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News & Views

India's first under water metro tunnel in Kolkata below Hooghly river

Seven years after two gigantic tunnel boring machines (TBM) arrived in Howrah to carve out two tunnels below the Hooghly river and link the twin cities with a Metro line, one of the TBMs finally hit the river bed on 14th Apr 2017 evening. This 520m stretch of river tunnel is the most crucial and prestigious phase of the 16.6km project between Howrah Maidan and Salt Lake Sector V and puts Kolkata on a par with cities like London, Paris, New York, San Francisco, Singapore and Hong Kong, among others, that have Metro tunnels under a river.

The underwater Metro tunnel will also be a first in the country just as Kolkata Metro was when it began operations a decade before Metro networks came up in other cities.

It was around 8pm on 14th Apr 2017 that one of the TBMs inched forward and scooped out earth from under the river bed along the western bank. Above, the post office stood motionless while commuters at the ferry ghat went about their usual day, unaware of the significant development 33m below.

"In terms of engineering, it is just another day for us. But in significance, this is momentous. We've been waiting for this since 2010 when the TBMs arrived. The boring began only in March 2016 from Howrah Maidan after a six-year delay," said Virinder Kaul, project manager of Transtonnelstory-Afcons, an Indo-Russian joint venture that has been given the contract for 2.9km of the twin tunnels between Howrah Maidan and Mahakaran, the station on the eastern bank. In all, 1.04km of tunnelling will be done under the river.

While the TBM that is drilling the Kolkata-bound track tunnel has crawled 1.2km in a year, it is now poised to move with rapid speed to excavate through the river bed in just 45 days. The TBM drilling the Howrah-bound track tunnel is 400m short of the river bed and will reach the other end in mid-June. From now till then, the TBM has to work non-stop while the soil that is scooped out is continually extracted from the shaft at Howrah Maidan.

Said project design engineer Satya Narayan Kunwar, "We had planned to complete the river tunnels last Christmas but issues cropped up leading to the delay. But now that it has finally started, we cannot risk stopping the TBM beyond 4-5 hours for preventive maintenance as that can spell disaster. Subsidence and water gushing in is a possibility. If that happens, the project can go completely awry. There have been instances when a TBM machine has had to be abandoned in the tunnel."

The TBM that began to drill at a depth of 16 metre below the surface at Howrah Maidan descended to 30 metre when it reached Howrah Station. It has now entered the river bed at a depth of 33 metre from the surface and will continue to gradually move downwards to reach Kolkata at a depth of 35 metre, the deepest point of the East-West Metro tunnel that will ultimately run 10.81 km between Howrah Maidan and Subhas Sarobar.

From now till it reaches Kolkata, the TBMs will move forward with a force of 800-1,200 tonne, grinding through the stiff clay at the rate of 10-14 metre per day and scoop out 1,200 cubic metre of earth each. "Everyday, each TBM will install 20 concrete reinforced rings, 27.5 cm in thickness and 1.4 metre wide. Each tunnel will be made of 340 rings," said quality department head Monu Govil.

Inside the tunnel, the man in charge is Paul Verrall, a South African with more than 20 years of tunnelling experience who has worked at metro projects in Delhi and Chennai in India, and cities in South Africa, Malaysia and Singapore in South-East Asia. Apart from Indians and South Africans, there are British, American, Canadian and Austrian engineers involved in the river tunnel. Over the next couple of months, around 250 persons will work in shifts. On Friday, it was Durgesh Tiwari who sat in the control room, directing the TBM as it drilled into the river bed. Alongside were a host of engineers, including shifts in-charge Jan Ellis and Yohan Ellis from South Africa. Shahbaz Khan, Subham Sharma, Sivang Agarwal and Kailash were also part of the historic moment.

"We had all waited for this moment. Many of us have been working at this site for last six years. There were many phases of despondence as the entire project got uncertain. The case was taken to Calcutta High Court. At times, it seemed hopeless. But the project has risen like a Phoenix and revived our hope. We salute the patience of people of Howrah who have endure pain but have reposed complete faith in the project," Kaul added.

Source: http://timesofindia.indiatimes.com, 15.4.2017

Tunnels to ease access in Leh and Laddakh in Kashmir Himalaya

Even as the work on the strategic Rohtang tunnel progresses slowly, the defence ministry has decided to construct four more tunnels to effect all-weather connectivity with treacherous roads linking the Chinese frontiers in Leh and Ladakh.

The four proposed tunnels will cut through lofty mountain passes in the Himalayan and Zanskar mountain ranges to facilitate year-round movement of vehicles to border areas. The Border Roads Organisation (BRO) India's elite agency responsible for the construction and maintenance of borders roads, has already engaged Italian consultants to conduct feasibility studies for the tunnels. Once built, it will cut through the avalanche-prone shinkula pass – which connects Lahaul valley in Himachal to Zanskar in Jammu and Kashmir.

Though the 16,703 ft-high pass has no glaciers, it is highly prone to avalanches during snowy winters. It was only last year that the BRO completed the 39.6 km stretch to connect Lahaul valley with Zanskar.

The stretch connecting Darcha with Shinkula pass will also drastically reduce travel time between Manali and Leh. Experts say that the road, besides being of strategic importance, will improve connectivity for residents of the 15 odd villages in Zanskar valley.

The road will also aid the construction of a tunnel being planned beneath Shinkula pass. This tunnel is aimed at reducing the distance between Manali and Leh.

Besides, the defence ministry has proposed the construction of a 11.25 km long tunnel beneath the 16,040 feet Baralachala pass in Zanskar range.

The last tunnel on the Manali-Leh road will be constructed below the 16,500 feet Lachungla pass, which is on Himachal – J&K states boundary.

Source: Hindustan Times, 25.3.2017

India successfully tests Lethal Missile Agni-V

India successfully test-fired Agni-V, its most lethal nuclear-capable, inter-continental ballistic missile that has a range of over 5,000 km, from Abdul Kalam island off Odisha coast on 26th Dec 2016.

The successful test-firing will pave the way for user trial of the missile and its eventual induction into the Strategic Forces Command (SFC).

The three-stage, solid propellant surface-to-surface missile was test-fired from a mobile launcher from launch complex- 4 of the Integrated Test Range (ITR) at about 11:05 hours, Defence Research and Development Organisation (DRDO) sources said.

About 17 metre long and weighing over 50 tonnes, the missile rose from the confines of its canister and achieved all targets.

The missile has a range of over 5000 km with 24 mach speed. Agni-V also has advantages of higher reliability, longer shelf life, less maintenance and enhanced mobility.

Source: Hindustan Times, 27.12.2016

Global media hail India's space feat

When the Indian Space Research Organisation (ISRO) launched a record-breaking 104 satellites atop a single rocket on 15th Feb 2017, the world sat up and took notice. The launch made it to the headlines of most news publications around the world, with global media hailing ISRO's frugal, but successful space mission.

The launch was "another success for the ISRO, which is gaining a reputation globally for its effective yet low-cost missions," The Washington Post said, noting that India has already sent up dozens of satellites, including 20 at once last year.

The New York times said that by sending 104 satellites into space within minutes, nearly trippling the previous record for single-day launches, India has established itself as a "key player" in a growing commercial market for space-based surveillance and communication. "The launch was high-risk because the satellites, released in rapid-fire fashion every few seconds from a single rocket as it travelled at 17000 miles an hour, could collide with one another in space if ejected into the wrong path," the paper noted.

London's Times newspaper reported that by today's feat, India has reinforced its ambition to join the elite space-faring nations.

Source: Hindustan Times, 17.2.2017

IISc graduates: the 38th most employable in world

Employers consider the Indian Institute of Science (IISc), Bengaluru, to be one of the world's best universities at producing graduates with the skills they need for the workplace, placing it 38th in a new global ranking of 150 universities.

Graduates from American universities are ranked as the most employable, with California Institute of Technology leading the pack, followed by the Massachusetts Institute of Technology at second place and Harvard University at third.

The sixth annual Global University Employability Ranking published by Times Higher Education is based on feedback from 2500 recruitment managers from large international companies. It shows that employers continue to favour graduates from US institutions.

Large global employers based in India surveyed revealed Indian employers value communication skills, adaptability and the ability to work in the team above the other non-academic skills graduates may possess, researchers said. Indian employers placed more importance than others on flexibility, motivation and the ability to work under pressure, they added.

Source: Hindustan Times, 17.11.2016

Award of $500,000 for developing long-life battery to an Indian scientist

Uttarakhand-born scientist Shailesh Upreti has bagged a $500,000 (Rs. 34.12 crore) award for developing a long lasting lithium-ion battery.

Upreti was presented the 76 West Clean Energy Competition - the largest clean technology business competition for green energy innovators - award in New York on November 30, 2016 for developing lithium-ion batteries by eliminating internal corrosion and with a lifespan of 20 years.

An alumnus of IIT-Delhi, Upreti has patented the technology. His technology has already been licensed to a number of companies in the US and other countries to manufacture the next generation batteries that can be used to store solar energy as well as run electric vehicles, including cars, trucks and buses.

The technology is carved out from a platform technology and there is a wide range of opportunities for companies. "I would like to see youngsters taking interest in and be excited about how green technology will positively impact not only the economy but also the environment in coming years," said Upreti, who now spends most of his time in the US, developing technologies and promoting start-up companies.

He further said that he is also planning to manufacture the advanced Lithium-ion batteries in India. Batteries are the future of energy technology that will replace polluting fossil fuels like diesel and petrol, he said.

Source: Hindustan Times dated 3.12.2016

Chenani-Nashri tunnel is set to open in J&K state

The longest highway tunnel on the Jammu-Srinagar national highway is to be opened on 2nd April 2017. Salient features of the tunnel are,

- **9.28 km**: Length of the tunnel. The world's longest tunnel (24.51 km) is in Norway.
- Main tunnel is 13 metre in diameter, parallel escape tunnel has 6 metre diameter, and are connected by 29 cross passages at 300 metre interval.
- The tunnel has of a system that will control communication, ventilation, video surveillance, power supply, SOS call box, fire fighting and incident detection and an FM signal repeater.
- The tunnel is part of a 286 km long four lane project on the Jammu-Srinagar highway.
- **30.11 km**: Reduction in travel distance between Jammu and Srinagar; Travel time will reduce by 2 hours.
- ₹ 2.7 million: Cost of fuel that will be saved daily.
- ₹3,720 crore: Construction cost of the tunnel, ₹ 1,200 crore more than the initial cost.
- May 23, 2011: Date on which work started on the tunnel.

Source: Hindustan Times, 28.3.2017

Top 10 small universities

Rank	Institution	Country
1	California Institute of Technology	US
2	Ecole Normale Superieure	France
3	Pohang University of Science and Technology	South Korea
4	Ecole Polytechnique	France
5	Scuola Normale Surperiore di Pisa	Italy
6	Scuola Superiore Sant'anna	Italy
7	Ecole Normale Superieure de Lyon	France
8	Indian Institute o Science	India
9	Swedish University of Agricultural Sciences	Sweden
10	Free University of Bozen-Bolzano	Italy

Credit: Times Higher Education

Source: Hindustan Times, 7.3.2017

Spiritual life force in Hindustani music

It is the wetness of water, the lilt in a melody, or the hue that radiates with the play of light on colour. Like the meaning of the word 'Krishna'- 'an inner element which attracts' – the concept of rasa in Hindustani culture and music helps transmit an elusive but profound tattva or principle of life.

Rasa is the spiritual life force, the affirmation of the spirit in life, which radiates when ragas and talas are boned to a shine. And yet, the ragas of the entire Hindustani system have been categorized under nau rasa or the nine rasas. They are the shringara or love, hasya or numour, raudra or anger, vira or valour, the adbhutta or vondrous, vibhatsa or odious, karuna or compassionat, bhayanaka or fearful, and shanta or peaceful. All raga moods are to be

contained within the gamut or these nine prescribed bhavas or emotions, with some mix and match as well.

"Rasa is the essence, the abstract quality of the raga," explains Pandit Amarnath of the Indore gharana. "There is basically one essence or rasa in all of Hindustani music, and that is the bhakti rasa; if it is shringara rasa or the emotion that represents love and its celebration, It is for bhakti. If it is adbhuta rasa or the mood which represents the sense or wonder, it is for bhakti. The underlying rasa is always bhakti. The underlying rasa is always bhakti. That is why the nau rasa theory is more relevant for the actor, rather than the musician, when things have to be dramatized."

In Hindustani music, ragas are said to number no less than a total of 999, representing as many shades of mood and emotion of the human heart. And they contain one underlying rasa!

In our times a musician normally sings or plays a quarter of this number in an entire lifetime. In the human heart, rasa lies in the emotional sparkle. Emotions, also said to number no less than perhaps a total of 999 in the cosmosphere, representing as many shades of mood in the human heart, contain one underlying rasa: bhakti.

Once a disciple asked Pandit Amarnath, "Guruji, why is it that in the slow aalaap or improvisation of the raga it is all emotion and rasa, and in the fast or taan portion the rasa seems to vanish completely?" To this he replied, "What we experience in the fast portion is not rasa but a thrill, which is not emotion-less, but a climax of the slow build-up of the emotion to its own resolution." In other words, a kind of heightened intoxication before the release, or the culmination of the meditation of the raga.

Close on the heels of the word 'rasa', conveying the same meaning and used in the same context in music, is the word 'rang', meaning colour, used to refer to the 'colour' of the soul, or spiritual colour. Rang chadhana, or raag ka rang chadhana, in other words, the colour of masti, or intoxication, the performer and listener both imbued with the spirit of the raga being sung or heard.

From the word rasa comes the word rasika, or the listener charged by music which is spiritually emotive and deep. The rasika can distinguish between the exhibition or music, and its intension, and gives his heart to the soul of the musician. Rang barase! Rasa barase! What is beautiful about the concept, finally, is that rasa sees life in spirituality and spirituality in life. Hindustani culture sees rasa, finally, as passion, as lust, and as life. As an eternal celebration of the Divine within the human.

Source: Times of India

Deep breathing exercises for rejuvenation

The fresh oxygen is our main food, the regular deep breathing may keep you young for 60 years really. Further it is in our hands to increase the happy chemicals (endorphins) in our brains and bodies. The regular deep breathing rejuvinates the endorphins for some time. Thus the mentally sick persons may also regain their natural smiles, even on the full moon days. Thus O_2 buildings and restaurants will become popular. Further the regular deep breathing exercises may increase our life spans to say 100 years. The deep breathing exercises may increase our life spans to say 100 years. The deep breathing exercise develops our overall

health and the creativity of our brains gradually due to the evoluation of our genes. There is a popular belief that our life spans are predestined-fixed numbers. This is not true now.

The deep breathing may reduce symptoms of panic attacks which may last upto 30 minutes. Regular deep breathing cures the disease of aging very gradually. The ionized-oxygen at the hill-tops has electrifying effects on our vital energy. Further, the inhaling by the left nostril develops our right hemisphere of brains. Similarly inhaling by the right nostril develops the left hemisphere of our brains.

Thus fresh oxygen is our main food for our genetic evolution. We need to inhale 8-10 times more pure oxygen of fresh air than we take normally to evolve to be healthier. The oxygen inhaling heals our wounds faster. The deep breathing changes our moods to be happier in just 10 minutes, due to the release of the happiness-chemicals. The oxygen is our life. The lack of oxygen is the cause of death.

Please follow the God's hygienic laws. So purify yourself. The regular deep breathing for about one hour purifies our blood by the oxygenation. As aeration is a powerful method of purifying the river waters. Thus the oxygen is a great purifier in this polluted environment. The scientists all over the world have confirmed the claim of anti-aging properties of regular deep breathing after considerable researches.

The regular deep breathing for one hour daily awakens our dormant genes. Hence we become stronger in a couple of years. Further our immune system becomes stronger by 8 to 10 times to fight the germs etc. Hence the regular habit of deep breathing exercises is very beneficial even in the young age. The positive thoughts have the healing powers.

Many doctors are now praising the health benefits of the regular deep breathing exercises for rejuvenation of our blood and the internal exercises e.g. much healthy heart, digestive system, kidney, lungs and memory regain etc. The regular deep breathing has stopped the dialysis of many kidney patients after a couple of months only. The doctors are expecting that the regular deep breathing exercises will save us from the cancers, due to the rejuvenating power of the fresh oxygen in the pure air. Time of deep breathing is important.

We should bloom like a lotus flower in the mud. We should enjoy the inner bliss. The mother nature favours the brave persons. The chemical eating societies will collapse due to their side effects. But herbal using societies will rise, due to their powers of healing.

Source: As inspired by H.H. Swami Ramdev

Union of the finite with the infinite is Yoga

In spirituality, when the finite comes in contact with the Infinite, it is called yoga, Yoga leads to the much aspired-for Supreme Union.

In Sanskrit, yoga means addition. For the spiritual aspirant, yoga is not only addition; yoga also means unification. Say there are two apples. You add another two apples. You add another two apples to the existing ones. The total would add up to four apples. The nature and characteristics or each apple remain unchanged before and after addition.

Unification, on the other hand, is like sugar and water. When sugar is added to water, it dissolves and becomes one with the fluid. Yoga means this type of unification. The starting point is aesthetic taste or aesthetic science. The culminating point is when you become unified with the Supreme Entity, whose seat is above the pinnacle of existence.

In yoga, undertaken for the unification of the unit with the Supreme, the finite merges with the Infinite. The human physical and psychic structure is most suitable for this purpose. Animals and plants act according to their inborn instincts. The cranium is very small and the conscious portion of the mine is sufficient for them; there is no necessity for the subsconscious or unconscious strata of the mind.

A plant gets pleasure or pain when its inborn instincts are either encouraged or discouraged. When the inborn instincts of a plant or an animal are encouraged it gets pleasure, and when the inborn is suppressed or depressed, it gets pain. But human psychospiritual movement cannot be suppressed.

There lies the specialty of human existence. Mysticism is the never-ending endeavour to find the link between the finite and the Infinite, between the self and Khuda. When the aesthetic sense, based on the subtle aesthetic science, comes to touch a certain standard, it is called mysticism. And when this mysticism reaches the pinnacle of human glory, or the excellence of human glory, it is called spirituality.

Human beings are never satisfied with something finite. The scriptures say that human thirst cannot be satisfied with something limited. In the quest for the Infinite, we first come in contact with aesthetic science. Aesthetic science is that which one can express in a subtler way, from suitable to subtler, and when it reaches the subtlest point, that point is the pinnacle of human glory. It is the duty of artists to express their work in a nice way, and place it before the world. Not everyone can do this. But enjoying something with aesthetic taste is within the capacity of every human being.

Yoga is the most developed and valuable human expression so it is in the first phase of yoga that one expresses oneself through so many arts and sciences. The final point of all artistic movement and the final point of all branches of sciences is the supreme source, the perennial source of all energies, the supreme seat of all energies. It is Parama Purusha, the supreme Entity, the Father of all, the Casual Matrix of all created beings in the universe, both animate and inanimate.

That is why for all people, the Supreme Entity must be the goal of life. That is, the Supreme Entity must be the goal of life. That is, the Supreme Entity is the culminating point, the desideratum of all human expressions. When we are lacking in this spirit of movement, we degrade ourselves from the human status.

Source: Times of India

Humour

- A fool thinks himself to be wise, but a wise man knows himself to be a fool.

- William Shakespeare

- When you are courting a nice girl, an hour seems like a second. When you sit on a red-hot cinder, a second seems to be like an hour. That is theory of relativity.

- Albert Einstein

- "Do you sing?"
  "Yes! I am Sukhvinder Singh".

- Sukhvinder Singh, Singer

- If politics divide people, a good table dinner always gather them.

- Gills Bragard