

PRAJYA

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Ganga River Cruise



Goa Liberation Day

19th December

The last of the European colonial powers were made to leave India on this day in 1961 after 'Operation Vijay' against Portuguese forces in Goa was carried out.



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Educational Consultant

Shri Nandakumar V
Educational Consultant

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

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Technical Editor :

Shri Guhaprasath Subramanian

Creative Design & Printed by :

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

COMMENTS

&

SUGGESTIONS

prajya.magazine@davchennai.org

माता भूमिः पुत्रोऽहं पृथिव्याः।

Source – Atharva Veda 12.1.12

(Translation: Earth is my mother and I am her child.)

Earth is our life giver and nurturer. It sustains our life and secures our future. It is our responsibility to be not just aware of this truth but also demonstrate suitably in every one of our actions individually and collectively as humanity. Mother Earth provides us with enough and more to lead our lives. However in our greed and recklessness we are oblivious of the long-term impact of our actions on earth.

What is happening in Joshimath is a grim reminder of our irresponsible actions. It is time to pay heed to these early warning signals and do a timely corrective action. Protecting not just Joshimath but other parts of Uttarakhand and similar places in other parts of India and the world is a must.

The longest river cruise in River Ganga is indeed a matter of pride from a modern perspective. However we must reinforce all conservational efforts to make it a sustainable and eco-friendly enterprise.

Thimmamma Marimannu in Anantapur, the one- tree-forest, is another precious treasure we need to keep alive for posterity.

As a nation rich in culture and natural biodiversity, we are duty bound to bolster our conservational activity.

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:

- We don't want to print more than what is required and
 - Keep the cost of the print version (plus postage) within reasonable limits.
- Please note that the access to free online e-version will continue.**

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

<http://bit.ly/Prajya>

Happy Reading !

Watch out for the Monthly Prajya Quiz online

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

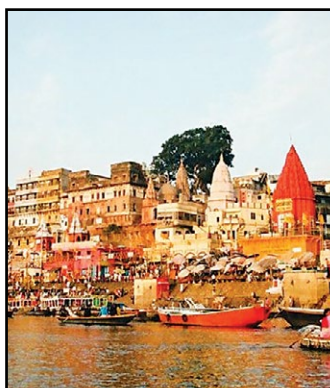
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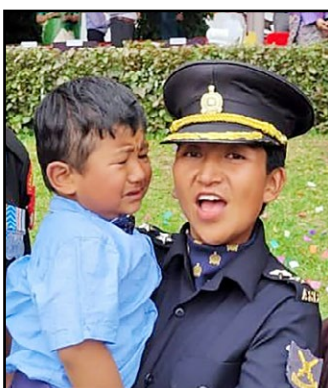
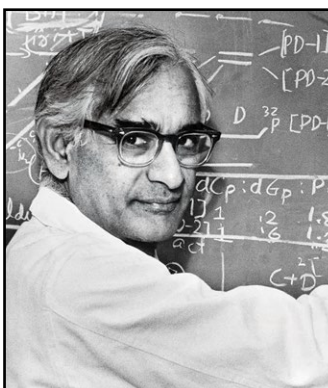
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Among the top ten world restoration flagships

River Ganga is the life source to over 65 crore people living in more than one million square kilometre area.

River Ganga reverentially known as Ganga Mayi, originates in the Himalayas in Uttarakhand. The 2525 km long river which flows through the States of Uttarakhand, UP, Bihar Jharkhand and West Bengal is known as River Padma when flowing inside Bangladesh. Together with Jamuna, Brahmaputra and Meghna, it is the second largest on Earth by discharge; and life source to over 65 crore people living in more than one million sq. km.

The burden of population and development has placed severe strain on Ganga and her tributaries. For battling this pollution, our Union Government in 2014, launched *NAMAMI GANGE*, a National Mission for Cleaning Ganga (NCMG) flagship programme with budget outlay of ₹ 20,000 crores. The objectives are abatement of pollution, conservation and rejuvenation.

The implementation has been divided into activities

- (1) Entry Level (Immediate and Visible)
- (2) Medium Term (Implement within 5 years) and
- (3) Long Term (implement within 10 years).

The main pillars of *Namami Gange* are:


- I) **Sewerage treatment infrastructure:** Over 150 treatment plants have been completed.
- II) **River front:** Nearly 340 ghats/crematoria constructed along with kunds/ponds.
- III) **River surface cleaning:** Vulnerable locations identified and cleaning initiated.
- IV) **Bio-diversity:** Wildlife Institute of India (WII), Dehradun, Central Inland Fisheries Research Institute (CIFRI), Kolkata and UP State Forest Department are jointly implementing various projects for aquatic bio-







Namami Gange

Budget for a cleaner Ganga quadrupled







Improving river and forest ecosystem

diversity. The institutes have taken up conservation and restoration of important fish varieties, fresh water turtles and gharials. The preservation of bio-diversity of the river is essential for soil health, erosion control and crop and tree pollination.

V) **Afforestation:** Forest Research Institute (FRI), Dehradun, has prepared a report for afforestation in an

area of 1.35 lakh hectares at an estimate of ₹ 2,300 crores.

VI) **Public awareness:** Numerous information, education and communication (IEC) activities are being carried out for public outreach and community participation.

VII) **Industrial effluent monitoring:** Greatly Polluting Industries (GPIs) have been identified and Online Continuous Effluent

Monitoring Systems (OCEMS) established to CPCB server. Those not complying have been served closure notice or have taken to self closure.

VIII) **Ganga Gram:** 1674 Gram Panchayats (GPs) have been identified along the river length and more than 15.27 lakh toilet units are to be provided for these GPs. Consortium of 13 IITs have adopted 65 villages for development as Model Villages. At an estimate of ₹127 crores UNDP is developing Jharkhand as Model State for sanitation.

Countries like Australia, UK, Germany and Israel too have shown interest in collaborating with NMCG. MoUs have also been signed with Railway, Tourism, Shipping and other ministries for synergising the government schemes.





India's candidature for 2028-29 UN Security Council Term



External Affairs Minister Jaishankar, while addressing the press after chairing an event on international count-terrorism declared India's candidature as a non-permanent member for year 2028-29, in the UN Security Council (UNSC).

UNSC is one of the six main parts of the United Nations, charged with ensuring international peace and security.

UNSC has five permanent member nations: China, France, Russian Federation, UK and USA. Ten non-permanent

members are selected for two-year terms by the UN General Assembly.

Maritime security, technology in U.N. peacekeeping, reforms of the U.N. and counter terrorism would be the focus on India's eighth term. India has been on the UNSC for the following terms: 1950-51, 1967-68, 1972-73, 1977-78, 1984-85, 1991-92 and 2011-12 and finally 2021-22.

Being the world's largest democracy and having the 4th largest armed force, India's impact on global security cannot be denied. Therefore, its consistent participation as part of the UNSC will ensure that India continues to play an active role in shaping the future of global peace and security.





Leo Varadkar

Prime minister of Ireland



Leo Varadkar became the prime minister of Ireland for the second time on 17th December 2022. He studied medicine at Trinity College Dublin and spent several years as a non-consultant hospital doctor, eventually qualifying as a general practitioner in 2010.

- **2004** - joined **Fine Gael**; became a member of Fingal County Council; served as Deputy Mayor of Fingal.
- **2017**, Taoiseach (chief or leader; a term used for the Irish PM) Enda Kenny announced his resignation as the leader. Varadkar contested and got elected; became the PM of Ireland for the first time; remained so till 2020.
- **2020** - Michael Martin took over as PM in 2020; served till 2022, while Varadkar became the Deputy PM and Minister for Enterprise, Trade and Employment.
- **2022** -Varadkar assumed his role again as PM.

Fine Gael and **Finna Failwera** on opposing sides during the Irish Civil War and had never formed a coalition ever since Ireland's independence in 1992.

But these traditional arch-rivals decided to form a three-way coalition government along with **the Green Party** in 2022 as they did not want to enter into a coalition with **Sinn Fein**, which had helped in the formation of the current government.





Braille Self-Learning Device and Battery Swapping Solution for E-Rickshaws

‘Annie’ is the world’s first self-learning device meant to teach braille to the visually-impaired.

Tinkerbell labs in Bengaluru was abuzz with excitement when, on 15th December 2022, it was announced that their invention ‘Annie’ had become one of the ‘best inventions of 2022’ by Time magazine.

Every year the Time, an American news magazine covering international news for over a century, publishes a run down of the best and most impactful inventions across the globe. The list represents inventions that will go on to fundamentally change aspects of peoples lives for the better.

‘Annie’ is the world’s first self-learning device meant to teach

braille to the visually-impaired. Aimed specifically at students so that they can master reading and writing in braille on their own, while having fun. This device can observe their progress and tailor lessons and activities that will suit their particular needs.

The device also teaches through activities and games, to make the lessons more interesting and has human voice modules that will guide students through their lessons.

“Our first Annie Smart Class was set up in Ranchi in 2018. Today, we have more than 50 Annie Smart Class centres across 16 states



“eZee Swappable Lithium ion Battery Pack” is manufactured in Noida for use in electric auto rickshaws.



in India. Annie is now available in 8 Indian languages,” said the Chief Technology Officer of Tinkerbell labs, Dilip Ramesh.

The impact of ‘Annie’ cannot be understated as it will revolutionize access to education for the visually impaired by allowing them to learn, not only in English, but also in their mother tongues.

Another invention that was listed alongside Annie was the “eZee Swappable Lithium ion Battery Pack” manufactured in Noida for use in electric autorickshaws. These battery packs are designed to be docked and recharged, so there is

no requirement for drivers to not take on trips while waiting to charge their vehicles.

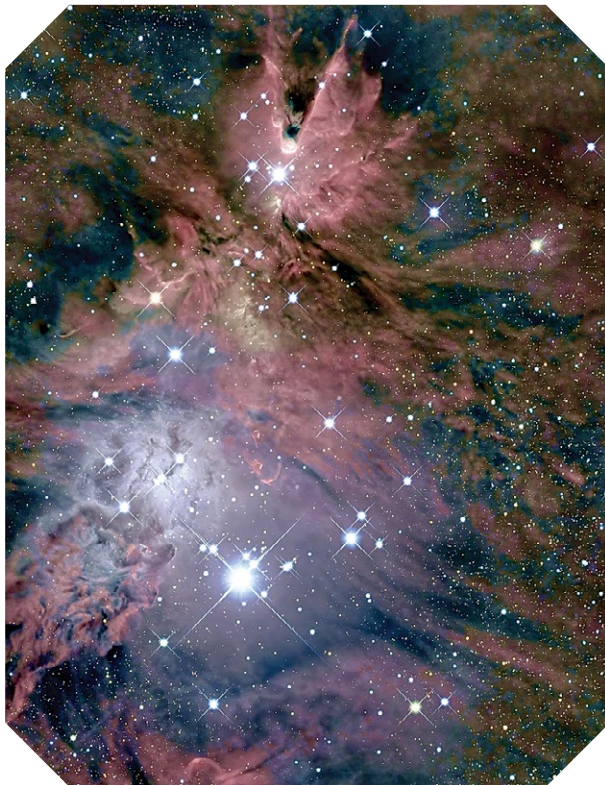
Developed in California, the eZee batteries found extensive use in India’s new e-rickshaws. Pankaj Dubey, head of the Indian branch of eZee remarked on the positive impact the change to electric motors in rickshaws will have on the environment.

India is home to some of the world’s greatest scientists and innovators. With technology advancing at a rapid and unceasing pace, it is these minds who will shape India’s and the world’s future.





Incredible images of Cone Nebula in Deep Space



In an image released by the European Southern Observatory (ESO), observers can glimpse a titanic wonder: a dark nebula, pillar-like in appearance - like a cosmic lighthouse watching over the cold void of space. This is the Cone Nebula, part of a star-forming region of space known as NGC 2264, almost 2,500 light-years away.

Taken by the ESO's Very Large Telescope (VLT) to celebrate its 60th anniversary, the nebula is located in the constellation of Monoceros (the Unicorn). Unlike others of its kind, which glow brightly with a complex spectacle of colors, the Cone Nebula is made up of dark, thick dust that absorbs visible light. Only electromagnetic waves at wavelengths invisible to humans, such as infrared and radio waves, can penetrate them.

These opaque nebulae are called **molecular clouds**, and also stellar nurseries if they include areas where baby stars are born. Thermal energy is carried away by the dust - an efficient emitter of infrared light - thus causing the cloud to cool. Without the outward pressure from the heat, gravitational forces quickly





overwhelm the clumps of dust and gas, causing them to collapse.

These high-density clumps then form the protostars, which then spin and draw in even more mass from the surrounding cloud to start fusion in its core. Eventually, the stars produce feedback. The magnetic field lines accelerate jets of plasma to erupt from its poles. This, along with the UV-generated radiation pressure, contributes to the stellar wind that pushes away material from the protostar. This process is what gives the Cone Nebula its iconic shape.

Instruments like the James Webb Space Telescope (JWST) can see the Universe in infrared light, and thus penetrate these dense clouds and reveal the specifics of star formation taking place within. But VLT's visible light images can show details that disappear in other wavelengths. Only by studying the full electromagnetic spectrum can we get the full picture.





Morocco gets Made-in-India MILITARY TRUCKS

DO YOU KNOW ?

Capital of Morocco:
Rabat

Languages spoken:
Arabic and standard
Moroccan Berber

Currency: Moroccan
Dirham

Tata Advanced Systems Limited is an Indian aerospace manufacturing, military engineering and defence technology company.



The Royal Armed Forces of North African country, Morocco got 92 six-wheeled military trucks designed and manufactured by Tata Advanced System recently. Our government's initiative in collaboration with Tata Company is a boost not only to the Indian economy but also a major push for diplomatic relations between India and Morocco.

Features: These (model 244566LPTA) high-mobility

trucks can be used for a variety of applications including, a multi-barrel rocket launcher and a missile firing unit.

Morocco's purchase of military trucks from India is part of the country's efforts to diversify its arms purchases in order to strengthen and upgrade its military. Morocco prioritises military cooperation with some of the world's most powerful militaries, including the US and Israel.





Demand for **Indian Generic Drugs** *skyrockets in China*

China's health system catering to 1.4 billion people is under severe strain especially on account of the heavy costs of drug supply.

Following countrywide demonstrations over its 'Zero Covid' policy, China abruptly abandoned it last month after nearly three years of lockdowns, quarantines and mass testing. This rapid policy change triggered huge outbreak of Coronavirus infection, leading to panic buying of fever and cold medications, resulting in significant shortages at pharmacies and online shopping platforms.

China's National Health Security Administration (CNHS)

said that Pfizer's Paxlovid oral medication, used for treating Covid-19, could not be included in the register of drugs on account of its huge cost.

He Xiaobing, Head of Beijing Memorial Pharmaceutical, told Sixth Tone that India was "the only country where we can source reliable and affordable COVID drugs with guaranteed therapeutic effects". He further stated that the strong demand was used by illegal groups who produce counterfeit drugs.

China's health system catering to 1.4 billion people is under severe strain especially on account of the heavy costs of drug supply, which were controlled by multinational pharmaceutical giants.





India has been persuading China to permit Indian pharma products to be sold at reduced cost for Chinese citizens.



It is seen that boxes of Paxlovid are now selling for as much as 50,000 yuan (\$7,200) in the black market, forcing many in China to seek out cheaper alternatives. This in turn is driving a surge in demand for generic versions of the drug produced by Indian manufacturers. It is seen however that laboratory analysis indicates a large amount of the 'Indian drugs' circulating in China are fake.

So far there has been no evidence of the fake versions causing harm. However, experts are worried that as they are ineffective against the virus and could lead to patients not seeking treatment.

Chinese media outlet Sixth Tone reported that "On the Chinese e-commerce platforms... at least four generic Covid drugs produced in India - Primovir, Paxista, Molnusat, and Molnatris — have been listed for sale in

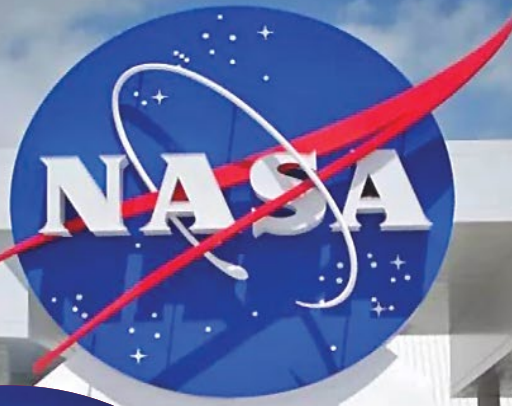


recent weeks. Primovir and Paxista are both generic versions of Paxlovid, while the other two are generic versions of Molnupiravir."

India has been persuading China to permit Indian pharma products to be sold at reduced cost for Chinese citizens and to decrease the massive trade deficit between the two countries. All four drugs appear to have been approved for emergency use by the Indian authorities, but have not been made legal for use in China.

At one time, Indian cancer drugs had become very famous for their efficacy and affordability. A Chinese film by the name 'Dying to survive' was made, showing the survival of cancer patients based on the banned imported Indian drugs which had a successful run in China.





A. C. Charania

NASA's new Chief Technologist

Charania will oversee the collaboration of technology with other federal agencies.

In a significant leap for India gaining recognition overseas, A. C. Charania, an Indian-American has been appointed as NASA's new chief technologist. An aerospace industry expert, Charania will serve as principal advisor to Administrator Bill Nelson on technology policy and programmes, replacing another Indian-American scientist Bhavya Lal in the role.

Charania will oversee the collaboration of technology with other federal agencies, external stakeholders and the private sector. He will also align NASA's agency-

wide technology investments with mission needs across six directorates.

Charania has worked in business and strategy development for the Virgin Orbit Launcher One small satellite launch vehicle program. He also served in multiple management and technology roles at Space Works Enterprises.

He received a bachelor's and a master's degree in aerospace engineering from Georgia Institute of Technology, and a bachelor's in economics from Emory University.





Rural households with tap water

increase from 17% to 55%



Jal Jeevan Mission was launched on 15th August 2019 to provide clean tap water to every household by 2024. At the time of launch, only 17% (3.23 crore) rural households had tap water supply.

So far, under JJM, around 7.48 crore (38%) rural households have been provided with tap water connections. As of December 2022, out of the 19.36 crore rural households in the country, more than

10.71 crore (55%) rural households reported to have tap water supply in their homes.

In 2021-22, over ₹40,000 crore grant had been released to States and UTs under the **Jal Jeevan Mission**. Further, the budget has been enhanced to ₹60,000 crore.

The Jal Jeevan Mission will be a major step towards improving our people's ease of living and meeting their aspirations for a new India.

DO YOU KNOW ?



47,249,086
(24.62%) Households provided with tap water connection since JJM launch

79,611,924
(41.48%) Households with tap water connections as on date

STATES WITH 100% TAP CONNECTIONS

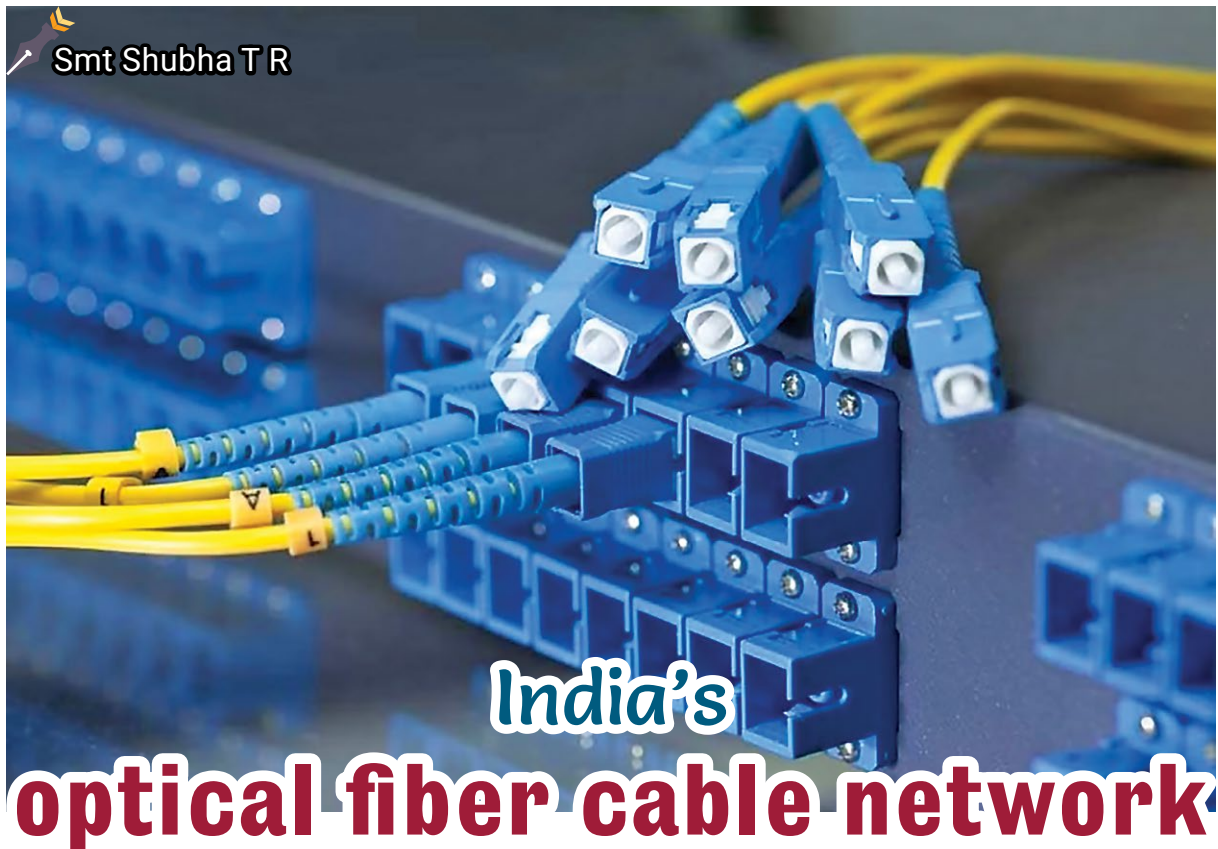
- Goa, Telangana, A & N Islands, Puducherry, Dadra & Nagar haveli and Daman&Diu

TOP FIVE STATES NEARING THE TARGET OF 100% COVERAGE:

Haryana	99.23%
Bihar	86.85%
Gujarat	86.04%
Punjab	83.93%
Himachal Pradesh	79.36%

Source: Jal Jeevan Mission Dashboard





India's optical fiber cable network expands to over 35 lakh route kilometres

DO YOU KNOW ?

A Fiber Optic Cable comprises of fiber glass strands insulated with an outer covering that protects the strands from external parameters. Here the data is transmitted in optical form i.e., through light signals or pulses.

Fiber Optics in India is the key vehicle for government and industry players to meet increasing data demand and improved quality of services. As of September 2022, 35.5 lakh route kms Optical Fiber cable (OFC) have been laid.

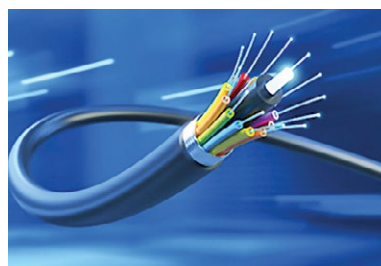
The government amended the Indian Telegraph Right of Way Rules, 2016 in August 2022 to pave the way for deployment of 5G

small cells and OFC on existing street infrastructure to facilitate faster and easier deployment of telecom infrastructure.

Benefits

OFC network will enable improved bandwidth, high-volume connectivity and support the roll-out of 5G technology in India.

The **BharatNet project** which aims to provide fibre connectivity to all Gram panchayats (GPs) in India has even been extended to include all inhabited villages beyond GPs. This is in line with the vision of PM Modi in providing internet to all 6 lakh villages in the country.





India's second longest cable-stayed bridge inaugurated

**The Zuari
Bridge connects
Bambolim in
North Goa and
Verna village in
South Goa.**

Union Minister of Roads Transport and Highways Nitin Gadkari inaugurated the country's second longest cable-stayed eight-lane Zuari Bridge in Goa. The PWD Goa App for integrated operations management was also launched.

The Zuari Bridge connects Bambolim in North Goa and Verna

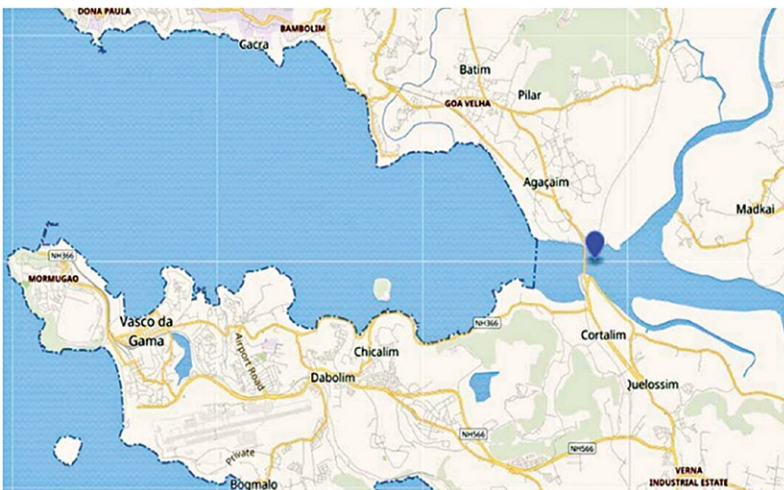
villages in South Goa. It carries the NH 66 over the tidal part of the Zuari River, between the villages of Agaçaim and Cortalim.

It is a few metres downstream of the Konkan Railway Bridge. French, Chinese, Central Public Works Department and state Public Works Department specialists helped in the project.

It is expected that two towers will be built on this bridge. It is also anticipated that there will be an observatory and viewing gallery, an art gallery and also a revolving restaurant.

Features

The bridge will be 640m long, with a central span of 360m and end-spans of 140m on both sides built in 3 phases. It is part of a ₹ 2,530 crore project covering a distance of 13.2 kilometres.



SMART program

to promote scientific research in Ayurveda



The aim is to boost scientific medical research through Ayurveda colleges and hospitals.

Scope for Mainstreaming Ayurveda Research in Teaching Professionals (SMART) is an initiative of National Commission for Indian System of Medicines (NCIMS) and Central Council for Research in Ayurvedic Sciences (CCRAS) under Ayush Ministry which is ministry for traditional and non-conventional systems of health care and healing such as Ayurveda, Yoga, Unani, Siddha, Homeopathy and Naturopathy. The programme was inaugurated on 2nd January 2023.

Ayurvedic treatment finds favor with general public because of absence of side effects, flexibility, accessibility and low cost.

Some Ayurvedic plants, roots and herbs which have known medicinal cure on the mentioned medical problems and which require further research study are given below.

Ashwagandha – Used in producing medicines prescribed for stress management, improved sleep, reduce inflammation and boost immune system.

Triphala – Combination of Amal, Bibhitaki and Haritaki to reduce joint inflammation and improve digestion.

Brahmi – Symptoms of ADHD.

Cumin – Type 2 Diabetes, heart disease and food borne infection.

Turmeric – Heart and brain health.

Cardamom – Blood pressure, breathing problems and stomach ulcers.

GOI too have launched special programme with respect to Ayurveda namely **National Ayush Mission, Aahaar Kranti Mission, ACCR Portal and Sanjivini App.**

The aim is to boost scientific medical research through Ayurveda colleges and hospitals. Innovative ideas are identified, supported and promoted in healthcare research in bone joint inflammation and degeneration, iron deficiency, breathing problems, obesity, diabetes, skin infection, anxiety disorders and disease affecting liver.

The SMART program will motivate teachers for taking up projects in designated areas of health care research and create a larger database.





Shri Sivakumar R



Strengthening our borders

These projects are a testament to the commitment of the Indian government to strengthening the country's border.

India has to contend with aggressive neighbours on the north and northwest as well as the north-eastern side. Of these, relatively we have been found to have infrastructure on the northeast. Additionally, if infrastructure were to be further developed, it would certainly aid in the progress of our north-eastern region.

With this goal in mind, our Raksha Mantri Rajnath Singh recently inaugurated 28 infrastructure projects in 7 states and Union Territories, built by Border Roads Organisation (BRO) valued at ₹ 724 crores. Eight of these projects are in Ladakh; five in Arunachal Pradesh; four in Jammu and Kashmir; three each in Sikkim, Punjab, and Uttarakhand; and two are in Rajasthan. These projects will

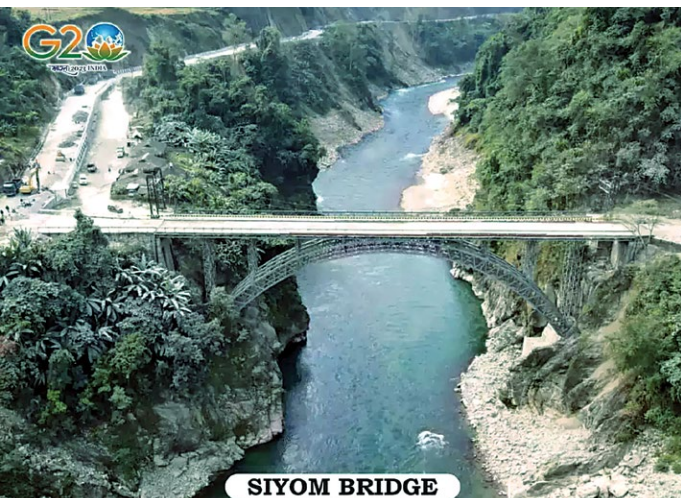
serve to connect the border areas and ensure the development of their residents.

Of these the Siyom Bridge, located on the Along-Yinkiong Road in Arunachal Pradesh, is among the most important. It will greatly enhance the speed of troop deployment, as well as the transportation of heavy equipment and mechanized vehicles to forward areas in the Upper Siang district, Tuting and Yinkiong regions along the Line of Actual Control (LAC).

The BRO has also connected remote villages such as Huri village in Arunachal Pradesh to the mainland.

This connectivity has triggered reverse migration in these areas, with population increases being witnessed due to the availability of basic amenities such as schooling facilities, primary health care centres and electric supply and employment opportunities.

These projects are a testament to the commitment of the Indian government to strengthening the country's border infrastructure and ensuring the safety and security of its citizens.



SIYOM BRIDGE





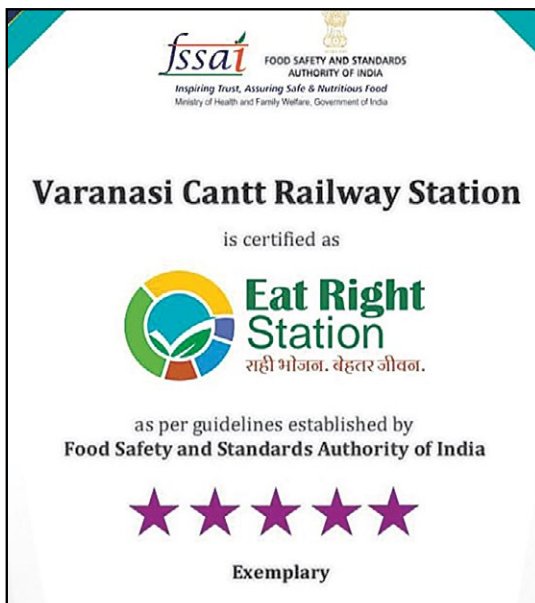
5 STAR FOOD

at Varanasi Cantonment Railway Station



The railway station that provides high quality, nutritious food has been recognized by Food Safety and Standards Authority of India (FSSAI) with a 5-Star 'Eat Right Station' certification. This highly prestigious and utilitarian award has been conferred upon Indian Railways' Varanasi Cantonment Railway Station.

This certification is granted to railway stations adhering to standard food storage and hygiene practices. On a scale of ratings from 1 to 5, 5-star indicates full compliance to safe and hygienic standard of food made available to passengers. It is a part of the 'Eat Right India' movement which is a large-scale effort by FSSAI to ensure safe, healthy and sustainable food for all Indians. The movement adopts a thoughtful mix of regulatory, capacity building, collaborative, and empowerment approaches to ensure that our food is suitable not only for the present, but also for the future.



Other star certified stations are:

- Anand Vihar Terminal Railway Station (Delhi),
- Chhatrapati Shivaji Terminus (Mumbai),
- Mumbai Central Railway Station,
- Vadodara Railway Station
- Chandigarh Railway Station
- Bhopal Railway Station.





New system to grade hospitals under **AYUSHMAN BHARAT SCHEME**

National Health Authority (NHA) has introduced a new system to measure and grade performance of hospitals empanelled under Ayushman Bharat Pradhan Mantri Jan Arogya Yojana

(AB PM-JAY). The objective is to measure performance of hospitals based on the value of healthcare services provided, rather than the current metric based on the volume of services provided.

What is AB PM-JAY?

Ayushman Bharat is a flagship scheme of GOI launched to achieve the vision of Universal Health Coverage (UHC). The PM-JAY is the largest health insurance scheme in the world which aims at providing a health cover of ₹ 5 lakhs per family per year for secondary and tertiary care hospitalisation to over 10.74 crores poor and vulnerable families that form the bottom 40% of the Indian population.

Traditionally, health insurance payments were made based on the number of services provided to the patient. **Under this new initiative, payments will be outcomes based and health care providers will be rewarded according to the quality of the treatment delivered to the patient.**

Under value based care, the performance of the empanelled hospitals will be measured based on five **performance indicators** such as:

1. Beneficiary satisfaction
2. Hospital readmission rate
3. The extent of out-of-pocket expenditure
4. Confirmed grievances and
5. Improvement in-patient's health-related quality of life.

The scores of the hospitals will also be available to the public in order to help the beneficiaries make informed decisions. **In this way, the hospital performance will not only determine the financial incentive of the hospital but also create a demand for quality treatment of beneficiaries under PM-JAY.**

Ayushman Bharat
Blessing India For A Healthy Tomorrow

About Half-Million Indians treated by the World's Largest Healthcare Scheme

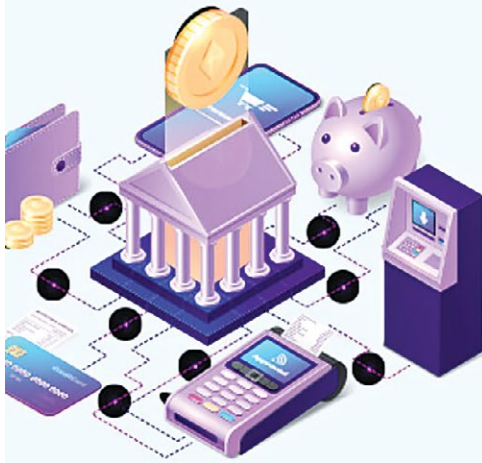
- 47 lakh** people have availed the 'Pradhan Mantri Jan Arogya Yojna' at a cost of Rs 7,500 crore
- 21,000 Health & Wellness Centres operational, to be scaled to **1.5 lakhs** by 2022
- Over **10 crore** beneficiary cards issued in 32 States & Union Territories
- 18,073 hospitals** and health care providers empanelled across the country

Source: Ministry of Health





Smt Shyamala Viswanathan



KERALA becomes the first fully digital banking state in India

DO YOU KNOW ?

- ✦ Kerala became the first and only state in the country to have its own internet service.
- ✦ Kerala won three 'Digital India' awards for advancement in the digital sector
 - * **Silver medal** for Ksheerashree portal,
 - * **Platinum medal** for Digital Workforce Management System and
 - * **Gold medal** for District Administration of Kottayam.

Kerala became the first state to enable digital banking in all eligible accounts. It now has at least one product in 3.76 crore accounts enabled digitally, according to the State-Level Bankers' Committee (SLBC). In 2021, Thrissur become the first district to implement digital banking under the "Expanding and Deepening of Digital Payments Ecosystem" scheme of the Reserve Bank of India (RBI).

What is Digital Banking?

Digital banking involves the digitization of all traditional banking products, processes and activities to serve customers through online channels.

What are digital banking services?

They include the operations

and activities (all the traditional banking services available 24/7 on mobile phones, computers and compatible smart devices, without the need for a customer's presence in the bank branch) like obtaining statements, cash withdrawals, funds transfers etc. In short-digital banking software makes all traditional services easier to access, understand and manage.

CM Vijayan said this achievement was possible due to social interventions through local self-government institutions along with infrastructure development and technological advances in the banking sector.

In a move to reduce the digital divide and enable the users to avail a seamless banking experience by providing internet to everyone in the state either for a cheaper price or for free-of-cost, the ambitious Kerala Fibre Optic Network (K-FON) project of the state government is also being ushered in by the state Government.

The K-FON will ensure internet facility to everyone in the state. 17,155 km-long optic fibre cable network has been laid and is due to be completed soon.





EFFECTIVE COATING TECHNIQUE to replace chrome plating

Chrome plating is a type of electroplating that is a finishing process involving chromium application onto the surface of a metal workpiece or object with direct electricity.

A group of Research scientists led by Dr Nitin P. Wasekar has developed a lab-scale process for depositing nanostructured nickel alloy coatings to electroplate.

Chrome plating is a type of electroplating that is a finishing process involving chromium application onto the surface of a metal workpiece or object with direct electricity. It is corrosion-resistant, increases surface hardness and provides ease of cleaning. Used in various manufacturing applications such as wheels, doorknobs, cutlery and vases, it has two types – **Decorative or Hard Chrome Plating.**

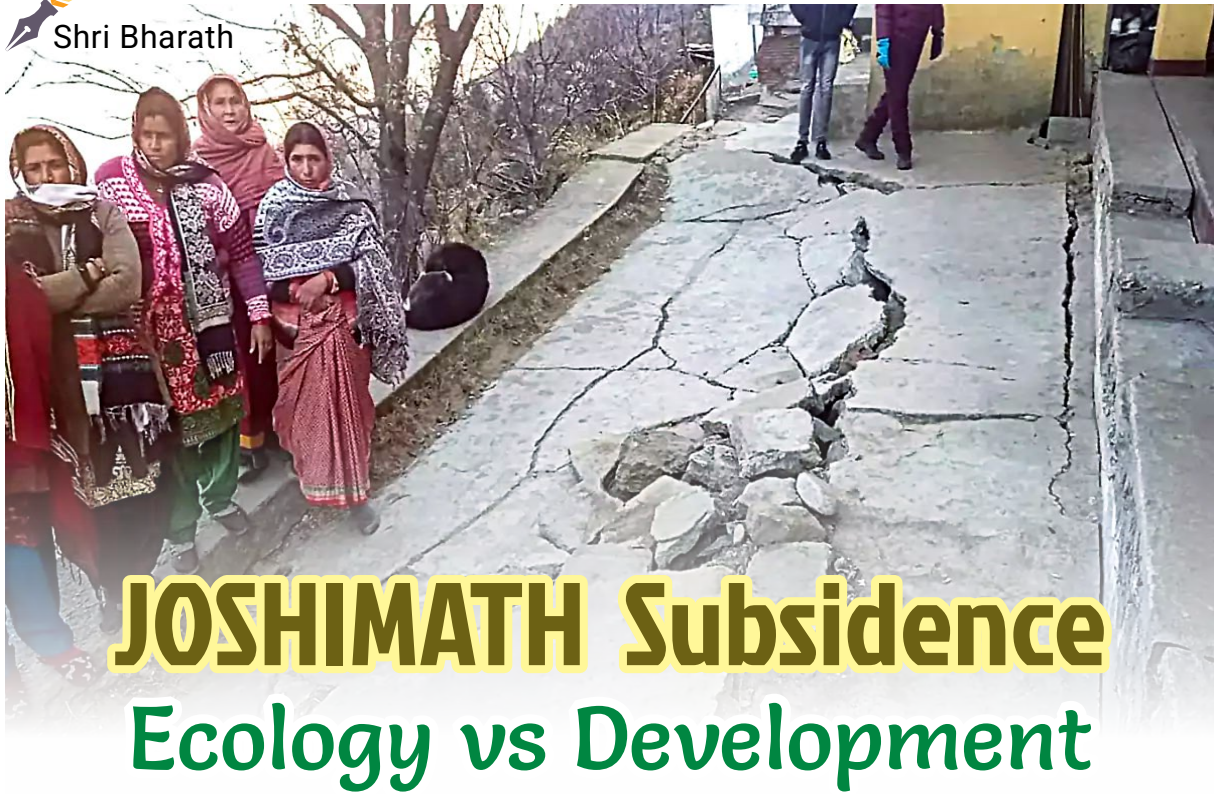
Chrome Plating involves the chemical element ‘Chromium’ which can exist in several states, most commonly as – Trivalent Chromium (Cr III) or Hexavalent Chromium (Cr VI). While Cr III may not be considered harmful

to the environment, Cr VI is a known human carcinogen which is generally exposed to humans via inhalation and carries the risk of lung cancer. It most likely impacts millions of people drinking chromium-contaminated water and those residing near toxic sites and chemical manufacturers.

This new technique involves nickel and its alloy with tungsten, which has been studied for over 15 years and is an optimal replacement for chromium plating. It uses pulsed current electroplating, is highly corrosion-resistant, and is helpful to the plastic-ware industry.

The Centre for Engineered Coatings at the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI) conducted the research. ARCI is an autonomous Research and Development Centre of the Department of Science and Technology (DST), Govt. of India.





JOSHIMATH Subsidence

Ecology vs Development

Joshimath cantonment is one of the important military stations of the Indian army in Uttarakhand and is the closest army station to the Indo- Tibetan border.

The Place

Uttarakhand is considered to be the abode of the Gods - the *Devabhoomi*. It is of great religious significance to the Hindus and it houses numerous temples and pilgrimage sites. Joshimath (aka Jyotirmath) is a municipality located in the Chamoli district of Uttarakhand and the gateway to Badrinath and Hemkund Sahib-two important religious places. It is also the entryway to many Himalayan mountaineering expeditions and trekking trails. One of the four Mutts established by Sri. Adi Sankaracharya is also at Joshimath. It is the winter abode of Lord Badrinarayana. Located at a height of 6150 ft above ground level, it has a population of about 61,000 people, which was around 17,000 in 2011.

Joshimath cantonment is one of the important military stations of the Indian army in Uttarakhand and is the closest army station to the Indo-Tibetan border.

The Phenomenon

The gradual caving in or the sudden sinking of an area of land is called subsidence. This is most often caused by the removal of water, oil, natural gas and fracking, or mining activities. Natural events such as earthquakes, soil compaction, erosion, sinkhole formation also can cause this. Joshimath has been hit by this geological phenomenon.

In October 2021 in about 14 to 15 houses in Joshimath cracks were observed. It rose to 150 in December 2022 and to a whopping 849 by mid-January 2023. While between April and November last year the town sank by 8.9 cm, in January 2023 it sank by 5.4 cm in 12 days. Several houses, hotels and government-owned buildings have developed cracks. Those certified





as unsafe by the Central Building Research Institute(CBRI) are being demolished by the government.

Relief and Rehabilitation

Chief Minister Pushkar Singh Dhami has had several reviews with the officials about the crisis, relief and rehabilitation of the affected residents. A committee has been formed to work out the compensation for the affected. PMO is also monitoring the situation closely. Till now about ₹ 4 crores have been distributed to about 400 people. Apart from this relief material such as food kits, blankets, heaters, daily use kits etc., have been distributed. Currently people have been rehabilitated in relief camps, hotels and house stays temporarily. The State Disaster Management Authority(SDMA) has identified

four sites for relocating the affected residents. In the first phase 120 families are to be rehabilitated.

The Causes

Joshimath was always vulnerable to earthquakes as the region falls in the seismic zone V. What really made things worse is the weak foundation of the city. The town's foundation has no solid rocks and hence structures began caving in when burdened with heavy construction going on during the past decades.

Widening of the Char Dham yatra road has led to the construction of many hotels in and around Joshimath. This needed higher levels of cleaning of the Hills thereby making the region highly vulnerable to landslides. The incessant rains in the region in the last few years also compounded the problem. Locals also blame the Tapovan Vishnugad hydel project of the NTPC, which has denied the allegations.

As early as 1975 a committee appointed by the UP government had warned about the geological instability of Joshimath, and recommended several steps, stressing that the undercutting by river currents of Alaknanda and Dhauliganga are bringing in erosion and landslides.

The ferocity was witnessed in February 2021, in the form of massive flash floods. Such disasters have been happening regularly in almost all the districts of Uttarakhand. **A 1998 study by an interministerial team after the flash floods in Rudraprayag and other Garhwal regions had stated that the main cause of the natural disaster was unplanned, uncontrolled and unscientific development, especially the**

Till now about ₹ 4 crores have been distributed to about 400 people.





The Joshimath crisis should be a case study for future town planning in the country.

construction of buildings, homes and roads on vulnerable slopes; uncontrolled mineral mining; and choking of natural drainage systems. The team had also recommended corrective and preventive actions. But no action was taken by the governments. As a result, some of these villages were washed away during the Kedarnath flash floods in 2013, causing humongous damage.

The Solution

Experts feel that as a short-term action the government should cap the population at reasonable levels and rehabilitate the others. There is an urgent need to ensure a foolproof sewerage system, and maintain the hydrology of the area. The developmental projects need to be reviewed and calibrated with a focus on ecology.

The Joshimath crisis should be a case study for future town planning in the country. The factors at play in Joshimath are also found in other hill cities such as Nainital, Champawat and Uttarkashi. The ills

afflicting these cities are similar to that of Joshimath.

There is a dire need to strike a balance between development and ecology. Emerging economies like India need development and there is a need to take a practical approach rather than one that is driven by ideology or emotion.

Ivan Illich the author of the book *Deschooling Society* lists erosion of traditional skills, spoliation of nature and displacement from traditional environments as some of the 'effects of development'. This was in the context of Mexico decades back, and very relevant in the immediate Joshimath context. This tells how little we have learnt.

The Western paradigm is not the universal model of progress and development. **India needs to do a course correction and reorient** itself to a more Swadeshi model of development so that development does not become a 'malignant myth'.

India needs to do it now.





World's longest River Cruise

The tourists will be served local food and seasonal vegetables. Neither non-vegetarian food nor liquor will be served on board.

PM Modi recently flagged off the world's longest river cruise, **MV Ganga Vilas** in Varanasi. **It is the first cruise vessel to be made in India.**

From Varanasi MV Ganga Vilas will sail around 3,200 km in 51 days to reach Dibrugarh in Assam via Bangladesh traversing 27 river systems in two countries. The cruise is planned with visits to 50 tourist spots including world heritage sites, national parks, river ghats and major cities like Patna in Bihar, Sahibganj in Jharkhand, Kolkata in West Bengal, Dhaka in Bangladesh and Guwahati in Assam. Some of the prominent tourist spots covered by the cruise include the Sunderbans mangrove forest and Kaziranga National Park, which is home to one-horned rhinoceroses.

The cruiser which is actually a 5 Star mobile hotel has 3 decks housing 18 suites with a capacity to carry 36 tourists with all luxury amenities like spa, saloon, gym etc. It is equipped with a pollution-free system and noise control technology. There is a sewage

treatment plant on this cruise so that no sewage flows into the Ganges; it also has a filtration plant which purifies the Ganga water for bathing and other purposes. It will have 40 crew members to take care of the 36 tourists. The tourists will be served local food and seasonal vegetables. Neither non - vegetarian food nor liquor will be served on board. The plan is to run the cruise itinerary twice a year between October and March, when the weather is better and the river water level is high.

Tickets for the next two scheduled 2024 sailings have already been sold out. The ticket cost is between ₹ 20 lakhs and ₹ 25 lakhs approximately per person.

The journey is expected to give the foreign tourists an opportunity to embark upon an experiential voyage and indulge in the art, culture, history and spirituality of India and Bangladesh."India has everything that you can imagine. It has a lot beyond your imagination. India cannot be defined in words. It can only be experienced from the heart," PM Modi said in his message for tourists.





Kum Silpa Nandakumar



विकसित बिहार के 7 निश्चय



BSPHCL

If you live in Bihar, you can now save time, energy and money by applying for new electricity connection from home. This is made possible as part of Bihar Har Ghar Yojna and can be done through the official BSPHCL e-corner portal.



The progressive scheme has been launched because many houses in Bihar are still without electricity.

The main objective of this initiative is to provide free electricity connection to every household in the state.

The Bihar government has set the target of providing electricity connection to 50 lakh households. Notably, the BPL (Below Poverty Line) families in the state are already covered under the **Deen Dayal Upadhyay Gram Jyoti Yojana** of the Central Government.

About half of the APL (Above Poverty Line) families who do not have electricity connection currently will be covered under the scheme. The connection will be provided free of cost but the electricity consumption bill will have to be borne by the beneficiaries. Those who do not require the facilities should have to provide the reason in writing.

The scheme comes under the 7 Nishchay Yojna launched by the Bihar government. Literally translating to “seven promises”, 7 Nishchay Yojna focuses on the overall development of the state.

Online Application Form

SUBMIT APPLICATION
UPLOAD DOCUMENTS
PAY
TRACK APPLICATION

APPLY ONLINE

GET ELECTRICITY





Shri Nagarajan R



WORLD HABITAT AWARDS 2023

Odisha wins Award for Jaga Mission

This award is given by World Habitat, in partnership with UN-Habitat.

The World Habitat Awards were established in 1985 as part of the United Nations International Year of Shelter for the Homeless. This year Odisha's ambitious initiative Jaga Mission, a slum land titling project, benefiting a million urban poor living in the slums, has won the **World Habitat Award** for the second time.

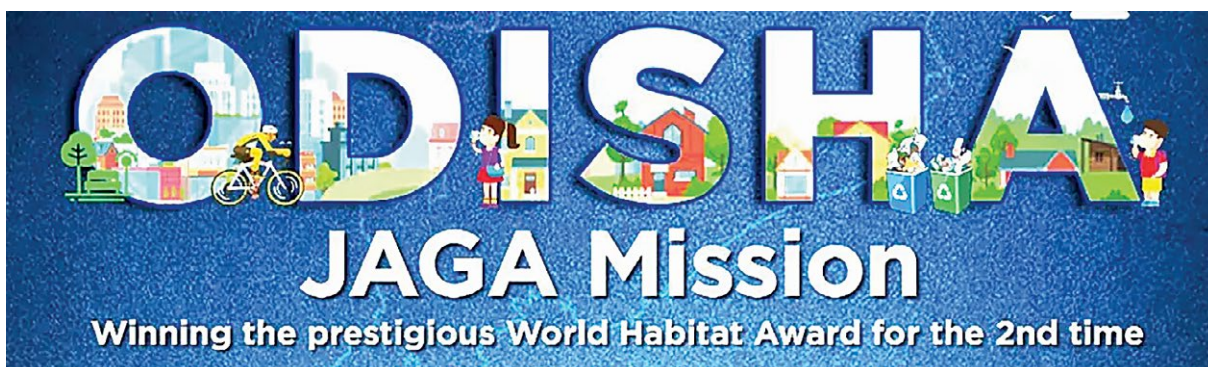
It is the bronze award winner for 2023. This award is given by World

Habitat, in partnership with UN-Habitat, every year, in recognition of innovative, outstanding, and revolutionary ideas and projects from across the world. According to an official statement, Jaga mission is the world's largest land titling and slum upgrading program which aims at empowering the lives of slum dwellers.

The project takes a holistic approach to address poverty, focusing on three core issues:

- Granting land rights to residents to mitigate the threat of forced evictions and enable access to public housing subsidies.
- Infrastructure upgrades to improve living conditions and livelihood opportunities.
- Community mobilisation to empower marginalised groups to construct, manage and maintain upgraded facilities.





Factfile

Odisha aims to be the first slum-free state in India. Out of the 2,919 slums, 707 slums have been upgraded across 30 cities till date.

Project's annual budget	Approximately ₹ 5 billion (\$65 million USD)
Families granted land tenure security	1,75,000 (in the last 5 years)
State that is replicating this programme	Punjab, where it will benefit 1.4 million people



The project's funds comes predominantly from the Odisha state budget and grants from the central and state governments that are meant for various components required for slum upgrading.

Odisha aims to be the first slum-free state in India. Out of the 2,919 slums, 707 slums have been upgraded across 30 cities till date, of which eight have been declared slum-free. 100 percent households in 2,724 slums have been provided with piped water connections, 707 slums have been converted into fully livable housing, 100 percent households in 666 slums have individual toilets.



2023 Men's Hockey World Cup



The tournament also featured a host of cultural experiences, fan parks and tourism initiatives to create an immersive experience for fans.

The 2023 FIH Men's Hockey World Cup successfully wrapped up with Germany winning the coveted trophy in a thrilling shoot out match against Belgium scoring 3-3 (5-4). The Governor of Odisha - Ganeshi Lal, Jharkhand's CM Hemant Soren and Odisha's Sports Minister Tusharkanti Behera were in attendance for the final match.

The 2023 Men's Hockey World Cup was held in Odisha's Bhubaneswar and Rourkela from 13th – 29th January, featuring 16 top teams from across the globe. The quadrennial world championships for men's national field hockey teams is organised by the International Hockey Federation. This was the 15th edition. It was held at the Kalinga Stadium in Bhubaneswar and at the 20,000 seat Birsa Munda International Hockey Stadium in Rourkela.

The 16 teams were divided into four groups - Pool A to D - of four teams each. In this group stage of the competition, each team plays against every other team once. This is known as the single-headed round-robin format. After the group stage, the top teams from each

pool, based on the results, qualified directly for the quarter-finals. The second and third-placed teams from the four groups, meanwhile, played in the crossover matches to determine the other four quarter-finalists.

Australia, Spain, England, Germany, Belgium, New Zealand, Netherlands and South Korea were the quarter finalists. After some nail-biting matches Australia, Germany, Belgium and Netherlands made it to the semi-finals. Germany entered the finals by beating Australia for 4-3. After missing the finals in 2014 and 2018, Germany made it to the finals after 13 years. Belgium edged out Netherlands in the penalty shootout 2-2 (3-2). India finished in 9th place.

With a total of 44 matches, the event was a great success. Fans from all over the world came flocking to Odisha to support their favourite teams. Alongside hockey, the tournament also featured a host of cultural experiences, fan parks and tourism initiatives to create an immersive experience for fans, giving them the opportunity to fully engage with the culture of Odisha and India.





Air Pollution in Indian cities

Our fossil fuels are responsible for pollutants like nitric oxides, volatile organic compounds, sulphur di oxide, lead etc.

Pollution, especially air pollution has a lot to do with the way we live. The effects of air pollution is seen more in urbanised settings. The onset of industrial revolution and the sources of energy like coal and oil which fuelled it paved the way for anthropogenic (human-induced) air pollution and showed a glimpse of what an urbanised, dense, fossil fuel-energised world and residual air pollution would look like.

Ambient air quality Index

Ambient air quality index refers to the amount of pollutants present in the outdoors without harming human health. It is obvious from the definition that there are different standards, values for different pollutants.

What are the pollutants?

Air borne particulate matter PM like PM2.5, PM10 is not a single pollutant, rather it is a mixture of solids, aerosols, metallic compounds, organic compounds, volatile organic compounds(VOC) etc. It could come from unpaved roads, construction waste, mining activities, unburnt fuel exhaust, power plants, agricultural wastes, pollen etc. Our fossil fuels are responsible for pollutants like nitric oxides, volatile organic compounds, sulphur di oxide, lead etc.

How do Indian cities fare w.r.t pollution?

Most Indian cities are painfully undergoing the same trauma that cities of developed countries faced. Our cities are densely populated,





The city of London fixed chronic air pollution problem in less than a decade after 4000 people died in just 5 days due to London smog.

with poor tree cover and dedicated garden spaces. Many Indian cities are at the receiving end of urban migration. There are infrastructural challenges like unavailability of quality roads, overburdened unreliable public transportation, construction boom, rising incomes and preference for private vehicles. All this have worsened its air quality. The air quality in its bustling metropolitan areas and tier-2 cities have been dangerously high with respect to most pollutants.

National clean air campaign NCAP

Following evidence from data that showed Indian cities faring very badly, the National Clean Air campaign was launched. 131 most polluted Indian cities that fell short of meeting the national ambient air quality standards were chosen for monitoring and action. These cities are expected to reduce their level of PM 2.5 and PM 10 by 20% to 30% by 2024. The Indian standards for PM 2.5 is less than 40 micro gram per cubic meter and for PM 10 it is less than 60 micro grams per cubic meter, with 2017 as base level.

Later a 40% reduction in particulate matter was targeted by year 2026, with an investment of ₹6897crores. Cities are required to quantify reductions that could be around 15% every year for PM10.

Results

Analysis of the 4 - year performance of NCAP was disappointing. Only 38 of the 131 cities ever came close to their targets. An acute lack of monitoring stations and equipment to monitor PM 2.5 – the most dangerous of particulate meter are low points. Delhi was the worst city for air quality with PM 2.5 averaging 99.71 micro meters per cubic meter. Most cities have reduced the levels of PM 10 and PM 2.5(where monitoring was possible) ,the levels were far higher than permissible limits.

Pollution and human health

Pollution is recognised as a risk factor for global disease burden. Chronic exposure to high levels PM 10 can cause respiratory distress and worsen health outcomes in the elderly and infants. Chronic exposure to PM 10 and PM 2.5 have been proved to increase mortality, hospitalizations and premature mortality in infants. Chronic exposure to very high levels of PM 2.5 have been linked to lung cancer and inflammation.

Can we do better?

Certainly, yes. The city of London fixed chronic air pollution problem in less than a decade after 4000 people died in just 5 days due to London smog. **It takes huge concerted, coordinated efforts between different government agencies, town planners, private sector and the most important of all...people.**



ECONOMY



India's digital economy grew 2.4 times faster than Indian Economy



The digital economy has expanded in absolute terms from USD 107.7 billion to USD 222.5 billion.

It is true that when a vision is realised, the entire nation feels a sense of accomplishment. Digital India was established with a vision of inclusive growth in areas of electronic services, products, manufacturing and job opportunities.

Vision to Reality

As per RBI's recent bulletin, India's digital economy grew 2.4 times faster than the economy between 2014 and 2019, creating approximately 62.4 million jobs.

The digital economy has expanded in absolute terms from USD 107.7 billion to USD 222.5 billion.

India's digital economy increased at a Compound Annual

Growth Rate (CAGR) of 15.62 % between 2014 and 2019, whereas the country's GDP (GVA) grew at a CAGR of 6.59%.

The core digital economy of India (hardware, software publishing, web publishing, telecommunication services and specialised and support services) grew from 5.4 % of GVA (2014) to 8.5 % (2019).

This shows the ability of Digital Economy to act as a pull force by bringing innovation, increasing efficiency and improving services.

Policies such as Make in India, Production Linked Incentive (PLI) scheme, which stimulate domestic production of computers, electronics etc., are crucial for India's growth.

CAGR - The compound annual growth rate is the average rate at which some value (investment) grows over a certain period of time assuming the value has been compounding over that time period.

GVA - Gross value added measures the contribution of a corporate subsidiary, company or municipality to an economy, producer, sector or region.



108th Indian Science Congress



DO YOU KNOW ?

- ✦ The Science city of India - **Bangalore**
- ✦ The first lady scientist elected as the general president of the Indian Science Congress in 1975 - **Asima Chatterjee**
- ✦ The first science village in India - **Jatinga village in Assam**
- ✦ President of Indian Science Congress - **Dr. Vijay Laxmi Saxena**

The 108th session of Indian Science Congress (ISC) was launched on 3rd January in Nagpur, Maharashtra. PM Modi virtually addressed the gathering. The five-day event was hosted by the Nagpur University.

The focal theme of this year's ISC is "Science and Technology for Sustainable Development with Women Empowerment." The key highlight of ISC is sustainable development with inclusive involvement of all sections of society including women.

ISC aims at promoting the cause of science in India. The Indian Science Congress Association (ISCA) holds an annual Congress at different places of India for this cause. India is among the top three nations in the world in terms of the number of PhDs and startup ecosystems.

While speaking, PM Modi emphasised the role of the scientific community in developing

ways of dealing with emerging diseases through new vaccines. He talked about integrated disease surveillance for the timely detection of diseases.

The contemporary issues such as climate crisis, hunger, unstable economy, growing population etc., can be tackled by converting information into insight and analysis into actionable knowledge.

Meanwhile, he also noted the role of low-cost satellite launch vehicles in the booming space



sector of India and mentioned that the world will come forward to take our services.

He highlighted the opportunities available for private companies and start-ups by associating with R&D labs and academic institutions.





The Jamboree provided a platform for young scouts to share their customs, food habits, handicrafts and religious practices with each other.

The Bharat Scouts and Guides is the largest voluntary, non-political, uniformed youth organization and educational movement in the country.

They work for the character-building of boys and girls without any distinction of creed, race or gender. The organization works with a spirit of dedication and service which promotes the welfare of humanity.

Lord Robert Baden-Powell started the movement in the year 1908 and it spread rapidly in countries outside the British Isles. This made Baden Powell realise that a get together of Scouts of all nationalities must be organised.

The event was named “Jamboree” which means people gathering for a big festival filled with fun and excitement. Though initially the event took off well, it got stalled now and then because of the outbreak of wars. Later after independence the first All-Indian Jamboree was held in Andhra Pradesh.

President Draupadi Murmu inaugurated the 18th National Jamboree of the Bharat Scouts and Guides at Pali, Rajasthan on 4th January 2023. In order to accommodate the 3500 participants, a smart village had been set up with all the facilities on a 220-hectare area at Nimble village and hundreds of tents had been erected at the venue.

The Jamboree provided a platform for young scouts to share their customs, food habits, handicrafts and religious practices with each other. This cultural exchange was the highlight of the event, as scouts learnt about and appreciated the diverse culture of their fellow participants.





Col Shashidhar M V (Retd)

K9 VAJRA

the formidable indigenous weapon

Rewind

The K9 Vajra -T 155mm, 52-calibre self-propelled howitzer is the largest defence contract worth ₹4,500 crore awarded under 'Make in India' for delivering 100 K9 Vajra-T guns, maintenance support package and transfer of technology (ToT) to the MoD in 42 months. The project is to eventually equip 18 regiments by replacing the 50-year-old 105-mm Abbott which we inherited from the British in 1964 (mounted on a tank chassis, Abbott was India's first and only self-propelled gun).

Futuristic Battlefield Requirement of the Indian Army



**K-9 VAJRA(T)
can turn
around at
zero radius
and fire at
long and short
distances.**

What is a K-9 VAJRA (T) ?

- ▶ A tank-mounted self-propelled howitzer with superior fire power and manoeuvrability.
- ▶ Weighs 50 tonnes and can fire 47 kg bombs at a distance of 43-75 km.
- ▶ It can turn around at zero radius and fire at long and short distances. (other modern tanks find it tough to hit short-distance targets as they are not equipped to engage for line of sight)
- ▶ Can fire six to eight rounds in less than a minute.
- ▶ Capable of attaining speeds up to 70 kilometres-(8-cylinder diesel engine with 1000 hp).
- ▶ Commanded by a crew of five combatants.
- ▶ Offers the best- in- class armour suite for protecting the commanding personnel.





The K9 Vajra will remain the mainstay artillery fire power equipment for the four Strike Corps of the Army including the newly raised 17 Corps for the eastern theatre against China.



- ▶ Equipped with steel armour, it can withstand armour piercing rounds and shells and incorporates an indigenously developed Nuclear Biological Chemical (NBC) suite which allows the crew to function even under the harshest conditions.
- ▶ Can strike targets up to 42 kilometres with pin-point accuracy.

A Make in India Initiative

The K-9 Vajra (T) has been assembled by L&T through a Transfer of Technology (ToT) from South Korea's Hanwha by procuring completely knocked-down kits (CKDs) imported at facilities in Talegaon, Maharashtra and in Hazira, Gujarat.

The equipment boasts of more than 80% indigenous work packages and 50% indigenous content including 14 critical systems like the fire control and

ammunition handling systems by involving local production of over 13,000 components per gun system through a supply chain of about 400 manufacturers (with over 100 small and medium enterprises).

The K9 Vajra was mainly bought for use in deserts being inarguably the world's best 155mm/52 tracked howitzer.

But at the height of tensions in eastern Ladakh in 2020, the Army deployed one regiment of K-9 Vajra(T) to augment its long-range fire power in the backdrop of a massive build-up of forces by China across the LAC. It will remain the mainstay artillery fire power equipment for the four Strike Corps of the Army including the newly raised 17 Corps for the eastern theatre against China. The 27-month long standoff with China has also seen the Army deploy a wide array of big artillery guns along the 3,488-km long Line of Actual Control, stretching from eastern Ladakh to Arunachal Pradesh.





Col Shashidhar M V (Retd)

DRDO spearheads India's self-reliance in DEFENCE TECHNOLOGIES

In 1983 GOI sanctioned the Integrated Guided Missile Development Programme (IGMDP) for developing the five missile systems.

Overview

The Indian defence sector aims to design, develop and lead the production of state-of-the-art sensors, weapon systems, platforms and allied equipment for the Armed Forces and Para Military Forces, thus reducing the burden of imports

Former President Dr. Abdul Kalam first advocated private entrepreneurship alongside the now seven defence PSUs (previously nine) focussing primarily on research and development (R&D) and manufacturing.

In 1983 GOI sanctioned the Integrated Guided Missile Development Programme (IGMDP) for developing the five missile systems - Prithvi, Akash, Trishul (the naval version of Prithvi), Nag (anti-tank) and Agni Ballistic

missiles with different ranges. From then to the recent announcement of a budget of ₹ 84,000 crores for domestic capital procurement, there has been a tremendous boost to Make In India Initiative.

Mission Benefits

Aimed at providing technological solutions to the Defence Services so as to optimise operational readiness besides promoting the well-being of the troops, DRDO and Defence Public Sector Undertakings (DPSUs) have both assiduously been working towards developing infrastructure with the help of a committed quality manpower.

In a major step, all the 41-operating and non-operating units of the Ordnance Factory Boards were merged into seven



DPSUs wholly owned by the Ministry of Defence in 2021. Mergers have been based on combat effective functions such as ammunition, transport, logistics

▶ Availability of in house infrastructure capability and industry support at all times in the critical areas of defence security.

defence companies and start-ups besides micro, small and medium enterprises that form the supply chain management.

This reorganisation entails the new defence PSUs need to compete against the domestic private sector thus bringing a level-playing field. They have not only to compete with the private sector for global orders but also look at emerging markets for growth thus offering both challenge and opportunity alike.



Technology Development Fund

GOI and DRDO signed an MoU to help support the execution of a new Technology Development Fund (TDF) Scheme April 2020.

A commitment was made by the government in Budget 2022-23 to ensure 68% of total capital procurement in defence sector from domestic market and 25% of R&D budget towards research through Indian entities thus providing impetus for industry and academia to collaborate and develop world-class innovative and futuristic technologies through indigenous solutions.



- ▶ Generation of employment.
- ▶ Nationalism and patriotism amongst the Indian Forces.

Re-organisation of DRDO

Previously, all defence acquisitions were largely on a nominated basis when the MoD would directly assign production to the respective board based on requirement from the armed forces.

Under the Atmanirbhar Bharat initiative, the nation has embarked on constructing the defence India pyramid addressing the combat readiness of defence sector so as to reduce dependence on imports and increase own capabilities of industries to meet the emerging security challenges.

These entities include the R&D institutions, defence PSUs, private

DRDO's Roadmap towards self-reliance in Defence Technologies

The last six decades has witnessed an unprecedented and significant professional growth of DRDO towards nation building. From a Defence and Scientific organization previously making only small arms and ammunition to its modern - day runway of growth, this formidable organization has now embarked on building complex systems including missiles, fighter aircraft, radars, sonars, electronic warfare systems, CBRN defence technologies and life support technologies. Despite

guns and artillery, weapons hardware, troop accessories like bullet proof jacket, uniforms, electronics like optical instrument and parachute manufacturing.

Primary benefits of such a merger include:

- ▶ Much-needed reduction in the fiscal deficit.





limited human resources and financial budget, DRDO has now grown into an R&D behemoth today consistently delivering many complex systems both in strategic and tactical defence sectors.

GOI initiative to have two major defence-industrial corridors, one each in UP and Tamil Nadu also has given fillip to many Indian industries and attracting foreign investments towards Aatmanirbhar Bharat and building a five trillion-dollar economy.

Its long and arduous journey at a glance

- ▶▶ In strategic sector- the credible second-strike capability from land, air, water and underwater.
- ▶▶ In the missile sector- technological excellence for increasing the accuracy of target attack besides developing a

complex family of missiles for tri-services from the PRITHVI to the BRAHMOS.

- ▶▶ For Akash missile alone, the services have placed orders worth close to Rs 40,000 crore.
- ▶▶ Development of ballistic missile defence (BMD) for interception of adversary missile both in exo-atmospheric and endo-atmospheric level.
- ▶▶ Anti-satellite missile Shakti is certainly a deterrent technology demonstrator for protecting our space-based assets.
- ▶▶ Light combat aircraft (LCA)- Tejas.
- ▶▶ Main battle tank (MBT) Arjun inducted with the first order of 124 tanks from the army besides delivering a family of combat vehicles and armoured amphibious vehicles.

▶▶ A family of radars – to include Indira PC radar, Rajendra phase array radar, battlefield surveillance radar, weapon locating radar and radars for electronic warfare (EW) sectors.

▶▶ Self-reliance in underwater sensor technologies by developing a family of sonars.

▶▶ Developed and special steel for ship building for India's aircraft carriers (INS VIKRANT) and Project 75 for the Navy.

▶▶ Long range artillery gun – Dhanush (Indian BOFORS).

▶▶ A large number of NBC defence technologies and equipment.

▶▶ More than 100 different types of equipment for operations for Central Armed Police Forces (CAPF).

▶▶ To keep combat soldiers fighting fit in extreme climatic and operational environment wide spectrum of life support technologies for personnel selection, placement, nutrition, clothing, personal protective equipment, adaptation to environment.

Conclusion

Russia's ongoing war in Ukraine has come as a rude and sudden wake-up call for most nation states who were procrastinating on their R&D towards strategic capacity building in their defence sectors.

DRDO is maximizing its output because of its strategies, commitment towards nation building and active partnership with the armed forces, industry and academia. India Inc growth engine has a unique and compelling opportunity here as a defence manufacturing nation and exporter of military hardware in the coming decades.





Col Shashidhar M V (Retd)



Helina Missile for Rudra Helicopters



Defence Acquisition Council (DAC) recently approved three proposals worth ₹ 4,276 crores to strengthen the country's deterrence and combat readiness by according approval for procurement of HELINA anti-tank guided missiles, launchers and other

associated support equipment which will be integrated to the Advanced Light Helicopter.

HELINA is a revolutionary tank-busting missile developed by the Defence Research and Development Organization (DRDO) and intended to be launched from Advanced Light Helicopters to obliterate enemy tanks.

The origin of the missile is indicated by its name, HELINA. It is a combination of two words. Helicopter is abbreviated as 'Heli'-Na' is derived from 'NAG,' an anti-tank guided missile that DRDO worked on for many years.

A variant of the HELINA Weapon System is called DHRUVA STRA and is being inducted into IAF.





Range : 500 m
to 7 km

Missile Speed :
240 m/s

SSKP : >80%

War head
penetration-
800mm

Diameter :
0.16 m

Weight : 45 kg

Length : 1.9 m

HELINA system has an all-weather day and night capability and can defeat battle tanks.

Once inducted HELINA will become an essential part of weaponization of Advanced Light and Attack Helicopters (Dhruv & Rudra) for countering enemy threats and further strengthen the offensive capability of the armed forces. Estimated cost of a missile is under ₹1 crore and around 500 missiles and 40 launchers are likely to be added to the inventory.

Features

- ▶▶ HELINA system has an all-weather day and night capability and can defeat battle tanks with conventional armour as well as explosive reactive armour (new age battle tanks and heavy armoured vehicles).
- ▶▶ Can target both in direct hit and top attack modes.
- ▶▶ Possesses high single-shot hit probability; has an advanced passive homing guidance system.
- ▶▶ Immune to countermeasures; airframe is built with lightweight and high-strength composite materials.
- ▶▶ Has real time image processor and fast and efficient algorithms which provide automatic target detection and tracking capabilities.



Anti-Tank Guided Missile 'Helina' being test-fired from a Advanced Light Helicopter





Birds and Humans

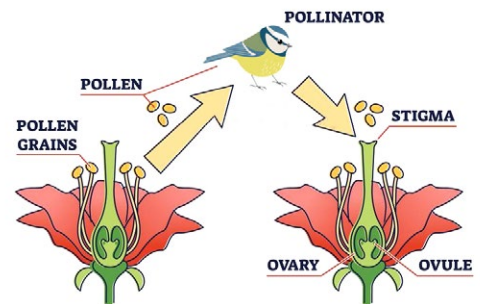
The food comes from plants and for plants to grow multifold they need seed dispersal.

The dependence of humans on birds has been well documented and researched. It has been proved that the birds help humans survive in multiple ways, some of which are visible and immediate; and some that are not easily seen by humans but have a long term effect. Here are a few ways in which humans are dependent on birds.

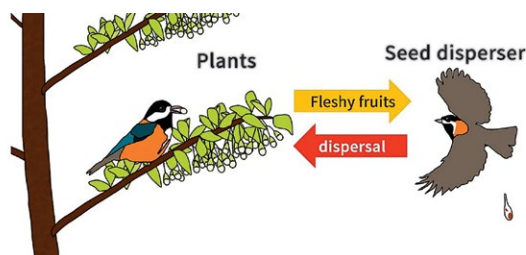
Seed Dispersal: For humans to eat, they need good nutritious food. The food comes from plants and for plants to grow multifold they need seed dispersal. The frugivorous birds like Barbets, Parakeets, Bulbuls, Pigeons etc., eat the fruits and then the undigested seed is passed out in their excreta. This falls on the ground

across vast areas and helps in the growth of that plant. The survival of forest and large plantations depends on birds for seed dispersal.

Pollination: For fruits to grow, it is very essential that the flowers get pollinated. Birds, bees and



butterflies (“the 3 Bs”) are the most important factor in this process. Nectarine birds like Hummingbirds, Sun birds and Flower peckers drink nectar from the flowers. The pollens get stuck to their tongue and beak. As they move around multiple bushes and trees, they end





Yellow-rumped honeyguide



Wedge-tail green pigeon-Seed dispersal



Steppe eagle-Hunting partner



Purple sunbird
-Pollination



Harrier-Hunting locusts

up spreading the pollen amongst flowers and help pollination.

Pest control: Birds are the best friends of farmers. While we do see the scarecrows and catapults to drive away birds from eating the crops, they help the farmers in keeping their land free of pests. Owls and eagles control the rat and snake population. Falcons and harriers are the best controllers of locusts. The cuckoos and rollers eat all the worms in the plants. Any field where there are plenty of birds will have a good crop because pest control is to perfection.

Tree doctors: Perhaps the most unseen but the most important help the birds do to humans is to keep the trees healthy. We see a healthy tree and we give credit to the gardener and many other factors, but we forget the “tree doctors”. All trees are filled with worms and maggots that cause a lot of harm to the tree. They can cause trees to die if not treated. Humans end up spraying chemicals that poison the tree and the surroundings. The birds do a great favour to humans by eating all these maggots and insects from these trees keeping them infection free. Warblers are specialist in this. The Tree creepers, Woodpeckers, Yuhinas form a team of tree doctors to keep the trees healthy.

Fisherman’s Friend: In Japan and Korea) fishermen use cormorants to catch fish. This is called “UKAI”. The cormorants are trained to catch multiple fishes in a single dive and the store them in their throat. They come up and regurgitate all the fishes stored in their throat. This helps net-free fishing and develops a strong bond between the fishermen and the bird. In Scandinavian countries the fishermen follow Gulls, Boobies and Skuas to locate large catchment





Indian roller - Pest control



Himalayan woodpecker-Tree doctor



Great cormorant-Fisherman's friend



Cinereous vulture - Scavenger

of fish. Birds hover around areas where there is a large school of fish and help fishermen maximize their catch.

Honey gatherers: There is a bird called Honey guide which guides humans to beehives in the forest. It is interested in the larva left after humans have extracted honey in the hive. It makes calls and guides humans to large hives and in return expects only the left-over hives. They are used by the wild honey gatherers in jungles and mangroves.

Hunting: In many cultures especially the bedouins in Arabia and mongols in Mongolia, large birds of prey like falcons and eagles are used to help in hunting. In Mongolia birds are treated as part of family and once they attain adulthood, they are released to be free. In Arabia falcons enjoy a luxurious life with their own passport and jets. They are treated as citizens of the country.

Scavenging: Perhaps the greatest help that birds do to humans is scavenging. The biodegradable matter generated everyday by humans directly or indirectly is a very large burden on the earth. Only a few mammals and birds have the ability to consume the larger pieces while the microbes take care of leftovers. Vultures, crows and ibises play a very significant part in this process. When an animal dies, it needs someone to open the carcass and this is done by red-headed vulture, bigger vultures like griffons, Indian vulture, cinereous vulture etc., which eat the larger part of carcass. The sinews attached to bones are eaten by Egyptian vulture.

The bones are eaten by the bearded vulture. Thus, the dead animal is consumed in matter of





Crimson sunbird-Pollination



**Andaman bulbul
-Seed dispersal**

hours to keep the environment clean. They have great ability to eat even rotten and putrid animal matter that otherwise will spread diseases.

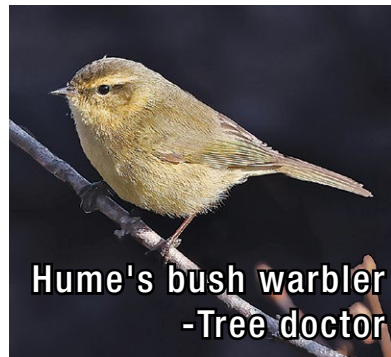
Birds have been a part of our folklore, mythology (Garuda) and even as symbols of countries (USA, Australia), but they have suffered a lot due to human greed.



**Coppersmith barbet
-Seed dispersal**



**Blyth's reed warbler
- Tree doctor**



**Hume's bush warbler
-Tree doctor**



**Brown headed barbet
-Seed dispersal**



**Buff-throated warbler
-Tree doctor**

By poisoning the vultures with Diclofenac injected cattle, humans have driven them to extinction. This has led to a huge issue in waste management.

By climate changes the migration patterns have been affected. The harriers arrived late in India and locusts took advantage of this and wiped away crops in Rajasthan, Punjab and Gujarat. This could lead to famine.

Human dependence on birds is more than birds' dependence on humans. It is very essential to recognize the importance of birds as part of human existence.



**Brown-throated tree creeper
-Tree doctor**



**Egyptian vulture
-Scavenger**



TAX SAVING INVESTMENT

Financial Planning Part 2

We have to make some investments to reduce the tax on our salary incomes.

Shravan and Gita were watering the plants when Grandpa was relaxing on his easy chair reading a book.

Mr. Gupta walked in. “Hello, Sir. My nephew Raj and his wife Seema have come to our house for the weekend. They seem to have some anxiety about saving tax. Can you guide them?”

Grandpa welcomed the guests.

Raj asked grandpa. “Uncle, can you guide us? Both of us are working in a start-up company. We have a 3-year-old daughter Asha. She has now gone to Seema’s parents’ house. We are anxious that we should save enough for our child.”

“We have to make some investments to reduce the tax on our salary incomes. We don’t have the time to listen to our financial agent and understand what he suggests so we end up taking some insurance policy at the last minute just to save tax.”

Seema added. “This year, our agent is suggesting that we both take fresh insurance policies. Last year we had taken some policy and its value is already less than what we paid.”

Grandpa smiled. “You both are working so hard to earn money. Every

rupee of tax saved adds to your wealth so you must plan your tax saving well in advance. Even if you have financial advisors recommending products, you cannot go only by their advice. You need to understand the benefits and disadvantages of each scheme so that you can make an informed choice. The first point to note is what are the permissible deductions for saving on tax.”

“Let us look at some of the important sections of the Income Tax Act that allow deductions on your taxes.

1. **Section 80 C** – Investments up to a limit of ₹1.50 lakhs in schemes that are eligible for tax rebate
2. **Section 80 CCD (1B)** – Investments in National Pension System - ₹50,000/ (over and above the limit of 1.5 lakhs available under section 80 c)
3. **Section 80 TTA** – Interest income on savings account up to ₹10,000
4. **Section 80D** – Deduction on premium paid for medical insurance.
 - a. Amount up to ₹25,000 on medical insurance for self, spouse and dependent children.

Health insurance is very important for peace of mind. In case of unforeseen illness leading to hospitalisation, you don't have to take out money from your savings.

Note

Budget 2023 announced on 1st Feb 2023 has introduced changes in the income tax deduction, rebate and exemption limits. These changes will be applicable from the financial year starting April 2023. The new tax provisions will be discussed in subsequent articles.

- b. An additional deduction for insurance of parents is available up to ₹ 25,000, if they are below 60 years of age.
- c. If the parents are above 60, the deduction amount is ₹ 50,000, which was increased in Budget 2018 from ₹ 30,000.
5. **Section 80 EE** – Interest on Home loan up to ₹50,000 per year.
6. **Section 80 G** – Donations to charitable institutions.

Raj wrote down the list as grandpa spoke. He then said, “Thanks uncle. This list is useful – I just remembered that we’ve been wanting to take health insurance. I didn’t realise that there is so much tax benefit on health insurance.”

Grandpa nodded. “Health insurance is very important for peace of mind. In case of unforeseen illness leading to hospitalisation, you don’t have to take out money from your savings.”

Raj :“Uncle, another interesting point is we can increase the exemption by another 50,000/- by investing in NPS. I will explore this option.”

Grandpa nodded. “Yes. **National Pension System** is becoming one of the important tax saving options especially because of the additional deduction.”

Seema: “Uncle, so we don’t have to take insurance policy. We have other options.”

Grandpa shook his head. “Yes. Taking insurance just for the purpose of tax saving is not a good option because neither do you get good returns nor do you get life cover. Let’s look at the various options for tax saving investments under 80C and also explore how to evaluate them.”

Some of the important investment options eligible for

deduction under Sec 80 C

- a. 5-year Tax saving fixed deposit scheme with banks
- b. NPS – National Pension System (Additional limit of 50000 over and above 1.5 lakhs under 80C is available for investment under NPS)
- c. Public provident fund
- d. Life Insurance premium
- e. Equity Linked Savings Scheme (ELSS)
- f. Unit Linked Insurance Plan (ULIP)
- g. National Savings Certificate
- h. Sukanya Samridhi Yojana

There are other investments like **Senior Citizens Savings scheme** but that won’t be applicable to you.

Raj: “How do we evaluate the schemes?”

Grandpa: “Consider factors that are important to you. You can then compare between schemes and choose the right one for you.”

1. Returns
2. Safety/Risk
3. Ease of investment
4. Liquidity
5. Transparency
6. Taxability of income

Seema: “ Uncle, I understand your point that insurance is not a good option for tax saving. When I look at the policies recommended to us - there isn’t enough transparency – we don’t understand the costs, charges or how much returns we will get.”

Grandpa smiled. “Right. If you look at 5-year fixed deposit with banks, it scores high on some parameters. Safety, ease of investment, transparency is high and returns are reasonable. However, there is a lock-in period of 5 years and the interest income is taxable.



Investment options	Type of investment	Expected returns – varies from time to time	Lock in period	Risk	Important point to consider
5-year Fixed deposit	Bank deposit	7 % - 8% differs from bank to bank. However, once you place the fixed deposit at a particular rate, that rate is fixed for 5 years	5 years	Low	Ease of investment
Public Provident Fund	Long term savings with banks or post office. You can invest a maximum of Rs.1.5 lakhs every year.	7.1 % p.a. Interest rate is reviewed and revised every quarter by the Government of India	15 Years	Low - Government scheme-guaranteed returns	Triple tax benefit - Investment, income as well as withdrawal is exempt from tax. Loan facility is available
Sukanya Samridhi Yojana	Government of India Scheme for girl child. Can be opened with banks.	7.6% p.a interest rate is reviewed and revised every quarter by the GOI.	Till girl child reaches 21 years of age	Low - Government scheme-guaranteed returns	Triple tax benefit. Higher returns. Financial Planning for girl child.
ELSS funds	Mutual Funds – equity linked investments	12 % depending on market conditions and performance of funds.	3 years	High	Least lock-in period. Disadvantage is that you cannot be sure about returns.
NPS – National Pension System	Government sponsored low-cost retirement saving option	8 to 10% depending on market conditions and performance of funds.	Till 60 years of age	High	Advantage -Retirement corpus and pension after retirement. Disadvantage is the long-term lock-in period.
ULIP	Unit linked insurance plan	8 to 10 % depending on market conditions and performance of funds.	5 years	Medium	Tax free returns Disadvantage is you cannot be sure of returns.

Raj: “Thanks, Uncle. We’ll both open a PPF Account. I think it’d be good to set aside some amount for future in a risk-free investment.”

Seema nodded. “I’d also like to start Sukanya Samridhi Yojana account for our daughter.”

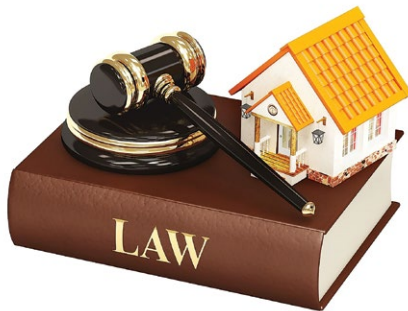
Raj: “I’ll also look at health insurance and NPS to get additional deduction.”

Grandpa smiled. “Good. I’d also suggest that you both take a good term insurance policy where your dependant would get an assured lumpsum if something

happens to you. Since both of you are young, the premium would be reasonable. This is important for the financial security of your family.”

Seema looked relaxed. “Thanks, Uncle. We now have a clear idea how to evaluate investment options and plan for tax saving.”





Intellectual Property Rights Law

Intangible: Something that cannot be physically seen or touched, but has a value.

DO YOU KNOW ?

The protection under Copyright Act is offered for the actual expression of an idea and not for the idea itself. This is because the free flow of ideas cannot be restricted.

For example, many people might have a similar idea for a book or a movie, and it is only the way in which it is expressed or executed which makes a difference. Granting copyright to an idea could hinder creativity and improvisation.

The past several decades have seen an increase in the importance given to ‘intellectual property rights’ in India. Intellectual property (or “IP”) refers to some intangible assets created by application of a person’s mental skill. An example could be an innovative process to manufacture mobile phones, not been used earlier. The right that the owner of the right would have, is termed an ‘intellectual property right’ (or “IPR”). In India, some of the major forms of intellectual property rights are trademarks, industrial designs, patents, plant varieties and copyright. It is important to secure these rights from an economic, commercial and moral perspective.

The Trips Regime

The “Trade Related Aspects of Intellectual Property Rights” (or “TRIPs”) regime is a comprehensive international framework pertaining to IPR across the world. It is not a universal law but provides a basic framework which members of the World Trade Organisation have imbibed in their respective national intellectual property laws. India has also adopted aspects of the TRIPs framework and today, India has several legislations governing different types of IPR, such as the **Copyright Act, 1957**, the **Patents Act, 1970** and the **Trade Marks Act, 1999**.

THE COPYRIGHT ACT, 1957

This protects original literary, dramatic, musical and artistic works,

cinematograph films and sound recordings.

The right itself, known as the ‘copyright,’ is an exclusive right granted to a person to carry out certain activities with regards to ‘copyrighted work.’ Simply put, copyright protects the works of an author or a creator and prevents others from copying such original work.

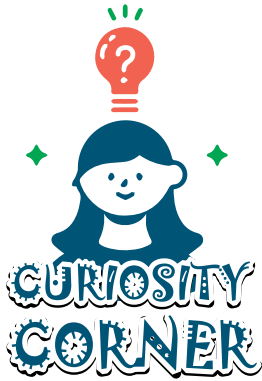
On the other hand, the Act also contains certain exceptions which would not be considered an infringement of copyright. These circumstances, known as ‘fair use,’ include private use such as research, criticism or review, reproduction necessary under any law, among others.

The Patents Act, 1970

A ‘patent’ is an intellectual property right which protects new inventions. It is an exclusive right that protects the rights of the inventor and prevents other people from using the registered patent without authorisation. For a patent for new invention to be registered, the invention must be original, capable of industrial application and must involve a process of inventive steps.

Once a patent is registered, the inventor gains the right to prevent third parties from making, selling or using the product or a product obtained from that process without prior consent of the original inventor.





Anagram is a word or group of words formed by transposing the letters of another word or phrase.

Unscramble the following anagrams with the given clues.

Fruits



Plane pipe

--	--	--	--	--	--	--	--	--	--

Cap riot

--	--	--	--	--	--	--	--

Melon

--	--	--	--

Manager poet

--	--	--	--	--	--	--	--	--	--

Landmarks



A halt jam

--	--	--	--	--	--	--	--

Beauties loft try

--	--	--	--	--	--	--	--	--	--

Elite few for

--	--	--	--	--	--	--	--	--	--

Landmarks



Tennis site

--	--	--	--	--	--	--	--	--	--

Crane sap

--	--	--	--	--	--	--	--

Knee lost

--	--	--	--	--	--	--	--	--	--

Roar bowmen

--	--	--	--	--	--	--	--	--	--



Musical Instruments



Aroma chin

--	--	--	--	--	--	--	--	--	--

Drain coco

--	--	--	--	--	--	--	--	--	--

Panes hoax

--	--	--	--	--	--	--	--	--	--

Birds



Crooked pew

--	--	--	--	--	--	--	--	--	--

Rap rows

--	--	--	--	--	--	--	--	--	--

Alone legged

--	--	--	--	--	--	--	--	--	--

Chocolate



Cheer error for

--	--	--	--	--	--	--	--	--	--

Liar kid my

--	--	--	--	--	--	--	--	--	--

Cress ink

--	--	--	--	--	--	--	--	--	--

LANGUAGE QUIZ

- How do you call a person who masters languages?
- What is the world's most spoken language (by number of speakers)?
- What was the first language on space?
- Which country has the most languages?
- What does it mean to be a dead language?
- Which of the following languages has no alphabet?
 - Korean
 - Chinese
 - Japanese
- Approximately how many languages are currently spoken in the world today?



8. Which country has up to 16 official languages?
9. A language that used to be a dead language, but was then successfully revived to become a living language today?

Translate the words given below and name the language

10.



11.



12.



13.



14.



15.



Answers on page 58

Centenarian Scientists

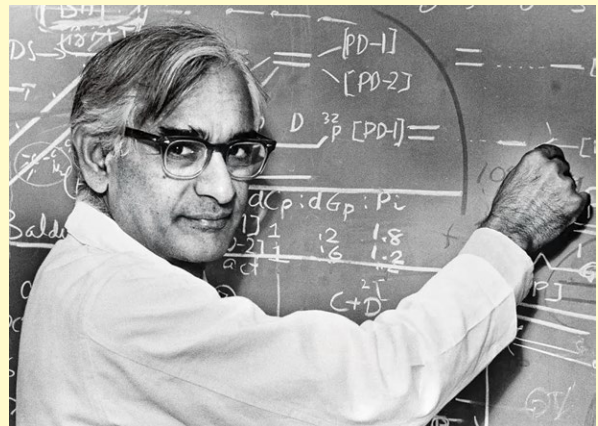


Shri Mrithyunjay GN

HAR GOBIND KHORANA

the man who changed the landscape of science

In 1929, young boy of seven sat under the banyan tree gripping his first pencil, studying in the only place his village could afford to call a 'school.' Despite his father being an agricultural taxation clerk in the British Indian Government, he could not dedicate much to his son's education. In Raipur, a village in present day Punjab, his family was only one among the hundred or so people in his village who were even literate.



9th January 2023 is the 101st birth anniversary of Har Gobind Khorana; a man who would go from not being able to afford a pencil to revolutionizing the field of biotechnology. He would also earn the 1968 Nobel Prize for Physiology or Medicine because of the undying pursuit of his dreams.

Education

Having finished his higher secondary education at D.A.V High School in Multan, Punjab, he went on to study at the Punjab University in Lahore. The dedication he had towards his studies earned him



Khorana did not rest on his Nobel laurels. He continued his research and became the first person to complete the total synthesis of a functional gene outside a living organism.

multiple scholarships and in 1945, he earned his Master of Science.

His pursuit of a PhD led him to the University of Liverpool on a government of India fellowship program. He studied under Roger J.S. Beer and received his PhD in 1948. He also did his post-doctoral education, the following year, at ETH Zurich in Switzerland.

Advancing the field of science

Har Gobind Khorana's greatest contribution is to the field of biochemistry. Working along with Marshall W. Nirenberg and Robert W. Holley, Khorana managed to crack the code behind how cells carry the genetic code in their nucleus to ensure that they can pass on information to future generations.

This was ground breaking as it opened up an entirely new field of molecular biology and study of genetics. Without his contributions, much of the research on genes and their impact would not have been



possible.

Khorana did not rest on his Nobel laurels. He continued his research and became the first person to complete the total synthesis of a functional gene outside a living organism.

Impact

The impact that Har Gobind Khorana left on the world cannot be denied. From a humble origin, he went on to fundamentally change our understanding of the molecular world. He truly is one of India's greatest sons.

ANSWERS of page 56 - 57

Anagram

FRUITS

Pineapple
Apricot
Lemon
Pomegranate

Landmarks

Taj Mahal
Statue of Liberty
Eiffel Tower

Human Body

Intestines
Pancreas
Skeleton
Bone marrow

Musical Instruments

Harmonica
Accordion
Saxophone

Birds

Woodpecker
Sparrow
Golden Eagle

Chocolate

Ferrero Rocher
Dairy Milk
Snickers

Language Quiz

1. Polyglot
2. Mandarin Chinese
3. Russian
4. Papua New Guinea
5. A language that is not the native language of any community
6. Chinese
7. Around 7,000
8. Zimbabwe
9. Hebrew
10. Hello - Spanish
11. Please - German
12. Thank you - Portuguese
13. Sorry - Japanese
14. Excuse me - Korean
15. Good bye - French



World's Largest SINGLE TREE FOREST

DO YOU KNOW ?

- ✦ India is home to seven of the largest banyan trees in the world.
- ✦ The Great Banyan in Kolkata is the second largest single tree forest supported by more than 3000 prop roots.
- ✦ The banyan (*Ficus benghalensis*), also called Indian banyan or banyan fig, is part of the mulberry family and is native to the Indian subcontinent.
- ✦ The banyan is considered India's national tree owing to its constant expansion and regrowth seen as a symbol of eternal life.

Anantapur in Andhra Pradesh is home to this nature's wonder - Thimmamma Marrimanu, the world's largest single tree canopy spreading over 5 acres with a circumference of 846m. This 550 years old banyan tree has a Guinness World Record for having the largest canopy on a living tree. The credit for the global recognition of this tree goes to Sathyanarayana Iyer, a journalist who investigated and discovered this tree in 1989.

The banyan begins its life as an epiphyte depending on another plant's surface. First they plant seeds on branches of other trees and the vine-like roots sprout and grow to block the sunlight for the host plant and gradually anchors into the forest floor.

The roots begin to spread and thicken into huge pillar like structures resembling tree trunks. The branches grow and expand as far as the environment permits. Thimmamma Marrimanu has

stretched out in every direction forming a grove/forest. Still expanding, this tree has more than 4000 prop roots.

This tree is considered as the goddess of fertility and legend says that a woman named Thimmamma performed Sati in 1433 in the exact place the banyan tree grows. Pilgrims remove their shoes before entering the canopy. There is a temple in the centre dedicated to Lord Shiva and a memorial for Thimmamma. Every year Mahashivaratri is celebrated here with grandeur. Many pilgrims believe that hugging the roots of the tree for around 10 minutes channel positive energy good for the body, mind and soul.

Though the tree is subject to damage due to the crowds visiting the place, Forest Department along with the local people take immense effort to look after the tree by strengthening and nourishing by adding soil and placing supports to balance the damaged branches.





GILOY

an elixir of youth

The Sanskrit word *amrita* means "immortality" and *guduchi* means "something that protects the complete body".

Giloy (*Tinospora cordifolia*) is a climbing shrub belonging to the Menispermaceae plant family includes the climbing shrub giloy. Giloy originated in India and is also found in China and the tropical regions of Australia and Africa.

In Ayurvedic and native medicine, Giloy plays a pivotal role as a therapy for a variety of illnesses. Every component of the giloy plant is useful. The stem, however, has the most medicinal phytochemicals.

Among its many alternate names, giloy is also known as **giloe, guduchi and amrita**. Giloy in Hindu mythology refers to the fabled elixir of youth from the heavens that is said to preserve the gods and goddesses in perfect youth forever.

The Sanskrit word Amrita means "immortality" and "guduchi" means "something that protects the complete body."

During the COVID-19 outbreak, the Union Ministry of Ayush issued a National Clinical Management Protocol based on Ayurveda and Yoga for management of COVID-19, which included giloy as one of the preventative care strategies.

People at high risk of infection or who are routinely exposed to the virus are instructed to take 500 mg of extract or 1-3 g of powder twice day with warm water for 15 days or one month.

The ministry recommends taking giloy with amla and gokshura (*Tribulus terrestris*) while receiving conventional treatment for the disease or recuperating from it.

Giloy is rich in numerous essential plant chemicals, including terpenoids, alkaloids, lignans, and steroids. These substances exhibit antibacterial, anti-inflammatory, antioxidant and anti-diabetic activities. Giloy may be beneficial

Giloy Kadha / Kashayam / Decoction for boosting your immunity

- ✦ Peel the giloy plant's stem and blend it in a mixer to make a powder.
- ✦ Boil water in a pan. Add turmeric and black pepper to it.
- ✦ Let the mixture simmer on a medium flame for a minute.
- ✦ Add tulsi leaves, mint leaves and honey to the mixture.
- ✦ Let the mixture come to a boil.
- ✦ Sieve the mixture and drink it.



Taking giloy may also strengthen the immune system against allergens. Giloy has been proven to provide relief from symptoms such as runny and stuffy nose.



for diabetics and people at risk for heart disease.

It decreases blood sugar by making the cells less insulin-resistant. It possesses antioxidant and anti cancer properties. Taking giloy may also strengthen immune system against allergens. Giloy has been proven to provide relief from symptoms such as runny and stuffy nose.

Giloy is available in the raw form as well as a supplement. In addition to the powder, we also get a tincture or juice prepared from the roots and stems to be mixed with water for consumption. Giloy based ointments can help in scabies and itchy skin.

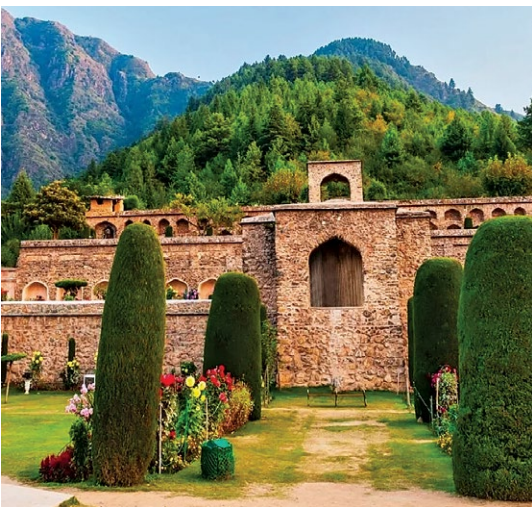
Growing Giloy at home

- ▶ First, obtain some Giloy seeds and thoroughly wash them. Soak them overnight in cold water.
- ▶ Fill a container with soil. Ensure that the surface of the pot has a hole.
- ▶ Now, add the seed to the soil and mix well. Don't bury the seeds too deeply.
- ▶ Slowly pour water onto the dirt until it becomes moist.
- ▶ Maintain it in indirect sunlight and water it periodically throughout its first several days. After around two weeks, the plant will develop roots and leaves.





Pari Mahal in Jammu & Kashmir



Hamam - a public steam room, in which people can come together to relax and bathe.

The breath-taking structure of Pari Mahal or Peer Mahal, also known as The Palace of Fairies and one of the most popular tourist destinations in Srinagar is a terraced garden located at the top of the Zabarwan mountain range overlooking Srinagar and the Dal Lake in Jammu and Kashmir.

Thirteen kilometres away from Srinagar, the garden expands across a length of 123 metres and is about 63 metres wide.

History: It is believed that the Pari Mahal was built by destroying the remains of a Buddhist monastery in the mid-1600s by Prince Dara Shikoh, the eldest son of the Mughal emperor, Shah Jahan. Prince Dara named the palace after his wife Pari Begum. He built it for his spiritual tutor, Akhun Mulla Shah. It was the residential school of Sufism where apart from the Quran, astronomy and astrology were taught. Later on, the Pari Mahal served as a venue for a paramilitary camp.

Design

A fabulous illustration of Islamic architecture, the monument is divided into six terraces. The entire building is enclosed with massive walls. There are ornamental fountains and lakes on five terraces.

The topmost terrace consists of the ruins of a reservoir - a structure that the archaeologists think is the Baradari which means a twelve-door pavilion usually constructed on top of certain monuments to allow ventilation.

Each terrace is connected with the lower one by a few steps in the corner. The second terrace has a rectangular tank in the middle which receives water from the first terrace through a water chute. The other terraces have water tanks on them and water flows into them through terracotta pipes from the above terraces. Finally, the water drains into Dal Lake.

The uniqueness of the third terrace: There are royal residential quarters and a hammam on the third terrace. It is connected to a room designed for heating water with the help of terracotta pipes to provide hot water in winter. These three higher terraces were meant for royal use.

Conservation of Indian heritage: The government is taking measures to conserve the monument to promote Heritage tourism in J&K. Owing to its historic importance, Pari Mahal is included in the tentative list of World heritage sites by UNESCO.



Honour for indigenous art forms **Khandu Wangchuk Bhutia** wins Padma Shri

“Passion is one great force that unleashes creativity, because if you’re passionate about something, then you’re more willing to take risks.” – Yo-Yo Ma



The Padma Awards, one of the highest civilian honours of India, were instituted in 1954. They are announced annually on the eve of Republic Day. Padma Vibhushan (for exceptional and distinguished service), Padma Bhushan (for distinguished service of a higher order) and Padma Shri (for distinguished service) are the three categories of Padma Awards.

In recent years, these awards have become more popular as many recipients are from among the ordinary people who have done extraordinary things.

The Padma Awards Committee constituted by the Prime Minister every year selects the deserving persons from among the nominations. The committee is headed by the Cabinet Secretary and includes Home Secretary, Secretary to the President and four to six eminent persons as members. The committee submits its recommendations to the Prime Minister and the President of India for approval.

In the year 2022, Govt of India conferred the Padma Shri award on Khandu Wangchuk Bhutia for his

distinguished service in the field of art. The award is in recognition of his service as an **"Eminent Thangka painter from Sikkim specialising in traditional Buddhist paintings on cotton and silk"**.

A Thangka painting is a Tibetan Buddhist painting on cotton and silk applique. These paintings depict the life of the Buddha, various influential Lamas and other deities and Bodhisattvas.

Khandu Wangchuk Bhutia hails from Sakyong in West Sikkim. After his formal education, he entered to monastic life at the Pemayangtse monastery. Once in the monastery, he took up Thangka painting as a profession.

He mastered the art of Thangka painting under Dungzin Rimpoche, Late Jigme Wangchuk Lama along with renowned Thangka artist Late Phuntsok Sangpo and Late Zapa Acho.

A nation can achieve real progress only if it respects and protects its rich cultural heritage. The honour given to great artists like Khandu Wangchuk Bhutia will promote our indigenous art forms and culture.



BAL PURASKAR AWARDS

Since 1996, the Government of India has been conferring the Pradhan Mantri Rashtriya Bal Puraskar awards (a civilian honour) to children for their exceptional achievement in innovation, scholastics, sports, arts, culture, social service, music or any other field. However, during 2017-18, the Ministry of Women and Child Development felt the need for reviewing the scheme to make it more topical and inclusive. The aim is to encourage children for their merits and society-centric achievements.



DO YOU KNOW ?

26th December is observed as 'Veer Bal Diwas', to mark the martyrdom of the sons of Sri Guru Gobind Singh - Sahibzadas Baba Zorawar Singh Ji and Baba Fateh Singh Ji.

Pradhan Mantri Rashtriya Bal Puraskar

Bal Shakti Puraskar (National Child Award)

Conferred to children with exceptional abilities and outstanding achievement in various fields

Eligibility

- Age: > 5 < 18 years
- Excellence in any of below fields
 - Innovation
 - Social Service
 - Scholastic
 - Sports
 - Art & Culture
 - Bravery
- Achievement should not be one-off, but carried out over a period of time
- Context & background of the child should also be criteria

Award

- Each Awardee will be given a medal, a cash prize of Rs. 1,00,000/-, book vouchers worth Rs. 10,000/-, a certificate and a citation.
- Awarded with fair representation of all States / UTs.
- Fair representation of all genders should be encouraged.

Bal Kalyan Puraskar (National Child Welfare Award)

Conferred to individuals who have made an outstanding contribution towards service for children

Eligibility

- Age: 18 years or above
- An individual should have made an outstanding contribution in any of the following fields:
 - Child Welfare
 - Child Protection
 - Child Development
- An individual should have worked for the cause of children for not less than 7 years.
- Salaried officers of the institution will not be eligible for consideration under this category.

Award

- These awards are given to Institutions who have done exceptional work for the cause of children in any field of child welfare. The number of awards would be 3 (three).
- The award for Institution consists of a medal, cash prize of \$ 5,00,000/- each and a citation, and a certificate





Bal Shakti Puraskar: Awards to children who outperform in various fields mentioned below.

Sl. No.	Category	Details
1.	Innovation	Any innovative initiative in the field of science and social science to develop a positive impact on human lives.
2.	Social Service	Leadership skills against social evils.
3.	Scholastic	Consistent achievement in scholastics at National and International levels.
4.	Sports	Consistent achievement in sports at national and international levels.
5.	Art and Culture	Consistent achievement in art & culture at national and international levels in art, music (vocal & instrumental), dance, painting or any other form of art/culture.
6.	Bravery	Outstanding courage and daring against natural or man made situations.



The awards are to be received personally only by the awardees.

Bal Kalyan Puraskar : Awards to individuals/institutions who have created a positive impact in the lives of children by their outstanding contribution towards the service of children in their development and protection for not less than 7 years.

Nomination Procedure:

- ▶ Open nomination from the public (only online) through an official website, www.nca-wcd.nic.in.
- ▶ Salaried officers of the institutions will not be eligible for consideration under this category.
- ▶ The awards are announced on 26th December on ‘Veer Bal Diwas’.
- ▶ The decisions of the National Selection Committee will be final.
- ▶ The awards are to be received personally only by the awardee.
- ▶ Normally the prizes shall not be presented posthumously except in cases of bravery under Bal Shakti Puraskar.
- ▶ These awards are only for Indian citizens.
- ▶ The number of candidates will be decided by the National Selection Committee.
- ▶ The application of an awardee of a particular year will not be considered in future.





RIGZIN CHOROL

First female officer from Ladakh



Rigzin Chorol, an economics graduate is the first female officer from Ladakh inducted into the Indian Army.

The army is encouraging women who are eligible to become officers to follow in the footsteps of their late husbands. She became the latest Veer nari to shine a spotlight on this trend when she passed out of the Chennai-based Officers Training Academy (OTA) along with 186 Officer Cadets as a newly-minted lieutenant in the Army Service Corps. Her

toddler son was left in the care of family members during the 11 months of rigorous training at the academy.

Lt. Chorol lost her husband Rifleman Rigzin Kendal of 3 Ladakh Scouts in a tragic incident while performing his duty. But she came out of the shock and prepared for the OTA and succeeded in getting entry in the premier institute.

To continue her husband's legacy and to devote her life to the very profession that killed her husband needs nerves of steel.

"Today I am feeling very proud, and I am very, very sure that he is feeling much more pride of the fact that his wife has done it."

- Lt. Col. Rigzin Chorol.

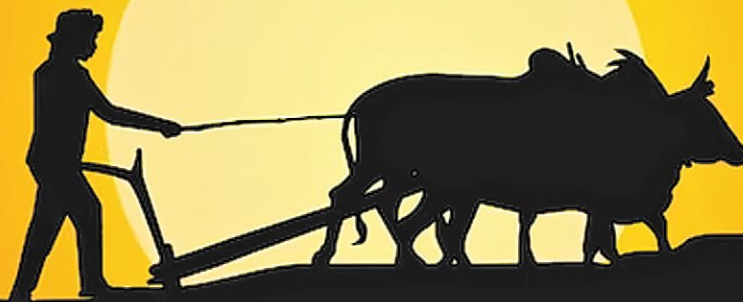
KISAN DIWAS

NATIONAL

FARMERS DAY

DECEMBER

23



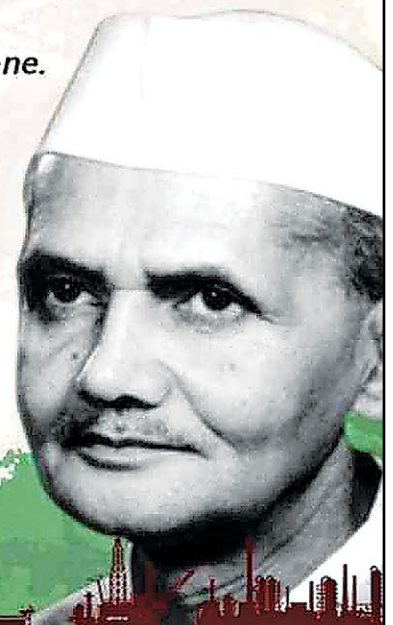
*"The preservation of freedom is not the task of soldiers alone.
The whole nation has to be strong."*

'Bharat Ratna'
Lal Bahadur Shastri

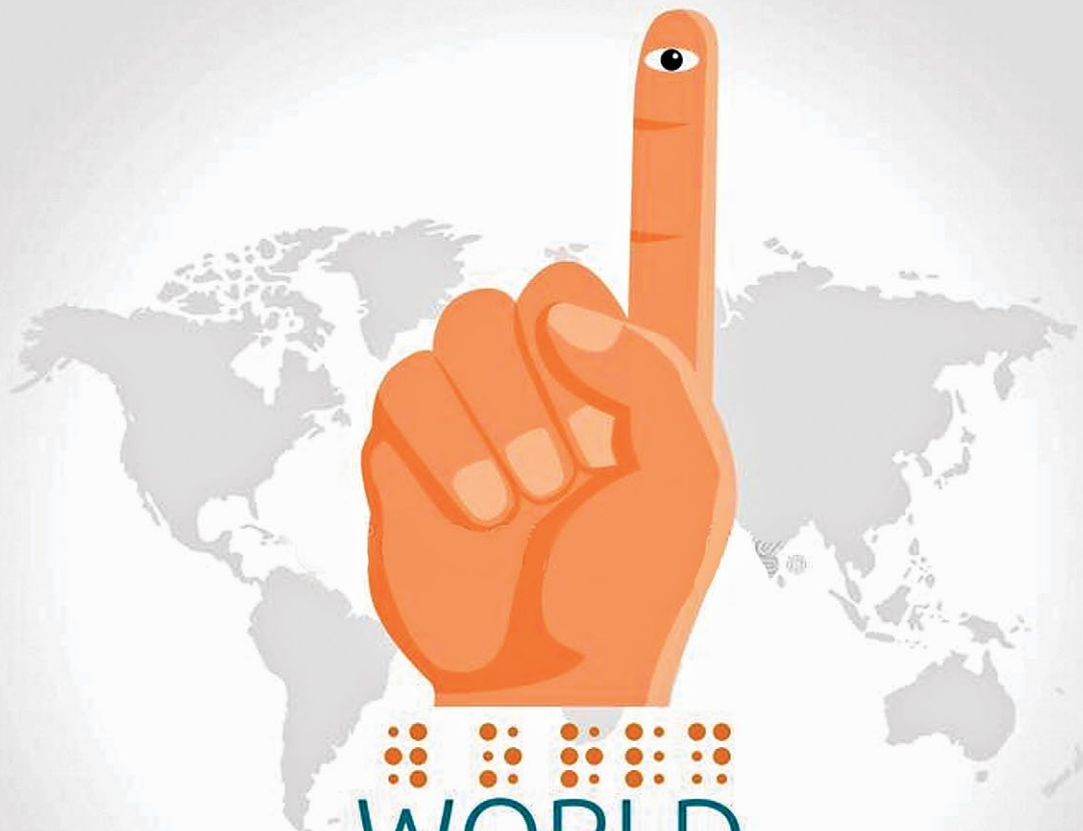
(1904-1966)

on his death anniversary.

January 11



One of **Louis Braille's** most famous quotes is
**"Braille is knowledge, and
knowledge is power."**



WORLD
BRAILLE DAY

4th January

If you know of someone who is
blind, ask how braille has been
of benefit to them!