

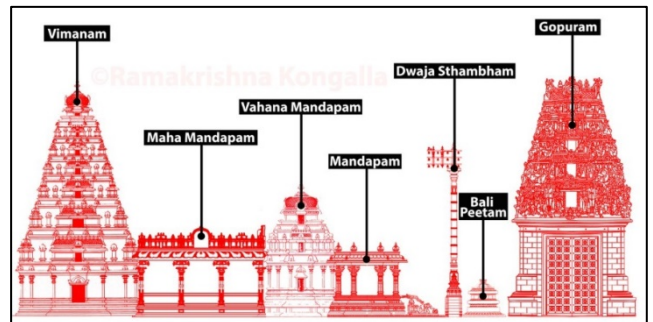


30 October, 2023

Pallava Architecture

Context: The ancient Pallava period paintings at the 1,300-year-old Talagirishwara temple in Panamalai, Villupuram district, have suffered significant damage due to neglect.

- **Transition from Rock-cut to Structural Temples:** Pallava architecture underwent a significant transformation from rock-cut temples to stone-built ones. The early Pallava art, dating back to the 7th century CE, primarily consists of rock-cut temples, while the later examples, constructed in the 8th and 9th centuries, are structural temples.
- **Major Pallava Rulers and Their Contributions:**
 - Mahendravarman: He is known for the Mandagapattu rock-cut temple.
 - Rajsimha (Narsimhamvarman/Kalasangama/Mamalla): He commissioned prominent temples such as the Kailasanathar Temple in Kanchipuram and the iconic Shore Temple in Mahabalipuram (Mammallapuram).
- **Monolithic Temples:** The Pallava period saw the creation of monolithic temples, such as the Five Rathas. These temples were carved out of single blocks of granite and showcased the extraordinary sculptural skills of the time.
- **Buddhist Influence:** Some of the rock-cut temples in Mamallapuram show the influence of Buddhist rock-cut caves. In ratha temples, you can find both Chaitya and Vihara models, reflecting Buddhist architectural styles.
- **Monolithic Rock-cut Architecture:** The Ratha temples, also known as the seven pagodas, represent the finest examples of monolithic rock-cut architecture in India.
- **Gavaksha Motif:** The Gavaksha motif, a symbolic window through which deities were believed to be viewed, is a distinctive feature in Pallava architecture. It can be found in the Chaitya arches.
- **Dravidian Sikhara and Kalasa:** The Dravidian Sikhara, with its square ground story and open verandas, evolved in the Pallava temples. The architectural motifs of Kumbha (melon capital) and Kalasa (finial) can be traced back to Pallava designs.
- **Yalis and Lion Motif:** The base of pillars in some structural temples features the Yalis motif, which later became the royal insignia of the Pallavas. This motif is later depicted by the Cholas.
- **Kudus and Ornamentation:** The facades of walls in Pallava temples often display Buddhist chaitya motif kudus. Decoration and ornamentation are prominent in both cave temples and structural temples.
- **Evolution of Pillar Designs:** Pillars in Pallava architecture can be categorized into three stages of development, each with its unique characteristics and motifs.
- **Regional Influence:** Some Pallava architecture, like one ratha in Mahabalipuram, reflects regional influences, such as the traditional Bengali hut. This suggests that the Dravidian shikhara might have its origin in bamboo hut designs.
- **Beginning of Gopura:** The architectural concept of Gopura, a monumental entrance tower seen in many South Indian temples, began with the Pallava dynasty. Early manifestations can be observed in the Shore Temple of Mahabalipuram.
- **Rock-cut Relief:** One of the most significant sculptural achievements of the Pallava period is the carving of the cleft in Mamallapuram, known as Arjuna's Penance or the Descent of the Ganges. This relief depicts various deities, gods, demi-gods, and kinnaras.
- **Influence of Amaravati School of Art:** Pallava relief sculptures in Mahabalipuram show the influence of the Amaravati school of art, particularly in the depiction of gods in cloud-like forms.
- **Earliest Portrait Sculptures:** In the Adivaraha cave, there are two portraits believed to be Pallava kings accompanied by their family members. These are among the earliest known portrait sculptures in India.
- **Shaivism and Vaishnavism Depictions:** Pallava art often features depictions of deities and stories related to Shaivism and Vaishnavism, such as Varaha lifting the earth goddess and scenes of Durga.



Jehovah's Witnesses

Context: A Sunday prayer convention of the Jehovah's Witnesses sect near Kochi resulted in the loss of two lives and left numerous individuals injured due to a series of explosions.

- Jehovah's Witnesses are a **Christian sect** with distinct beliefs that **differ from mainstream Christianity**.
- They **do not adhere to the doctrine of the Holy Trinity**, instead worshipping Jehovah as the one true and Almighty God, the Creator.
- Jehovah's Witnesses believe in Jesus Christ as the "King of God's Kingdom in heaven" but not as the Almighty God.
- Their religious beliefs are **solely based on the Bible**, which they consider the word of God.

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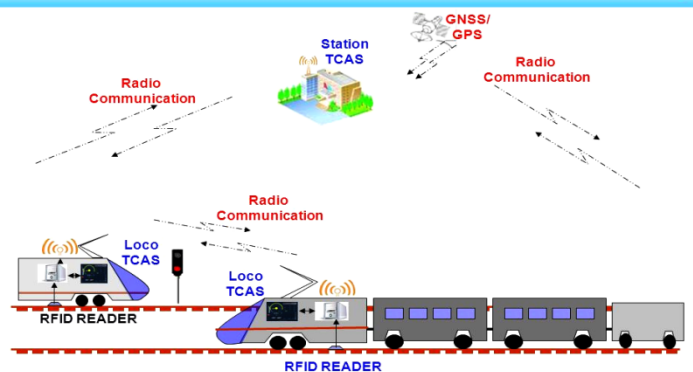
- They do not celebrate Christmas or Easter, as they view these holidays as having pagan origins.
- They believe that the end of the world is imminent and anticipate the establishment of the "Kingdom of God" to replace human governments and fulfill God's purpose for the earth.
- The origins of the sect trace back to a Bible Student movement initiated in the 1870s by American pastor Charles Taze Russell.
- The headquarters of the Governing Body of Jehovah's Witnesses is located in Warwick, New York.
- The primary organization responsible for disseminating the sect's doctrines is the Watch Tower Bible and Tract Society of Pennsylvania, also headquartered in Warwick.
- **Jehovah's Witnesses in India**
 - There are **approximately 56,747 ministers who teach the Bible as Jehovah's Witnesses** in India.
 - Jehovah's Witnesses have been **present in India since 1905**, with an official **office established in Mumbai in 1926** and legal registration obtained in 1978.
 - They benefit from constitutional guarantees in India, including the right to practice, profess, and propagate their faith.
 - In a **landmark case in 1986**, the **Supreme Court of India granted protection to Jehovah's Witness children who did not participate in singing the National Anthem at their school**, citing a violation of their fundamental right to religious freedom under Article 25 of the Constitution.
 - In **2020**, a **Jehovah's Witness from Nigeria** received a **live liver transplant** in a Bengaluru hospital **without the use of blood or blood products** to accommodate the patient's religious beliefs.
 - The **Supreme Court's Bijoe Emmanuel** ruling referenced the peculiar beliefs and practices of Jehovah's Witnesses, including their **stance against voting, holding public office, serving in armed forces, saluting the flag, standing for the National Anthem, and reciting the pledge of allegiance**.
 - The ruling also highlighted international instances of clashes between Jehovah's Witnesses and governments due to their religious beliefs, resulting in lawsuits, violence, imprisonment, torture, and death.
 - The Jehovah's Witnesses' beliefs and practices have led to legal challenges in various countries, including the United States and Australia.

Train Collision Avoidance System (TCAS)

Context: The recent collision of two trains in Andhra Pradesh has highlighted the importance of the Train Collision Avoidance System (TCAS), which in India is called as the Kavach.

- **Development Origin:** Kavach, originally known as the Train Collision Avoidance System (TCAS), is an indigenous project that has been under development in India since 2012.
- **System Components:** Kavach is a sophisticated railway safety system that integrates electronic devices and Radio Frequency Identification (RFID) technology. These components are installed in locomotives, signaling systems, and along railway tracks.
- **Functionality:** Kavach operates by establishing communication between its various components using ultra-high radio frequencies. This communication allows it to control train brakes and provide real-time alerts to train drivers, all based on pre-programmed logic and safety parameters.
- **Safety Standards:** Kavach adheres to the highest safety and reliability standard, known as Safety Integrity Level (SIL)4. This standard is essential in preventing accidents and ensuring the system's dependability.
- **Inspiration from Existing Systems:** Kavach incorporates elements from well-established railway safety systems, such as the European Train Protection and Warning System. It also includes features from India's own Anti-Collision Device.
- **Global Compatibility:** Efforts are underway to make Kavach compatible with other railway safety systems worldwide. This adaptability positions it as an exportable technology, potentially offering a cost-effective alternative to existing systems.
- **Collaborative Development:** Kavach is the result of a collaboration between the Research Design and Standards Organisation (RDSO) under Indian Railways (IR) and private companies, including Medha Servo Drives Pvt Ltd, HBL Power Systems Ltd, and Kernex Microsystems.
- **Future-Proofing:** Plans include adapting Kavach to be compatible with 4G Long Term Evolution (LTE) technology to keep up with technological advancements.

TCAS - System configuration



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- **Safety Enhancement:** Kavach's primary objective is to enhance railway safety by preventing train collisions, reducing accidents, and improving overall operational security.
- **SIL4 Standard:** Safety Integrity Level (SIL)4 is the highest level of safety standards, emphasizing the system's robustness in preventing accidents and ensuring the safety of railway operations.
- **Export Potential:** The system's adaptability and potential for export not only improve railway safety in India but also position the nation as a player in the global railway technology market.
- **Applications:**
 - **SPAD and Overspeed Prevention:** Kavach helps prevent Signal Passing At Danger (SPAD) and overspeed incidents.
 - **Automatic Train Halt:** It can automatically stop the train when another is detected on the same track, reducing collision risks.
 - **Signal Relay:** Kavach relays signals to the locomotive, improving safety in low visibility conditions.
 - **Speed Control:** It automatically applies brakes if the pilot fails to control speed, ensuring safe operations.
 - **Inclement Weather Support:** Kavach aids locomotive pilots in operating trains during adverse weather, like dense fog.

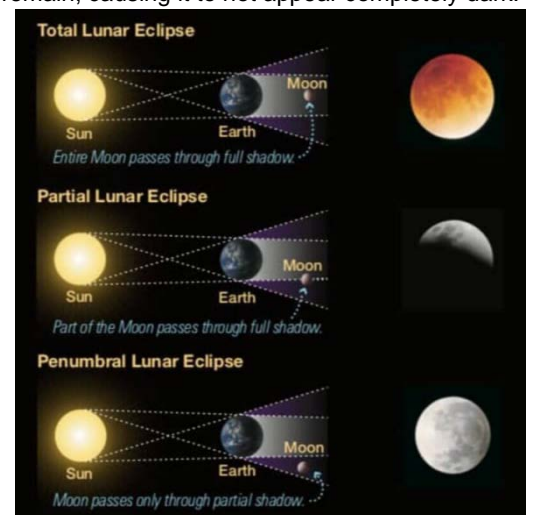
Lunar Eclipse

Context: On the night of October 28, a partial lunar eclipse was observed across a vast expanse, including regions in Asia, Europe, Africa, and Russia.

- A lunar eclipse occurs when the Moon moves into Earth's shadow, and this can only happen during a full Moon.
- The Earth must be directly between the Sun and the Moon for a lunar eclipse to take place.
- The eclipse begins when the Moon enters the penumbra, a part of Earth's shadow where not all of the Sun's light is blocked out. This makes part of the Moon appear dimmer than a regular full Moon.
- The eclipse progresses as the Moon moves into the Earth's umbra, where all direct sunlight from the Sun is completely blocked by Earth. During this phase, the only light reflecting off the Moon has been refracted or bent by Earth's atmosphere.
- Lunar eclipses are a result of the Moon's orbit around Earth, and Earth's orbit around the Sun.
- When Earth comes between the Sun and the Moon, it blocks the typical sunlight that reflects off the Moon's surface.
- The Moon appears dark during a lunar eclipse because Earth's shadow falls upon it, which is a unique celestial event only possible during a full Moon phase.

Types of Lunar Eclipse

- **Total Lunar Eclipse:**
 - During a total lunar eclipse, Earth's umbra, the central and darkest part of its shadow, completely covers the Moon's surface.
 - While it's called a "total" eclipse, some light reflections from the Moon remain, causing it to not appear completely dark.
 - Sunlight is refracted by Earth's atmosphere, with shorter wavelength colours scattered and filtered out, allowing hues like orange and red to reach the Moon.
 - The fully eclipsed Moon is illuminated with a reddish-orange glow due to the refraction of this light, leading to the term "Blood Moon" in historical depictions of such lunar phenomena.
- **Partial Lunar Eclipse:**
 - A partial lunar eclipse occurs when Earth's umbra obscures only a portion of the Moon's surface.
 - This means that a part of the Moon's surface is covered by the central, darkest part of Earth's shadow, known as the umbra, while the rest is covered by the outer part of Earth's shadow, called the penumbra.
- **Penumbral Lunar Eclipse:**
 - In a penumbral lunar eclipse, the Moon travels through the faint penumbral portion of Earth's shadow.
 - During this eclipse, Earth partially blocks the Sun's light from directly reaching the Moon's surface, covering all or part of the Moon with the outer region of its shadow, known as the penumbra.
 - The penumbra is much fainter than the darker core of Earth's shadow, the umbra, making penumbral eclipses challenging to distinguish from a regular Full Moon.
- **Planet Transits:**
 - Planet transits occur when a planet moves between Earth and the Sun, creating a celestial alignment.
 - Mercury and Venus are the only planets in the solar system that can be seen transiting the Sun from Earth.
 - This is possible because their orbits are inside Earth's orbit around the Sun.



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NEWS IN BETWEEN THE LINES

National Pension System



Recently, the Pension Fund Regulatory and Development Authority has introduced a new requirement for the withdrawal of funds from the National Pension System.

About National Pension System:

- The National Pension System (NPS) was introduced by the **Central Government** in January **2004**, with the exception of armed forces.
- In **2018**, the Union Cabinet approved significant changes to NPS to make it more appealing and beneficial, primarily for central government employees under NPS.
- It is implemented and regulated by the **Pension Fund Regulatory and Development Authority (PFRDA)** in India.

Eligibility and Beneficiaries:

- National Pension System was made available to all Indian citizens from May **2009**.
- Any individual citizen of India, both **residents** and **non-residents**, in the age group of **18-65** years can join NPS.
- Overseas Citizens of India (**OCI**), Person of Indian Origin (**PIO**) card holders and Hindu Undivided Families (**HUFs**) are not eligible for opening NPS accounts.

Systematic Investment Plan



Recently, the imposition of a 30-year cap on the tenure of Systematic Investment Plans (SIPs) is not expected to significantly affect your investments.

About Systematic Investment Plan:

- A Systematic Investment Plan (SIP) is an **investment method offered by mutual funds** that allows individuals to invest a fixed amount at regular intervals (e.g., monthly) in a chosen scheme, rather than making a lump-sum investment.
- The installment amounts of systematic investment plan can be as low as **₹500** per month, making it similar to a recurring deposit.
- It aids in achieving financial goals by steadily accumulating funds through regular, small investments.

Benefits of Systematic Investment Plan:

- Systematic Investment Plan **promotes investment discipline** among investors.
- It is typically conducted in open-ended funds, allowing investors to invest and withdraw funds at their convenience.
- **Full and partial withdrawals** can be made during or after the SIP tenor.
- The SIP amount can be increased or decreased as per the investor's requirements.

Gudavi Bird Sanctuary



Recently, there have been reports of bird deaths at the Gudavi bird sanctuary in Sorab taluk.

About Gudavi Bird Sanctuary:

- Gudavi Bird Sanctuary is one of the well-known bird sanctuaries located in **Karnataka**, India.
- It is situated on the banks of **Gudavi Lake**.
- **Fauna:** The sanctuary is home to more than **217 bird species**, including both resident and migratory birds like **Grey Heron, Little Cormorant, Spoon bills, Little Grebe, Snake birds (Darters), White Ibis** and **White-Headed Crane**.
- **Flora:** Gudavi Bird Sanctuary is covered by moist **deciduous forest species** with interspersed **grassy areas, marshy plants** and **microphyte biota**.

Gravitational Constant



About the Gravitational Constant:

- The Gravitational Constant (G) is a **fundamental physical constant** that plays a crucial role in the understanding of gravity.
- It is the proportionality constant in **Newton's law of universal gravitation**, which describes the gravitational force between two objects.
- It's also a key component of **Einstein's theory of general relativity**, which provides a more accurate explanation of gravity, especially in extreme conditions.
- The value of G was accurately determined by **Henry Cavendish** in **1797** through experiments that measured the **gravitational attraction between lead spheres**.
- In **Einstein's theory of general relativity**, G appears in equations that describe the curvature (warping) of spacetime in the presence of mass and energy.
- According to **Newton's law of gravitation**, the gravitational force is directly proportional to the product of the masses of two objects and inversely proportional to the square of the distance between them.

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Place in News

Solomon Islands

A Chinese Communist Party delegation recently visited the Solomon Islands, describing the collaboration between China and the Pacific nation as thriving.

Solomon Islands (Capital: Honiara)

Location: Solomon Islands is an island nation located in **Melanesia**, east of Papua New Guinea, comprising more than **990 islands**.

Geography and People:

- The country's terrain is characterized by **mountains** and **dense forests**.
- Over **90%** of the population in the Solomon Islands is made up of ethnic Melanesians.

Historical Background:

- The Solomon Islands were once a **British protectorate**.
- The country achieved independence as a republic in **1978**.

Language:

- Solomon Islands is known for its linguistic diversity, with **63 distinct languages** and numerous **local dialects**.
- **Official Language: English** is the official language of the Solomon Islands.



Place in News

Brazil

Recently, a drought in the Negro River revealed the Ponta das Lajes archaeological site near Manaus, Brazil.

Brazil (Capital: Brasília)

Location: Ponta das Lajes archaeological site is situated in a rural area of **Manaus, Brazil**.

Political Boundaries:

Brazil shares its borders with **Venezuela, Guyana, Suriname, French Guiana, Uruguay, Argentina, Paraguay, Bolivia, Peru** and Colombia while its eastern boundary is the Atlantic Ocean.

Physical Features:

- One of the **planet's longest rivers**, the Amazon River is not only a lifeline for the region but a natural wonder of tremendous importance.
- The world's largest tropical wetland, the **Pantanal** is a biodiversity hotspot and an essential ecosystem for unique wildlife.
- The Rio Negro is the **largest left tributary of the Amazon River**, contributing about **14%** of the water to the Amazon basin.

Recent Discovery:

- The archaeological site was recently uncovered following a drought in the Negro River.
- The site features ancient rock paintings.
- Archaeologists believe the rock paintings date back between 1,000 and 2,000 years.



POINTS TO PONDER

- ❖ Competition Commission of India (CCI) is a statutory body under which Union Ministry? - **Ministry of Corporate Affairs**
- ❖ What is the name of the National Hackathon focused on the use of 5G technology for police applications? - **Vimarsh 2023**
- ❖ Which country is the host of the 'Three Basins Summit'? - **Republic of Congo**
- ❖ Where was "Waste to Art- Scrap to Sculpture" Exhibition organised? - **New Delhi**
- ❖ Where will the 7th edition of Exercise KAZIND be conducted? - **Otar, Kazakhstan**

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