The pace of road construction also peaked in FY 21 to reach 37 kms/day. It used to be 3 km/day and rose to 12 km/day in 2014. In the same period the 4 lane NH doubled from 18,000 kms to 44,000 kms. Special emphasis is being accorded to the development of highways in the North East. Projects worth ₹2 lakh crores have kicked in.

The highways sector has acquitted itself admirably when it comes to performance and innovation.

It has registered 7 world records in a span of 9 years. The construction of the highest motorable road at Umling La (Ladakh) and the completion of a 75 kms bituminous concrete road in 100 hrs and 33 mins are two of them.

Sustainable Development

The government is not just focusing on the development of highways. It is taking a holistic approach. Roadside facilities are planned along highways to make the experience pleasant.

Green initiatives have also been incorporated as part of the various projects. In the last nine years 3.86 crore trees have been planted and about 68,000 trees have been transplanted. Water rejuvenation initiatives have also been taken and 1500 **Amrit Sarovars** have been developed along the highways. In the Delhi Ring Road project 30 lakh tonnes of garbage has been used.

Bamboo crash barriers that enhance strength have been introduced.This also generates employment. The Government is thus serious about sustainable infrastructure development.

FASTag

With the introduction of FASTag on Highways, the toll

collection has risen from ₹4,700 crores to about ₹41,300 crores apart from eliminating cash transactions.

The waiting time for vehicles in the Toll Plazas has come down from 12 mins (734 seconds) to less than a minute (47 seconds). The savings in fuel on account of this is approximately ₹70,000 crores. This will go a long way in reducing the logistics cost of India that is currently estimated to be high on a global bench mark (though some experts dispute the estimate). This is important if India has to be competitive globally.

The waiting time for vehicles in the Toll Plazas has come down from 12 mins (734 seconds) to less than a minute (47 seconds).

Funding

The National Highways Authority of India (NHAI) and The National Infrastructure Development Corporation Ltd (NHIDCL) are responsible for the construction of National Highways and Expressways in India. The Ministry of Road Transport and Highways (MoRTH) monetizes its assets in three different modes-

- **Toll-operate-transfer** (TOT) model,
- **Infrastructure Investment Trust** (INVIT) model and
- **Project based financing** model.

These provide opportunities for various types of investors to invest in assets pertaining to highways and associated infrastructure. A bond issue launched last year on the INVIT model witnessed seven times oversubscription. This year another ₹10,000 crores is planned to be raised through the INVIT mode. Dispute resolution has also been made easy and effective to fast track the projects,

Long Expressway

The seeds for highway development in India was sown by Atal Bihari Vajpayee when he was the Prime Minister, by way of the **Golden Quadrilateral project** connecting the metropolitan cities –Delhi, Kolkatta, Mumbai and Chennai. This project began in 2001 and was completed in 2012. The current government has expanded it multifold and has undertaken many mega projects.

Important among them are the Bharat Mala, Sagar Mala, Delhi-Mumbai Expressway, Delhi-Amritsar-Katra Expressway and the Ganga Expressway. These certainly have the potential to propel our economy to cross the USD 5 Trillion mark by 2026-27.

Nitin Gadkari often refers to former US President John F Kennedy who said “America is rich because of its good roads.” Indian roads are becoming as good indeed.

Shri Mrithyunjay GN

Tamil Nadu government forms State Bird Authority

Tamil Nadu is also home to 17 Ramsar sites, wetland areas declared as places of international importance by an intergovernmental environmental treaty.

If you have ever had a conversation with your grandparents in which you asked them to describe how the place you live in was like before you were born, you will most likely hear this: "There used to be so many sparrows!"

With the advent of cellphone towers, skyscrapers and urbanization in general, we have fundamentally changed the ecosystem of the cities we live in. In the same skies that were full of a variety of birds, we now only see pigeons which make their nests in the many apartment buildings across the city and crows.

Indigenous bird populations have decreased and migratory birds, as they return every year, find their homes and nesting grounds cemented over. To combat this destruction of habitat and ensure long term preservation of different birds, the Tamil Nadu government has established a 'State Bird Authority'.

Tamil Nadu is of particular importance in terms of avian conservation as it is part of the Central Asian Flyway- a migratory path for various birds connecting the Arctic Ocean and Indian ocean across 30 different countries.

Tamil Nadu is also home to 17 Ramsar sites, wetland areas declared as places of international importance by an intergovernmental environmental treaty in 1971 called the **'Convention on Wetlands'.** This treaty was established under UNESCO and named after the Ramsar city of Iran where the treaty was signed. Wetlands are prime areas for nesting grounds and also a safe place for birds to rest and feed during migration.

The State Bird Authority will be headed by Supriya Sahu, Additional Chief Secretary for Environment, Climate Change and Forests. This committee will have experts from various departments such as Forests, Public Works, Tourism etc., all working towards monitoring the bird population, protecting nesting areas and improving the tourist experience of visiting these areas of natural importance.

Smt Archana Sundar

World famous Shravani Mela begins

The Baba Baidyanathdham Temple in Deoghar is among the 12 Jyotirlingas, the most sacred and revered Shiva temples in the country.

The world famous two-month-long Shravani Mela has commenced at the revered Baba Baidyanathdham temple in Deoghar, Jharkhand. State Agriculture Minister Badal Patralekh inaugurated the event with traditional rituals and prayers on the occasion of *'Ashadha Purnima'* ensuring a smooth and memorable experience for the millions of devotees gathered there.

This year's Shravani Mela holds special significance as it spans an extended duration and features the unique alignment of eight Mondays, a rare occurrence after nearly two decades.

The month-long fair witnesses a massive influx of Kanwariyas, who embark on an annual pilgrimage to fetch holy water from the sacred Ganges River and offer it to Lord Shiva at the Baba Baidyanath Temple. The pilgrimage takes place during the auspicious month of *Shravan* and stretches from 3rd July to 7th September this year.

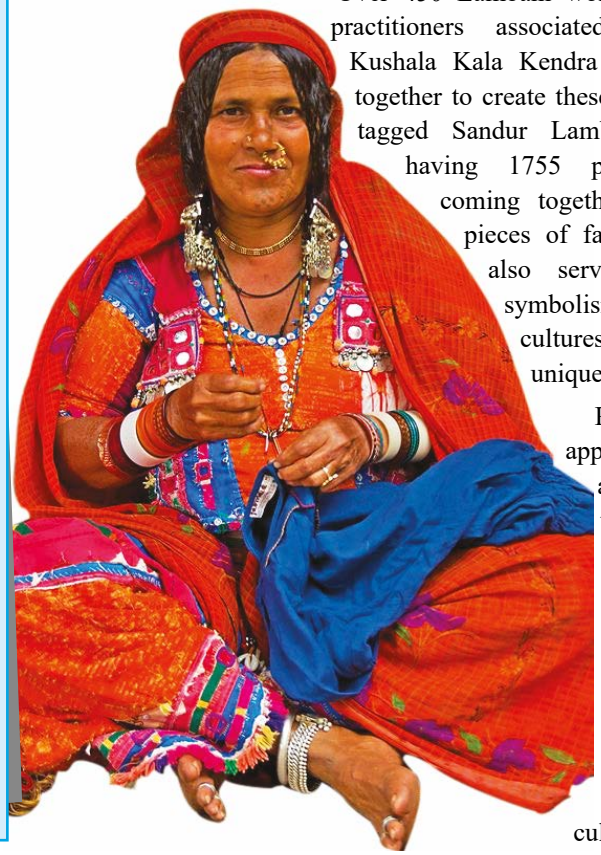
The journey of the Kanwariyas begins with a holy dip in the Ganges at Bihar's Sultanganj, after which they undertake a challenging 105-kilometer pilgrimage on foot to reach the revered Baba Baidyanath Dham temple in Deoghar. Upon arrival, the pilgrims pour the sacred water on the *'shivalingam,'* chanting *'Bol Bam'* as a symbol of their unwavering devotion and dedication.

The Baba Baidyanathdham Temple in Deoghar is among the ***12 Jyotirlingas,*** the most sacred and revered Shiva temples in the country. Its spiritual significance attracts devotees from far and wide, seeking blessings and solace. The successful organization of Shravani Mela is the result of collaboration between Jharkhand and Bihar. The Deoghar administration, in particular, has taken comprehensive measures, including crowd management and lodging facilities for the devotees, to provide a seamless experience throughout their spiritual journey.

Kum Kavya R

Lambani artisans set Guinness World Record

Lambani artisans have set a world record for the largest display of Lambani items. As part of the 3rd Culture Working Group (CWG) Meeting of G20 in Hampi, CWG displayed 1755 items under its **'Culture Unites All'** campaign. This unique exhibition titled **Threads of Unity** was inaugurated at the Yeduru Basavanna complex, Hampi by Minister of Parliamentary Affairs & Coal and Mines, Prahlad Joshi on 10th July 2023.



Over 450 Lambani women artisans and practitioners associated with Sandur Kushala Kala Kendra (SKKK) came together to create these items using GI-tagged Sandur Lambani embroidery having 1755 patchworks. The coming together of different pieces of fabric and mirrors also serves as a great symbolism for how cultures of our world are unique, yet connected.

PM Modi appreciated this achievement via a tweet -"Commendable effort, which will popularise Lambani culture, art and craft as well as encourage Nari Shakti participation in cultural initiatives."

Lambani Art

- **Lambanis,** also called **Lambadis** or **Banjaras,** were nomadic tribes who came from Afghanistan to Rajasthan and have now spread themselves across Karnataka, Andhra Pradesh, Rajasthan, Madhya Pradesh, Gujarat and Maharashtra.
- **Lambani embroidery** is a vibrant and intricate form of textile embellishment characterised by colourful threads, mirror work, and a rich array of stitch patterns. Lambani embroidery uses a total of fourteen types of stitches and most of them follow a geometric pattern like squares, circles, triangles, rectangles, diagonal and parallel lines. The artisans are primarily women and it serves as a vital source of livelihood and sustenance, intertwining living practices with economic empowerment.

Col Shashidhar M V (Retd)

India gifts active warship to Vietnam

India, in a unique action gifted an active-duty missile corvette of its navy to Vietnam, a first of its kind to any nation.

Corvette is a small warship. It is traditionally the smallest class of vessel considered to be a proper warship.

Overview

India previously had gifted smaller boats and other military equipment to countries like Maldives, Mauritius and Vietnam.

South China Sea, a vital trade route, is home to rich natural resources and abundant marine life. The sea has an approximate 11 billion barrels of untapped oil and 190 trillion cubic feet of natural gas. China has long maintained its claims of sovereignty over the region. Further, it wants the other stakeholders like Vietnam, Brunei, Indonesia, Malaysia, Philippines and Taiwan to settle the dispute without participation of foreign armies.

Key Takeaways

- India, in a unique action gifted an active-duty missile corvette of its navy to Vietnam, a first of its kind to any nation.
- Both countries have strengthened defence ties in the past as concerns grow over their hostile neighbour China.
- India is now more involved with the South China Sea regional stakeholders besides taking on a bigger role in countering China's strategic design and Himalayan posturing post the Galwan skirmish of 2020.
- Vietnam and its other smaller neighbours claim to have their own historical and legal evidence to support their sovereignty on smaller islands like Paracel and Spratly in the region.

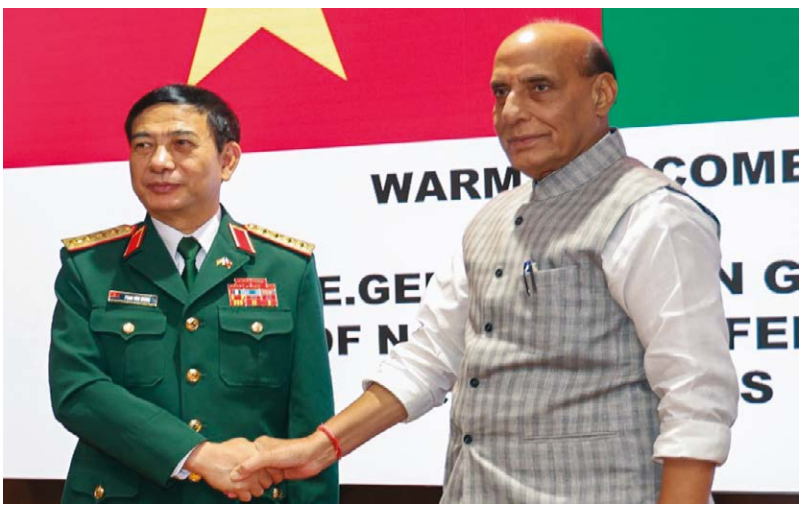
INS Kirpan- A Brief

- A Khukri - class missile corvette was built and launched by Kolkata's Garden Reach Shipbuilders and Engineers on 16th August

The gifting of the corvette will augment Hanoi's maritime security and also safeguard our economic interests.

1988 and later commissioned on 12th January 1991.

- With a length of 91.1 metres, the war ship is powered by two diesel engines in two shafts with 14,400hp of total power output and has a full-load displacement of 1350 tonnes and has a range of 4,000 nautical miles (7,400 kilometres) with a top speed of 16 knots per hour (30 kilometres per hour).
- It is equipped with four P-20M anti-ship missiles, two Strela-2M anti-aircraft missiles, one AK-176 76mm gun and two 30mm AK-630 guns and a small helipad on its deck from where smaller helicopters like Chetak, Sea King MH-60 R Sea Hawks can land and take off.



Indian Interest

From an economic perspective, India relies on the freedom of navigation and unhindered trade routes in South China Sea. A well-equipped Vietnam can contribute to this by challenging Chinese predatory moves. The gifting of the corvette will augment Hanoi's maritime security and also safeguard our economic interests.

Col Shashidhar M V (Retd)

POD WAR

Is India ready?

Rewind

Two recent actions by combat aircrafts have shown us where the future wars are now heading.

February 2019- In the raid by the Indian Air Force (IAF) on Jaish-e-Mohammad (JeM) bases in Pakistan Occupied Kashmir (PoK), the Mirages were fitted with **Litening Precision Targeting System** for amazing accuracy using **Optical Targeting Pods** (OTPs).

Sukhoi-30SM

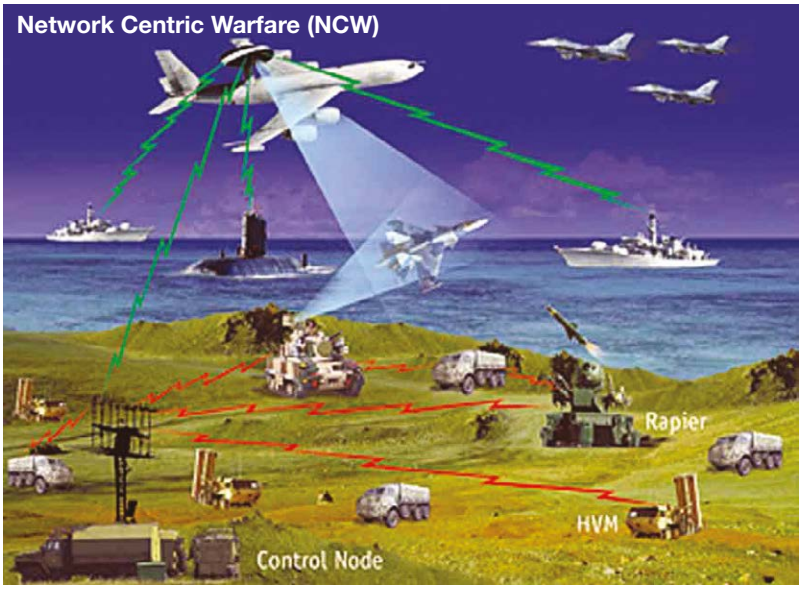
May 2022 - A Sukhoi-30SM Russian fighter plane conducted a surprise interception of an Italian Air Force F-35 jet over the Baltic Sea in the ongoing Russian – Ukraine war when the latter got too close to a Russian military transport plane. The F-35's pilot's sensors showed no warning until the Su-30 was next to him and buzzing him.

Electronic Warfare in Modern Operations

Evolution of the radio/radar/TV/laser brought in the Electronic Warfare (EW) meant to degrade the enemy sensors and weapons thus becoming a game changer. As network centric warfare evolved, few famous and major military operations in modern history are briefly highlighted below:

F-35

- **World War II-** The Germans had a radar station every ten miles on the French coast. The employment of deception jammers carried from the air by the British to drop chaff and dummy parachutists in the Dover-Calais deceived German fighters so much so that none of them were able to attack the 884 transports and 105 gliders which landed or dropped some 15,000 troops famously called the **"Normandy Landings"** during the war.



An ECM pod emits specific signals which delays aircraft detection by interfering with and by jamming the sensors thus confusing the other aircrafts instrumentation by projecting misleading locations thus rendering both time penalty and difficulty for a pilot to launch a missile against the enemy target.

- **9th June 1982-** "Operation Mole Cricket 19", a **Suppression of Enemy Air Defences** (SEAD) launched by the Israeli Air Force against Syrian targets successfully destroyed a Soviet-built SAM network. The Israeli Air Force used ECM pods, chaff rockets, chaff from drones and stand-off jammers onboard Boeing 707 and Arava transport aircraft and Sikorsky CH-53 helicopters.
- **1990-91-** Gulf War demonstrated the real importance of EW in modern warfare when the coalition forces repeatedly took down early warning radars of the Iraqi forces.
- **September 2022-** Russia's 'Most Advanced' Electronic Warfare (EW) Jamming Pod Mounted on Su-30 Fighter seized by Ukraine.

Network Centric Warfare (NCW)

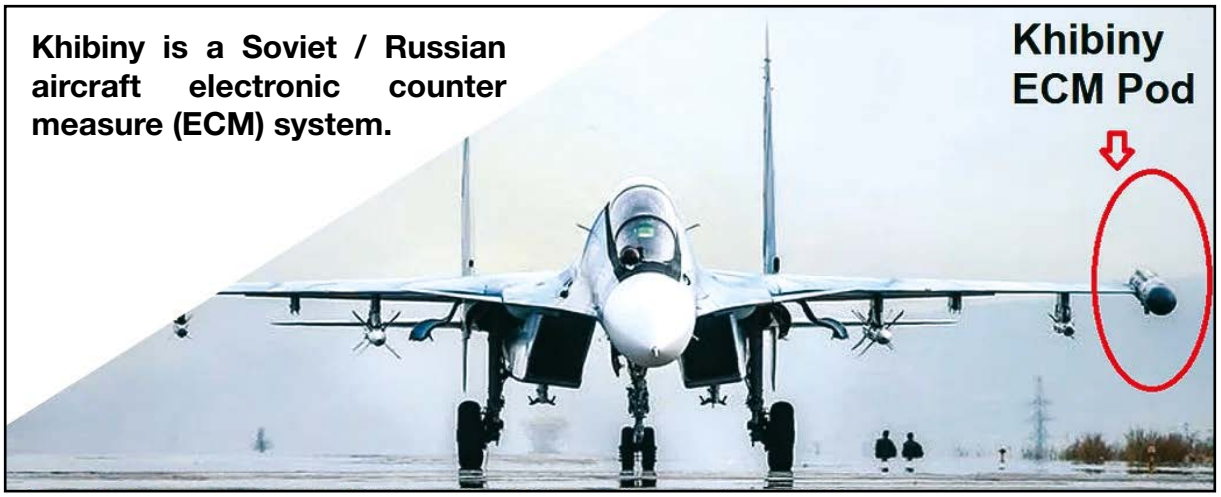
NCW generally means to have an uninterrupted link with all the elements on and off the battlefield, both via datalink and communication systems that allows precise mission handling and decision making after analysing threat scenarios. NCW is essential for battle preparedness and effective coordination in real time. Being such a critical element, it is vulnerable to hostile actions as it can be disrupted thus adversely affecting operational precision and deteriorating the quality of coordination. NCW is therefore to be prepared for every attack - electronic or physical.

Origin of EW with IAF

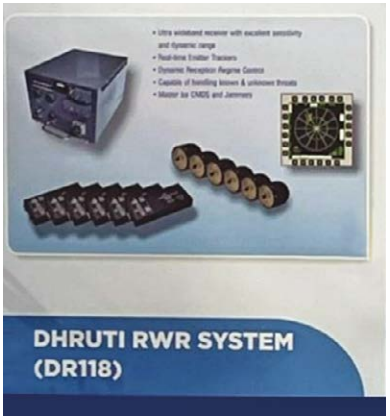
A dedicated EW's role can be traced to No 35 "Rapiers" squadron also called the Wild Weasel. Raised in 1958 as a bomber squadron with a fleet of English Canberra bombers, the squadron later switched to a dedicated Electronic Warfare squadron in 1978 with introduction of MiG-21Ms with the Canberras remaining in service but now modified for commencing EW role.

EW actions and erstwhile preparedness

India had procured numerous Khibiny ECM pods for the



Sensors, Electronic Warfare & Communication System



Radar Warning Receivers (RWR)

272 Su-30MKI fighter jets and the larger SAP-14 advanced jamming pods which our Su-30s can carry on their undercarriages. We also have dedicated pods for the Mirage-2000, the upgraded Jaguars and the MiG-21s with the French Rafales carrying their own advanced integrated suite, called SPECTRA.

Khibiny is a Soviet / Russian aircraft electronic counter measure (ECM) system.

India - Preparing for The Pod War

IAF has recently concluded a contract with BEL for DR-118 Dhruti Digital **Radar Warning Receivers** (RWR) under the Buy Indian-IDMM (Indigenously, Designed, Developed and Manufactured) deal as a part of a larger subsystem upgrade in the EW Package.

Various PSUs have offered it a range of different equipment and the package now available for integration on at least 2 platforms (LCA Tejas, and Su-30MKI) are briefly enumerated below-

- **Offensive Jammer Pods-** Disrupt or degrade the functionality of enemy radar and communication systems. **Status** – Flight Trials Underway.
- **Self-Protection Jammer Pods-** Designed to protect the aircraft itself from incoming threats, such as radar-guided missiles or other electronic threats. EOI Issue and production level ready.
- **DC-MAWS (Dual Colour MAWS)-** A Dual Colour (DC) Infrared Missile Approach Warning System (MAWS) uses two different infrared spectral bands to provide enhanced threat detection and tracking capabilities by accurately identifying and tracking incoming missiles with high fidelity, while reducing false alarms. **Status** not available.
- **RWR (Radar Warning Receivers)-** A passive system which can detect and identify radar emissions from hostile sources.

  Status- Upcoming NG-RWR (an improvement on DR-118) for which order has been placed by IAF with BEL.
- **Software Defined Radios- Status-** BEL Proposed SDR Solution underway.

Other Technological Advancements

EL-8222 is a premium product from Israeli firm Elta and is IAF's "standard issue" element on multiple platforms in service both with the Indian Air Force and Indian Navy. It is the primary self- protection jammer for Sukhoi Su-30K (and successor Su-30MKI), MiG-21Bis UPG "Bison" and MiG-29K of Navy besides Tejas and other future variants in order to deal with major electronic threats during air combat missions.

D-29 is an integrated EW suite of MiG-29 1 featuring an embedded directional jammer.

DRDO has developed indigenous **ASPJ (Advance Self Protection Jammer)** pod and Dhruti digital RWR for Indian fighter jets. Both these systems are completely indigenous be it hardware or software. The Dhruti RWR detects the hostile RF signal and transfers that data to ASPJ which in turn jams the incoming hostile RF signal.

ASPJ is based on Active Phased Array (APA), ultrawide band DRFM (Digital Radio Frequency Memory) and inbuilt cooling system. The DRFM jammers are famous for their capability to severely degrade the adversary radars and missile seekers.

EW for LCA Tejas Mark 1A (Internal Receiver & ASPJ)- Indigenous EW Suite developed for LCA Mk1A consists of internal Receiver unit and External Podded Jammer. The internal receiver unit is a new generation EW receiver system which operates in a wide frequency range. The developmental flight evaluation on LCA Mk1 is under progress.

EW for SU-30 MKI (Internal Receiver & ASPJ)- The ASPJ is also been designed for SU-30 MKI as a podded jammer. It will be installed on Su30MKI wing tip stations 11 & 12 in a LH & RH configuration as a set. The development of POD structure is complete and it is undergoing qualification.

Dhruti Digital RWR or DR118 - Dhruti is a state-of-art six-channel digital RWR that not only offers a wide dynamic range and large bandwidth of detection but also offers good sensitivity, selectivity and wide instantaneous bandwidth. The 6 channel RWR provides 360- degree coverage.

Conclusion

Our armed forces have well understood the need and significance of modern day battle systems (pod-war) besides their future potential. The effort to develop technologies in-house is widely being implemented and operationalised. Relying on indigenous solutions with active collaboration by defence PSUs and private players the Indian context coupled with the global market will provide the desired leverage towards significantly carrying battle planning, management, action analysis and its final execution.

Our armed forces have well understood the need and significance of modern day battle systems (pod-war) besides their future potential. The effort to develop technologies in-house is widely being implemented and operationalised.

Col Shashidhar M V (Retd)

HAL DHRUV

MULTIROLE CHOPPER RECEIVES EASA CERTIFICATION

EASA is an agency of the European Union to ensure a high and uniform level of safety in civil aviation implementing common standards in civil aviation.

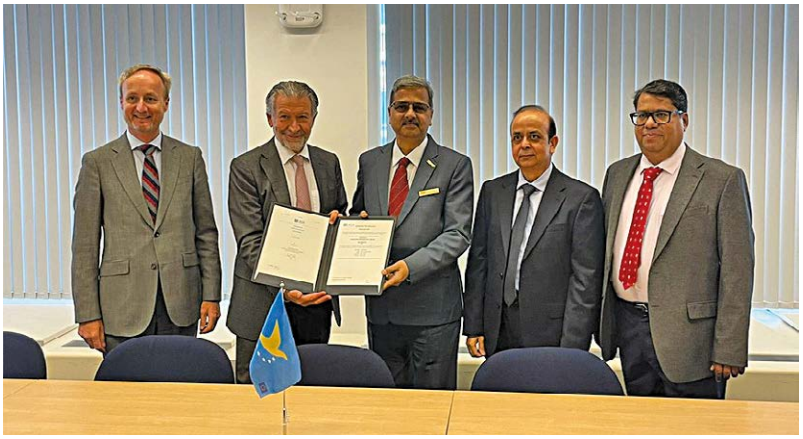
Hindustan Aeronautics Limited's (HAL) Dhruv helicopter has become the first Indian-designed and developed rotorcraft to secure certification from the European Union Aviation Safety Agency (EASA). This enhances the credibility of Indian aerospace engineering on the international stage.

EASA is an agency of the European Union to ensure a high and uniform level of safety in civil aviation implementing common standards in civil aviation. It covers various aircrafts - medium & large jets, light aircraft, rotary-wing aircraft (helicopters, gyroplanes), light sport aircraft (balloons, gliders, airships, civilian drones), engines, propellers, flight simulators and some military aircraft.

- ✶ Responsible for all design approvals, continued airworthiness and environmental certification.
- ✶ Approves production, maintenance and maintenance training organizations outside the EU.
- ✶ Responsible for operations, personnel licensing, aerodromes, air traffic management and air navigation services.
- ✶ Stipulates four levels of stringent certification process before certification.

DGCA – EASA MoU

The DGCA-EASA MoU was signed to foster collaboration in the fast-growing sector of Unmanned Aircraft Systems and Innovative Air Mobility.



The EASA certification demonstrates HAL's engineering ability and perseverance in designing the Dhruv helicopter platform.

- Covers a wide array of areas to include personnel licensing, training, air traffic management and infrastructure, and Unmanned Aircraft System Traffic Management (UTM) standards and services.
- Ensures increased information-sharing on technological developments and research and collaboration.

HAL DHRUV

It was designed with the assistance of German aerospace company Messerschmitt-Bölkow-Blohm (MBB) and entered the market in 2001.

- Comes in four variants — ALH Mk I, ALH Mk II, ALH Mk III and ALH Mk IV.
- The civil variant is used to carry VIPs, passengers for short-range trips mostly in tourist location, cities and sea harbour ports and for quick access to airports.
- Has multi-role capability for military missions and combat role.
- Four ALH Dhruv choppers presently used by IAF 32-airman Sarang aerobatic squad are amongst the world's top three helicopter daredevil teams.
- Major roles undertaken include flood relief and rescue, cargo movement, casualty evacuation, troop transport and maritime and social security.

Implications

The EASA certification demonstrates HAL's engineering ability and perseverance in designing the Dhruv helicopter platform. It will assist HAL to build closer relationships with European aviation stakeholders with its high quality and dependability as it widens its presence for consumers, boost partnerships and joint ventures.

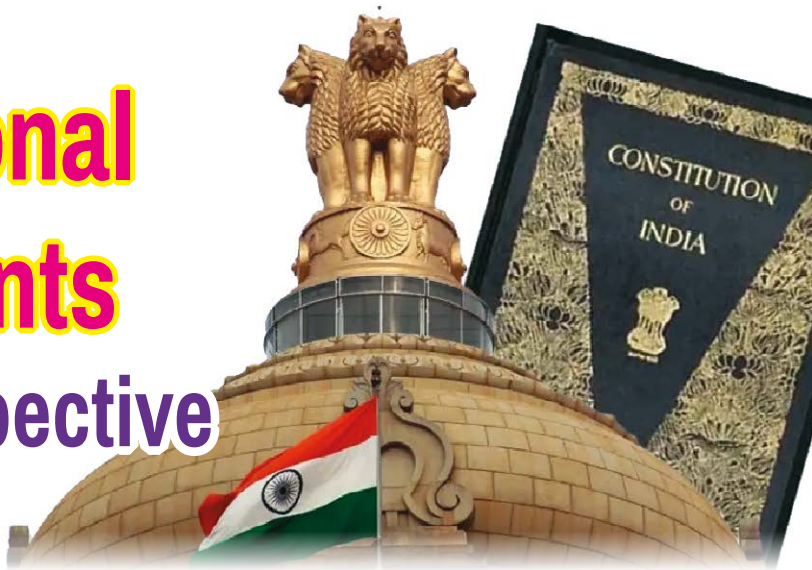
The MoU and certification will stimulate growth in the domestic sector by integrating international best practices and standards for the Indian aviation industry. It will greatly enhance its trustworthiness and appeal to consumers.

More than 300 Dhruv helicopters are operating with Indian Defence Forces certified by Indian regulators earlier. Other customers include the Nepal Army, the Mauritius Police Force, our states of Chhattisgarh, Jharkhand and Karnataka besides ONGC and MHA.

Kum Deepasri

Constitutional Amendments

A judicial perspective



While it is important that the Constitution be amendable, the Parliament having absolute power over amending the constitution would not be an ideal scenario.

The Indian Constitution was made flexible to ensure that the document can evolve and grow along with the nation. One provision intended to fulfil this is the power of the Parliament to amend the constitution.

Background

The issue on the powers of the Parliament to amend the Constitution had been under discussion for long. While it is important that the Constitution be amendable, the Parliament having absolute power over amending the constitution would not be an ideal scenario. To resolve this dilemma, the judiciary through various landmark cases established the contours of these powers and delineated the portions of the Constitution which may be amended.

This edition will touch upon the cases to trace the evolution of this constitutional issue.

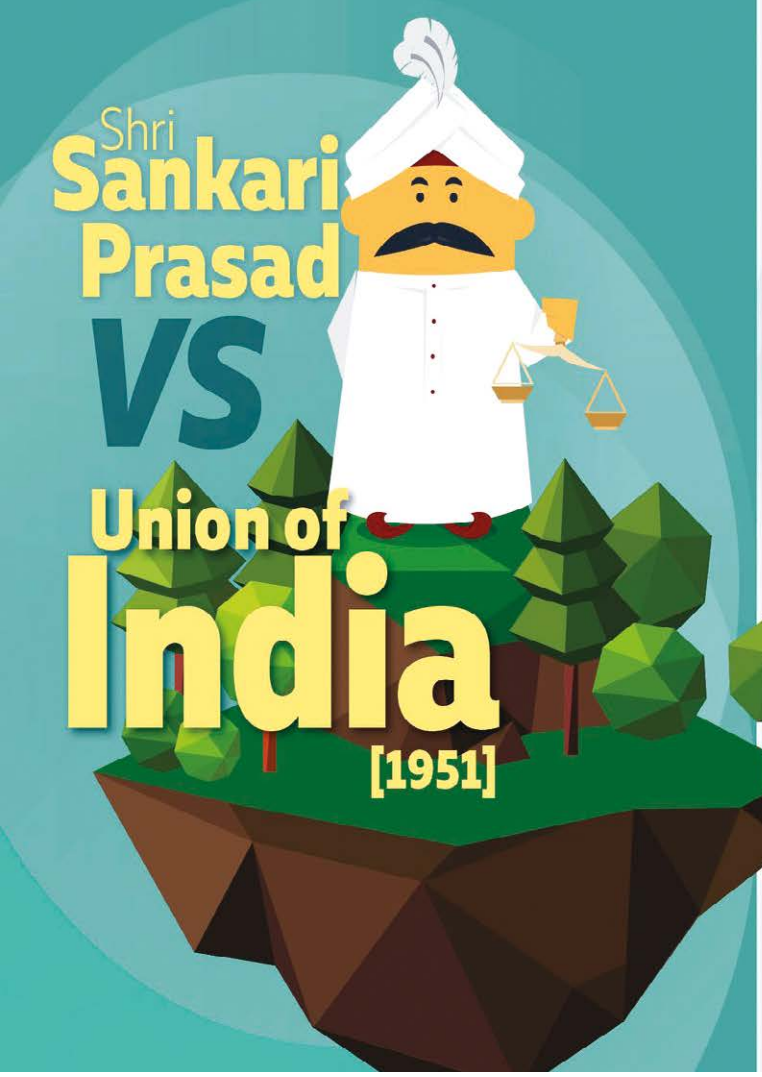
Provisions involved

The primary provision under discussion is Article 368, which states that the Parliament may amend by way of addition, variation or repeal, any provision of this Constitution in accordance with the procedure laid down in this article.

Further, as explained earlier in this series, **Article 13 lays down that the State shall not make any law which takes away the fundamental rights under the Constitution and if any law violates these rights, it shall be void to the extent of the contravention**. Thus, another question involved in the issue under discussion is whether the amendments would fall under the definition of 'law' under Article 13 of the Constitution.

The Initial Position: Sankari Prasad V. Union of India [1951]

The matter of Sankari Prasad is referred to as a landmark judgment wherein the constitutionality of the Constitution (First Amendment) Act of 1951 was challenged based on the grounds that it is in violation of Part III of the Constitution. The Amendment Act involved ways to limit freedom of speech and



Fundamental Rights are meant for promoting the ideal of Political Democracy. However, through Article 352 and Article 356, the Fundamental Rights or some parts of them stand liable to suspension during the time of an emergency.

Article 13 of the original Constitution says that the State shall not make any law that takes away or abridge the rights given to the citizens in Part III of the Constitution.

The Sankari Prasad vs Union of India case witnessed the supreme court testing this very concept.

BACKGROUND

The Supreme Court upheld the power of the Parliament to amend any part of the Constitution, including that which affects the Fundamental Rights of the citizens.

OUTCOME

For the first time, the very question that the Fundamental Rights could be amended under Article 368 came up for consideration.

Validity of the first constitutional amendement that added Article 31-A and Article 31-B was challenged.

The Court held that even if amendment is considered to be superior to ordinary legislation, it will not be able to strike its validity by Article 13(2).

expression and measures to abolish zamindari, among other aspects.

LEGAL ISSUES

- Whether the First Constitutional Amendment is constitutionally valid.
- Whether the term 'law' used in Article 13(2) of the Indian Constitution includes laws to amend the Constitution as well.

Decision of the Supreme Court

The Court held that even if amendment is considered to be superior to ordinary legislation, it will not be able to strike its validity by Article 13(2). The constitutional amendment done by the Parliament in its constitutional power is not subjected to Article 13(2) and such powers include the power to amend the Fundamental Rights.

The Court observed that *"We are of the opinion that in the context of Article 13, law must be taken to mean rules and regulations made in the exercise of ordinary legislative power and not amendments to the Constitution made in the exercise of constituent power with the result that Article 13(2) does not affect amendments made under Article 368."*

The Court upheld the validity of the First Amendment Act, 1951 by using the literal interpretation. The Court, however, diverged with the view that the Fundamental Rights can be inviolable. Ultimately, the Court narrowed the scope of Article 13(2).

Further developments pertaining to this issue will be covered in the next edition.

Smt Uthra Dorairajan

Dr Kamal Ranadive

(8th November 1917 – 11th April 2001)

Established the first tissue culture lab

Under the guidance of Dr V.R. Khanolkar, founder of India Cancer Research Consortium (ICRC) and revered as the father of pathology and medical research in India, she took up research on Cancer cells.

Like many Indian parents, Dinkar Dattatreya Samarath and Shantabai Dinkar Samarath firmly believed that education is the path for growth. A botany professor himself, Dinkar wished his daughter Kamal to take up medicine and serve our countrymen. Kamal thought of a slightly different path to fulfil his intention. Inspired by her father, she chose to do Botany and Zoology during her undergraduate studies at Fergusson College and later joined the Agriculture College, Pune.

This pedestal of higher education was established due to the efforts of Mahatma Jyotiba Phule, a noted thinker, social reformer and agriculturist in 1879, with the realisation that research and education are the very foundations for the development of agriculture. This institution inspired her to take up research seriously, where she worked on the cytogenetics of Annoneceae for her Master's degree.

She married Jaysingh Trimbak Ranadive, a mathematician who is one of the greatest Indian luminaries of actuarial science. Looking at their accomplishments, we can say this couple respected each other's vision and encouraged their partner in tandem to follow their passion. As they moved to Bombay, she started working at Tata Memorial Hospital. Under the guidance of Dr V.R. Khanolkar, founder of India Cancer Research Consortium (ICRC) and revered as the father of pathology and medical research in India, she took up research on Cancer cells.

Her dissertation "Experimental studies in breast cancer" was supervised and approved by Dr.Georgina Bonser of University of Leeds, England and Kamal received a doctorate degree in 1949 from Bombay University.

From 1949 to 1951, Kamal Ranadive pursued her research in the United States under the prestigious Rockfeller Postdoctoral fellowship in tissue culture, at Johns Hopkins University in the laboratory of George Gey who developed the HeLa cell line and at Columbia University Medical Centre under Margaret Murray.

A nationalist at heart, she returned to serve our motherland and resumed her research at Indian Cancer Research Institute, but now as a senior research officer. She established our country's first tissue culture laboratory and experimental biology lab. In the early 1960s, tissue culture media and other reagents had to be prepared in the laboratory. To fulfill these needs, as the Head of Biology division of this centre, Dr. Kamal spotted talent, recruited and trained biologists and biochemists continuously.

She strongly believed that scientists who went abroad for postdoctoral work should return to India and develop new areas of research here. She instilled the same spirit in her colleagues, that most of them returned to work in India, making this institute a renowned centre for cancer research. **Her unique quality of allowing individual scientific talents to bloom resulted in the formation of three new divisions, carcinogenesis, cell biology and immunology besides tissue culture.**

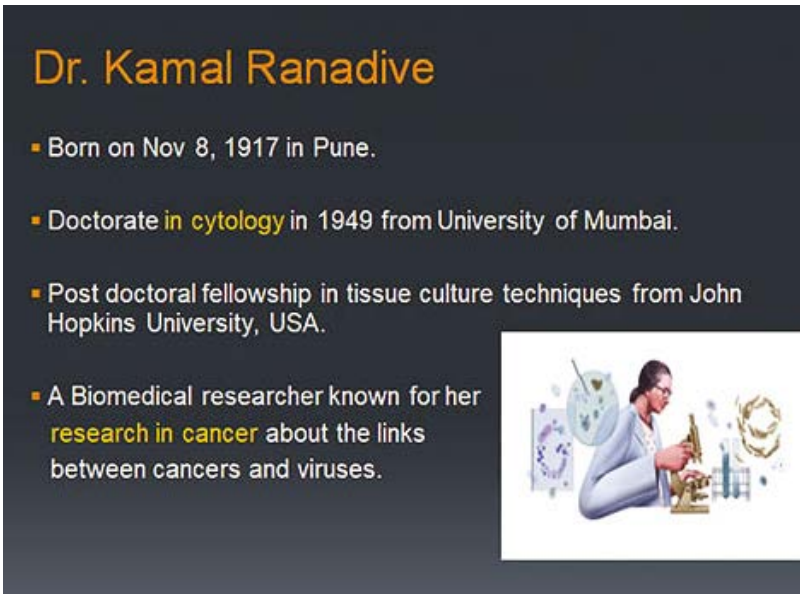
By 1966, she became the acting director of the institute. Dr.Kamal was a pioneer in animal modelling of cancer development. Her research led to further understanding of leukaemia, breast cancer, and oesophageal cancer. **She was the first scientist to find a genetic component of breast cancer. Her notable achievement was in establishing a link to the susceptibility of cancer, hormones and tumour virus relationship.**

Her research paper on "Betel quid chewing and oral cancer: Experimental studies on hamsters" published in the International Journal of Cancer is an example of how she focussed on common practices that lead to poor health, so the public can understand the consequences. She attempted to correlate the cause of the disease with heredity, child-bearing, histological structure and other factors.

Malignancies of genetic origin in children and abnormal states of the blood, known as *dyscrasias* received her special attention. By 1970, this institute was merged with TATA memorial hospital and grew as TATA memorial Hospital and Cancer research institute. She continued as the Head of Biology division till her retirement in 1978. **Kamal Ranadive has produced more than 200 research papers related to cancer and leprosy.**

She studied and helped develop

Her research paper on "Betel quid chewing and oral cancer: Experimental studies on hamsters" is an example of how she focussed on common practices that lead to poor health, so the public can understand the consequences.



Kamal broke the barriers of the times and this inspired many parents of that period to support their daughters pursue higher education and take up research.

a vaccine for *Mycobacterium leprae,* the bacterium that causes leprosy. Evolution of the leprosy vaccine was a result of her basic research on the bacteria related to leprosy.

Her exemplary leadership qualities and administrative capabilities as the director of the ICRC made her an icon for many Indian women to take up research, especially on cancer in women and children. Her empathy and people connect was such, she was fondly addressed as "Bai". She broke the barriers of the times and this inspired many parents of that period to support their daughters pursue higher education and take up research. **People like Dr.Kamal set the path for the next generations on how Indian women can tread high-end research, family life and societal needs successfully.** In 1973, she founded the Indian Women Scientist Association (IWSA) with the goal of spreading science to masses particularly women and children.

Post retirement, Dr.Kamal transitioned to work in Maharashtra's rural communities training women to work in healthcare and advising the population on health practices and medical care. Her team from Satya Niketan (a voluntary organisation) was involved in the project on "Immunohematology of Tribal Blood" related to study of infant deaths and the nutritional biosocial aspects of tribal cultures of that region.

Kamal also provided insight to women in the rural villages on basic hygiene practices, nutrition and family health through government-sponsored projects under the aegis of the IWSA.Dr.Kamal lived an extraordinary life with a great purpose and vision. Recognising her research contributions and untiring work, Indian government decorated her with the **Padma Bhushan** award (1982).

Other accolades include the first Silver Jubilee Research Award (1964) of the Medical Council of India, G.J. Watumull Foundation Prize for her leprosy research, Sandoz Award and Dr.Basanthidevi Amirchand Award to name a few. With her tireless research, contribution towards science education and mentoring young scientists, she has made a huge impact.

Dr Preethy S P

Dental Hygiene

Chewing on neem stems helps in attrition and levelling of biting surfaces, facilitates salivary secretion and has anti-bacterial action.

All of us brush to ensure our dental hygiene is good, mainly by removing the remains of food particles and other potential germs. During the ancient days people cleaned the teeth using their fingers. This was sufficient as the dietary practices followed then was healthy and natural.

However, with the current exposure to range of food especially with more sugar and carbohydrate, it is may be advisable to follow simple but effective methods to clean the teeth. Animals spend a lot of time chewing their food, which is often rich in fibre and also cleans their teeth at the same time. Most animals also chew on sticks, barks, bones and grass to help clean their teeth after big meals.

Neem (Margosa or *Azadiraxhta indica*) has excellent tooth cleaning properties. Approximately a 9- inch- long stem of neem with a thickness of one's little finger can be used for brushing.

The thick covering can be removed at the end which is put into the mouth. Stems should be healthy, soft, without leaves or knots and taken from a healthy tree. The antimicrobial properties of the bitter-tasting twig helps to keep the mouth germ-free and healthy. Chewing on these stems helps in attrition and levelling of biting surfaces, facilitates salivary secretion and has anti-bacterial action.

These days, brushes made of neem or bamboo stems are commercially available and definitely better than plastic brushes. Often just finger or a neem stem or brush may be sufficient.

The advisable duration to brush teeth is 2 minutes and twice a day - after waking up and before going to bed.

However, when we do not feel fresh and need a cleanser, salt works best or herbal toothpowder or herbal based paste. The midrib of neem or mango leaves can be used as a tongue cleaner.

Toothpaste

Most of the commercial toothpastes have various ingredients, viz. Triclosan to prevent bacterial contamination, Saccharin or Aspartame for sweetening, Parabens for preservation, Sodium Lauryl Sulfate (SLS) and Sodium Laureth Sulfate (SLES) as a foaming agent. When used over the years, most of these ingredients have proven to be cancerous, and can lead to ulcers and other harmful diseases.

In fact, few of these ingredients especially like Triclosan are banned by Food and Drug Administration (FDA) across the world. It is

advisable to read through the ingredients in toothpaste or any product at the time of purchase. It is also important to be aware of some wrong information which was in circulation few years ago. It is relatively better to use herbal based toothpaste or toothpowder than chemically loaded fancy toothpastes. Commercial mouth washes are more dangerously loaded with the chemicals listed above.

Recommended healthy practices

Practices like gargling with rock salt dissolved in water, rinsing mouth with water after every meal prevents the occurrence of cavities/ decay in tooth. While brushing teeth, it is important to have sidewise, up and down and rounded movements for better cleaning and removal of food particles. Do ensure the bristles of the brush or neem stem are soft so there is no injury to the gums. The advisable duration to brush teeth is 2 minutes and twice a day - after waking up and before going to bed. Brushing for too long or with excessive pressure as a regular practice can damage the teeth and lead to bleeding gums.

The food we consume influences our oral hygiene to a great extent. Thus, we need to be watchful by avoiding excessive intake of processed food, carbonated beverages and food items with added sugar for better dental hygiene. Clove, cinnamon, alma and salt are also good for better dental hygiene and avoiding cavities. In general, a calcium rich diet helps in better oral hygiene especially the teeth and avoids tooth decay.

Kum Sunita D Behera

RITU KARIDHAL ROCKET WOMAN

Reverently known as 'Rocket Woman', Ritu serves as an inspiration to countless students aspiring to pursue careers in science and space exploration.

On 14th July 2023, Chandrayaan-3 was launched into space as its team looked on proudly. More than 54 female engineers and scientists were part of this extraordinary feat and leading them all was Ritu Karidhal Shrivastava.

She was the Project Manager and Deputy Operations Director of Mangalyaan (MOM), the mission that successfully entered Mars' orbit in 2014 in its very first attempt making India the first Asian country to achieve this feat. Then as the Mission Director of Chandrayaan – 2, Ritu Karidhal made a remarkable impact in India's space exploration journey.

Currently a Senior Scientist at the Indian Space Research Organisation (ISRO), she completed her M.Sc. in Physics from Lucknow University and later pursued an M.Tech degree from the Indian Institute of Science in Bengaluru. Being captivated by space from a very young age, she enjoyed collecting news articles about space missions by ISRO and NASA, feeding her passion and curiosity for all things space-related.

Ritu's dream of joining ISRO came true in November 1997. Since then, she has been an essential part of many prestigious space missions.

Throughout her career, she has also published over 20 papers in National and International publications, showcasing her expertise in the aerospace domain.

Her dedication and hard work have earned her numerous accolades, including the "Young Scientist Award" presented to her by the former President of India, Abdul Kalam, and the "**ISRO Team Award for MOM**" in 2015.

Reverently known as 'Rocket Woman', Ritu serves as an inspiration to countless students aspiring to pursue careers in science and space exploration.

Laxman Singh

Brought alive degraded pasturelands

Laxman Singh is the founder and secretary of Gram Vikas Navyuvak Mandal Laporiya (GVNML), a non-governmental organisation. He is known for initiating community-led collective efforts like the ***'Chauka System'***, eco parks and ***'Khulla-Chidiyaghar'*** or open aviary. His initiatives for water harvesting in his village are known as the famous 'Laporiya Model' for groundwater recharge.

He was born on 8th December 1959 in Laporiya, a small village in Jaipur, Rajasthan. After going to the city for higher studies, he returned to his village to enjoy the rural lifestyle. The prevailing water scarcity and drought in Rajasthan drove him to undertake the repair work of the tank.

Singh invented a unique in-situ rainwater conservation technology – the Chauka System based on indigenous technical know-how. Initially, by recharging the water in the pond of his own village, he made the pasture green. Soon, the Lapodia model was the talk of the surrounding villages. After this, Laxman Singh started a public awareness campaign for saving water and the development of pastures in other villages through the Lapodia Navyuvak Manual.

The GVNML team has helped the rural community develop 10 thousand hectares of degraded pasturelands and helped the milk production in this region boost up to 3-4 times.

In 1987, Singh launched the ***Dharti Jatan Yaatra***, a campaign creating awareness for utilisation of common property resources. More than 3000 community-based organisations are in place and engaged in programmes for the development of Gauchar, Talaab and Nadis, and seasonal rivers.

All these efforts increased the groundwater level by 2-3 meters. The green cover has increased 4 to 5 times, and the number of birds and wildlife has risen remarkably. Subsequently, more than 5 lakh people pledged to protect the local environment. Around 2000 ***talaabs*** are worshipped, 4 lakh trees were tied the raksha-sutra and more than 10 lakh saplings were planted.

Other accolades

- **1992** - National Youth Award
- **1996**
  - Indra Priyadharshini Vriksh Mitra
  - United Nations Development Programme (UNDP) appointed him as the "Eco Volunteer India"
- **1997** - Ashoka Innovators for the Public presented him as a "Lifetime Member of the Ashoka Fellowship"
- **2008** - Silver Award for Water Warrior
- **2013** - Rajiv Gandhi Paryavaran Sanrakshan Puraskar
- He is also on the Board of Governors for some leading Civil Societies Organisations in Rajasthan.

Smt Ramamani N

BAL PURASKAR AWARDS

M.Gauravi Reddy

Gauravi dreams of running a dance school and help children learn about our heritage and culture.

M. Gauravi Reddy is pursuing B.Des (Hons.) in the School of Arts and Design. She has been awarded the Pradhan Mantri Rashtriya Bal Puraskar Award (2023) for her outstanding contribution to promote Kuchipudi which is one of the classical styles of Indian dance. Around the third and fourth decade of this century, it emerged as a rich tradition of dance-drama of the same name. Kuchipudi is also the name of a village in the Krishna district of Andhra Pradesh.

Classical dance connects you to the Almighty. Gauravi Reddy connects to God and helps the audience to do so through her enthralling performance. She was the youngest artiste from the country to participate in the United Nations International Children's Emergency Fund (UNICEF),

Greece(2016). UNICEF works towards the interests of children across the world.

NIMSME (National Institute of Micro, Small and Medium Enterprises) celebrated its golden jubilee in the year 2017. Gauravi performed at the event when she was eight years old. **She impressed hundreds of people during the event by performing 6 ancient dance forms, Bharatanatyam, Manipuri, Odissi, Kuchipudi, Mohiniattam and Kathak in 22 minutes inclusive of costume change.** She is seen as a flag bearer of Indian culture and heritage for her excellence in the field of art and culture. She has performed over 315 programmes and earned 7 world records and 11 awards.

Gauravi dreams of running a dance school and help children learn about our heritage and culture. Another interesting fact about her is that she has taken part in the Green India Challenge and involved herself in spreading awareness about the importance of planting trees.

Smt Ghana Saraswathy M

Mehrangarh Fort

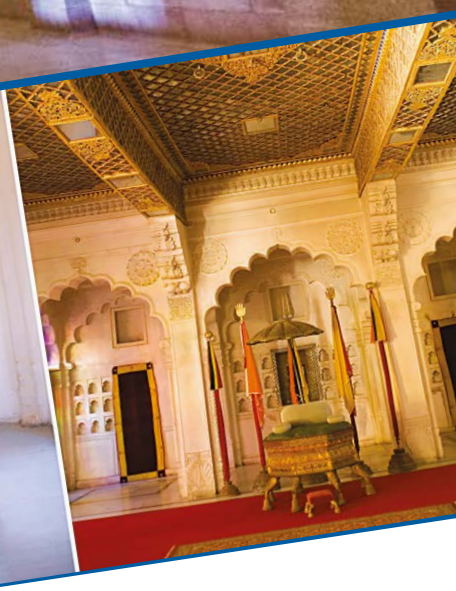
Perched high on a rocky hill in Jodhpur, the Mehrangarh Fort is a breathtaking sight to behold. This ancient wonder takes us back in time to the fascinating world of kings, queens and valorous warriors.

Let's explore this historical marvel that has captured the hearts of people from all over the world.

Built in the 15th century by a brave ruler named Rao Jodha, the fort's name means **"Fort of the Sun."** The fort's massive walls, grand gates and beautiful carvings showcase the amazing skills of the people who built it.

Inside the fort, there are many magnificent palaces like Moti Mahal, Phool Mahal and Sheesh Mahal. The fort also has a museum that takes us on a captivating journey through history. You'll find ancient weapons, royal costumes and even stunning palanquins used by the kings and queens.

Mehrangarh Fort offers a panoramic view of the "Blue City" of Jodhpur. From the top of the fort's walls, you can see the city below, painted in shades of blue. Mehrangarh Fort has seen many battles and withstood invasions, showing the bravery and determination of the



Rajput warriors who defended it. It is a living testament to the rich history and culture of Rajasthan.

Today, the fort is not just a tourist attraction; it's a place where culture comes alive. Festivals, concerts and events take place here, celebrating Rajasthan's traditions and arts. In conclusion, Mehrangarh Fort is a captivating journey into Rajasthan's glorious past. Its majestic beauty and historical significance make it a must-visit destination. So, if you ever get the chance to visit Jodhpur, make sure to explore this enchanting wonder and let its stories of valour and grandeur leave an everlasting mark on you.

DO YOU KNOW ?

- **Jodhpur is often referred to as the "Blue City" due to the predominantly blue-painted houses in its old city area.**
- **The walls of Mehrangarh Fort stand tall at an imposing height of about 36 meters (118 feet), making it an architectural wonder of its time.**

Smt Archana Sundar

CURIOSITY CORNER

Major waterfalls in India

Unscramble the letters and use the given clues to reveal the names of the highest waterfalls in India

1. **OGJ:** Located in Karnataka, it is the tallest un-tiered waterfall in India.

2. **LAIKKNIOAH:** This waterfall is named after a woman and it plunges from a great height in the state of Meghalaya.

3. **RAGSHDDUA:** One of the highest waterfalls in India, it is situated on the Goa-Karnataka border. It is also known as the "Sea of Milk".

4. **IAEPIBHRAN:** Found in Odisha, it is a two-tiered waterfall and a prominent attraction in a national park. This place is also known for sheltering elephants, Bengal tigers and the Indian bison.

5. **ARYALHIAT:** Also known as Rat Tail Falls, it is located in Tamil Nadu and is the sixth-highest waterfall in India.

6. **TIODAHS:** It is a locally known as ‘mini Niagara of Uttara Kannada District.

7. **USGHAB:** This waterfall is located in Himachal Pradesh, it houses the famous Bhagsunath Temple and is a popular tourist destination.

8. **ALARAH:** It is a stunning waterfall surrounded by scenic beauty. It is also believed that Sage Vyasa had chosen this place to meditate.

9. **GEKJNANCNA:** A perennial waterfall, located in Sikkim. This falls was not known to people and remained untouched till the 1990s.

10. **UKLNKACIH:** It is located near the Masthikatte-Hulikal on the Shimoga - Udupi border in Karnataka. A hydroelectric plant built under the waterfall generates high power electricity.

Answers on page 66

Smt Vaishnavi V

Murmu Brothers

who led the Santhal Rebellion

The Santhals lived in peace and harmony with Nature and practised hunting and shifting agriculture.

Many believe that if not for the British rule, we wouldn't have got the railways in our country nor have been civilized, forgetting the turmoil we underwent during their rule. Here is one such story which will remove the aforesaid thoughts from our minds.

We became familiar with the surname 'Murmu' after Smt. Draupadi Murmu took her oath as the 15th President of India. Most may not know about the Murmu brothers, the unsung heroes of Indian history.

The Murmu brothers belonged to the Santhal tribe which is the largest tribal group even today. They are native to the Indian states of Jharkhand, West Bengal and Odisha.

The Santhals and their problem

The Santhals lived in peace and harmony with Nature and practised hunting and shifting agriculture. After the Battle of Plassey in 1757, these areas came under the Bengal Presidency of the British. Slowly their lives were disrupted.

- Their forests were cleared for building railways.
- Introduction of Zamindari system made them landless.
- They had to pay taxes to till their own land.
- Introduction of currency made them depend on the money lenders leading them to poverty.
- They were harassed and exploited and made servants.
- Their animals were forcibly taken.

The Santhal rebellion led by the Murmu brothers to this date remains one of the greatest and fiercest uprisings against the British.

- Anyone who questioned would be punished to death and there was none to raise voice for them.

The Murmu Brothers

They were six of them. The eldest was Sidhu Murmu followed by Kanhu, Chand, Bhairav and their sisters Phulo and Jhano who played a vital role in the rebellion.

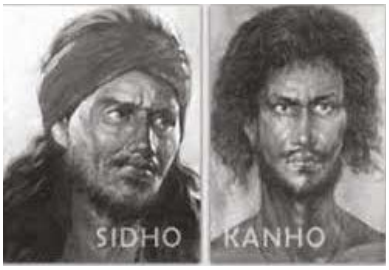
It was 1855, two years before The Great Revolt, Sidhu and Kanhu organized more than 50,000 Santhals in order to drive away the British by sending message to each house in the 400 villages that read **'Abua Raj'** meaning our rule from now on.

The oppressors were attacked and captured in huge numbers by the Santhals. This was a huge blow for the British. But they crushed it later with reinforcements sent from Calcutta. Their firepower was no match for the tribal methods of warfare. Martial law was implemented and a huge reward was in place for the arrest of the Murmu brothers. About 15,000 Santhal villagers were killed and their villages destroyed.

The end of the Rebellion

The Battle of Badhait was a significant event in the Santhal Rebellion led by Sidhu and Kanhu. Chand and Bhairav were shot. Phulo and Jhano wielded axe and eliminated 21 Britishers before they were martyred.

Sidhu and Kanhu were betrayed by their own companions and were publicly hanged - Sidhu in Panchkathia in Barhait, known as the martyr's place. Kanhu in his village, Bhognadih.



The death of the brothers marked the end of the Santhal rebellion. On 30th November 1856, Santhal Pargana was declared a district and had a unique legal system different from the rest of the country that offered some protection for the tribals against exploitation.

The Santhals were fierce but honourable fighters. They used poisoned arrows for hunting but never against their enemies. The Santhal rebellion led by the Murmu brothers to this date remains one of the greatest and fiercest uprisings against the British.

Answers of page 64

1. **Jog Falls**
2. **Nohkalikai Falls**
3. **Dudhsagar Falls**
4. **Barehipani Falls**
5. **Thalaiyar Falls**
6. **Sathodi Falls**
7. **Bhagsu Falls**
8. **Rahala Falls**
9. **Kanchenjunga Falls**
10. **Kunchikal Falls**

World Paper Bag Day

12th July

Stop Using Plastic Bag

For a sustainable and balanced plastic free future, paper bags are a good alternative.

Paper bags can be reused multiple times, which is a great way to reduce your environmental impact.

WORLD POPULATION DAY

11TH JULY | WORLD POPULATION DAY

"Let us join hands to control POPULATION and save this world."

The world is like a big family and the onus of saving it from the growing population lies on each one of us.

On the occasion of World Population Day, let us come together and fight against one of the biggest causes affecting us.