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Current Affairs - 31 December 2024

ADVANCEMENTS IN INDIA'S SMART CITIES MISSION



Recent studies by IIM Bangalore highlight the Smart Cities Mission in India has led to improvements in education and safety, as well as the impact of urban initiatives across various cities. The findings are part of the SAAR – Sameeksha series, which assesses urban project outcomes.

Enhancements in Education

The education study revealed that 71 smart cities implemented 9,433 smart classrooms in 2,398 government schools. This initiative resulted in a 22% increase in student enrolment from 2015-16 to 2023-24. Economically weaker sections benefited the most from these developments. Cities like Ajmer, New Delhi Municipal Council, and Tumakuru demonstrated increased attendance and improved learning experiences. Additionally, digital libraries were established in 41 cities, accommodating 7,809 students. These libraries serve as vital resources for competitive exam preparation. Teachers, particularly in senior secondary education, reported increased comfort in using smart classroom technology.

Urban Safety Improvements

The urban safety study focused on women's safety through real-time monitoring. Over 59,802 CCTV cameras and emergency call boxes were installed in 93 smart cities. These systems are connected to Integrated Command and Control Centers (ICCCs). Cities such as Chennai, Nagpur, and Tumakuru showed remarkable improvements in safety. Nagpur experienced a 14% reduction in crime rates. Women in these areas reported feeling more secure in public spaces. Advanced monitoring systems and evidence-based policing have effectively reduced harassment and crime in regions with enhanced safety measures.

India cultural tours

SAAR Platform and Future Policies

The SAAR platform, launched in 2022, connects academic research with government initiatives. It has involved 29 leading institutions, including IIMs and IITs, in completing 50 impact assessments. The insights gained are expected to influence future urban development strategies .



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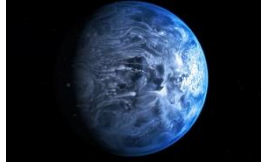
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DISCOVERY OF EXOPLANET K2-18 B



NASA's James Webb Space Telescope has made a discovery by identifying an exoplanet called K2-18 b, located in a habitable zone, suggesting conditions may support liquid water and potentially life.

Characteristics of K2-18 b

K2-18 b is approximately 124 light-years from Earth. It has a radius 2.6 times that of Earth and a mass 8.6 times greater. These features make it a prime candidate for the search for extraterrestrial life.

The atmosphere of K2-18 b contains methane and carbon dioxide. These gases are often associated with biological processes. Notably, dimethyl sulfide (DMS) has also been detected, a molecule linked to life on Earth.

The Hycean Planet Hypothesis

Scientists propose that K2-18 b could be a "Hycean" planet. This term indicates the potential for oceans and a hydrogen-rich atmosphere, which could create environments suitable for life.

The Kepler Space Telescope first identified K2-18 b in 2009. Recent studies by the James Webb Space Telescope have provided detailed analyses of its atmosphere, enhancing our understanding of this exoplanet.

The presence of DMS is particularly intriguing. On Earth, DMS is produced by plankton in oceans, hinting at possible biological activity on K2-18 b. However, the planet's size raises questions about its habitability.

K2-18 b: K2-18 b is an exoplanet located in a habitable zone. It is 124 light-years from Earth and has a radius 2.6 times larger than Earth's.

Hycean Planet: The term "Hycean" describes planets with potential oceans and hydrogen-rich atmospheres. These conditions may encourage environments suitable for life, expanding the search for extraterrestrial life.



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INDIA TO HOST WORLD AUDIO VISUAL ENTERTAINMENT SUMMIT(WAVES)



2025

India is set to host the World Audio Visual Entertainment Summit (WAVES) in 2025, marking a milestone for the nation, and providing a platform to showcase its creative talents. Prime Minister Narendra Modi emphasized the importance of young creators in this initiative, denoting their role in driving innovation within the creative sector.

Significance of WAVES 2025

The World Audio Visual Entertainment Summit aims to bring together industry leaders and creators. It will serve as a global stage for discussing trends, challenges, and opportunities in the audio-visual sector. Hosting this summit aligns with India's vision of enhancing its cultural footprint on the world stage.

Role of Young Creators

Young creators are very important to the success of WAVES 2025. Their fresh perspectives and innovative ideas will shape the summit's discussions. The Prime Minister noted that the enthusiasm of India's youth is crucial for the growth of the creator economy, which is a key component of India's broader economic goals.

Tribute to Cinema Legends

Recently, Prime Minister Modi paid tribute to iconic figures of Indian cinema on their 100th birth anniversaries. He honoured Raj Kapoor for his films that showcased India's cultural richness. Mohammed Rafi was remembered for his timeless voice, which continues to resonate across generations. Akkineni Nageswara Rao was celebrated for his contributions to Telugu cinema and his role in preserving Indian traditions.

The contributions of these cinema legends have enriched India's cultural heritage. Their work during the golden age of Indian cinema has left a lasting legacy.



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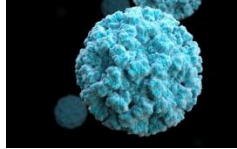
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WHAT IS NOROVIRUS?



Norovirus, often referred to as the stomach flu or “winter vomiting bug,” causes inflammation in the stomach and intestines. It leads to vomiting and diarrhea, with symptoms appearing suddenly. Common symptoms include nausea, stomach pain, body aches, headaches, and weakness.

Transmission of Norovirus

Norovirus is highly contagious and can spread through contact with infected individuals. Just ten viral particles can cause infection. The virus can contaminate food, water, or surfaces, primarily due to inadequate hand hygiene. Common transmission routes include consuming contaminated food or beverages and touching infected surfaces.

Symptoms and Duration

Symptoms typically manifest 12 hours to two days after exposure and can last for one to two days. Infected individuals often experience severe nausea and frequent vomiting, which can occur unexpectedly.

Treatment and Recovery

There is no specific treatment for norovirus, as antibiotics are ineffective against viruses. The CDC recommends staying hydrated by consuming fluids like sports drinks or Pedialyte to help recovery.

Prevention Measures

To prevent norovirus transmission, the CDC advises several key practices:

Remain at home for at least two days after symptoms cease.

Wash hands frequently with soap and water for a minimum of 20 seconds.

Disinfect contaminated surfaces thoroughly.

Wash fruits, vegetables, and shellfish adequately.

Laundry contaminated clothing in hot water.



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VIKRAM SARABHAI'S 52ND DEATH ANNIVERSARY



Vikram Sarabhai, a prominent figure in Indian science, died on December 30, 1971, in Kerala, shaping the nation's space programme and continuing to inspire generations of scientists and innovators.

Sarabhai established numerous institutions that remain vital to various fields, including space research and the arts.

Early Life and Education

Sarabhai was born into a wealthy family in Ahmedabad. His parents owned textile mills, which provided a nurturing environment for his creativity. He built a working model of a train engine at the age of 15. He studied at Gujarat University and later at Cambridge University, where he specialised in physics and mathematics. His studies were supported by Rabindranath Tagore's recommendation.

Contributions to Science

Sarabhai played an important role in developing India's space programme. He founded the Physical Research Laboratory (PRL), which became the foundation for the Indian Space Research Organisation (ISRO). His vision led to the launch of India's first sounding rocket in 1967. He advocated for government investment in long-term space and nuclear initiatives.

Leadership and Legacy

After Homi Bhabha's death, Sarabhai became the chairman of the Atomic Energy Commission. He initiated collaborations with NASA, notably the Satellite Instructional Television Experiment in 1975. This project aimed to provide educational content to rural populations, improving access to information.



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CHINA'S CR450 BULLET TRAIN BREAKS SPEED RECORDS



China has recently revealed its CR450 bullet train, achieved a remarkable speed of 450 km/h (approximately 280 mph) during testing. This development marks advancement from the previous CR400 Fuxing trains, which maxed out at 350 km/h. The CR450 combines speed with enhanced efficiency, promising to transform rail travel.

Key Features of the CR450

The CR450 is designed to be 12% lighter than its predecessor, consumes 20% less energy, and boasts a 20% improvement in braking performance. Passengers can expect a quieter and more spacious interior, thanks to advanced noise-reduction technologies.

Operational Speed and Safety Measures

Once in regular service, the CR450 is expected to operate at a top speed of 400 km/h (approximately 249 mph). The train is equipped with over 4,000 sensors to monitor critical systems, ensuring passenger safety, which also includes a multi-level emergency braking system for added security.

Aerodynamic Design and Energy Efficiency

The aerodynamic shape of the CR450, combined with lighter materials, reduces air resistance. This design enhancement leads to a 22% decrease in energy consumption, making the train more environmentally friendly.

China's extensive high-speed rail network, which exceeds 46,000 kilometres, will greatly benefit from the CR450. The train is expected to shorten travel times on key routes, such as Beijing to Shanghai. Testing has been successfully conducted on various lines, including Zhengzhou-Wanzhou and Jinan-Zhengzhou.

The CR450 sets a new global standard for train speed and efficiency. It represents milestone for China's transportation system and is poised to revolutionise rail travel, making it faster, safer, and more energy-efficient.



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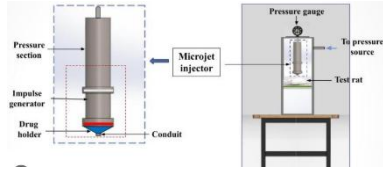
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IIT BOMBAY DEVELOPS PAINLESS NEEDLE-FREE SHOCK SYRINGES



Recent advancements in medical technology have led to the development of a needle-free syringe by researchers at the Indian Institute of Technology (IIT) Bombay. This innovative device utilizes shockwave technology to deliver medication painlessly, addressing common fears associated with traditional syringes.

What is the Shockwave Syringe?

The shockwave syringe is a device that administers medicine without the use of needles and employs high-energy pressure waves that travel faster than sound. These shockwaves penetrate the skin, delivering medication efficiently and safely.

Benefits for Patients

This new syringe reduces the pain and anxiety associated with injections. It is particularly beneficial for individuals who fear needles, including those hesitant about vaccines. Additionally, it serves patients with chronic conditions, such as diabetes, who require regular insulin injections.

How It Works

The mechanism of the shockwave syringe involves compressing air or liquid around the shockwaves. As these waves travel through the skin, they create a pathway for the medication to enter the body. This process minimises damage to skin and tissues, making it a safer alternative to traditional methods.

Safety and Efficiency

According to lead researcher Priyanka Hankare, the shock syringe is not only faster but also safer than conventional syringes. Traditional syringes can cause injuries if used improperly, while the shockwave technology mitigates this risk. The design ensures a controlled delivery of medication, enhancing patient comfort.



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KONERU HUMPY WINS 2024 FIDE WOMEN'S WORLD RAPID CHESS CHAMPIONSHIP



Koneru Humpy has recently claimed her second women's title at the World Rapid and Blitz Championship held in New York, marking a milestone in her chess career, showcasing her exceptional talent and determination. Humpy scored an impressive 8.5 points over 11 rounds, defeating Indonesia's Irene Sukander in the final match. At 37 years old, she stands as the top-ranked Indian player and is only the second woman to achieve this title more than once.

Significance of the Victory

Humpy's win is historic as it establishes her as a leading figure in women's chess. She previously won the championship in 2019 in Georgia, making her a two-time champion. This achievement marks her consistency and skill in a competitive field.

Performance Overview

In the championship, Humpy demonstrated remarkable strategic prowess. She navigated through 11 rounds, amassing 8.5 points. Her performance reflects her deep understanding of the game and her ability to adapt to different opponents.

Best video game consoles

Prime Minister Narendra Modi publicly congratulated Humpy on her achievement. He acknowledged her remarkable accomplishment as the only Indian woman to win the World Rapid Championship twice. His praise puts stress on the impact of her success on inspiring future generations of chess players.

Koneru Humpy: Humpy is a two-time World Rapid Chess Champion. She is the only Indian woman to achieve this feat. Her success inspires many aspiring chess players in India.

World Rapid and Blitz Championship: This championship features fast-paced chess games. Players have limited time to make moves. It showcases quick thinking and strategic prowess in competitive chess.



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WHAT IS HYDROPONIC FARMING?



Agartala, Tripura, is witnessing advancements in hydroponic farming, which is gaining traction across India. The state has transitioned from small, portable systems to larger, commercial setups, which aim to assist local farmers in overcoming challenges posed by climate change.

Tripura faces increasing threats from heavy rains and floods. While these natural disasters cannot be prevented, hydroponics offers a solution. It mitigates the impact of adverse weather on traditional farming. By adopting hydroponic techniques, farmers can continue to grow crops even during challenging conditions.

Financial Support and Investment

The government of Tripura has invested ₹55 lakh in this hydroponic initiative. This financial backing aims to enhance farmers' profitability. Although the initial costs are substantial, experts predict returns within three to five years. This investment is crucial for improving the financial stability of local farmers.

Benefits of Hydroponics for Farmers

Hydroponics is especially advantageous for farmers with limited land. The method employs vertical farming techniques, allowing for increased crop yields in smaller spaces. This approach not only satisfies household food needs but also opens up opportunities for selling surplus produce. Consequently, farmers can enhance their incomes.

Following recent floods, the government has provided financial assistance to impacted farmers. The hydroponic initiative further supports these individuals by offering sustainable farming options. This approach helps farmers adapt to land constraints while addressing the growing demand for fresh produce.
