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THE PRAJYA TEAM

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FROM THE EDITOR'S DESK

सिद्धिर्भवति कर्मजा ॥

(***Translation:*** *Success is achieved through efforts.*)

These words are particularly true in the field of sports. Regular and unflinching practice is an absolute essential in shaping a sportsperson. But human effort alone is not sufficient. Adequate and appropriate facilities are a must.

India's first Indoor Athletics Centre and Indoor Aquatic Centre at the Kalinga Stadium in Bhubaneswar is a classic example. The recently inaugurated world – class facility can be an excellent training ground to shape champions and also the arena for the display of sporting talent.

A **Formula 4 car race** on Boulevard Road along the banks of Dal Lake is an extraordinary success considering what Kashmir was just a few years ago. Continuous efforts to pull the state out of crippling terrorism has paid dividends.

Bilquis Mir from Jammu and Kashmir created history as the first woman from India to serve as a jury member at the upcoming Summer Olympics in Paris. Her continuous efforts helped her overcome challenges, particularly as a Kashmiri woman pursuing sports. She propelled herself forward to excel in her field and eventually gain recognition as a jury member for major sporting events.

"Continuous effort - not strength or intelligence - is the key to unlocking our potential."

Read, reflect and revert with your thoughts and feelings.

We look forward to your support and suggestions.

- Editorial Team

Dear Readers,

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

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

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

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

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

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

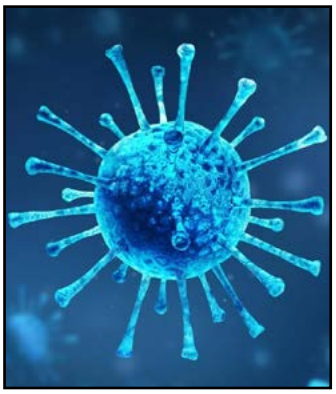
http://bit.ly/Prajya

Happy Reading !

Watch out for the Monthly Prajya Quiz online

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

Content



International Current Affairs

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General Knowledge

Smt Anuradha V R

Indo - Nepal initiative for Sanskrit research and education

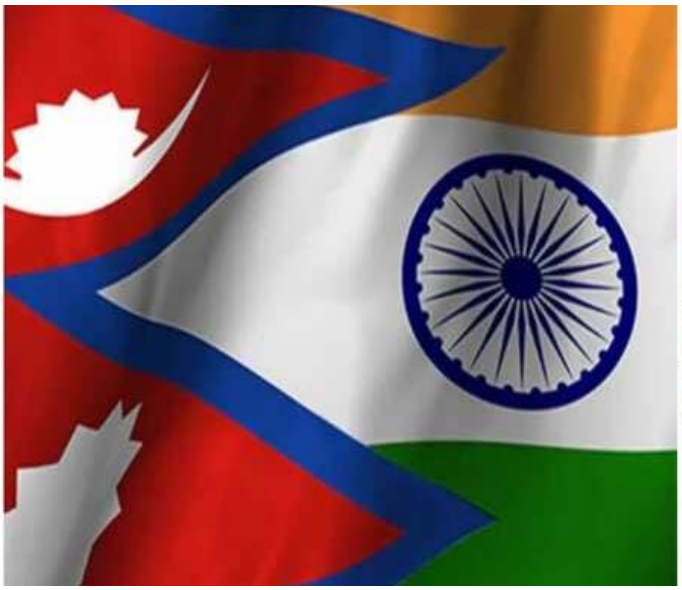
Sanskrit, one of the oldest languages in the world, has been a vital part of the cultural heritage of India and Nepal for centuries. It has served as the language of ancient scriptures, classical literature and philosophical texts. Throughout history, Sanskrit has played a pivotal role in shaping the cultural and intellectual landscape of South Asia.

India and Nepal share a long-standing cultural bond rooted in their common history, traditions and religious beliefs. Sanskrit has been a unifying force that transcends geographical boundaries, fostering mutual respect and admiration between the two nations.

The two countries have joined hands to bolster the promotion of Sanskrit research and education. The initiative aims to deepen the cultural ties between the two nations while fostering academic collaboration in the field of Sanskrit studies.

The core idea behind this significant move:

1. **Annual International Sanskrit Conference:** Participants proposed organizing an annual International Sanskrit Conference. This platform will facilitate scholarly discussions, exchange of ideas and the dissemination of Sanskrit knowledge.
2. **Study Centre for Sanskrit Research:** The conclave emphasized the establishment of a study centre dedicated to Sanskrit research. This centre will focus on the study, preservation and publication of Sanskrit scriptures, particularly the manuscripts found in the Himalayan region.
3. **Collaboration with Gurukuls:** Gurukuls, traditional centres of learning,



will receive support for their development in Nepal. The collaboration between Maharshi Sandipani Veda Vidya Pratisthan, Ujjain and Nepali institutions aims to strengthen Sanskrit education.

4. **Niti Anusandhan Pratisthan Nepal:** Designated as the head office of the Nepal-India Sanskrit Study Centre, Niti Anusandhan Pratisthan Nepal will play a pivotal role in coordinating joint research efforts and facilitating manuscript publication.
5. **Training programme for Nepali Sanskrit students:** To enhance Sanskrit learning capabilities, the conclave proposed organizing training programmes for Nepali Sanskrit students in India. This initiative aims to deepen their understanding and proficiency in the ancient language.
6. **Central Sanskrit University's role:** The Central Sanskrit University, Delhi, will actively support Gurukul libraries in Nepal by providing essential Sanskrit texts and resources.
7. **Promotion of culture and heritage:** Beyond education, the conclave also underscored the importance of promoting religion, culture, philosophy, history and archaeology in both Nepal and India. The preservation of Sanskrit, Pali, and Prakrit languages remains a shared objective.
8. **Successful participation:** Over 120 Sanskrit scholars, professors and government officials from Nepal and India actively participated in the three-day conclave.
9. **Strengthening Nepal-Indian Relations:** The primary goal of this international conference was to foster stronger ties between Nepal and India while advancing Sanskrit education.

The recently concluded Nepal-India International Sanskrit Conclave held in Kathmandu thus witnessed the adoption of several resolutions aimed at promoting Sanskrit education and research.

Beyond education, the conclave also underscored the importance of promoting religion, culture, philosophy, history and archaeology in both Nepal and India.

Shri Ramaswamy R

Leaders across Nations

Vladimir Putin secures another six- year term

Putin (72) on 18th March 2024, secured his 5th six year term by polling 76 million or 87% of Russians' votes. His main opponent Alexei Navalny in Siberian exile died in February under suspicious circumstances. Putin, who had earlier worked for KGB for 16 years started his political career in 1991.

In 1996, he worked under President Boris Yeltsin. When Yeltsin resigned in 1999, Putin ascended the Presidency. The rule of Putin has been marred by accusations of dictatorship, corruption and sporadic killings of political opponents even if they were in exile in distant countries. The economic growth has also been a modest 6% and suffered setbacks caused by Russia's military expedition against neighbouring Chechnya, Georgia, Crimea and currently Ukraine since 2022.

Vaughan Gething becomes first European Black leader

Zambia born Vaughan Gething (50) is the first ever Black leader to head the Government of Wales. Taking charge on 21st March 2024, he is also the first ever Black leader to head a government in the whole of Europe and U.K. Gething got this opportunity after U.K.'s central government devolved their powers.

Wales with a population of 3 million is one of the 4 countries of U.K. England, Scotland and Northern Ireland are the other three. Three of the 4 U.K. countries - England, Scotland and Wales have non-White leaders in Rishi Sunak, Humza Yousaf and Gething respectively. With the fourth, Northern Ireland governed by two women, the rule of U.K. only by non-White men is complete.

Bassirou Diomaye Faye wins Senegal's presidential election

Senegal is one of the few countries in Africa that enjoys democracy and change of governments through elections without coups or coup attempts. Bassirou Diomaye Faye (44), a former tax inspector has taken over as the 5th President of Senegal.

He came to power on 2nd April 2024. He contested the election, won and became the youngest President directly from a prison in just a matter of weeks. "Diomaye" means "honourable one". With a reformist agenda, he has promised to rid

the nation of corruption, focus on agriculture and self-sufficiency, and restore national sovereignty over key assets in sectors such as oil, gas and fishing. By all these, Diomaye has caught the imagination of youth of Senegal yearning for change.

Congo appoints the first female Prime Minister

Democratic Republic of Congo (DRC) is the 2nd largest country in Africa with a population of 11.2 crores and having abundant natural resources like copper and cobalt. But the country is one of the poorest in the world, severely crippled by internal conflicts, guerilla wars and warlords going after the natural resources.

Towards fulfilling his poll

promise of eliminating violence against women and children and to give them their due respect, DRC President Tshisikedi nominated Judith Suminwa Tuluka (50), as the first ever female Prime Minister. The PM who took charge on 1st April 2024 has a PG degree in Applied Economics and had served the former PM as Minister for Planning. She also has international experience working for the UN in their UNDP programmes.

Abdel Fattah Al-Sisi sworn in as Egyptian President

Former Army Chief Abdel Fateh Al-Sisi (69) was sworn in on 2nd April 2024, for his 3rd six year term as President of Egypt, the most populous country of the Arab world. The President in his new term will be battling economy and restraining neighbouring Israel

who has undertaken strong military action against Hamas extremists. The President has been accused of human rights violation for keeping thousands of people under detention. Al-Sisi is also fully engrossed in the USD 58bn new administrative capital project, southeast of Cairo.

Peter Pellegrini wins Slovakia presidential elections

Slovak Republic is a Central European developed democratic country, having land area of 49,000 sq.km and a population of 5.4 million. The picturesque country is mostly mountainous terrain, with castles, caves, hot springs and forests. The country existed together with Czeck as Czechoslovakia prior to the disintegration of Soviet Union

in 1992. Slovak is the language spoken and Bratislava on the banks of Danube is the capital city.

Presidential elections were held as two rounds on 23rd March and 6th April 2024.Peter Pellegrini (48) Slovak nationalist-left government candidate won the election. Pellegrini along with the Prime Minister Robert Fico is considered to be Pro-Russian in their conflict with Ukraine.

Simon Harris becomes Ireland's youngest Prime Minister

Simon Harris (37) became the youngest ever to take over as Prime Minister of Ireland. Harris came from a humble background. He was the son of a taxi driver and had a brother with autism. The struggle the family underwent to receive special needs services for his brother, made Harris drop out of his journalism and French studies and take to politics.

In April 2024, he was elected unopposed as leader of the ruling Fine Gael Party following the vacuum created by the stepping down of Leo Varadkar during the previous month. Simon Harris has held various governmental positions for the last 10 years, the latest being Minister for Higher Education and Science. The incumbent PM faces the daunting task of facing the General Elections in March 2025 against right wing Sinn Fein Party.

Kum Pavithra S

Operation INDRAVATI

India has launched Operation Indravati, a vital mission aimed at ensuring the safety and security of its nationals caught in the crossfire of escalating gang violence and political instability in Haiti. The operation, named after the Indravati River, symbolizes the nation's commitment to safeguarding its citizens amid dangerous circumstances.

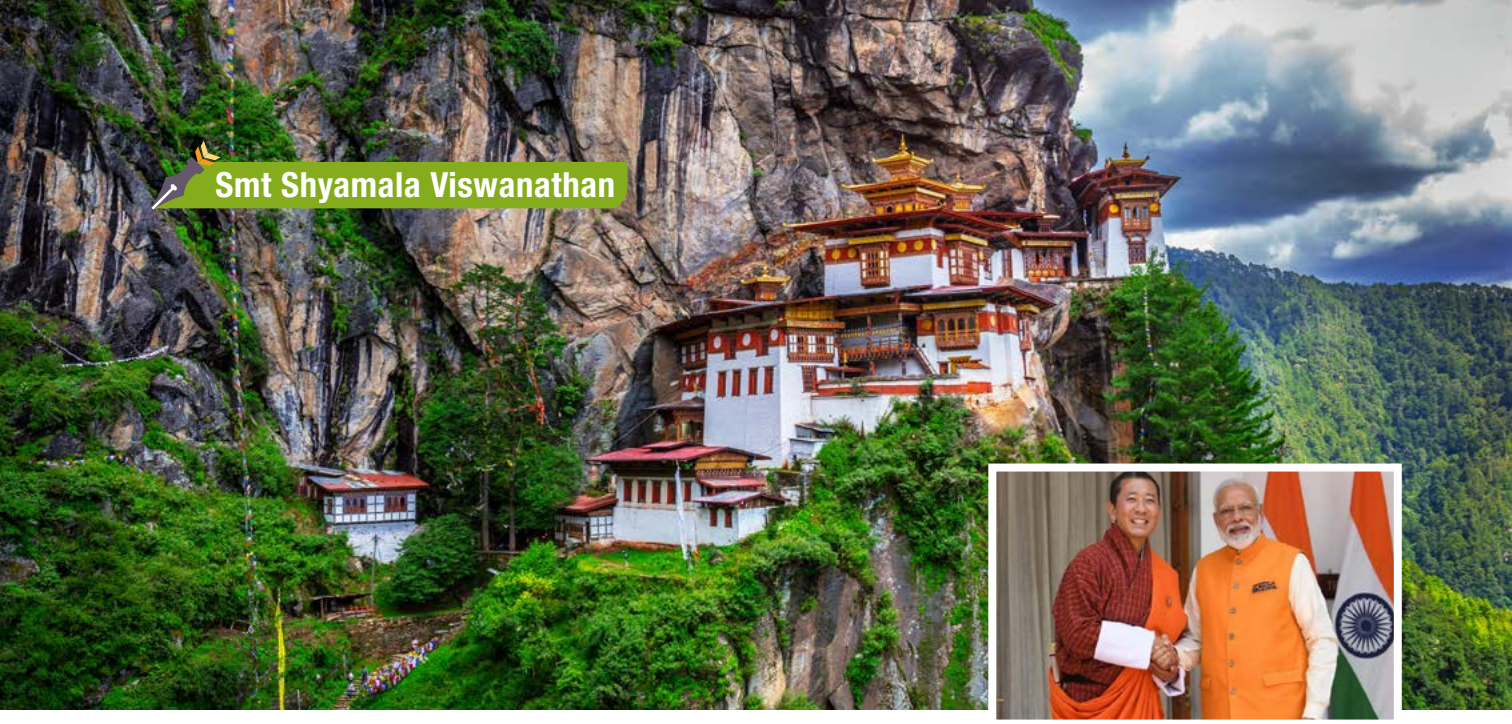
Since the 2010 earthquake, the situation in Haiti has been marked with increased gang activity including attacks, arson targeting police stations, closure of the airport and the liberation of prisoners. Such acts of violence have pushed Haiti into a state of emergency, compelling authorities to impose a night time curfew in a bid to restore order. With criminal gangs exerting control over significant swathes of the country, the humanitarian crisis deepens, displacing tens of thousands and leaving communities in despair.

In response to the escalating violence and the need to ensure the safety of its citizens, India launched Operation Indravati. The operation involves evacuating Indian nationals from Haiti to the neighbouring Dominican Republic. Under this mission, 12 individuals were successfully evacuated.

Operation Indravati's urgency highlights the severity of Haiti's situation, where ongoing violence worsens, especially after the recent mass prison break.

External Affairs Minister Dr. S Jaishankar reaffirmed India's unwavering commitment to the safety and security of its citizens abroad. Expressing gratitude to the Government of the Dominican Republic for their support, Jaishankar's statement underscores the collaborative efforts involved in executing Operation Indravati.

As Haiti grapples with its most profound crisis in recent years, Operation Indravati serves as a beacon of hope for Indian nationals stranded amidst the chaos. It represents India's commitment to standing by its citizens in times of adversity, expressing the spirit of solidarity and compassion on the global stage.



Smt Shyamala Viswanathan

Bhutan's highest civilian award for PM Modi

The King of Bhutan Khesar Namgyel Wangchuck conferred the **Order of the Druk Gyalpo** on Prime Minister Narendra Modi, who became the first foreign Head of Government to receive Bhutan's highest civilian honour.

Significance

Instituted as a decoration for lifetime achievement, this honour holds paramount importance in the Himalayan Kingdom. The Order of the Druk Gyalpo is inarguably the pinnacle of the honour system in Bhutan. Being an esteemed civilian accolade, it is reserved for individuals who have demonstrated exceptional contributions to society, embodying values of service, integrity and leadership.

Recipients of this prestigious award are carefully selected based on their outstanding accomplishments and positive impact on society. Their contributions are assessed in alignment with Bhutanese values, emphasising holistic development, cultural preservation and regional harmony. Since its institution, the award has been conferred upon only three other eminent personalities.

Previous recipients of the award

- Queen Grandmother of Bhutan Ashi Kesang Choden Wangchuck in 2008;
- Je Thrizur Tenzin Dendup (68th Je Khenpo of Bhutan) in 2008 and
- Je Khenpo Trulku Ngawang Jigme Choedra in 2018.

FUN FACTS

- **Thimpu is one of just two capital cities in Asia that does not have a single traffic light. (The other is Pyongyang, North Korea)**
- **Bhutan is the only nation in the world where the sale of tobacco is banned.**
- **At 24,840 feet, Gangkhar Puensum is the highest point in Bhutan—and the highest unclimbed mountain in the world.**
- **One of the last countries in the world to introduce television to its people. The government lifted a ban on TV—and on the internet—only 11 years ago.**

Kum Anu Narayan

Asteroid named after Indian scientist

The International Astronomical Union (IAU) has recognized Indian scientist **Professor Jayant Murthy** by naming an asteroid after him. This honour is a tribute to Murthy's significant work in studying the interstellar medium, ultraviolet astronomy and space missions. **Asteroid (215884) Jayantmurthy** will carry the name of the Indian Institute of Astrophysics (IIA) scientist, leaving a lasting legacy. The asteroid was previously known as “2005 EX296”.

IAU is the organization responsible for naming small celestial objects in the solar system. Asteroid (215884) Jayantmurthy was first discovered in 2005 by MW Buie at the Kitt Peak National Observatory in Arizona, USA. It orbits the sun between Mars and Jupiter every 3.3 years.

Upon hearing the news, Professor Murthy expressed his gratitude and excitement. "I am thrilled to have an asteroid named after me, in connection with my work on the New Horizons team, led by Dr. Alan Stern," Murthy said.

After concluding his tenure at IIA in 2021, Murthy has been serving as an Honorary Professor. He also held the position of acting director at the institute from July 2018 to October 2019.

Murthy's achievements have greatly advanced our understanding of the universe, particularly through his work with NASA's New Horizons Science Team. The team focused on observing ultraviolet background radiation, which has expanded our knowledge of cosmic phenomena.

Murthy's contributions to the New Horizons mission include studying ultraviolet background radiation in the outer regions of the Solar System, where the influence of the sun and interplanetary medium is minimal.

NASA's New Horizons mission gained worldwide attention with its fly by of Pluto in 2015. The mission provided valuable insights and data about the dwarf planet and its moons.

Annapurni Subramaniam, director of IIA, described the asteroid naming as "a very rare honour." **Murthy now joins previous IIA directors MK Vainu Bappu and JC Bhattacharyya, who also have asteroids named after them.** This honour acknowledges Murthy's important contributions to astrophysics.

Shri Mrithyunjay GN

STARGATE
AI Supercomputer

The key to mankind's future. That is what the characters in the 1994 science fiction film ***"Stargate"*** remarked about the titular device. One cannot help but wonder if the name for Microsoft and OpenAI's 100 - billion - dollar AI supercomputer is a nod to the device in the film. while the supercomputer itself is far off, with extremely ambitious estimates putting the completion of it around the year 2028. The groundwork for it has already been laid. Over the the last 4 years, their partnership.

In 2019, Microsoft began a very profitable partnership with OpenAI, the US based AI research organization which has the goal of developing safe and beneficial AI for all users.

Over the the last 4 years, their partnership has yielded incredible dividends. ChatGPT, the large language AI model created by OpenAI has been instrumental in the development of Microsoft Copilot, the AI assistant that comes bundled with the Windows 11 operating system, effectively putting AI in almost every computer user's home.

This success is the reasoning behind their multi-stage plan to construct Stargate. Stargate will be the biggest in a series of supercomputers that Microsoft and OpenAI plan to build over the next six years.

The supercomputer plan is currently in the middle of the third phase with Stargate being part of the fifth and final phase. Stargate will actually be preceded by the construction of another supercomputer which will then lead to Stargate itself.

The greatest cost comes from the amount of cutting edge silicon microprocessors needed to power the computer. The supply chain and manufacturing delays caused due to the Covid-19 pandemic saw a downturn. Shortage of chips is still not completely resolved.

The construction will also create a surge in demand for GPUs, Graphics Processing Units, which will further put a strain on a different type of chip manufacturers. While Nvidia, the GPU manufacturer and Microsoft have announced that they will be working on custom-designed computing chips, it is unclear if the chip shortage and increased pricing will be resolved anytime soon.

Finally, there is the future to consider. While Stargate has the potential to be a game-changer, ushering in a new era of AI innovation and shaping the future of technology, we still have endless questions about how this technology will impact not just our economy but our society as a whole.

The number of kinks to iron out remain endless and the AI we see today is not to be trusted completely. Only time will tell what the future holds.

On that note, the other tagline for 1994's Stargate seems ominously appropriate to ponder. ***"It will take you a million light years from home. But will it bring you back?"***

Shri Sridhar P

WHO launches CoViNet

The COVID 19 pandemic created havoc, derailing world economies, destroying livelihoods and ultimately resulting in the death of a million affected patients worldwide. COVID 19 tested our resolve, our capacity to strategize, organise and communicate to mitigate its effects. The world has always been plagued by such pandemics, only the scale of devastation varied. 20th century saw the devastation caused by Spanish flu that killed anywhere between 19 and 50 million people worldwide.

SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome) are serious infectious respiratory diseases caused by members of a class of viruses known as coronaviruses.

Medical strategies to lessen the impact of a pandemic depends on the knowledge and behaviour of the virus, its hosts, speed and mode of transmission, incubation period, symptoms etc. Sadly these were lacking during the Spanish flu pandemic.

CoViNet

COVID 19 pandemic taught us the remarkable power of what a coordinated global effort can do to contain it. The role of WHO in its capacity as apex body was instrumental in organising and coordinating the efforts of varied sets of people from health care workers, epidemiologists, governments, vaccine manufacturers, research labs and media. This resulted in the containment of COVID 19. WHO has launched CoViNet, a new network to facilitate and coordinate global expertise and capacity for early and accurate detection, monitoring and assessment of SARS-COV-2, MERS-COV and other novel corona viruses of public health importance. The network includes 36 labs from 21 countries in all the 6 WHO regions. Representatives of the labs met in Geneva for an action plan for 2024 -2025, so that member states are better prepared for a coordinated response to pandemics.

Importance of CoViNet

CoViNet brings together global experts in human, animal and environmental health. This collaboration is essential for increased surveillance, sequencing, data integration required for WHO decisions and policy making. Data generated from CoViNet will guide the work of WHO's technical team in studying viral evolution and generating suitable policies.

Kum Sunita D Behara

The first Indian woman on Olympics Jury

Bilquis Mir, a canoeist from Jammu and Kashmir, made history as the first Indian woman to serve as a jury member at the Summer Olympics 2024 in Paris. This remarkable achievement comes as a testament to her unwavering determination and passion for the sport.

Bilquis' journey into canoeing began in 1998, when she first dipped her paddle into the iconic waters of Dal Lake. From there, she embarked on a noteworthy journey, **representing India and amassing over 25 national-level medals between 1998 and 2006**.

In addition to her illustrious career as an athlete, Bilquis has also taken on roles as a coach and mentor. She has served as the coach of the Indian women's canoeing team, preparing them for the challenges of the upcoming Games. Her expertise has been recognized not only on the national stage but also internationally, as she was appointed as a jury member at the 2023 Asian Games in Hangzhou, China.

Born in the Khanyar area of Srinagar, Bilquis' education began at SA Modern School Babar Shah, followed by graduation from Women's College, Maulana Azad Road in Srinagar. Her dedication to the sport led her to assume various leadership roles, including Director of Water Sports in Jammu and Kashmir.

She made history as the first Indian woman participant in the ICF Sprint Racing World Cup in Kayaking and Canoeing in 2009. Her commitment to excellence saw her appointed as the Chief Coach of the Women's National Team for the Under 23 Canoe Slalom World Championship in Italy in 2018.

She was also selected as a judge by the Asian Canoe Federation for the 18th Asian Games Canoe Spirit in Indonesia in 2020.

Bilquis Mir's journey is not just one of personal triumph but also a symbol of inspiration for aspiring athletes everywhere. As she prepares to make history at the Olympics, she continues to pave the way for future generations of Indian athletes.

Smt Silpa Nandakumar

The man who ran the length of Africa

Imagine running more than 9,940 miles (16,000km), across 16 countries for over 352 days! For **Russ Cook,** it wasn't easy but he did complete the mammoth task of running tip to tip from southern to northern Africa. It was a year-long journey for Cook who saw various obstacles including visa issues, health scares and an armed robbery.

Calling the challenge "the toughest in his life but an immense honour", Russ Cook expressed his hope that his achievement would inspire others to take up sports. His run spanned through rainforests, across mountain ranges and the Sahara.

Money raised through the challenge is directed towards the Running Charity, which provides running and mental health programmes to young people experiencing homelessness and complex needs and Sandblast, which promotes awareness of the Saharawi people (an ethnic group native to the western part of the Sahara desert).

Although Cook believes that he is the first person to have run the entire length of Africa, the claim has been challenged by the World Runners Association (WRA), a group of seven athletes who have successfully circumnavigated the world on foot. Based on the evidence presented, the WRA recognizes Jesper Kenn Olsen of Denmark, who was part of the group, as the first person to have run the full length of Africa. The achievements of adventurers and explorers have to be verified and acknowledged to ensure that the historical records are accurate and fair.

However, this does not undermine the exemplary achievement of Russ Cook and his perseverance and determination are worthy of appreciation. He has attempted various challenges previously, like running from Istanbul to London, being buried alive for a week and the fastest marathon pulling a car. Surely, it is a message to the young people that with positivity and determination, difficult hurdles can be overcome.

Shri Sampath D

Zimbabwe introduces Gold-backed currency

The introduction of gold-backed currency in Zimbabwe which is known as Zim Gold (ZiG) has been necessitated to tackle sky-high inflation and stabilise the country's weakening economy. The newly structured currency will be backed by gold, precious minerals and foreign currencies. The new currency would be in circulation alongside other foreign currencies. Zimbabweans have 21 days to convert their old cash into new money, according to the Central bank.

The Governor of Central Bank said that it would also introduce a market-determined exchange rate. It is aimed at fostering simplicity, certainty and predictability in Zimbabwe's financial affairs. The new banknotes come in eight denominations ranging from one to 200 ZiG. The new notes feature a drawing of gold ingots being minted, as well as Zimbabwe's famous Balancing Rocks which already appeared on the old ones.

The Zimbabwean dollar lost almost 100 % of its value against the USD over the past year. Its poor performance has contributed to the high inflation rate, which after climbing well into the triple digits last year, was at 55% in March, according to official data. The current inflation rate has put pressure on the country's 16 million people who are already enduring widespread poverty, high unemployment and a severe drought induced by the El Nino weather pattern. Soaring prices have also brought back memories of 2008, when hyperinflation was so much out of control that the Central bank even issued a 100-trillion-dollar note, which is now a collectors' item.

It is stated that Central Bank's vaults appear to hold 1.1 tonnes of solid gold. The bank also has almost 1.5 tonnes more abroad, as well as USD 100m in cash and precious minerals – such as diamonds, which if converted into gold would account for another 0.4 tonnes. The total reserves' value being USD 285m, is "more than three times cover for the ZiG currency being issued".

The Central Bank is also "recalibrating" its main interest rate and setting it at 20%, which is a drastic cut from the previous rate of 130%. It is very much likely to have an impact on inflation.

DO YOU KNOW ?

- **Interest rates have a direct effect on consumer behaviour, impacting several facets of everyday life. When rates go down, borrowing becomes cheaper, making large purchases on credit more affordable.**
- **Any Central Bank typically cuts interests only when the economy appears to be weakening and needs help. Lower interest rates would reduce borrowing costs for homes, cars and other major purchases and probably fuel higher stock prices, all of which could help accelerate growth.**

Smt Gaayathiri G

India's first integrated oil palm processing unit

PM Modi virtually inaugurated India's first integrated oil palm processing unit, operated by 3F Oil Palm, marking a significant stride in the nation's journey towards self-reliance in edible oils. Situated in Arunachal Pradesh's **Roing,** this project aligns with Mission Palm Oil under the National Mission on **Edible Oils – Oil Palm (NMEO-OP).** This initiative empowers farmers, particularly in the northeast region.

The integrated project comprises a state-of-the-art oil palm factory (palm oil processing and refinery), a zero-discharge effluent plant and a palm waste-based power plant, alongside supporting structures and godowns.

3F Oil Palm has invested ₹100 crore in the region, with plans to invest ₹1100 crore by 2030, generating employment opportunities for 1,700 people.

Arunachal Pradesh alone has identified 1,30,000 hectares of suitable land for oil palm cultivation, with the northeast region holding 33% (9.6 lakh hectares) of the designated area. However, only 4% of this potential has been utilized for oil palm development.

India currently imports 96% of its required palm oil, constituting 67% of the country's edible oil import bill, surpassing ₹1 lakh crore. The NMEO-Oil Palm Policy aims to reduce this dependency through domestic cultivation promotion, particularly in the northeast.

Aims of NMEO-OP

- Increase oil palm cultivation and boost crude palm oil production to 11.20 lakh tonnes by 2025-26. This scheme operates in 15 states nationwide.
- Promote oil palm in new areas, provide farmers with planting material and assure buyback from private players. To protect farmers from global price volatility in oil palm, the government is providing **viability gap payment** (VGP) to hedge farmers' risk.

Under the mission, processing companies are also setting up one-stop centres for oil palm farmers which provide:

- Inputs.
- Custom hiring services.
- Farm advisories of good agricultural practices.
- Collection of farmers' produce.

The Mahakumbh of

The ***Mahakumbha Mela*** is the largest peaceful gathering and festival of Hinduism, wherein people take a dip in the holy rivers; Sadhus deliver religious discourses and learned people (pandits) engage in philosophical discussions and debates. It is also an occasion for entertainment, education and community commerce with numerous fairs.

The event

India's biggest celebration of startups was held at Bharat Mandapam, New Delhi, from 18th to 20th March 2024. The event was appropriately named as the **'Startup Mahakumbh'** and its theme was **'Bharat Innovates'**. This is a first-of-its-kind event bringing together the entire startup ecosystem of India spearheaded by the collaborative efforts of ASSOCHAM, NASSCOM, Bootstrap Incubation & Advisory Foundation, TiE, and Indian Venture and Alternate Capital Association (IVCA) with support from the **Department for Promotion of Industry and Internal Trade (DPIIT)**.

The event had sector-focused pavilions that showcased India's most innovative startups. There were various verticals that had pavilions namely AI & SaaS, Agritech, Deeptech, Biotech & Pharma, Climate Tech, Fintech, Medtech, B2B & Manufacturing, Gaming & E sports, D2C/Consumers/Platforms and Incubators/Accelerators.

The event also had mentorship clinics, pitch competitions and a multi-track conference featuring leadership talks, panel discussions, workshops and a host of exciting activities for startups as well as future entrepreneurs.

On the concluding day of the event there was a **Future Entrepreneurs Day, with a focus on cultivating the entrepreneurial spirit among students.** The main purpose of the event was enabling collaboration and connecting

startups with a wide spectrum of investors such as VCs, angel investors, family offices and HNIs (high net worth individuals) as well as potential corporate partners.

India's startup ecosystem

India is the world's third largest startup ecosystem with over 1.25 lakh startups with 12 lakh youth directly linked to them. Out of this 110 are unicorns. It has grown from a few 100s in 2014 to this admirable level in a decade. Between them they have about 12,000 registered patents. Startups are doing very well in 50 sectors in space and have also started launching space satellites.

Prime Minister's address

PM Modi, in his address at the Mahakumbh said that India has scaled up from being the 11th biggest economy in the world to being the 5th currently and promised to take it to the 3rd position in his third term. He said that startups have played a big role in helping India scale up to the 5th position and will also play a major role in moving to the 3rd position. He also suggested that India could take a lead in Artificial Intelligence (AI) and startups will power this too.

The startup impact

For nearly 3900 future entrepreneurs it was a perfect forum to participate and benefit from. With 2000+ startups, 48000+ business visitors, 165+ sessions, 392+ speakers, 110+ unicorns, 300+ incubators and accelerators, 165+ investors, 10+ thematic pavilions, 1306 exhibitors and participation from 26+ states and delegations from 14+ countries, it was indeed a Mahakumbh of sorts.

Factors like the rise in startups from Tier 2 and Tier 3 cities and women leading 45% of the startups are clear pointers to the fact that the Indian startup model in inclusive, diverse and sustainable. It has democratized entrepreneurship, wealth and services in a meaningful fashion.

Today, the youth of India can be proud and happy that they are living in these times wherein there could be ready recognition and reward for their innovative ideas. They can also take pride in the fact that unlike their earlier generations, they can be job providers and not job seekers.

The Startup Mahakumbh will certainly prove to be a major leap forward in our journey towards a **Viksit Bharat.**

Smt Shubha T R

India's first Athletic and Aquatic Centre

Beyond just being venues for spectators, stadiums play an important role in nurturing young talent, promoting sports and bringing about a collective sense of pride for the nation. On 9th March, Odisha's Chief Minister Naveen Patnaik inaugurated India's first ever Indoor Athletics, Aquatic Center at Kalinga Stadium, Bhubhaneshwar.

The Italian company **Mondo SpA** has set up a 10,000 sq. metre track (including a 200 m synthetic track) in the stadium, a first of its kind in the country. This indoor complex includes an athletic track, aquatic center, diving center, coaching facilties, medical care and a pantry. This indoor facility can host a variety of sports events throughout the year without fear of weather disturbances.

DO YOU KNOW ?

Kalinga Indoor Athletic stadium earned the prestigious recognition– Category 1 certification from World Athletics in December 2023.

Highlights

Indoor Athletic Stadium

- World class facility to host National and International athletic events with a seating capacity of 2000 spectators.
- Can host events like long jump, triple jump, pole vault, short-put, badminton, shooting, track events like 100m, 200m etc.
- Capacity: full time coaching-120 athletes; residential facility- 100 athletes.

Indoor Aquatic Centre

- Has temperature controlled 50 meter Olympic size pool, 25 m warm up pool with a seating capacity of 1000, fitness and sports recovery facility.

Indoor Diving Centre

- Upcoming facility has temperature controlled 25m diving pool and additional 5m for synchronized swimming with a seating capacity of 500.

This will be a major boost for the development of athletics in India and is bound to become the hub of world class championships in the years ahead.

Shri Ramaswamy R

First Formula-4 car racing near Dal Lake

Srinagar hosted the first ever Formula 4 Racing demonstration event on 17th March 2024, on the banks of the world famous Dal Lake. The lake is spread at an altitude of 1775 metres above sea level. The shoreline of the lake, about 15.5 km long is encompassed by a boulevard, lined with Mughal era gardens and parks and snow clad Himalayan mountain ranges overlooking the lake.

The racing track was 1.7 km long, from Lalit Ghat on the lake banks to Nehru Park in the city. Hundreds of enthusiastic youth lined the picturesque Boulevard Road at the foothills of Zabarwan mountain range to witness the event.

According to local authorities, the event was organized to promote tourism in the region and to encourage youth to consider sport as a career choice. The event, the first of its kind in the Kashmir Valley, was organized by the Federation of Motorsports Clubs of India, which is affiliated with the Federation Internationale de l'Automobile (FIA), with headquarters in Paris.

PM Modi, in a post expressed that the event would further showcase the beauty of J&K. The event started at 10 a.m. and went on till 2 p.m., when four F4 drivers showcased their skills.

Formula Car Racing

These are prestigious racing events conducted since 1950. The various categories for open wheel car racing are as given below:

Formula	HP	Speed MPH	Limit KMH
F1	1000	230	370
F2	620	200	320
F3	380	185	300
F4	160	130	210

Open wheel cars are those whose wheels are outside the car body. The engineering design helps to bring out individual's racing abilities to their limits. The rules and specifications are framed for each year and the teams build the cars from scratch to suit the technological changes. F1 is considered the pinnacle of motor racing.

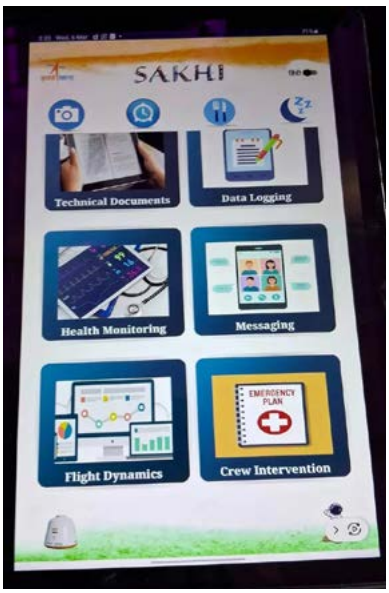
Tourism in Kashmir

The region is seeing a tourism revival after Article 370 was abrogated in 2019 by the Centre. This signalled job creation, infrastructure development, revenue generation and overall economic growth.

Tourists' arrival in Kashmir, from a high of 95 lakhs in 2014 had dipped in subsequent years, but has again seen a revival with 1.8 crores and 2.11 crore visitors in 2022 and 2023 respectively. G-20 Conference chaired by India and attended by world leaders was also held in May 2023 in Kashmir.

Kum Shrivaishnavi R

SAKHI the lifeline for Gaganyaan crew



India's latest star child in the making has to be the Gaganyaan mission. In this project, we plan to launch three astronauts into a Low-Earth Orbit for three days. This comes as a leap into space technology for the country, and puts us in the fourth position to launch astronauts into space, after the Russian Federation, the United States of America, and the People's Republic of China.

The prestigious mission, whose main goal is to launch Indian astronauts into space, has come about with a budget of ₹10,000 crores. The spacecraft will utilise the LVM3 launch vehicle which uses multiple fuel propellants to ensure an efficient employment of fuel.

The **Vikram Sarabhai Space Centre (VSSC)** of the Indian Space Research Organisation (ISRO), in conjunction with this mission, has developed an application called SAKHI. **SAKHI** stands for **Space-borne Assistant and Knowledge Hub for crew Interaction.** The application, which will be integrated into the spacesuits of the astronauts, will have several features to make data collection, medical monitoring and communication a seamless experience.

The application will have features such as technical assistance guides and emergency protocols. It comprises specialized support documents and training manuals for the crew to peruse during their flight, and also a software for the astronauts to log their data and experiences while on board the spaceship. Additionally, the app has a plethora of health monitoring parameters such as blood pressure, heart rate, pulse rate and oxygen saturation, just like a smart-band. Lastly, the application boasts of an excellent communication system, enabling the cosmonauts to communicate with each other, digital systems and with ground staff in India.

The mission as a whole is a matter of pride by itself. The addition of this application adds a touch of finesse and accomplishment to the Gaganyaan project.

Kum Anu Narayan

Pushpak RLV LEX-02 *landing experiment*

India's quest to develop **reusable launch vehicles (RLVs)** reached a major milestone when a winged rocket, known as "Pushpak" or "RLV LEX-02," successfully landed on a runway in Karnataka after an experimental flight.

The mission was celebrated by ISRO Chairman S Somanath, who praised the "excellent and precise" results. ISRO proudly declared, ***"We nailed it again!"***

This real-world test involved dropping the shuttle, nicknamed Pushpak, from an Air Force helicopter and allowing it to autonomously land on a runway designed to mimic a real return from space.

ISRO stated, "The winged vehicle autonomously approached the runway with cross-range corrections. It landed precisely and came to a stop using its brake parachute, landing gear brakes and steering system."

This successful flight marks Pushpak's third test, proving its ability to land under increasingly challenging conditions. Although it may be a few years before Pushpak is ready for operational use, each test brings India closer to its goal of affordable and sustainable space travel.

ISRO reused the winged body and flight systems from a previous mission for the RLV LEX-02 test, demonstrating the potential for recycling flight hardware and systems. The airframe and landing gear were strengthened based on data from earlier flights.

Pushpak's development is an ambitious effort to make space access more affordable for India. Recovering and reusing the rocket's upper stage, which contains costly electronics, could help significantly reduce launch costs. RLVs like Pushpak also have the potential to refuel satellites in orbit or retrieve old satellites for repair, helping to address the growing issue of space debris.

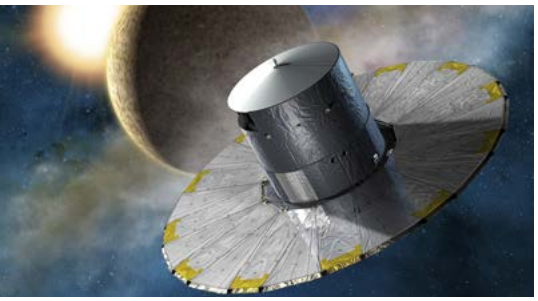
The Pushpak project showcases India's dedication to space innovation. The programme has been a team effort over the past decade, with numerous engineers and scientists working on its development. Pushpak's earlier test flights in 2016 and 2023 also demonstrated successful landings, highlighting India's consistent progress in RLV technology.

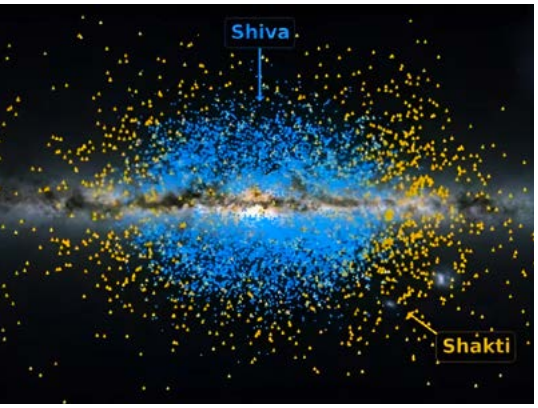
Inspired by the mythological flying chariot, *pushpak viman,* India's reusable space shuttle represents the nation's aspirations for self-reliance in space technology. With continued achievements and government support (over ₹100 crores in investment, roughly USD 12 million), India aims to join the leading nations in reusable launch technology.

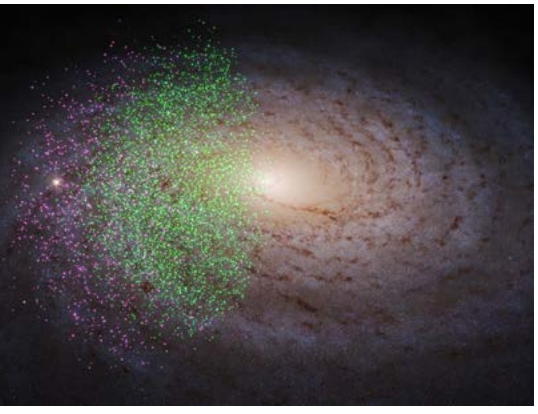
Kum Kavya R

Shiva & Shakti

Two ancient streams of stars discovered







European Space Agency's Gaia telescope has discovered two streams of stars that formed and wove together over 12 billion years ago. The two streams, fittingly named after the divine couple in Hinduism who unite to create the universe - Shakti and Shiva, contributed to the formation of the Milky Way galaxy.

"What's truly amazing is that we can detect these ancient structures at all," says Khyati Malhan of the **Max Planck Institute for Astronomy (MPIA)** in Heidelberg, Germany, who led the research.

The Milky Way is a spiral galaxy that contains our solar system, along with billions of other stars, planets, asteroids and other celestial objects. But 12 billion years ago, our galaxy looked very different from the spiral we see today. Astronomers have theorised that our galaxy formed as multiple long, irregular filaments of gas and dust that have come together to form stars and wrap together into a spiral structure. Shiva and Shakti are two of the many components that have played a crucial role in this formation.

Shiva and Shakti are very similar, but not identical. Both streams contain around 10 million suns each, with stars that are 12 to 13 billion years old, moving in very similar orbits and similar compositions. Both streams are located towards the Milky Way's heart. Gaia explored this part of the Milky Way in 2022 and found this region to be filled with the oldest stars in the entire galaxy, all born even before the disc of the Milky Way formed properly.

The stars in this area are so ancient that they lack many of the heavier metals created during the later part of the universe's expansion. The heavy metals we are able to trace today were forged within these stars and scattered through space when they died. "The stars in our galaxy's heart are metal-poor, so we dubbed this region the Milky Way's 'poor old heart'," says co-author Hans-Walter Rix.

Gaia has been instrumental in developing this family-tree of our galaxy by discovering various components that have played a role in the galaxy's formation. Understanding and mapping out the various kinds of stars in our galaxy will give us great insights about how our galaxy formed and evolved.

Smt Ghana Saraswathy M

900-year-old Chalukyan inscription found

In a remarkable archaeological discovery, a 900-year-old Kannada inscription dating back to the **Kalyana Chalukya dynasty** has been found in Gangapuram, Telangana. The inscription, found in a neglected state near the Chowdamma temple, provides a rare glimpse into the administrative and religious practices of one of the most prominent dynasties in Indian history.

Dated to 8th June 1134 CE, the inscription reveals details about toll taxes remission under the reign of Tailapa-III, son of the illustrious **Kalyana Chalukya Emperor 'Bhulokamalla' Someswara-III.** These taxes, known as ***Vaddaravula*** and ***Hejjunka,*** were directed towards funding a perpetual lamp and incense for the deity Somanatha. Such religious endowments were common during the Chalukya era, highlighting the fusion of administrative governance with religious patronage.

The Kalyana Chalukya dynasty, renowned for its architectural marvels and military prowess, dominated much of present-day Karnataka and parts of Andhra Pradesh and Telangana between the 10th and 12th centuries. Their conquests extended from the Western Ghats to the eastern coast, establishing a powerful empire that left a permanent mark on South Indian history.

Notable among their conquests was the annexation of the Western Deccan region, including the Raichur Doab and parts of Maharashtra. Despite their military might and cultural achievements, the Chalukya dynasty faced periods of internal strife and external invasions. However, through their contributions to governance, religion and culture, their legacy endured shaping the socio-political landscape of medieval South India.

The discovery of this inscription not only highlights the historical significance of the Chalukyan era but also underscores the importance of preserving and understanding our rich cultural heritage. Efforts by archaeologists and local authorities to protect and relocate the inscription signify a collective commitment to honouring and safeguarding our past for future generations.

In uncovering this 900-year-old artefact, we are not just deciphering ancient scripts but unlocking the secrets of a bygone era, bridging the gap between the past and the present and enriching our understanding of India's vibrant history.

DO YOU KNOW ?

The capital of the Chalukya dynasty was Badami, located in present-day Karnataka. Badami was a strategically important city, situated on the banks of River Malaprabha.

ICF in Rapid Transit Mode

ICF is one of the earliest production units of modern India. It was inaugurated on 2nd October 1955.

Railway coaches in India are manufactured in three factories:

- **Integral Coach factory (ICF)**, Chennai in Tamil Nadu,
- **Rail Coach Factory (RCF),** Kapurthala in Punjab and
- **Modern Coach Factory (MCF)** at Rae Bareli in Uttar Pradesh.

Coaches produced in FY'24	
ICF	2829
RCF	1901
MCF	1684

The total coach production plan for the three units put together, released in March 2024 for the next fiscal pegs the target at an ambitious level of 8145 coaches. While all the three manufacturing units did extremely well in FY 24, surpassing their previous best numbers, ICF added many feathers to its cap.

About ICF

ICF is one of the earliest production units of modern India. It was inaugurated on 2nd October 1955. It has a shell division and a furnishing division. The furnishing division was inaugurated on 2nd October 1962. The shell division manufactures the skeleton of the rail coach, the furnishing division does the interior furnishing, exterior painting, electrical equipment and testing.

ICF manufactures many varieties of coaches including IC coaches, **Linke-Hoffman-Busch (LHB)** Coaches, Metro coaches, **Diesel Electric Multiple Units (DEMUs)**, **Electric Multiple Units (EMUs)** and **Mainline Electric Multiple Units (MEMUs)**.

The original Swiss design coaches were called the ICF coaches. From 2018 the coaches designed by LHB Germany replaced the ICF coaches. ICF developed a semi-high speed train-set that was fully air-conditioned and equipped with modern facilities and capable of reaching speeds up to 160 kph. The first prototype of this was completed in 2018 and it was renamed as Vande Bharat Express the first of which was flagged off in February 2019.

EMU is a multiple unit train consisting of self-propelled carriages using electricity as the motive power.

ICF also exports bogies and coaches to countries like Thailand, Bangladesh, Nepal, Mozambique, Myanmar, Sri Lanka, Vietnam and others.

Record-breaking 2023-24

ICF manufactured 2,829 coaches in 2023-24, an increase over 2,702 in FY 23.

The production in FY24 was the highest number of **DPRS (distributed power rolling stock)** coaches with 1,091. The earlier high being 996 in FY 19. The remaining 1,738 were LHB coaches. DPRS type of coaches include coaches for Vande Bharat train sets, Electric Multiple Units, Mainline Electric

Distributed power rolling stock is equipped with a regenerative braking system with the help of 3-phase induction motors. The 3-phase motor acts as a generator and produces electricity from the kinetic energy of moving train wheels while braking.

Multiple Units, Self -propelled Inspection Cars and Self-propelled Accident Relief Trains.

Another highlight of the FY 24 production was the manufacture of number of 51 Vande Bharat rakes as against the 12 of the previous year. Out of this 45 rakes were with 8 cars and 6 rakes with 16 cars each. During FY24, two rakes of 22 coaches each for Amrit Bharat Express, which provides better facilities for long distance passengers in unreserved coaches, were also manufactured.

ICF also manufactured the highest number of 19 Self-propelled Inspection Cars for safety inspections in the Zonal Railways in FY 24. The introduction of the first Oscillograph Monitoring Car for the **Research Design and Standards Organisation** (RDSO), Lucknow, to validate the quality of passenger journeys in new coaches was another feather that the ICF added to its cap in FY 24.

In the current financial year FY 25, ICF is expected to start production of Vande Metro. It could also start manufacturing of Vande Sleeper, once the prototype rolled out of BEML is approved.

Unlike in the past, in the India of 2024 even the public sector entities have become target oriented. In this journey, they are sharply focused on productivity and efficiency. No wonder the Indian Railways is in the Rapid Transit Mode to serve the people better.

Smt Uthra Dorairajan

Kodaikanal Solar Observatory

celebrates 125th anniversary

Numerous studies of the planet Venus, Nova Aquilae and of Sirius have put this observatory in the map of stellar spectroscopy even by early 1900s.

A Nova is a transient astronomical event causing the sudden appearance of a bright apparently new star that slowly fades over weeks or months.

Nova Aquilae was a bright nova first observed in the constellation Aquila.

Nature dominated by Sun as the source of energy has been a huge fascination for humans for ages. Every culture has been inspired by Sun since ancient times. No wonder, it is central to mythology and religions around the world. We are aware from our science books that the connection and interactions between the Sun and Earth drive the seasons, ocean currents, weather, climate, radiation belts and auroras. This special star holds the solar system together, keeping everything – from the biggest planets to the smallest debris in its orbit. Mankind has been trying to understand about this powerful source energy by collecting details. This search has resulted in evolution of theories and multitude of instrumentation techniques.

With the idea of making solar observations under tropical skies gaining ground in late 1800s, search for a suitable site extended over the entire Indian subcontinent. With Lord Kelvin in the chair, the decision was taken to establish a Solar physics Observatory at Kodaikanal and was established in 1899. Numerous studies of the planet Venus, Nova Aquilae and of Sirius have put this observatory in the map of stellar spectroscopy even by early 1900s.

KSO has for over a century been the principal centre of activity in observational solar and atmospheric physics. Since 1905, it has the record of having captured Sun's images in white-light and Ca-K and Hydrogen-

alpha wavelengths on photographic plates. This makes it unique and an important observatory as these offer an excellent opportunity to study solar surface magnetic field over more than a century. Images from this observatory provides crucial data for carrying out the studies of long-term activity on the sun to understand the history of the Sun's activity and solar influence on Earth's climate.

Radio observations of the sun from KSO date back to the early 1950s. In India, the earliest recording of the solar radio noise flux commenced here by using **Yagi antennas**. Following this success, recording of radio radiation from Jupiter at a frequency of 22.2 MHz was started under the Kodaikanal - Yale Project. In late 1960s and early 1970s, research on outer solar corona was initiated using antenna arrays.

With advancements in technology to gather better data, twin telescopes were installed in 2008, to make observations of sun in Ca-K wavelength and white-light. Later this was replaced by much upgraded **WARM (White light Active Region Monitor)** telescope. With the help of Ca-K filter, this telescope is making full disk observations of the photosphere and chromosphere of sun simultaneously.

Beginning of the 21st century witnessed a global network of H-alpha telescopes to observe sun's activity through an entire day. **To catch up with this trend, our country designed and installed a Hydrogen-alpha telescope in 2014 at Kodaikanal Astronomical Observatory.** With the additional optics, this telescope makes full-disk image of the sun every day.

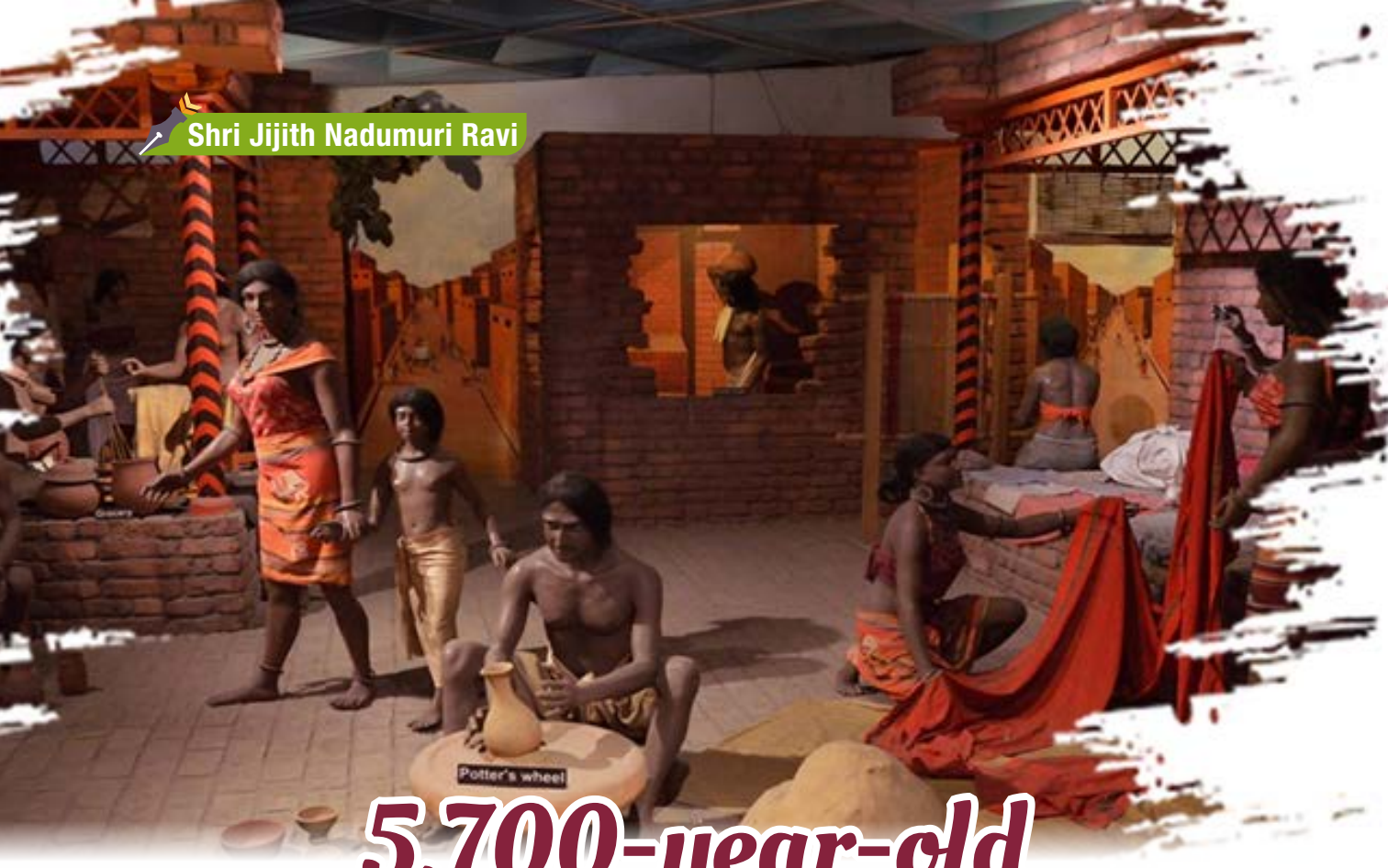
Public can access/request for these data and cumulative spectrum published in their website. **This uninterrupted series of photographs continue unto the present day, and form one of the most unique collections of a record of solar activity available anywhere in the world.** This is a premier institution devoted to research and education of astronomy and physics in the country.

To promote interest among public, this observatory hosts an astronomy museum and arranges for night-sky watch on campus for the visitors and astro enthusiasts. Kodaikanal Observatory is under the Indian Institute of Astrophysics funded by the Department of Science and Technology of our government.

Ca-K (Calcium K) viewing uses an interference filter to zero in on the wavelength of 393.4 nm (nanometre). This emission line is one of two that are produced by Calcium just at the edge of the visible spectrum.

A nanometre is equal to one billionth of a metre.

Shri Jijith Nadumuri Ravi



5,700-year-old Harappan settlements

Recent years have witnessed many exciting archaeological discoveries in India. These include discovery of OCP Copper Hoard weapons like Antenna swords between Hastinapura and Ayodhya in Uttar Pradesh dated to 2500 BCE in February 2024, and a settlement of 3700 BCE (5700 years ago) in Kutch, Gujarat in 2018.

All of these discoveries elevate the antiquity of the Vedic and *Aitihāsic* civilisation of Bharata by few centuries into the past.

The discovery of 2018 was a Harappan settlement of 200 x 200 meters at Padta Bet hillock in Kutch. Archaeologists involved in the site have ascertained that a river flowed behind the hillock once. They add: "we have also found remains of cows and goats. We can say that the settlers here were involved in animal husbandry.

Also found were remains of a human skeleton." There were circular and rectangular structures / habitats. Many pots and dishes were found. Semi-precious stones like carnelian and agate, shell fragments and hammer stones were found at the site. The settlements were populated from pre-Harappan Period to Late Harappan Period.

Dr Subhash Bhandari, head of the archaeology department at Krantiguru Shyamji Krishna Verma Kachchh University said they are now focusing on unearthing more about the link between the burial site and the settlement. "We will try to learn more about the people who lived there. This site is on a hillock, so they have a clear view of the surroundings. We will try to determine whether that was from a strategic point of view or due to water availability nearby. We will also try to find out their food habits. We have found stones, so we will explore if their occupation was largely pastoral or they were also into trade," he said.

This discovery came after the excavation of a burial site in Juna Khatiya which is located near

Padta Bet. Around 500 graves were discovered in Juna Khatiya. The two sites are separated by 1.5km. The burial site (Necropolis) might have be used by many settlements. Within Padta Bet there were two sites with archaeological remains. Population growth might have led to people spreading out from one locality to another. Nearby rivers provided the necessary source of water.

Early Harappan Period - 3300-2600 BCE

Mature Harappan Period - 2600-1900 BCE

Late Harappan Period - 1900-1400 BCE

The institutions involved in the project include several universities from the country and institutes in Spain and the US. The institutions involved in the project include the University of Kerala, Kachchh University, Pune's Deccan College, Central University of Karnataka, three Spanish institutes - Catalan Institute of Classical Archaeology, Spanish National Research Council, and University of La Laguna, Albion College and Texas A&M University.

The Harappan Civilization is otherwise known as the **Indus Valley Civilization (IVC).** It is redefined as the **Sarasvatī Sindhu Civilisation (SSC)** because the largest density of the settlements in this civilization is found along the Sarasvatī River.

The discovery aligns with the chronology of Ṛgvedic composition detailed in recent books titles Rivers of Ṛgveda, Geography of Rāmāyaṇa and Geography of Mahābhārata (Volume 1 and 2) where the continuity of the Ṛgvedic Period into the Aitihāsic Period of Rāma and the Pāṇḍavas are detailed.

These books indicate that both Ṛgveda and Harappan Civilization have the same geographical extent! They both extend from (the present) western Uttar Pradesh to eastern Afghanistan. The rivers mentioned in Ṛgveda start with Gaṅgā in the western Uttar Pradesh and end with Kubhā (Kabul River) in the eastern Afghanistan. Both the Ṛgvedic geography and Harappan IVC / SCC geography extend from Kashmir in the north to Gujarat in the west.

The two large rivers mentioned in Ṛgveda, Sarasvatī and Sindhu (Indus) both run southwards and drain into the southern sea around Gujarat. Sarasvatī starts from the Himalayan foothills and flows into Kurukṣetra of Haryana. Then it turns southwest and flows into Pakistan. It runs parallel to Sindhu and drains into the sea. Sindhu drains into Arabian Sea close to Karachi in Pakistan. Sarasvatī drains into the Rann of Kutch which was a navigable shallow sea 3500 years ago. Then sea-ports in this region like Dholavira were very active with sea-trade connections with other civilizations like Mesopotamia.

A detailed reading of the two well-known Aitihāsas and references in ṚgVeda help us to evaluate the findings of the 3700 BCE settlement of Kutch.

Samudra mentioned in Ṛgveda is identifiable only with the sea neighbouring Gujarat. Often four distinct seas are mentioned in RgVeda. These include 1) Arabian

Sea, 2) the sea-gulf of Kutch, 3) the sea-gulf between Kutch and Kathiawar peninsulas and 4) the sea-gulf of Khambhat. The river Narmada drains to the Gulf of Khambhat.

The recent findings and the excavations of the now famous Dholavira throw interesting perspectives into how we view our civilisation. Dholavira is bounded by rivers Mansar in the north and Manhar in the south. In Mahābhārata and Harivamśa it is mentioned as a quadrangular city bounded by rivers and located on an island close to the Sarasvatī-Sāgara-Saṃgama (where Sarasvatī joins the sea). Dholavira was active in the 2650-1450 BCE period. It was abandoned once in 1900-1850 BCE and again in 1750-1650 BCE. Dvāraka was built on the ruins of the abandoned city named Kuśasthalī. After the life of Kṛṣṇa, Dvāraka submerged and was abandoned again. These two abandonments of the Kuśasthalī-Dvāraka Island align with the two desertion phases of Dholavira.

In the light of extensive analysis and readings of various archaeological findings, references in the two Aitihāsas, we can identify the 3700 BCE settlement and burial sites in Kutch with the pre-Ṛgvedic people.

The migration from the Kutch region northward along Sarasvatī occurred before 3300 BCE. It might have started as early as 9600 BCE marking the end of Ice Age and the start of the Mesolithic Period, retreat of glacial ice, and rise in sea level.

The finding and dating of the remains of this Harappan site, coming close on the heels of the findings of the third phase of excavations at Rakhigarhi go on to tell us that it will be quite some time before we fully understand the full extent of the geographic spread of what most experts would like to call as IVC/SSC. During the December 2023 press note, this is what Dr.Prabhodh Shirwalkar assistant professor, Deccan College Pune said on Rakhigarhi : "The most beautiful are the clay pots. A dinner set from that period has been found."

"We think that the words bedroom and kitchen are of recent origin. Whereas in Rakhigarhi, an even larger settlement of the largest ancient houses ever was found underground. A courtyard and a drainage system were also found in it. There were two to six- bedroom houses that were also available at that time. The clothing fashion of the people of that time is also known. A colourful worn piece of cloth, a shawl and skirt were also found," he said.

"This research has found strong evidence that the Harappan civilisation is 7,000 to 8,000 years old. Scientists from the department of archaeology of India and Deccan College have worked together on the project. It is agreed that there was human habitation or civilisation in our country 8,000 years ago. The evidence shows that the people of that time were as advanced as they are today," said Shirwalkar.

In the light of all these, it isn't surprising that the NCERT (in a note sent to CBSE during the first week of April 2024) has sought to make revisions to hitherto disseminated information of Harppan (IVC/SSV) civilisation.

Shri Sampath D

Record growth in Indian defence exports

Defence exports have touched a record ₹ 21,083 crore (USD 2.63 Billion approx) in the Financial Year 2023-24, a growth of 32.5% over the last fiscal when the figure was ₹ 15,920 crore. The recent figures indicate that the defence exports have grown by 31 times in the last 10 years as compared to FY 2013-14.

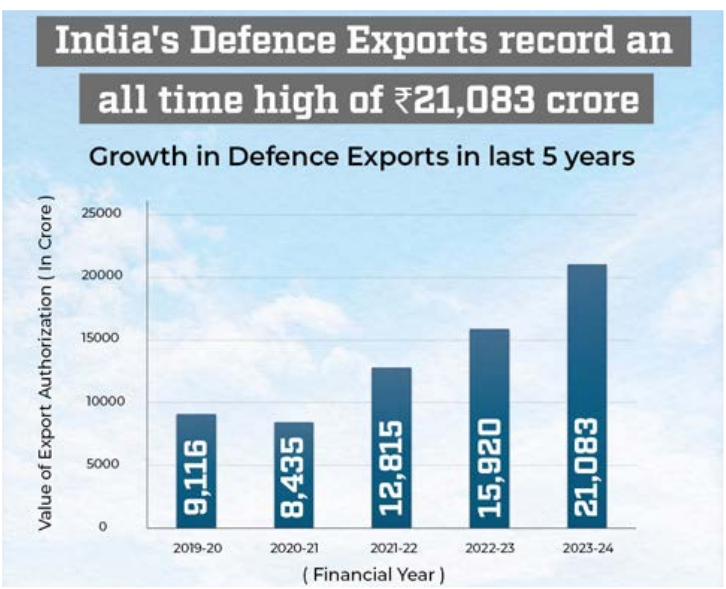
The defence industry, including the private sector and **defence public sector undertakings (DPSUs),** have made tremendous efforts in achieving the highest-ever defence exports. The private sector and the DPSUs have contributed about 60% and 40% respectively. There has been a sharp rise in the number of export authorisations issued to defence exporters during FY24. From 1,414 export authorisations in FY23, the number has jumped to 1,507 export authorisations in FY24.

Total defence exports between 2014 and 2024 are given bellow:

Total Defence Exports	
2004-2014	₹ 4312 crores
2014-2024	₹ 88,319 crores

This remarkable growth has been achieved due to the policy reforms and **'Ease of Doing Business'** initiatives brought in by the Government, in addition to the end-to-end digital solutions provided to the Indian industries for promoting defence exports. This growth is a reflection of global acceptability of Indian defence products and technologies.

The Defence Ministry has taken several initiatives under Prime Minister Modi's leadership, to spur India's defence manufacturing and exports. India's defence manufacturing capability is a reflection of **'Atmanirbhar**



Bharat'. India's total defence manufacture stands at a monumental ₹ One lakh crore. It only proves that India is becoming self-reliant (Atmanirbhar) and leaders across the world acknowledge that 21st century shall belong to India.

India achieved significant success in expanding its defence manufacturing capabilities, which led to a boost in exports last year. The Ministry of Defence attained a historic success the previous year by witnessing a surge in defence exports. The rise in exports has led to an increase in global interest in Indian defence products like LCA-Tejas, light combat helicopters, aircraft carriers and more.

India is exporting its locally manufactured defence products to over 85 countries, showcasing the prowess of its defence industry. Over 100 firms are actively exporting defence products. Multiple sophisticated defence systems including 155mm Advanced Towed Artillery Guns, Brahmos Missiles, etc., have been exported to other countries. India has set ambitious targets, aiming for an annual defence production of ₹ 3 trillion by 2028-29. Exports of military hardware are projected to reach massive numbers with emphasis on indigenization and self-reliance in defence manufacturing.

The government's commitment to boosting defence exports is evident through continuous efforts to enhance indigenous capabilities and facilitate a conducive business environment. Defence Minister Rajnath Singh has reiterated India's resolve to achieve self-reliance in defence production and become a net exporter of defence equipment.

Tensions with neighbouring countries continue to drive India's arms imports to reduce the gap, necessitating a comprehensive approach towards bolstering indigenous defence capabilities.

Shri Sridhar P

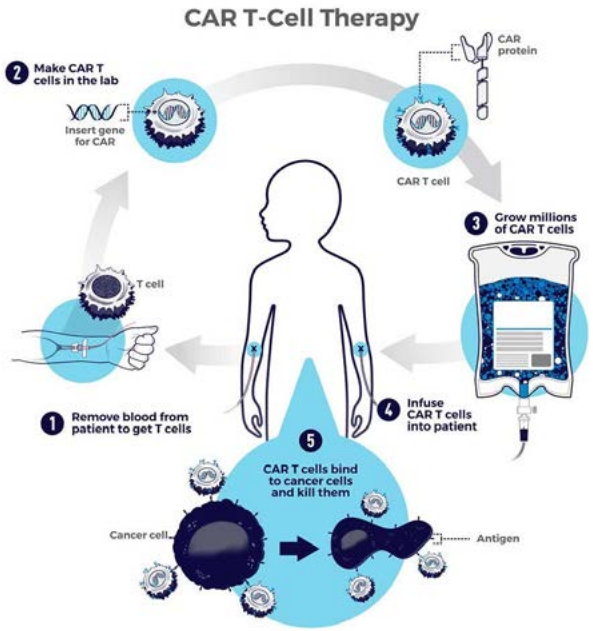
India's first gene therapy for cancer

President Droupadi Murmu launched India's first home grown anti-cancer therapy **NexCAR19CAR-T.** This therapy for cancer is considered a phenomenal advance. It has been available in advanced countries for some time but is prohibitively expensive. This NexCAR19 CAR-T cell therapy was developed by **Prof. Rahul Purwar,** from the Department of Biosciences and Bioengineering, IIT Bombay, in association with Immuno ACT, a startup he founded along with his students at Tata Memorial Hospital, which was involved in the project. This indigenously developed technology costs 90% less than the ones developed abroad.

Understanding cancer

The medical world has been impressive in unravelling the mysteries of cancer biology. The established therapies have always been chemotherapy, radiation and surgery. However the human genome project was pivotal and paved the way in understanding the genetics behind cancer. Cancer is a medical condition where the cells divide uncontrollably.

Scientists have now established the presence of oncogenes in human cells. The activation of oncogenes through mutations in DNA and the inactivation of tumour suppressor genes are thought of as one of the factors behind cancer development. Cancer is an expansionist disease, invading tissues establishing colonies and surviving inventively. The risk of cancer seems to increase with age. Mutations in cancer genes seems to accumulate with aging.



CAR-T therapy in cancer

Precision medicine, delivering genetically modifying immune cells is at the forefront of targeted therapy in cancer. A special kind of cell called T cells mount the immune response in our body. These T cells are harvested from the patient's body, reengineered in the lab and then reintroduced into the patient's body. The genetically modified T cells produce proteins on the surface called **Chimeric Antigen Receptors (CAR)**, which bind to specific proteins or antigens that are present on the surface of cancer cells and proceed to kill them.

This ground breaking research in the field of bioengineering using latest techniques of **gene splicing** often referred to as **molecular scissors** has enabled Indian scientists to master precision medicine to combat various types of cancer. Such Industry academia cooperation brings cutting edge technology for commercial use faster.

Development of CAR-T technology puts India on the coveted map of countries that can use gene splicing techniques for drug development, bringing down the cost of therapy significantly to benefit patients.

Smt Meenakshi S

Shakti
a festival of music and dance

Sangeet Natak Akademi is India's largest national-level academy of music and drama established by the Government of India in 1953 through a parliamentary resolution and later reorganized in 1961. The headquarters of SNA is located in New Delhi. The academy plays a vital role in promoting and preserving the cultural heritage of India.

Shaktipeeths are sacred sites in Hinduism associated with the Goddess Shakti or Devi, the divine feminine energy.

Today India is a nation of a billion aspirations with a robust economy, assertive nation-first diplomacy, brave defence forces and a growing soft power but it has always been a land where people sought inner peace and genuinely tried understanding the secret behind every creation. The world has always looked at India with awe for its varied culture and tradition. The ministry of culture under the Government of India keeps patronising this richness through various performing arts like music, dance, drama, folklore, ethnic arts and related art forms that are deeply embedded in the fabric of our culture.

In order to preserve the temple traditions associated with the Shaktipeeths, **Sangeet Natak Akademi (SNA)** a respected organization under the Ministry of Culture, Government of India, had launched a vibrant '**Shakti-Sangeetha Nritya Mahotsav**' to commemorate the auspicious festival of Navratri. Navratri is a major Hindu festival celebrated for nine days when devotees pay homage to the divine feminine power of Goddess Durga in her nine different forms.

The theatrical extravaganza was inaugurated on 9th April 2024 at the famous Kamakhya Temple in Assam. Subsequently the events were organised at the other Shaktipeeths.

Mahalakshmi Temple, Kolhapur (Maharashtra)
Jwalamukhi Temple, Kangada (Himachal Pradesh)
Tripura Sundari Temple, Udaipur (Tripura)
Ambaji Temple, Banaskantha (Gujarat)
Jai Durga Shaktipeeth, Deoghar (Jharkhand)

The grand finale was held at Shaktipeeth Maa Harsiddhi Temple, Ujjain (Madhya Pradesh) on 17th April 2024.

Through 'Shakti - Music and Dance Festival', SNA invited audiences to participate in the paradigm of our temple tradition with devotion, passion and excellence in artistry. The festival not only showcased artistic genius but also created a deeper connection to our spiritual roots during this holy season of Navratri.

Smt Archana Sundar

India secures management of Sittwe Port

In a significant development for India's maritime strategy, the Ministry of External Affairs (MEA) has approved a proposal for **India Ports Global (IPGL)** to manage the Sittwe Port in Myanmar. This marks India's second international harbour management endeavour after its involvement in the Chabahar Port in Iran.

IPGL, a joint venture between Jawaharlal Nehru Port Trust (JNPT) and Deendayal Port Trust, was established in 2015 under the Ministry of Shipping with a focus on extending harbour facilities overseas. Its role has now expanded to include the management of the entire Sittwe Port, situated on the Kaladan River in Myanmar.

Sittwe Port is a crucial component of the broader Kaladan Multi-Modal Transport Network, a collaborative initiative between India and Myanmar aimed at connecting India's Eastern and North-Eastern regions via Myanmar. By reducing transportation costs and distances, this network provides an alternative trade route that bypasses the congested Siliguri Corridor and Bangladesh, benefiting the northeastern states of India.

Strategically positioned on Myanmar's Arakan coast, Sittwe Port is a deep water facility capable of accommodating large vessels efficiently. This location not only facilitates maritime trade routes but also offers a smoother and more cost-effective outlet for goods from India's northeastern region.

Furthermore, the port's proximity to the Indian Ocean and the Strait of Malacca enhances India's maritime connectivity and trade routes, bolstering regional security amidst the evolving dynamics in the Indian Ocean Region (IOR), particularly concerning China's increasing assertiveness.

India's acquisition of Sittwe Port reflects its commitment to safeguarding strategic interests in the IOR and expanding economic and naval capabilities. By leveraging such partnerships and initiatives, India continues to strengthen its influence and presence in the critical maritime domain, ensuring greater connectivity and prosperity for the region.

This move underscores India's growing focus on international collaboration and its vision for a more integrated and secure Indian Ocean region, where ports like Sittwe emerge as pivotal players in shaping regional trade and security dynamics.

Shri Nagarajan R

Gopi Thotakura
to be the first Indian space tourist

In a leap towards the cosmos, humanity's quest for the stars is about to reach new heights as Gopichand Thotakura, a visionary pilot and entrepreneur, prepares to etch his name in history as the first Indian space tourist.

The thrill of soaring through the cosmos, the weightlessness of space embracing you and the awe-inspiring view of our planet from above are the adventure that awaits Gopi aboard Blue Origin's NS-25 sub-orbital mission. This journey will take him beyond the **Kármán line,** the boundary that marks the edge of space. The orbital spacecraft, on the other hand, takes passengers much further than the Kármán line. Usually, passengers can spend from a couple of days to more than a week at an altitude of nearly 1.3 million feet.

Gopi is a skilled pilot and aviator with a wealth of experience, who learned to fly aircraft before he could even drive a car. His journey in aviation continued with a Bachelor of Science in Aeronautical Science from Embry-Riddle Aeronautical University. He served as an international medical jet pilot and recently ascended the summit of Mt. Kilimanjaro.

This space mission marks a new chapter in sustainable space exploration, with a focus on reusability and environmental responsibility. The New Shepard rocket reuses nearly 99% of its dry mass, including the booster, capsule, engine, landing gear and parachutes. The engine is powered by liquid oxygen and hydrogen, producing only water vapour as its byproduct.

As the countdown to launch begins, anticipation mounts for the moment when Gopi and his fellow explorers take their place in history, carrying the dreams and aspirations of a generation with them.

In 2023, the space tourism market was valued at USD 848.28 million. It is expected to grow to USD 27,861.99 million by 2032. However, there are several challenges, such as high cost, safety and environmental concerns that may limit the industry's growth.

DO YOU KNOW ?

Wing Commander Rakesh Sharma, a former Indian Air Force pilot, was the first Indian to travel into space, he flew to the Salyut 7 space station on a Soviet spacecraft in 1984.

Smt Archana Sundar

Record-breaking visits to Kaziranga

Nestled in the verdant landscapes of Assam, **Kaziranga National Park and Tiger Reserve (KNPTR)** has emerged as a beacon of biodiversity and a magnet for wildlife enthusiasts. The park's recent surge in visitors and revenue during the 2023-24 fiscal year signifies a remarkable milestone in its history.

This influx resulted in a record revenue of INR 88,184,161, a substantial rise from the previous year's INR 83,385,383.

Established officially in 1974 (though with roots dating back to 1905), Kaziranga has evolved into a cherished destination renowned for its iconic inhabitants, notably the endangered one-horned rhinoceros. The park spans 430 sq km and boasts diverse landscapes that provide a safe haven for numerous species, including tigers, elephants, wild water buffalo and myriad bird species.

Visitors to Kaziranga are treated to captivating wildlife safaris, offering glimpses of these majestic creatures in their natural habitats. The park's sprawling grasslands, intertwined with winding water bodies like the Brahmaputra River, create a picturesque setting that enchants nature enthusiasts and adventure seekers alike.

Beyond wildlife experiences, Kaziranga offers a range of activities - from elephant safaris and jeep rides to bird watching and nature walks. The park's eco-tourism initiatives allow visitors to engage with local communities and witness conservation efforts first hand.

The recent tourism boom has been attributed to several factors, including increased travel post-pandemic, growing interest in wildlife tourism, and new initiatives such as tea tourism. Tea tourism, introduced in February, invites visitors to explore the region's tea culture, providing an immersive experience in the art of tea production.

Additionally, innovative programmes like **"Kazir Ronghangpi Tales"** celebrate the cultural legacy of Kaziranga and its surroundings, enhancing the overall visitor experience. Cycling in Kohora, Panpur jeep safaris, and boat safaris in Biswanath Wildlife Division further enrich the range of activities available.

As the current tourist season draws to a close with the onset of the monsoon in late April or early May, Kaziranga continues to leave an indelible impression on all who visit. Its breath-taking landscapes, rich biodiversity and commitment to conservation make it a must-visit destination for families and wildlife aficionados seeking an unforgettable encounter with nature.

Kum Kavya R

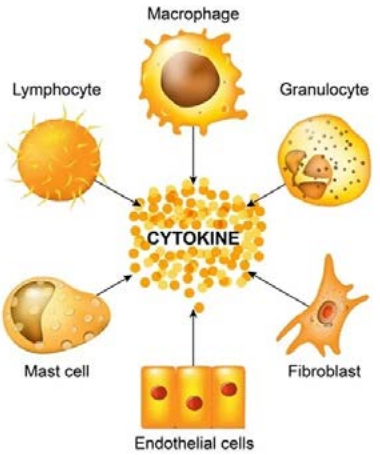
Nano sensor
for disease tracking

Researchers at the Indian Institute of Technology, Jodhpur have developed a nano sensor that helps in the detection of cytokines, one of the many biomarkers of inflammation that are used for diagnosing diseases and tracking their progression. Developed by Prof. Ajay Agarwal and his team, this nano sensor doesn't merely facilitate expedited disease diagnosis, it can also make a huge difference by offering rapid medical support.

Cytokines are small proteins that are crucial in controlling the growth and activity of immune system cells and blood cells. They play a vital role in tissue damage repair, monitoring cancer development and progression, and modulating immune reactions. This is why they play a key role in developing precision medicine and targeted therapeutics in various branches of medicine such as oncology, infectiology and rheumatology.

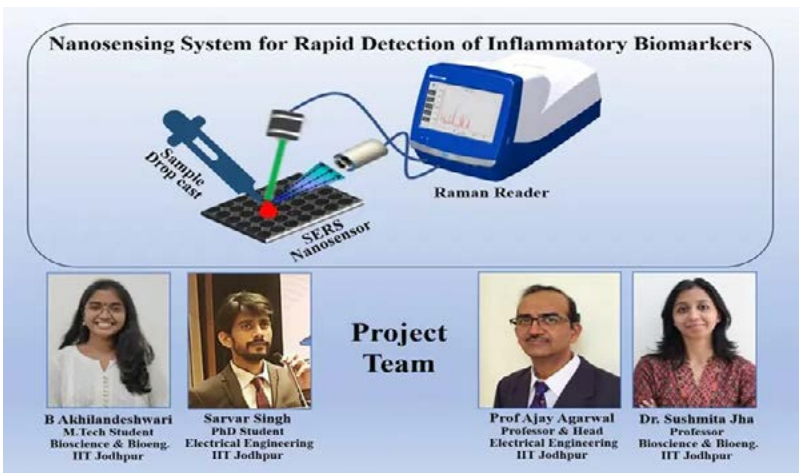
The nano sensor has shown promising results in early detection of three biomarkers released by inflammatory cells: interleukin-6 (IL-6), interleukin-b (IL-b), and TNF-a. The sensor uses Surface Enhanced Raman Spectroscopy, a highly sensitive technique that lets scientists study how molecules behave and interact with each other based on how each molecule scatters light rays. This is based on the principle of **Surface Enhanced Raman Scattering (SERS)** which allows us to detect even trace level molecules with high precision and selectivity.

The most widely used cytokines detection techniques are **enzyme-linked immunosorbent assay (ELISA)** and **polymerase chain reaction (PCR).** These tests are highly time-consuming and require trained experts. Sample preparation and analysis time can take more than 6 hours. On the other hand, the nano sensor is combined with AI for quick and highly accurate data processing, bringing down the analysis time to just 30 minutes.



At the moment, the nano sensor has been tested on controlled samples, but the team aims to start clinical trials soon. The same technique is also being used by the team to develop detection methodologies for diagnosing sepsis and fungal infection at an early stage.

Delayed diagnosis or lack of early warnings cause many deaths. Fast and robust diagnosis of a person's autoimmune diseases and bacterial infections will reduce the number of fatalities.If this technology clears clinical trials, it can completely transform how a patient is diagnosed and treated.



Infectiology - a medical speciality dealing with the diagnosis and treatment of infections.

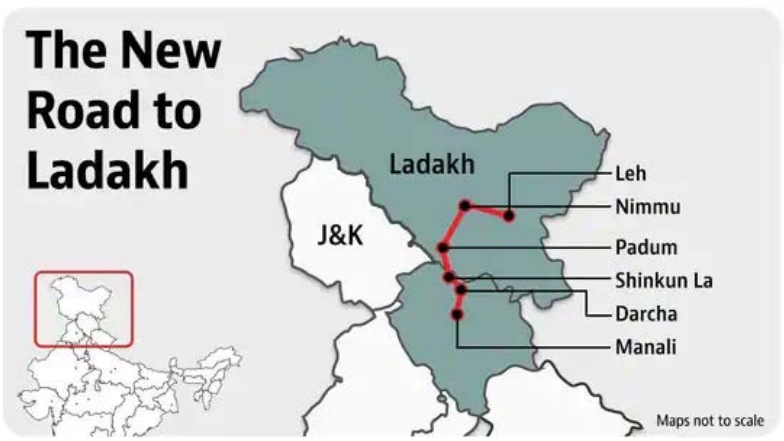
Col Shashidhar M V (Retd)

NEW ROAD TO LADAKH

Background

A new road from Manali to Leh to establish a third link between the mountainous regions and the rest of India has been in the pipeline for the past three years to provide alternate connectivity to Sub-Sector North (SSN), Daulat Beg Oldi and other strategically-important areas. This new road to Ladakh will provide not only infrastructural advancement by pre-positioning equipment and material in case of combat with both adversaries but also assist forward posturing of troops and tanks without the enemy coming to know about it.

The erstwhile road through Zojila pass running through the Drass-Kargil axis to Leh was used for deployment of own troops, artillery and other heavy equipment. As this route witnessed heavy shelling by Pakistan during the 1999 Kargil war, a need was felt to open a new route which will eventually allow flexibility of options to the Army.



Construction of an All-Weather Axis

The Border Roads Organisation (BRO) successfully linked the strategic Nimu-Padam-Darcha road in Ladakh on 25th March 2024. This 298-kilometre road is poised to establish crucial connectivity from Manali to Leh traversing through Darcha and Nimu along the Kargil–Leh Highway. The road starts at Nimu, which lies on the Leh-Srinagar highway, 35km before

Leh and will serve as the third axis connecting Ladakh to the hinterland complementing the existing Manali-Leh and Srinagar axis.

Strategic significance

The new road holds immense strategic importance due to its shorter distance compared to the other two axes. Moreover, it traverses only one pass, Shinkun La, standing at an altitude of 16,558 feet. This enhanced connectivity not only bolsters defence preparedness but also promises to catalyse economic development in the Zanskar valley. This third all-weather axis to Ladakh will offer the following dividends:

- Fortify the region's connectivity and resilience.
- Provide strategic flexibility and resilience particularly during adverse weather conditions.
- The all-weather connectivity through the construction of the Shinkun La tunnel will help mitigate seasonal disruptions and facilitate year-round access to Ladakh from mainland.
- Facilitate rapid deployment of military assets and strengthen logistical support to remote border areas.
- Shorten travel from Manali to Leh by three to four hours.

Conclusion

Nimu-Padam-Darcha road is expected to unlock new opportunities for trade, tourism and infrastructure development, thereby enhancing the socio-economic well-being of local communities. The all-weather connectivity is likely to attract investments and promote sustainable growth across various sectors.

Indian Navy's heroic paradrop exercise for rescue

Col Shashidhar M V (Retd)

In a 40-hour long operation, the Indian Navy warship INS Kolkata successfully recaptured a ship from Somali pirates in the Arabian Sea on 15th March. All the 35 pirates were made to surrender, safeguarding the 17 crew members uninjured from the pirate-captured **MV Ruen** vessel.

The operation involved airdropping marine commandos (MARCOS) and combat boats by an Indian Air Force C-17 transporter aircraft. It was supported by the Indian warship **INS Subhadra, High Altitude Long Endurance (HALE RPA) drones** and P8I maritime patrol aircraft.

The entire operation shows the Indian Navy's ability to continuously track any ship on the high seas and to take coercive defensive and offensive action when needed in a joint environment.

The hijacking incidents were monitored and reported by various maritime security centres and naval forces, highlighting the collaborative effort in combating piracy.

A minimum of 17 hijacking incidents have been recorded by Indian Navy since December 2023. Indian Navy's commitment to maintaining maritime security and the safety of the seafarers made it possible to navigate through these risky waters.

Flashback

The Maltese-flagged cargo vessel was hijacked on 14th December 2023, reappeared as a pirate vessel, threatening merchant shipping in the high seas. The pirates used the Iranian- flagged fishing vessel Al Ashkaan which was hijacked earlier on 29th November 2023, off Yemen's coast, as a mother ship for this operation. The crew of Al Ashkaan consisting of 24 Pakistani nationals were taken hostage and later used in the hijacking of MV Ruen.

The Somali pirates opened fire on the Indian Navy. Responding swiftly to the threat, Indian Navy engaged the pirate vessel. The Navy then asked the pirates to surrender immediately and release any civilians they may be holding.

The crew consisted of citizens from Angola, Myanmar and Bermuda. Since 2017, MV- Ruen was the first possible hijack by Somali pirates, ultimately foiled by the Indian Navy.

Post -rescue

Following the successful rescue, the vessel was sanitized for the presence of illegal arms, ammunition and contraband materials. The pirates were brought to Mumbai for prosecution later in accordance with international law.

After the incident, MV Ruen, with its Malta flag restored, proceeded on its own power to the port of Salalah, Oman, escorted by INS Subhadra.

Col Shashidhar M V (Retd)

Anti-drone defence systems deployed along LAC

National Counter Rogue Drone policy and guidelines being drafted by the Government would require all Indian drones to have registration numbers on the lines of the vehicle registration system.

General

- The Line of Actual Control (LAC), the de-facto border with China, has witnessed significant deployment of army divisions and equipment on both sides of the border due to simmering tensions.
- Indo-Pak border has also reported nearly 350 incidents of drones originating in Pakistan dropping weapons and narcotics.
- Apart from military drones, civil, domestic drones are also a genuine source of concern for security agencies. India's liberalised drone-flying policy has added to the problems.
- National Counter Rogue Drone policy and guidelines being drafted by the Government would require all Indian drones to have registration numbers on the lines of the vehicle registration system.

Necessity

The ongoing Russia-Ukraine and Israel – Iran conflicts have highlighted the growing threat of missile and drone attacks prompting our armed forces to acquire a broad spectrum of UAVs from both domestic and international sources. Additionally, significant enhancements are made in our defence preparedness by developing technologically superior and modern anti-drone and anti-missile systems.

New cutting- edge system

Central to this strategic manoeuvre is the deployment of cutting-edge **Integrated Drone Detection and Interdiction Systems (IDD&IS)** developed domestically in collaboration between the **DRDO** and **Bharat Electronics Ltd (BEL).**

These systems are designed to counteract unmanned aerial vehicles (UAVs) through both jamming (soft kills) and lasers (hard kills).

- **Electro-optic infrared (EO/IR) systems are a type of sensor technology using a combination of optics and electronics to detect, track and identify objects or targets in the infrared spectrum. EO/IR systems can be used for a variety of purposes, including target acquisition, tracking, and identification.**
- **An LRF (Laser Rangefinder) is a device used to measure precise distances. Most operate on the time of flight principle by sending a laser pulse in a narrow beam towards the object. A receiver then detects the reflection of that light and accurately calculates the distance based on the time it took for the light to bounce back. Some higher end laser rangefinders are able to achieve millimeter-level precision, even over long distances.**

With a detection range of 5 to 8 km, the system can jam drones within 2 to 5 km and effectively destroy them at over 800m thus ensuring our robust defence capabilities.

Counter Drone System

The Counter Drone System (D4 System) is capable of performing real time search, detection, tracking and neutralization (Soft/ Hard Kill) of the flying drones (Micro/Small UAVs) and will provide object details (Optical / Thermal) and RF spectrum display. Counter Drone system (D4 System) is equipped with the following systems:

- **RADAR System** – Drone detection and tracking
- **EO System** – CCD, IR camera with LRF for detection and tracking of drone targets.
- **DF Counter Drone System-** Drone communication channel RF Detection & Jamming, GPS Jamming / Spoofing System (Soft Kill).
- **Laser Directed Energy Weapon System** (Hard Kill).
- **Command & Control Centre** (C3) with power source for complete system.

Future rollout

Seven IDD&IS units have now been deployed augmenting the **Army Air Defence (AAD)** network. Several more contracts have been inked and more are in the pipeline to overcome all previous delays.

IAF also floated initial tenders for 10 kamikaze drones-based anti-swarm drone systems, 10 mobile micro munitions-based anti-swarm drone systems and 100-200 vehicle-mounted **C-UAS (counter unmanned aircraft systems).**

Meanwhile, DRDO is actively developing advanced **Directed Energy Weapon system (DEWs)** to provide robust protection against potential drone swarms thus ensuring the nation's defence readiness.

Shri Mrithyunjay GN

Indian Army inducts Akashteer

Ever since the skies became a front for war in World War I, countries have constantly worked on improving their capabilities to engage their enemies in the air. Churchill's famous speech delivered after the success of Operation Dunkirk, ***"... we shall fight on the seas and oceans, we shall fight with growing confidence and growing strength in the air…"*** reinforces the role that superior air power played in winning the WWII as well.

It is then no surprise that the Indian Armed Forces are investing heavily in bolstering our capabilities through state-of-the-art technology. **Project Akashteer** is an indigenous project, developed by **Bharat Electronics Limited (BEL)** in collaboration with the **Indian Ministry of Defence**. It aims to revolutionize our country's air defence operations through automation and digital integration. The deployment of 'Akashteer' began with the launch of the first batch of control centres from BEL-Ghaziabad, New Delhi.

Project Akashteer's core function is to automate air defence control by constantly reporting on aerial threats. Traditionally, these were manual tasks, prone to human error and delays.

Soldiers would rely on radars and sometimes even line of sight to detect potential threats, which would then have to be manually reported before they are sent to command centres, where the reports would be analyzed and actions would be taken. This would make the process tedious and response times longer.

By digitizing the system, Akashteer aims to create faster response times to aerial threats and smoother coordination between air defence units.

How it works

Akashteer works by compiling data from various sensors, communication channels and detection methods across different places in the battlefield in real time. The data is consolidated to provide commanders a clear and detailed situational awareness across the entire battlespace, letting them make split second decisions.

Another benefit of this system is it can be mobile. As the system's control centres are designed to be vehicle-based, they can maintain operational capabilities even in challenging communication environments, while moving to best serve the needs on the battlefield.

Finally, Akashteer marks another feather in the cap of the **Atmanirbhar Bharat** (self-reliant India) initiative. Developed domestically by BEL, the project reduces dependence on foreign technology for our country's needs.

The induction of Akashteer along with several other developments across the armed forces, truly marks the beginning of a technological upheaval of our combat capabilities.

The Companies Act, 2013

The Memorandum, a relatively brief document, contains all the preliminary details of the company, including its name, registered office, objects and purposes of the business etc.

Scope of the Companies Act, 2013

As mentioned in the previous edition of this series, the Companies Act, 2013 **("Act")** governs corporate entities, primarily companies. Some of the major aspects of a company are:

(a) its charter documents,

(b) its capital structure and shareholding,

(c) its shareholders who constitute the ownership of the company,

(d) its directors, key employees, etc., who constitute the management of the company, and

(e) its employees. The Act covers all these aspects in great detail, in a substantive as well as procedural sense. We will, however, be gaining a brief insight into all these concepts and more.

Charter Documents of a Company

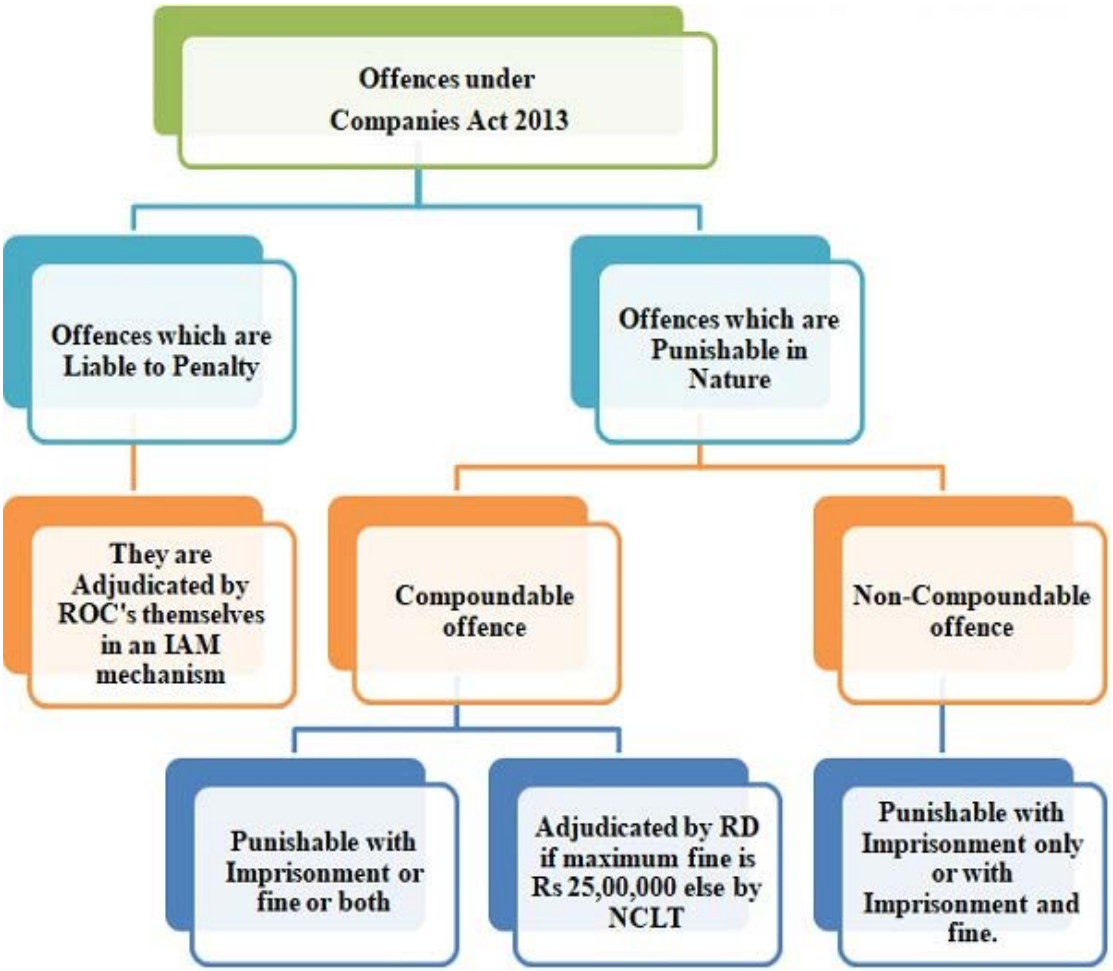
Every company has a

(i) memorandum of association **("Memorandum")** and

(ii) articles of association **("Articles")**.

The Memorandum, a relatively brief document, contains all the preliminary details of the company, including its name, registered office, objects and purposes of the business etc. The Articles are a lengthier set of rules which lay down the rights of various parties and procedure for functioning of the company. This includes provisions detailing the various rights of the persons holding shares in the company, process for holding meetings of the shareholders and the board of directors etc.

Considering that the Memorandum and Articles cover the majority of the company's details and operational aspects,



these documents are called the **'charter documents.'** The Act and the various rules framed under the Act, also specify the procedure for amending the Memorandum or Articles.

Shareholding and shareholders of a company

Every company requires money to carry on its long term and day-to-day operations. This money may be invested by the founders, their friends and family, third parties or the general public. You may recall that every valid agreement requires quid pro quo, or something in exchange for something. Accordingly, companies issue 'shares' in exchange of the money invested by any person. In the event the company generates profits, the shareholders may also get a dividend on the shares, i.e., a kind of return on their investment.

A **'share'** is a unit of ownership of the company, the amount raised by a company is called the **'share capital'** and the persons who have purchased the shares are **'shareholders'** of the company. The Act prescribes various modes of raising of capital and issue of shares by a company.

Management of a company

While the shareholders constitute the ownership of a company, there may be many shareholders in a company and often, they may not have business or leadership expertise to manage its day-to-day operations. Therefore, they entrust the rights of management of the business affairs of the company in the **board of directors** and other **key managerial personnel (KMP)** such as chief executive officers, chief operational officers, etc. The directors and KMP, who usually comprise the 'management' of a company, are paid remuneration by the company to undertake their duties.

In light of such an arrangement, **the Act also contains several provisions protecting the rights of shareholders, including minority shareholders, to ensure that the affairs of any company are conducted in a democratic and lawful manner.**

Dr.Tessy Thomas

Missile woman of India

(Born April 1963)

"It is our responsibility to figure out what went wrong to make the next attempt a successful one. And this is what science and technology is all about!"

It was the year 2014. Just a few days were left for the test launch of another prestigious AGNI missile of our country. Things did not go as expected, and there were more than 100 scientists working in different teams. A few seconds went by! "Failure should be considered as the first attempt in learning. After putting so much of work, sometimes we may miss the taste of success."

"We cannot afford to sit and brood over the hard work of so many scientists. It is our responsibility to figure out what went wrong to make the next attempt a successful one. And this is what science and technology is all about! There is always scope for learning and improvement, to find scientific solution. This is where one needs to develop inner strength and confidence, especially when you want to become a scientist!", Dr. Tessy Thomas, their leader invigorated everyone to focus on what was necessary to accomplish their mission. Known as the **Missile Woman of India**, she has been an epitome of perseverance, team-work and leadership.

Born in Kerala in 1963, life was not easy for her, as in every middle-class family. Her mother was a trained teacher but could not take up a job due to family responsibilities, while her father was an accountant. But they ensured all their five daughters and son had the freedom to study and aspired for a meaningful life. Her mother devoted her life to bringing them up and nurturing them with values. Along with love for science and maths, they were taught to savour every moment, which helped Tessy to focus on what is at hand, accepting the reality. Dr.Tessy recalls, "They encouraged us to be part of every opportunity we got, it could be

visiting a science exhibition, be part of it or go for science tour. That's how I got an opportunity to visit rocket launching station at Thumba, Thiruvananthapuram where my uncle lived. Those are very memorable moments etched in me. That fascination helped me to choose this path. I would always say these experiences we face as children are very important and this is where we need to focus."

Young Tessy obtained her B.Tech in Electrical Engineering from Calicut University. "When I first moved from my small town to Tiruchur to do my engineering in a government college, there were challenges - big and small in all forms. Even hostel food comes with its own plus and minus. I never used to bother much about any of these and managed with pickles and podis brought from home or anything that was palatable.

I would say all these are part of growing up. Nothing should matter, if we are focussed on our learning spree. Face every challenge, as these should not deter anyone from pursuing bigger life goals." In her final year, she learnt about application of RADAR system which inspired her to do M.E. in guided missiles from Institute of Armament Technology (now Defence Institute of Advanced Technology), Pune. Later she joined IAT, Pune as a faculty member in Guided Missiles in the year 1986. Soon after completing her Masters, she continued in the same institute as faculty member before moving to DRDL, Hyderabad in 1988.

She obtained her Ph.D in Missile Guidance from **Jawaharlal Nehru Technological University (JNTU)**, Hyderabad. "Being in the field of defence research, our job is not a 9 to 5 job, especially while doing research. Fabricating and designing something for the first time is always a challenge. The output may not be exactly the same as you might have expected.

Most importantly the mission in front of us has a bigger cause; whatever we do, it is for our country's defence requirements. This understanding of what we are working for, gives us the inner strength to do more and more. Self-motivation, decision-making abilities, **'I have to do'** mind-set gives us the necessary strength to complete this mission laid in front of us. Also, this definitely needs support and understanding from the family," asserts Dr.Tessy Thomas about perseverance one needs to build to become a scientist.

Dr. Tessy Thomas has been associated with AGNI Programme right from its developmental flights. She has designed the guidance scheme for long range missile systems which is used in all AGNI missiles. Under her guidance, an energy management guidance scheme was designed and developed for the first time in the country for an all-solid propelled long-range systems, for which she was conferred with **AGNI self-reliance award** in the year 2001. She has contributed in various fields such as guidance, control, inertial navigation, trajectory simulation and mission design. **She served as the Project Director for the AGNI IV and V missiles, making her the first woman to lead missile teams in India.** These are intercontinental ballistic missiles that have very high ranges.

Every nation's progress depends on its science and technology capabilities. Dr.Tessy asserts the importance of application of science as a tool to handle local

as well as global issues. She says, "Once a person understands science, it becomes much easier to use it as a tool. For an outsider, they may say that scientists are carrying a very heavy burden; but the truth is it is not so, if you are dedicated!" She held various roles and responsibilities that led to the development of strategic missile systems from 2014 to 2018. Eventually, **she took over as Director General (Aeronautical Systems) in 2018.**

"I always keep saying that science has no gender. You work as a scientist, not as a woman. It is the knowledge that matters. Of course, women do need support system and nothing should hold anyone from doing science. Perseverance and determination are something I learnt from my mother which has made me what I am today." She recalls her mother's words, "Answer to life is always YES. This is the only life you have and make the best out of it. You should not regret about the things you could not do, because you are afraid of trying. Take every opportunity that comes in your way as blessings! Consider risks as challenges and find solutions, that's when life becomes interesting. And when those challenges help society, then life becomes purposeful too."

Awards/ Accolades

2007 - DRDO award for Path breaking Research / Outstanding technology development

2008 - DRDO Scientist of the year

2011 - DRDO Performance Excellence Award for AGNI-4

2012 - DRDO Performance Excellence Award for AGNI-5

2014 - Dr. Y. Nayudamma Memorial Award

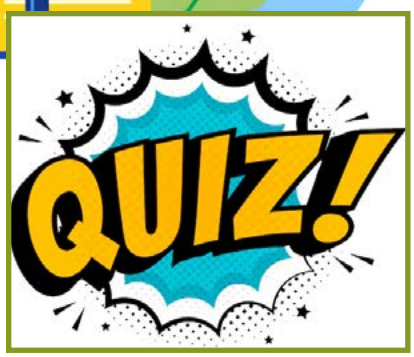
2016 - Distinguished Woman Scientist Award for her contributions in the field of Missile Technology by Andhra Pradesh Science Congress, Andhra Pradesh Academy of Sciences.

2019- Doctor of Science (Honoris Causa) from IIT, Kanpur

Many illustrious institutions speak of her contribution to the society through science and technology. These awards are testimony of her conviction and how she has handled every challenge. One needs to be prepared to take these challenges! **There is no shortcut to success!!**

Smt Vanaja Shankar

Financial Health and Awareness



A. Choose the correct answer / answers from the options given below each question.

1. Which of these are parameters of financial health?

a. Adequate savings and investments

b. Availability of emergency funds

c. Diversification of risks

d. Adequate insurance

e. All of the above

2. What do we understand by positive net worth?

a. Our assets are more than our liabilities.

b. Our assets and liabilities are equal.

c. Our liabilities are more than our assets.

d. We have adequate cash stocked in the house.

3. Which of these are considered our assets?

a. Cash in a safe in our house.b. Bank account balance.

c. Investment in shares and mutual funds.

d. Car loan and home loan account outstanding.

4. How do we diversify our risk in investments?

a. Keeping all the money in bank fixed deposits.

b. Keeping all the money as cash at home.

c. Investing in different assets like fixed deposits, mutual funds, shares, gold.

d. Maintaining a balance between different investments.

5. What is a CIBIL score?

a. A 3-digit numeric assigned to a borrower

b. Denotes credit worthiness

c. Scores ranging from 300 to 900

d. All of the above

6. Which authority analyses borrowers' data to provide CIBIL score to each borrower?

a. Reserve Bank of India

b. Indian Banks' Association

c. Credit Information Bureau (India) Ltd

d. Borrowers' bank

7. What is the identification with which a borrower can check his CIBIL report on CIBIL website?

a. Loan account number
b. Name
c. PAN – Permanent Account Number
d. Aadhaar number

8. CIBIL score and CIBIL report are used by _____.

a. Banks for checking the credit worthiness of an applicant for loan.
b. Borrowers to check their eligibility to avail a loan.
c. Both of the above
d. None of the above

9. Which of this information is available in the CIBIL report?

a. Credit score
b. Name and address
c. Loan account, credit cards and other borrowings.
d. Repayment history and outstanding balances
e. All of the above

10. Which of these CIBIL scores is satisfactory?

a. 650
b. 350
c. 500
d. 750

B. Based on your learning about financial health and awareness, read the questions below and identify which statements are true.

11 A family needs to save and set aside six months of household expenditure as emergency funds.

12 If one has invested in life insurance, you don't need to take health insurance or any other insurance.

13 Setting of financial goals and revisiting the financial goals at periodic intervals is important for people of all ages.

14 When you plan to borrow, you must ensure that you have adequate income for making the repayments.

15 It is good to revisit your financial goals and check your financial health before taking any major decision like buying a new house.

16. A borrower has a CIBIL score of 650. He has applied to his bank for a home loan. Which of the following statements is true?

a. The bank will grant him a loan because his CIBIL score is satisfactory.
b. The bank will prefer a higher CIBIL score of 750 to 900, so will reject the loan.

c. The bank will take up the loan application because the CIBIL score is satisfactory. However, the bank will check other parameters like debt-to-income ratio before sanctioning the loan.
d. The CIBIL score is not relevant for sanctioning a bank loan.

17. Mrs. Moneybag has a credit card for which she pays the entire outstanding by the due date. She does not have any immediate requirement for a loan. Which of the following statements is/are true?

a. She has no need to check her CIBIL score.
b. She needs to check her CIBIL score and report to ensure that there are no unauthorized loans in her name.
c. She needs to check her CIBIL report to ensure that all other information and records are correct.

d. She cannot check her CIBIL report unless she applies for a bank loan and her banker authorizes her to see her report.

C. Read the situations below and suggest the solution/next course of action.

18. Ram has received a gift of ₹5,000 from his grandfather for his birthday. He has been dreaming of buying a pair of sports shoes that cost ₹12,000. The shoes are endorsed by his favourite sports hero. The shoes are now available for a discounted price of ₹10,000. He has been saving money for this in a recurring deposit but that is due for maturity after a year. He was hoping his parents would gift him cash. They surprised him by gifting him a pair of sports shoes that cost ₹2,000. The shoes were of a very good quality but not the brand that he desired. **What would you advise him to do? Why?**

19. Raj and his wife are employed in private sector companies. They have two children aged 10 and 8. They have identified their financial goals and invested money in different assets like fixed deposits, shares and mutual funds. Raj pursued a professional degree and has now got a new job that offers him three times his current salary. Raj feels that he has already been saving for his financial goals, so this was the time to buy a bigger house, bigger car and tour the world. **Mrs. Raj suggests that they increase their savings and investment before they start planning the expenditure. What would you suggest? Why?**

20 X has a credit limit of ₹3,00,000 in his credit card. His credit card outstanding is always close to ₹2,90,000. He pays the minimum balance due on his credit card every month. A few times, he has missed the due date only by a day or two. He takes pride in showing off his four credit cards from four different banks. When he applies for a home loan, he is shocked to learn from his banker that his loan is rejected because his credit score is less than 600. **What are the steps he can take to improve his CIBIL score over the next year?**

Answers on page 66

Smt Ramamani N

Padma Shri Awardee

Kaluram Bamaniya

Kaluram is a renowned Bhajan singer from Malwa, Madhya Pradesh. He is known worldwide for his harmonious Bhajans. His unique presentations of Kabir Das, Gorakh Nath, Banna Nath and Mira Bai Bhajans are known for their mellifluous tunes. Kaluram's singing belongs to a living tradition of these songs.

The story of Kaluram Bamaniya's music started in his childhood. At the age of 9, he started learning manjira with his father, grandfather and uncle. At the age of 13, he went to Rajasthan to learn singing. After this, for about 1-2 years, he included a wide list of songs from the touring **Mirasi singer Ram Niwas Rao**. According to Kaluram, singing is not just a profession, but a way of life. He says that he gets a lot of strength by singing Kabir's songs. He and his troupe make performances in the state, the whole country and abroad too. He is commonly known as **Kabir of Malwa.** Kaluram dedicates his award to his father and grandfather while he plays a crucial role in transferring the art of Bhajan to the younger generations to keep the art alive.

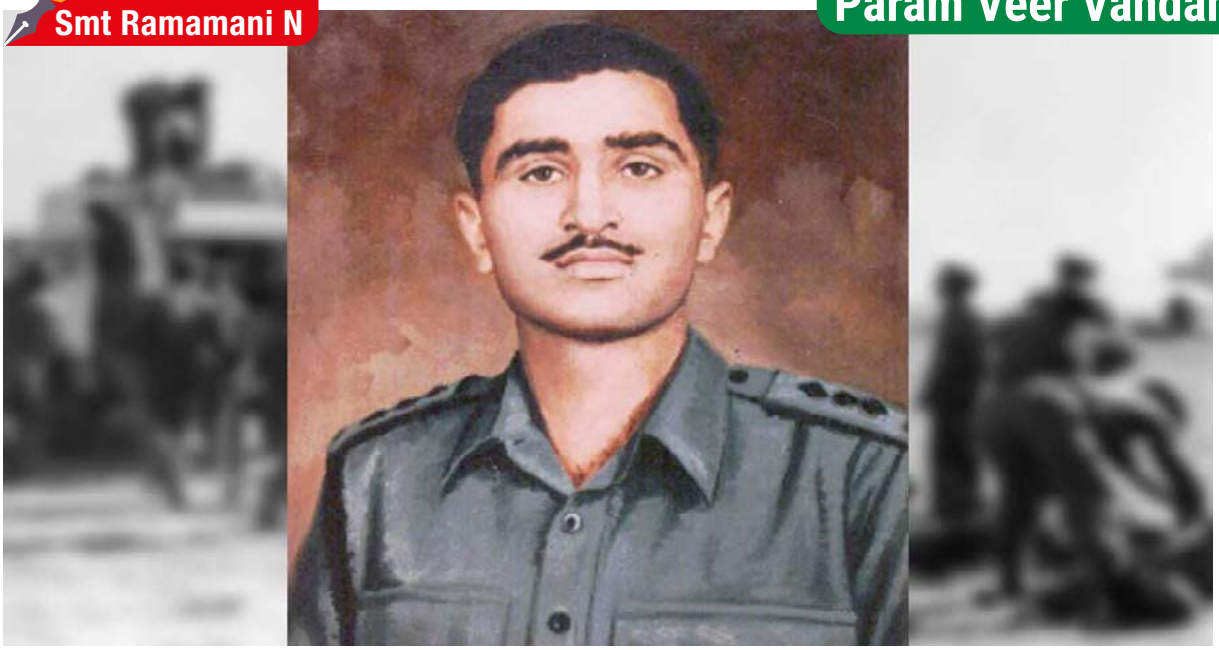
Folk singer Padma Shri Kaluram Bamaniya and his troupe presented Kabir songs in the Malvi dialect which enchanted the audience at Bharat Bhavan in Madhya Pradesh. It was the first performance of Kaluram after getting the Padma award. The audience thoroughly enjoyed the performance that started with Guru Vandana followed by a few famous Kabir songs.

Kaluram said that he has a deep love for singing Kabir's songs. As someone hailing from a small village, he appreciates the simplicity and straightforwardness of Kabir's lyrics. Kabir's songs have a universal appeal that transcends religion, caste, creed and region, touching on different aspects of life. Kaluram believes that people should look to seek God, who is omnipresent, through righteousness rather than solely relying on visiting places of worship.

DO YOU KNOW ?

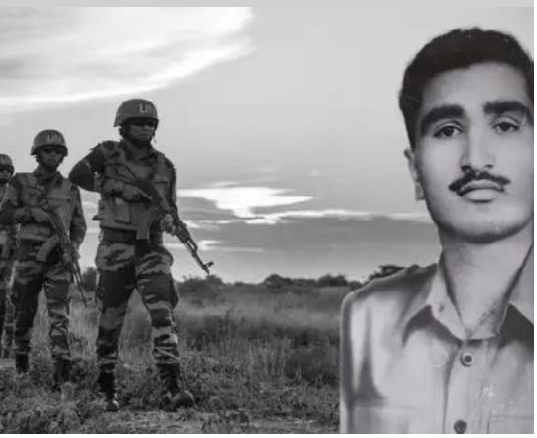
- **Sant Kabir (1398–1518 CE) was a well-known Indian mystic poet and saint. His writings influenced Hinduism's Bhakti movement; his verses are found in Sikhism's scripture Guru Granth Sahib, the Satguru Granth Sahib of Saint Garib Das and Kabir Sagar of Dharamdas.**

Smt Ramamani N



Capt. Gurbachan Singh Salaria

UN MISSION

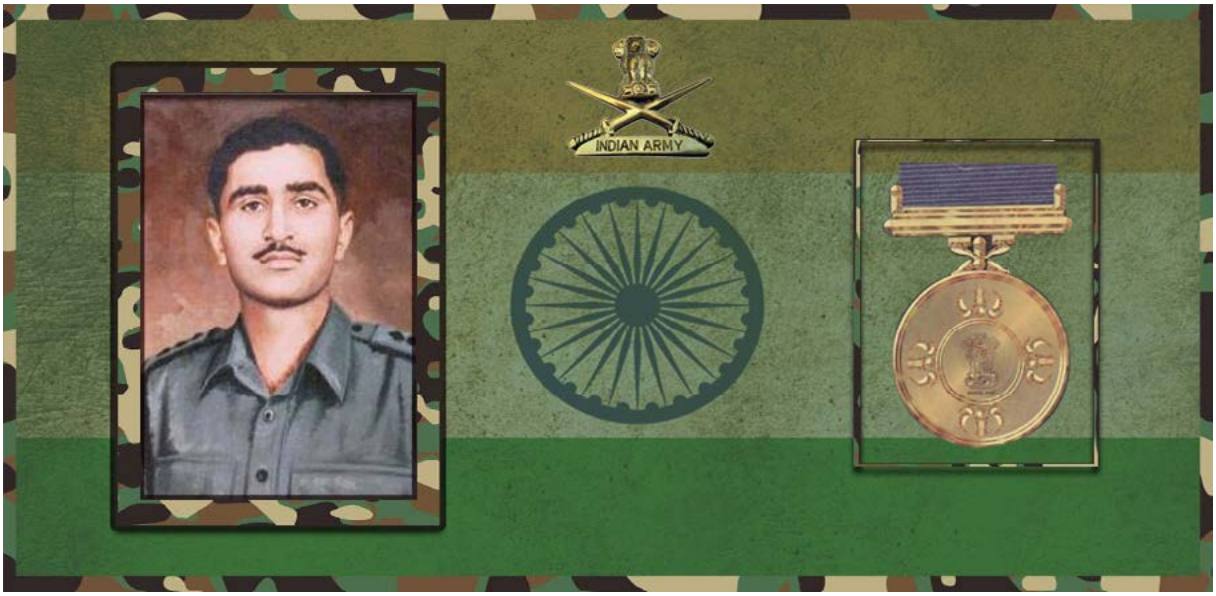


Captain Gurbachan Singh Salaria, a brave soldier, was born in November 1935 and hailed from the Jamwal community in Gudaspur district, Punjab. He enrolled in the King George Royal Indian Military College in Bangalore in 1946 before transferring to the College in Jalandhar. Later, he joined the National Defence Academy as part of its 9th Course and was in the Bravo Squadron.

In June 1960, the Republic of the Congo became independent from Belgium. But during the first week of July, a mutiny broke out in the Congolese Army and violence erupted between black and white civilians. Belgium sent troops to protect fleeing whites and two areas of the country, Katanga and South Kasai, subsequently seceded with Belgian support. The Congolese government asked the United Nations (UN) for help, and on 14th July 1960, the organisation responded by establishing the United Nations Operation in the Congo, a large multi-national peacekeeping force and aid mission.

Captain Salaria was among the Indian troops deployed to Congo as part of the United Nations Operation in the Congo. In November 1961, the U.N. Security Council decided to stop the fighting of the Katangese troops. However, this decision made the secessionist leader angry, and he increased his campaign to hate the UN.

On 5th December 1961, a company of Gorkha soldiers, with the support of a 3-inch mortar, launched an attack on a roadblock that had been set up by the Katangese troops. The roadblock was located between the HQ Katanga command and the airfield at a strategic roundabout. The Gorkhas successfully destroyed the enemy roadblock and were then able to establish a UN roadblock in its place.

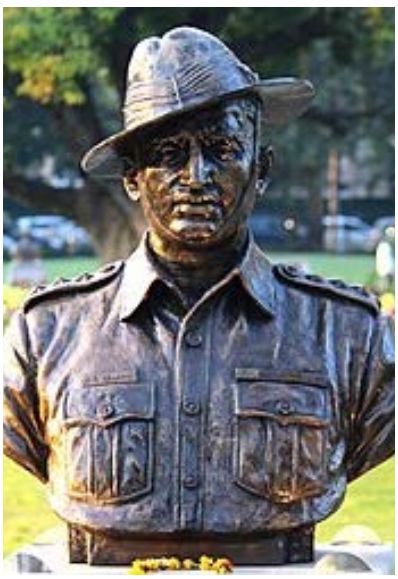


DO YOU KNOW ?

- On 23rd January 2023, on the occasion of Parakram Diwas, 21 largest islands of Andaman & Nicobar Islands were named after 21 Param Vir Chakra awardees. One of the islands was named after Captain Gurbachan Singh Salaria called "Salaria Dweep".
- A stadium and a park have been set up by 14 Gurkha Training Centres at Subathu in Himachal Pradesh as a tribute to Captain Gurbachan Singh Salaria.
- A square in National Defence Academy Khadakwasla, Pune, Maharashtra has been named as "Salaria Square" in his honour.

The remarkable story of Captain Salaria and his platoon is a testament to the power of courage and determination in the face of overwhelming odds. Despite encountering heavy resistance from the enemy, including armoured cars and a fortified position, Captain Salaria refused to back down. With the help of the Gorkhas, he charged forward with bayonets, khukris, and hand grenades, determined to achieve their objective.

A rocket launcher supported them in the attack. In this sharp encounter, Captain Salaria and his men killed forty of the enemy and knocked out two enemy cars. His bold action completely demoralised the enemy who fled despite numerical superiority and well-fortified positions. However, in the engagement, Captain Salaria was wounded in the neck by a burst of enemy automatic fire, but he ignored the injury and continued to fight till he collapsed due to excessive bleeding. The bravery and tenacity in the face of danger are truly awe-inspiring and serve as an example for all of us to follow.



Subsequently, he died of his grave wounds. Captain Salaria prevented the enemy from going to the roundabout thereby saving the UN Headquarters from encirclement. His leadership, courage, unflinching devotion to duty and disregard for personal safety were in the best traditions of the Indian Army. For his extraordinary leadership and devotion to duty, Captain Gurbachan Singh Salaria was awarded the highest wartime medal, Param Vir Chakra, posthumously.

Smt Vaishnavi V

CURIOSITY CORNER

Hyderabad

How much do you know?

I Quick five on Hyderabad!

1. Capital city - _____
2. Plateau, the city lies on - _____
3. River that flows through - _____
4. Founder - _____
5. Old name - _____

II Facts Fantastic!

Do you know these interesting facts about Hyderabad? Go ahead! Use the clues given below.

1. The statue of this deity stands in the middle of Hussain Sagar Lake.
2. Visited by millions of people every year, this stands as the largest film studio in the world.
3. Hyderabad is the home of this world-famous jewel. Also known for its controversy, this was originally found in the mines of Golconda.
4. This landmark monument was built by Quli Qutb Shah as a sign of prayer to god, to keep his citizens and the kingdom free from the deadly plague.
5. With one of the world's largest collections of antiques, this place houses rare artefacts from various civilizations and is a treasure trove of history and culture.
6. Hyderabad has been a member of the UNESCO Creative Cities Network (UCCN) for this category.

III Unscramble to find what this city is renowned for

1. Also known as the 'City of _____'

E	A	L	P	R	S

2. From the lands of Persia, this particular tea has a big name in the city.

I	I	N	A	R

3. This bazaar is a bustling market famous for its traditional bangles and embroidered fabrics.

A	A	D	L

4. These bangles of Hyderabad received the GI tag for its unique craftsmanship.

A	C	L

5. Fortified citadel originally built by the Kakatiya rulers, renowned for its diamonds.

N	A	D	L	G	O	O	C

6. An indigenous handicraft tradition intricately practised on zinc and copper, and inlaid with pure silver or thin sheets.

D	R	I	B	I

Answers on page 66

Dr Preethy S P

Natural farming foods for better health

A tribute to Earth Day

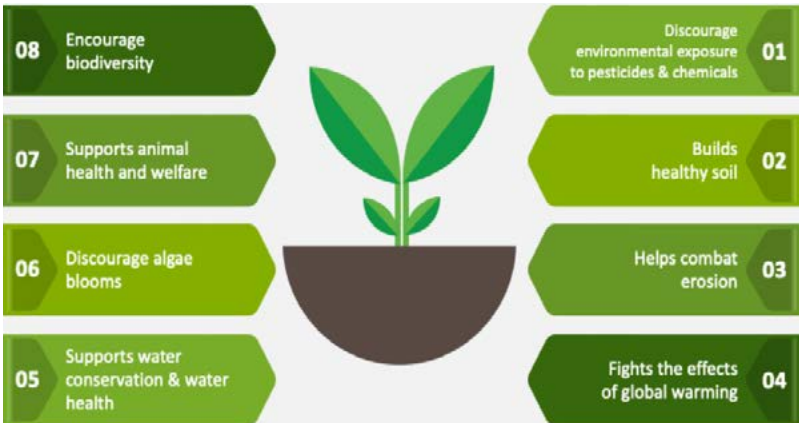
The rise of industrial agriculture has led to widespread reliance on synthetic pesticides and chemical fertilizers to maximize crop yields.

Earth Day is celebrated on 22nd April. As we celebrate the beauty and bounty of our planet, it is imperative to reflect on our relationship with nature. "Living with Nature" resonates deeply with the need to embrace sustainable practices that not only preserve the environment but also safeguard our health. One such practice that embodies this ethos is natural farming, a holistic approach to agriculture that respects the Earth's natural processes and promotes the production of wholesome foods.

In recent decades, the rise of industrial agriculture has led to widespread reliance on synthetic pesticides and chemical fertilizers to maximize crop yields. While these inputs may seem beneficial in the short term, their long-term impact on the environment and human health are profound and concerning.

One of the primary disadvantages of pesticides is their harmful effects on human health. Exposure to pesticides has been linked to a range of health problems including cancer, reproductive disorders, neurological issues and respiratory problems. Children, pregnant women, and farmworkers are particularly vulnerable to the adverse effects of pesticide exposure. Furthermore, pesticide residues in food can accumulate in the body over time, posing a chronic health risk to consumers.

Chemical fertilizers, similarly, have detrimental effects on both



human health and the environment. These fertilizers contribute to soil degradation, water pollution and loss of biodiversity. Moreover, they can lead to nutrient imbalances in the soil, resulting in reduced soil fertility and crop yields over time. Additionally, the runoff of chemical fertilizers into water bodies can cause algal blooms and aquatic ecosystem disruptions, further exacerbating environmental degradation.

In contrast to conventional farming methods, natural farming offers a sustainable alternative that promotes soil health, biodiversity and human well-being. Natural farming relies on organic and locally sourced inputs to nourish the soil and enhance plant growth, without the need for synthetic chemicals. One popular natural farming practice is the use of ***jivamrit***, a fermented microbial inoculant that enriches the soil with beneficial microorganisms.

Jivamrit, derived from cow dung, cow urine, jaggery and water, is a potent biofertilizer that enhances soil fertility and plant resilience. When applied to the soil, *jivamrit* promotes the growth of beneficial microorganisms, such as nitrogen-fixing bacteria and mycorrhizal fungi, which help improve soil structure, nutrient cycling, and disease suppression. Additionally, *jivamrit* enhances plant nutrient uptake and resilience to environmental stresses, resulting in healthier, more resilient crops. Furthermore, *jivamrit* is cost-effective, easy to prepare and environmentally friendly, making it accessible to farmers of all scales and backgrounds. By adopting natural farming practices, farmers can reduce their reliance on synthetic inputs, improve soil health, and produce nutrient-dense foods without compromising the health of the environment or consumers.

In conclusion, the best way to celebrate Earth Day is to reflect on our interconnectedness with the natural world. It is essential to embrace sustainable agricultural practices that promote environmental stewardship and human well-being. By shifting towards natural farming methods using *jivamrit,* we can honour the wisdom of our ancestors, protect the health of the planet and nourish ourselves with wholesome, natural foods.

Let us begin living in harmony with nature, and cultivating a healthier and more sustainable future for generations to come.

Smt Manju Aildasani

Ummul Kher

From slums to IAS

Every year, a large number of people appear for the Union Public Service Commission (UPSC) Exam. However, many people fail to clear one of India's toughest exams and eventually lose hope. But some aspirants never give up and manage to clear it. Here is the story of Ummul Kher who fought against all odds to fulfil her dream of attaining the country's most prestigious position.

Hailing from Rajasthan, Ummul grew up in Delhi's Trilokpuri slum. Her father used to sell clothes in a store. From a very young age, she suffered from a fragile bone disorder. Due to the severe disease, Ummul got at least 16 fractures and underwent 8 surgeries. To financially support her family, she started taking tuition classes to fund her education. She managed to complete her education till Class 10 with help from an NGO Amar Jyoti Charitable Trust.

After Class 10, her family did not want her to pursue further education. So, she ran away from her home and ended up living in the slums, where she took up tuition and completed her Class 12 by scoring an impressive 91%. She later earned a degree from Gargi College under Delhi University.

Tragedy struck in 2012 when a small accident confined her to a wheelchair for one year. In 2013, she secured a Junior Research Fellowship at JNU under which she started getting a stipend of ₹25,000 per month. Simultaneously, she began her rigorous preparation for the UPSC examination. Her efforts were rewarded as she secured an All India Rank (AIR) of 420 and fulfilled her dream of becoming an IAS officer.

Reading such success stories should motivate you to push yourselves harder and study with focus and resolve.

DO YOU KNOW ?

The Civil Services Examination (CSE) is a competitive examination in India conducted by the Union Public Service Commission (UPSC) for recruitment to various Civil Services of the Government of India that includes the Indian Administrative Service (IAS), Indian Foreign Service (IFS), and Indian Police Service (IPS) among others.

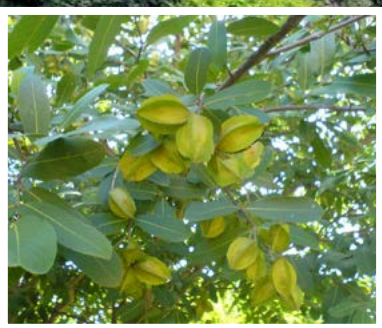
It is conducted in three stages:

i. **Preliminary examination consisting of two objective-type papers (general studies and aptitude test).**

ii. **Main examination consisting of nine papers of conventional (essay) type.**

iii. **Personality test (interview).**

Arjun Tree



India's native flora showcases an extraordinary level of biodiversity. These plants play a crucial role in maintaining ecological balance and providing habitats for wildlife, and some of the plant species have medicinal properties too. Arjun tree is an example.

Scientific name:
Terminalia arjuna

Arjun tree grows to about 20–25 metres tall, usually has a buttressed trunk, and forms a wide canopy at the crown from which branches drop downwards. It has oblong, conical leaves which are green on the top and brown below, with smooth, grey bark. It blooms with pale yellow flowers between March and June. Its fibrous woody fruit, divided into five wings, appears between September and November.

Other names: *Arjuna, Koha, Kahu, Arjan, White Marudah, White Murdh, Arjuna myrobalan, Orjun, Yerra Maddi, Sadada, Sadaru.*

Distribution: *Terminalia arjuna* is common throughout India, especially in the sub-Himalayan tracts and Eastern India. They are widely grown in Bandhavgarh National Park, Pench Tiger Reserve and Kanha National Park in India. It is mainly grown on the banks of rivers and streams.

Cultivation methods: Its fruit is dried in the sunlight and then stored for up to 6 -12 months. Seeds are pretreated by soaking in the water for 48 hours before sowing in beds. 8 – 9 months seedlings are better to transplant in the field.

Silk production: Arjun leaves are fed on by the *Antheraea paphia* moth which produces the tussar silk, which is of commercial importance.

Medicinal uses: The bark of the Arjuna tree contains calcium salts, magnesium salts and glucosides that have been used in traditional Ayurvedic medicines to control the cholesterol level, improve the functioning of cardiac muscle and used to cure asthma and several other ailments.

Other uses: Its wood is used in boat and house building as it is very hard. It is also used in the making of agricultural implements and weapons. It is grown in cities and towns for shade.

The tree does not suffer from any major diseases or pests, but it is susceptible to rot due to '*Polystictus affinis*' a type of wood-decay fungus.

Smt. Sumathi Ramakrishnan

TARABAI BHOSALE

Identity	The Queen of Maratha Empire and was daughter-in-law of Shivaji Maharaj
Birth	April 1675, Satara, India
Parents	Hambirrao Mohite; Commander in chief of Maratha Empire
Spouse	A third Chhatrapati of the Maratha Empire, Rajaram Bhonsale (1670-1700)
Children	Shivaji II
Grandchild	Rajaram II of Satara
Reign	• 1700-08 • 1710-14 • 1751-60
Achievements	After the death of her husband, she contributed to the Maratha kingdom when the throne of the kingdom was empty. She led the Maratha forces to save the honour of the kingdom.
Death	Passed away at 86 in 1761.

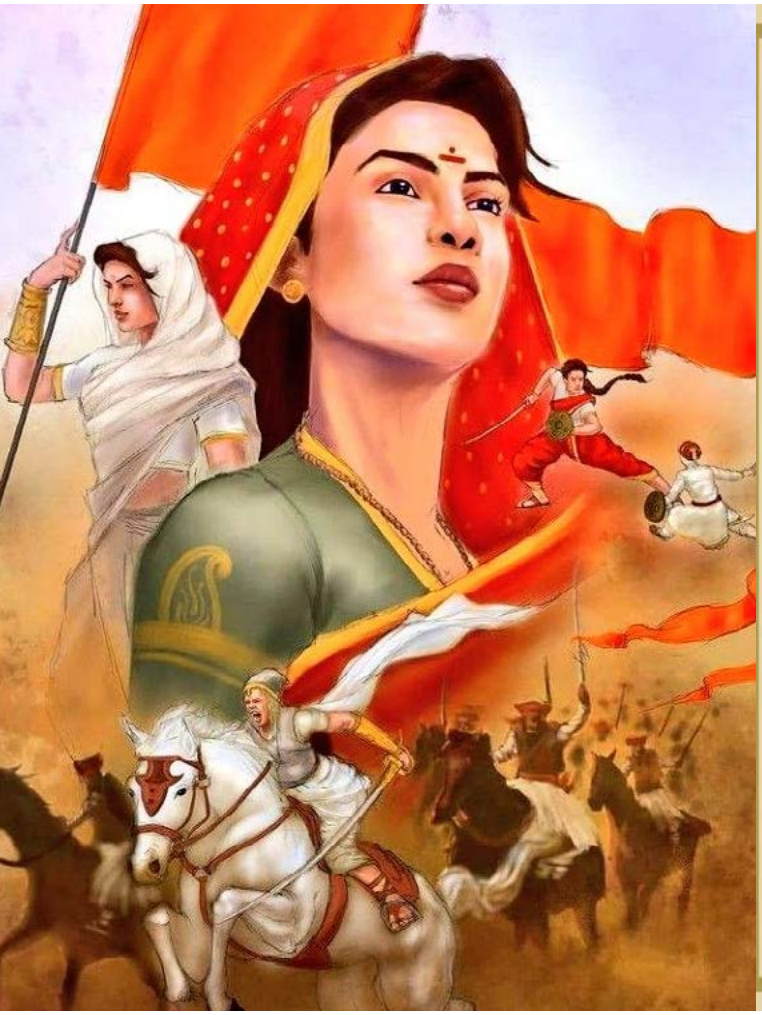
An indomitable warrior queen who was deeply devoted to her kingdom, Tarabai Bhosale didn't just prevent the Maratha Confederacy from disintegrating when it was at its lowest ebb, she played a crucial role in it to rise to national power (by 1760, the Marathas de facto controlled almost all of India).

Fiercely independent as a young girl, Tarabai was well-trained in sword fighting, archery, cavalry, military strategy, diplomacy and all other subjects of statecraft.

A woman who witnessed the rise and fall of the Marathas, Tarabai was just eight years old when she was married. This was an era when the Mughals and the Marathas were constantly at war for control over the Deccan.

The year 1689 saw the eldest son of Shivaji and his first wife Saibai, being captured and put to death. During the same battle, the new Maratha king — Rajaram passed away due to lung disease in 1700 after an extremely short reign.

A month after his sudden death, Tarabai took over the reins of the Maratha kingdom as regent (for her 4-year-old son, Shivaji II).



Realizing the urgent need for strategic and stable leadership if the Marathas were to stop the Mughal onslaught (led by Aurangzeb himself), the 25-year-old widow also took command of the Maratha Army.

Though grief-stricken by the loss of her husband, Tarabai threw herself into organizing a well-planned and vigorous opposition to Aurangzeb. Mughals thought their enemy weak, contemptible and helpless; but she showed great powers of command and government. As the war spread, the power of the Marathas increased.

An intelligent woman, Tarabai had earned a reputation during her husband's lifetime for her knowledge of civil, diplomatic and military matters. She used this knowledge to lead from the front—traveling between forts, forging crucial partnerships, mobilizing resources and men. A skilled cavalry warrior, she also motivated her commanders and soldiers by personally leading aggressive attacks on the enemy.

In her seven-year period as regent, Tarabai single-handedly directed the Maratha resistance against the massive army of Aurangzeb, then the mightiest ruler in the region.

A regent is a person who rules a country when the king or queen is unable to rule because they are too young or too ill.

Answers of page 59

I Quick five on Hyderabad

1. Telangana
2. Deccan
3. Musi, tributary of River Krishna
4. Muhammad Quli Qutb Shah in 1591
5. Bagyanagaram

II Facts Fantastic!

1. The Buddha
2. Ramoji film city
3. Koh-i-Noor Diamond
4. Charminar
5. The Salar Jung Museum
6. City of Gastronomy.

III Unscramble

1. Pearls
2. Irani
3. Laad
4. Lac
5. Golconda
6. Bidri

Answers of page 53 to 55

Financial Health (Quiz Answers)

Solutions

1. e
2. a
3. a,b,c
4. c & d
5. d
6. c
7. c
8. c
9. e
10. a & d
11. True
12. False
13. True
14. True
15. True
16. c
17. b&c
18. Make the distinction between needs and wants. Refer article on financial health part I.
19. Understand the need to revisit financial goals and increase savings and investment when there is increase in income. Refer article on financial health part I.
20. Steps to improve credit score. Refer article on Know your CIBIL score Part II .

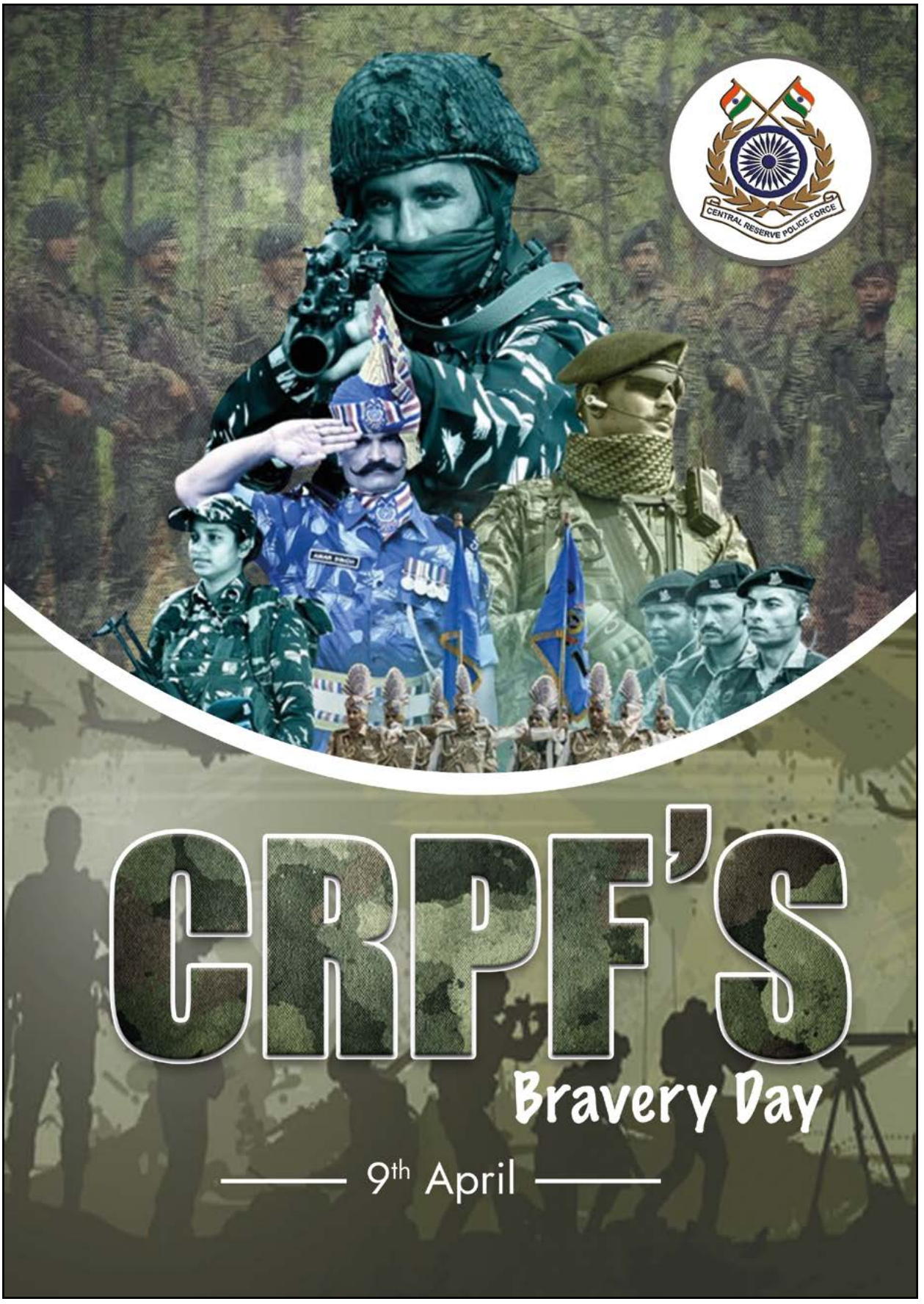
NATIONAL

HAND MADE

DAY

6th April

Every decade has its own manual of handicrafts. A creative mess is better than a tiny idleness. You can't buy love, but you can buy handmade and that's kind of the same thing.


CENTRAL RESERVE POLICE FORCE
CRPF'S
Bravery Day
9th April