Indian Science News Association
ESTD.–1935

Scientifica Communica

Kolkata, March 17, 2023, Vol.2, Issue.2

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The New World Order

It was way back in 1994. Then the Californian Energy Secretary was explaining the steps his state, described as the "Fifth largest economy," had taken to contain environmental hazards. The audience included senior journalists from a cross section of countries. California had already promulgated sternest laws to control emission from fossil fuels.

"…But we will have to look forward for alternative resources to run battery driven cars for which we will need Lithium and our state has a huge reservoir," he threw his forecast in the air, simultaneously highlighting a "New World Order."

The surprised scribes, still trying to digest the confabulations of "The New World Information Order" by that time propounded by James McBride started wondering what else could it be and what were its implications.

Time flew by and many of the members of that international team had retired meanwhile. But, what a prophecy! Almost thirty years after, the Christian Science Monitor in its best collection of 2022 declares that in a few years from now the US could be the largest supplier of Lithium, found in southern California's Imperial Valley that could make it the "Saudi Arabia of Lithium." Everyone with a smart phone, for example, knows how the light metal functions in the battery or for other purposes.

This declamation is something very significant and timely when the world at the moment is at a loss how to deal with the vagaries of nature, especially in the wake of COP 26. While California itself is battered by a "Bomb Cyclone," thousands of miles apart Rudyard Kipling's "Chance directed, chance erected" city of Calcutta had witnessed the "Warmest Christmas" of recent years. Figures for the entire country are no better either. "India sees warmest December in 122 years," proclaimed a headline in the nation's largest daily.

Leaders at the last international summit in Egypt had scratched their brains on how to face the whimsical Mother Nature and vowed to do something in the coming decades to save Mother Earth. So far, so good. But the question still hangs in the fire. What else? Opinions of scientists, environmentalists, and surprisingly of politicians, seem to be unidirectional at this juncture. They appear to be unanimous in suggesting that this is the high time to intensify the quest for alternative energy resources.

How and what that could be? The naysayers are forecasting that the existing fossil fuel reserves monopolized by some countries are not going to last long. Till they run out of stock these countries are trying to politically capitalize on the situation. The ongoing Ukrainian war is a classic example.

The situation, therefore, is very critical and unless something is concurrently done the world will be held at ransom. In that context the CSM article is very relevant. Meagre efforts to tap the sea or blow the wind fan may be enough for smaller countries to sustain their energy requirements but that's not the story for the entire mankind.

The world population is almost bursting to the seams. Because of a Demographic Slump," The Economist has already predicted that India will overtake China early 2023! Naturally, many in India are not happy as apparent from their vilification of the famous British weekly, But at the same time, it's also encouraging to hear a Union Minister that India has become the world's second largest manufacturer of smart phones, and will be in the row of front rankers of electronic items exporters shortly.

So far, we have heard about the shortage of semiconductors in the country that badly affected the production of battery-operated vehicles. But if 2022 statistics are to be believed Indian car manufacturers have turned the tide being enthused by the governmental steps. These include internally augmenting semiconductor production and increasing the number of charging stations for the initially hybrid and finally for totally battery-operated cars.

This was evident at the last Gurgaon car expo where Indian and foreign car manufacturers had flaunted their yet-to-be-launched battery and hybrid models. Others have shown ethanol mixed engines. It was also good to note that India had already started setting up bio-ethanol plants and looking for Green Hydrogen.

But what about Lithium? Will India hold new hands? The question remains….

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The New World Order

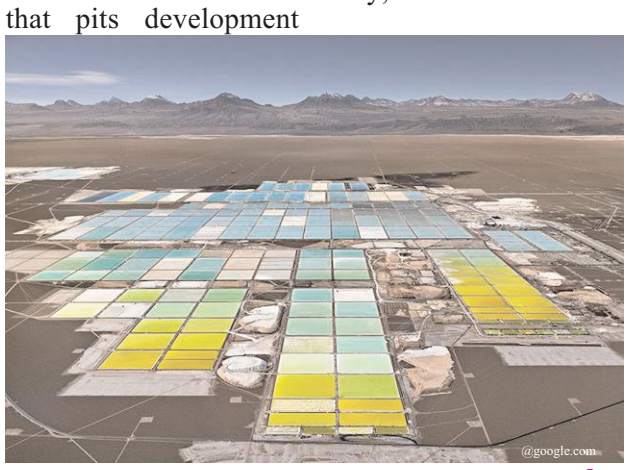
Balancing The Lithium Action

Manas Pratim Das

Break your shackles, think of the future and imagine yourself driving a Tesla model through the countryside. Your four-wheeler is smart in every sense and the fuel is equally so. It is in fact an electric car being fuelled by an electric battery. The battery sitting deep inside is an icon of the new era. It uses around twelve kilograms of 'new oil' i.e., Lithium. As a responsible citizen you have switched to an electric vehicle and you leave the environment clean as you cruise along. Your conscience is also clean for having chosen an environment-friendly transportation. It appears to you as a win-win situation for all concerned. Well, you are not probably right!

Some debates unfortunately refuse to die down. The debate that pits development against environmental health is one such. As we double our efforts to fast pace our transition to the Electric Vehicle (EV) era we dig more mines to lift Lithium. Our prospectors have informed us that there are about 98 million tons of Lithium reserves around the globe. Any country that has a fair share of these reserves stands to benefit heavily from its domestic use as well as its trade.

India is reported to have 5.5 percent share of global Lithium and is being looked upon as a game-changer in this field. Experienced political analysts know very well that mineral reserves can hardly change any game unless the concerned country has immense financial and military power to influence international decisions. Be that as it may, Lithium remains



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Is Lupus India In Offing?

The Story of An SLE Fighter

Prasanta K. Bose

It was another 8th March years ago when the world was observing the International Women's Day (IWD). I was enjoying my afternoon siesta at the American Canter after a successful programme followed by a sumptuous lunch. Suddenly the call was put through. I did not know her before.

She introduced herself as Monideepa Choudhury, attached to a reputed private hospital and looking after corporate communication. Without any pre-tense she started complimenting me for what I was doing in my present capacity as part of public diplomacy. Feeling a little awkward I asked her how did she know that. As a veteran communications professional she was aware of it from her professional world of advertising and public relations, she maintained. She promised me to send her House Journal and requested for my review. Since that day we were bonded by a brother-sister tie-up.

It was only after reading her journal I came across the term Systemic Lupus Erythematosus (SLE) of which was a victim. The Canters for Disease Control and Prevention (CDC) of the US says in a study that it was an autoimmune life-long disease mainly affecting women, especially of the child-bearing age. In America alone there are more than 200,000 victims now but Indian contemporary statistics are not available. Then I planned to interview her for writing a piece on the disabling disease but there was no opportunity in sight.

When I called her again on March 8 last, it could have been a sordid saga of the IWD of a bubbling professional falling prey to "an incurable but controllable malady." But it turned out to be a story of a sagacious and resolute woman who is fighting SLE tooth and nail with her resilience. Not only that, she has joined hands with doctors and other professionals for setting up a foundation for Lupus victims on the lines of the Lupus Foundation of America that extends all sorts of financial and medical assistance to American victims. "After all, it was

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The New World Order

White Gold for a Green Revolution

Sayari Biswas

We have been taught from a young age that red means danger, while green means safety and sustainability. Even the traffic signal waves green to let us move forward. And so, it applies for our society, our environment. So, going green is not a very new concept.

From the mid of last-century the whole human civilization started being familiar with the term "Green Revolution". Starting after the World War II, it emerged as agricultural advancement enforcing the production of food grains during 1960's supported by technological developments. An inevitable consequence of which is the noticeably higher energy consumption day by day. Fossil fuels, such as coal, oil and gas, are by far the largest contributor to the global energy need and global climate change as well, accounting for over 75 percent of global green house gas emissions and nearly 90 percent of all carbon dioxide emissions.

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Fourteenth Science Communicators' Meet

Theme

Science Popularization: The Role of Women Communicators

Organized Jointly by

INDIAN SCIENCE NEWS ASSOCIATION, KOLKATA
and
VIGYAN PRASAR, DST, GOVT. OF INDIA, NEW DELHI

XXXV TRAINING PROGRAMME ON SCIENCE COMMUNICATION AND MEDIA PRACTICE 2022-2023

Friday, March 17, 2023

Venue

Meghnad Saha Auditorium
University of Calcutta
Rashbehari Siksha Prangan, Rajabazar Campus
92, A.P.C. Road, Kolkata - 700 009

Decarbonisation: An Opportunity For Jobs

Sanjit Kumar Saha

India is the third largest emitter of CO2 in the world after China and USA. As per the report submitted by NITI Aayog to Government of India, in present situation we are emitting 2.6 Giga tonne/annum of CO2, with major share of contribution from industry (31%), power (30%), along with agriculture (20%), transport (10%) and buildings (5%).

However, at global platforms India has committed to reduce emission by 50% by 2050 and reach net zero emission by 2070. Even if India is able to green the power grid with 500 GW by 2030 from the renewable sources, we are still depending on coal as fuel source for 70% of electricity needs. So we need to develop, redesign and adopt an inbuilt system of decarbonisation in our existing economic sector with the application of Carbon Capture, Utilisation and Storage (CCUS) Technology.

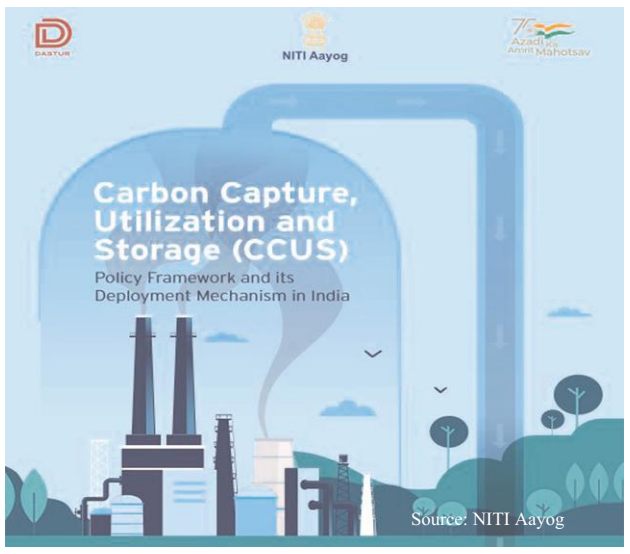
The NITI Aayog submitted a detail report regarding the needed technology and policy level interventions for the implementation of the CCUS technology with the goal of decarbonization of the Indian economic sector. The Union Budget, 2023-24 echoed it.

In this budget Rs. 19,700 Crore was allocated by for the National Green Hydrogen Mission with the target of annual production of 5 MMT by 2030. Here electricity produced from the renewable sources (e.g., wind power), is utilized for the electrolysis of oceanic water to get H2 (Green Hydrogen) along with the valuable by product O2 without any Carbon input or output. For mass production a low cost electrolyser is required and manufacturing of that may be a good start-up option for young engineers and scientists.

But at present the cost of production of green hydrogen (Rs. 414-497/Kg) is 4-5 times than that of the cost of blue hydrogen production (Rs. 100-165/Kg). So, with cost-benefit analysis and where coal is an available natural resource, the decarbonized path of coal gasification is a better option to get blue hydrogen from the Sync gas (H2, CO2, CO, CH4) along with full capture of other gases (CO2, CO, CH4), and utilization in the industrial procedures. It may be a good start up option for future industrial chemists to produce green hydrogen at a lesser cost of production of blue hydrogen with new technological interventions.

Direct Air Capture (DAC) is another new principle to capture dilute CO2 (415 ppm) directly from air and it is independent of the source and concentration of the emission. But it is in nascent stage and very cost intensive (approx. Rs. 33,000-66,000/tonne) of CO2 capture. But it can be an opportunity of start-up for the environmental engineers and chemists to develop indigenized cost effective DAC technology of CO2 capture from air. Adoption of these several CCUS technologies by the public and private sectors, also will promote job creation for diploma engineers from polytechnics and the Industrial Training Institutes (ITIs).

Another option of carbon capture is absorption of CO2 by microalgae cultivated in horizontal/vertical photo-bioreactors. Here specific selected strains of microalgae can absorb CO2 as nutrient source from the flue gases after filtering out the heavy metals and toxic gases. Selection of specific strains of microalgae through testing of exposure to CO2 and other toxic gases and heavy metals will also create job opportunity for microbiologists and plant pathologists. Heavy metal/Toxic Residue analysis of the microalgae to fix the Maximum Toxic/Purity % of the flue gases will create job also for the agricultural chemists.



Source: NITI Aayog

After the capture technology, the next step is utilization of captured carbon in converted value-added forms like green Urea [CO (NH2)2], CH3OH, C2H5OH, CH3COOH, green fuel, clean energy for our domestic economic sectors and export. It will create numerous green jobs for the educated human resource of the country. Ultimate step of CCUS technology is storage of CO2 in vacant geological reservoirs like empty oil, gas and coal reservoirs in appropriate temperature and pressure to convert the store CO2 in different geological forms. This will create job opportunities and start-ups for the geologists and chemical engineers along with the associated youth in the field of Geography, remote sensing and GIS. So, the policy of decarbonisation with the Carbon Capture, Utilization and Storage (CCUS) technology will help create numerous green jobs for India's valuable human resource in different economic sectors in India and abroad.

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Will Coal Stay?

Amar Nath Bhadra

The critical challenge confronting the world today is climate change and global warming and they require a collective action and demand a multilateral initiative to address the issue. This was discussed in the Egypt conference last year to reach the much-desired goal to release a loss and damage fund in order to support the weak economies in the world. India is now the 5th largest economy and amidst the global slowdown following the Ukraine conflict for the last one year, the critical energy crisis remains to be solved despite the G20 presidency to address the problem of sustainability through collaborative efforts that matters for emerging economies, adopting renewable energy and Hydrogen as green energy options.

Despite the big announcement at the Glasgow summit to phase down Coal, India is on the path of more coal production in the face of surging oil and gas prices that threatened to derail the economy from the pandemic situation. The ongoing Ukraine crisis is causing energy system disruptions throughout the entire world. Recent trends show that consumption and production of coal is here to stay despite the nation's ambitious target of achieving 50 percent of energy generation from non-fossil fuel based energy resources to reach a capacity of 500 GW by the end of the year 2030.

The Government has been strategically placed to propagating self-reliance and cutting down imports of coal and oil and to raise the production of coal to meet the surging demand of electrical energy when the peak load is expected to reach out 230 GW by April, 2023. There are signs of economic recovery even after recession in the EU nations. The COP 27 took place against the backdrop of war.

The striking features of the summit are the acceptance of the proposal for generating a corpus fund, which was long overdue, to support the weaker economies. The preceding COP was committed to phasing down coal but this COP had come out with a decision to use coal-based energy resources at a judicious manner and expand the use of renewable energy to reduce global warming by 1.5 degree Celsius by the end of this century. For India the transition to net zero emission may require an additional investment of 3 trillion dollars over the three decades. It is heartening to note that India has taken the G20 presidency to drive the sustainable energy transition agenda forward.

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Balancing The Lithium Action

1>> the buzzword in national and international conferences on energy sustainability and environmental protection.

But just as the replacement of paper with electronic documents did not actually help the environmental recovery, ushering in the Lithium era similarly might not allow the required relaxation that our environment badly needs. The jubilation in the cities over EVs might not be matched by the mood in the localities where Lithium mining goes on. Extraction of Lithium is likely to cause great damage to the soil, the water and the communities that depend on these natural resources.

German aerial photographer Tom Hagen has brought us startling photographs from the Lithium fields of South America. To have a feel of the real process he chartered a small aeroplane and flew over the rich Lithium fields of Argentina, Chile and Bolivia. The fields are in arid territories and present a wonderful composition of colours. The attractive hues are caused by different combinations of Lithium carbonate.

But beyond that visual pleasure a lot of things are there that are not so pleasant. For example, Lithium extraction is extremely water-intensive. Approximately 2.2 million litres of water are needed to produce one ton of lithium. As a consequence, communities in South America are fighting each other over the right to the little remnant of water that is left after Lithium extraction. Far away in Europe, in the land of the Portuguese, there is tremendous discontent over the government's permission to mine Lithium. The government, local residents allege, are ignoring environmental ramifications.

Such disturbing reports continue to pour in and we are forced to think – can we really balance our Lithium action?

Manas Pratim Das
Veteran Science Communicator,
AIR
Council Member, ISNA

LAUGH A LITTLE

Tuhin Sajjad Sk

Very naughty his niece is! Humpty Dumpty! So joyful as well as intelligent that she has to solve mathematical problems everyday. Her maternal uncle tries to guide her enthusiasm into a love for mathematics.

Yesterday, he asked her jokingly, "Why is 6 afraid of 7?" For a few seconds she was dumped and then smartly replied, "6 is afraid of 7 because 7 ate 9 (7 8 9)." The quip surprised her uncle and, of course, others.

He nodded and asked her again, if you were to spell out numbers from one, when will you find the letter "A" ? She was quick to reply, "One thousand".

As inquisitive as she was, she asked her uncle whether he took her mental ability test or just made fun of her. The uncle flustered.

"Oookaay", he tossed his head and tried another approach to conceal his foolishness. He again started chatting and asked her, "Do you know what did the bartender say when oxygen, hydrogen, sulphur, nitrogen, sodium, and phosphorus walked into his bar?

She said, "Nooo...

"The bartender blurted, "OH SNaP!

"They both burst into laughter.

National Science Day

The Theme This Year

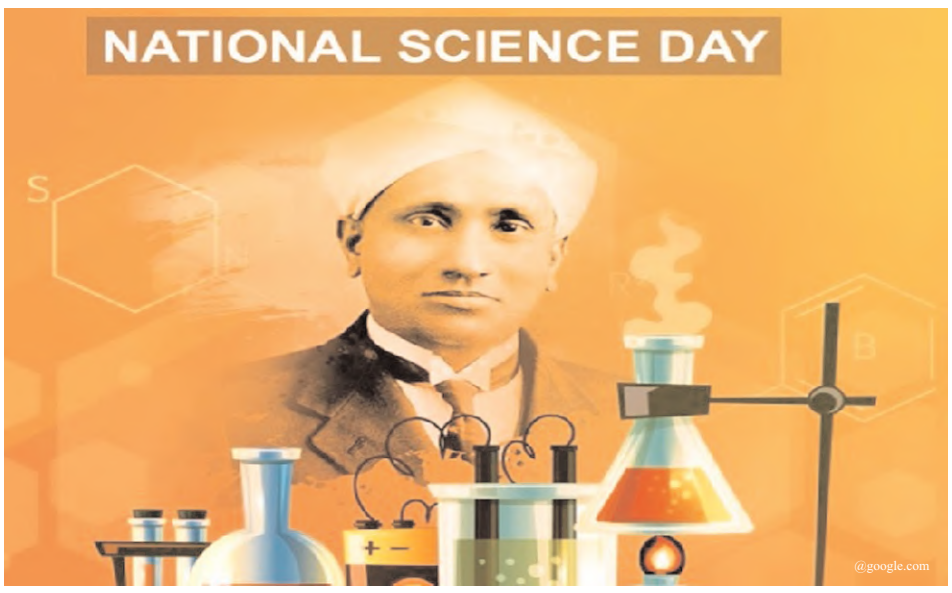
Devaprasanna Sinha

These days we observe/celebrate various international/national days, even more than one on the same day. Depending on the pressing and continuing need of the day, new themes are chosen to preach the objectives with special emphasis by all sections of the people. The observance of the National Science Day is no exception.

Since 1987, on February 28 every year we have been observing this day with different themes to mark the discovery of Raman effect by the great scientist of India, Sir C.V. Raman. The Government of India accepted the recommendation from the Department of Science & Technology in 1986 to observe the day every year. This year's declared theme's purpose is to spread science awareness amongst the students and general public to have a better impact on our life and inculcate scientific mind and temperament. The theme - "Global Science for Global Well-being" - was released by the Union Minister of Science & Technology, Dr Jitendra Singh, at a function in New Delhi on January 9 last. He said the theme is perfectly synchronizing with India assuming the Presidency of G-20. He and other speakers reiterated the rationale for choosing the theme for public appreciation of scientific issues in global context.

As we all know, well-being is a positive state experienced by individuals and societies as a resource for daily life, and is determined by social, economic and environmental conditions along with mental, physical or emotional wellbeing. These different forms of well-being are closely interlinked. When we talk about and continue to talk on Global Well-being, we must address our local needs in right earnest, and must work out various programmes addressing relevant scientific issues. We must continue discussion programmes at all levels in those places with greater participation and interaction to form both a big physical and virtual network in India. To me and many of us belonging to this fraternity, we believe this day is not to be observed as a ritual now, like some Pujas or events with no immediate and future result or direction. More fund on research and studies on basic as well as applied science, and also on different modes of science communication, must be allocated by the center and the state governments. Institutes, societies and associations working for the cause must be given more funds to organize not only for publications but also for developmental projects. The funding must not necessarily be restricted to urban areas.

Research in teaching/training/preparing materials at various levels to raise science awareness have come to stay and should continue unabated. It is unfortunate that one finds a gradual decay of computer clubs,parishads, even small publications at the rural level, because of lack of government patronage. Our appeal, therefore, on behalf of all members engaged in different societies and associations to all elected policymakers, is to create and support more economic and environmental resources in this direction and sustenance on a perennial basis.



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National Science Day

SAB Honours ISNA Official

Saikat Kumar Basu

On the occasion of the National Science Day on February 28, a program was organized by the Science Association of Bengal (SAB) to honour noted scientists and s cience communicators. The awardees included Mr, Prasanta K. Bose, Editor, Scientifica Communica and Bigyan Kahon, the two popular science e-Papers of the Indian Science News Association (ISNA).

The other awardees were Dr. Shankar Kumar Nath (Oncologist), Dr. Barun Kumar Dutta (Mathematician), Mr. Akul Biswas (Environmental activist from the Sunderbans), Dr. Snehashikta Swarnakar (Cancer biologist), Dr. Raghunath Bhattacharya (Expert on plasma processing of thin films) and Mr. Saurav Chakraborty (Information Technology professional).

The Society for Socio-Economic and Ecological Development (SEED) and the Computer Society of India (CSI) collaborated with the SAB to hold the programme at the Turiyananda Hall of the Ram Krishna Mission Institute of Culture, Gol Park, Kolkata. A book on the life and works of legendary scientist, Prof. A.K. Barua was also released on this occasion. Dr. Subhabrata Roy-Chowdhury, Secretary, SAB, in his welcome address explained the objective behind the programme. Swami Suparnananda Maharaj, Secretary, Ram Krishna Mission Institute of Culture delivered the inaugural address linking science with spirituality after the welcome song by noted cancer specialist, Dr. Shankar Nath.

The inaugural session was followed by a seminar that included several erudite lectures by noted scientists and scholars including Dr. Madhumita Dube (Former Director & Professor, All India Institute of Public Health and Hygiene), Dr. Somnath Bhattacharya(Executive Director,SEED), Mr. Devaprasanna Sinha (Former Chairman and Fellow, CSI), Mr. Anupam Boral (Managing Director, Geetanjali Solar Enterprise), Dr. Shankar Nath (Oncogist), Dr. Snehashikta Swarnakar (Cancer biologist), Dr. Parijat Chakraborty (IT professional), Dr. Aniruddha Nag (Academic and researcher, Air India and CSI), Mr. Prasanta K. Bose and Mr. Gopi De Sarkar (Journalists), and Dr. Saikat Kumar Basu (Environmentalist).

With the central focus of the seminar being the importance of innovation and learning science with interest the program was highly successful. The importance of science and technology in the national economic and social progress of India was discussed from various perspectives. The role of scientific and technological innovations, the history of science movements in West Bengal and India, contemporary science and Indian society, recent trends in cancer research, robotics and information technology were also discussed. The importance of ground level NGO workers and science communicators for eradication of superstitions, social prejudices and social discrimination along with scientific education and awareness of the rural and urban communities were also highlighted.

The concluding programme of the day was an extempore speech contest by students, coordinated by Dr. Saikat Kumar Basu and Dr. Parijat Chakraborty. The awards and prizes were handed over by Dr. a RoyChowdhury of SAB, Mr. Devaprassana Sinha (CSI), Dr. Aniruddha Nag (Air India), Dr. Parijat Chakraborty (SAB), Mr. Bimal Sengupta (SAB), Mr, Mrinal Bhattacharya (SEED), Dr. Sneha Ghosh, Dr. Saikat Kumar Basu (SAB), Ms. Sutapa Bardhan, Ms. Tilottoma Dey, Ms. Jayita Chaki and Ms. Ruma Ghosh Kathotia (ECHO). The audience, participants and the awardees eloquently thanked Dr. Subhobroto Roy Chowdhury and his team for their warm reception and recognition in this august platform.

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SLE Fighter

1>>not a life-threatening disease as tuberculosis or cancer was before, and no social stigma should be attached to it," she asserts. Unfortunately, the society still sees those apparently healthy women as psychotically ill.

But as any other young, spritely woman with verve and energy Monideepa's story was no different. After fortifying her creative acumen with a post-graduate diploma in public relations, she jumped on the bandwagon into the fantasizing world of advertising after a brief stint in a reputed corporate house of Kolkata, though she did not enjoy the first job of her career much.

Then came the clarion call from an international advertising agency. This was what she was looking for. Do you know who did she groom under? It was Barun Chanda, the famous, charismatic hero of a Satyajit Ray film. Monideepa immersed herself wholeheartedly and spent sleepless nights sometimes campaigning for a newly launched hard drink or assigning a name for a mesmerizing perfume. Her name was spreading and she did get a call from India's financial capital, Mumbai. The story, however, did not have a happy ending. She had to come back to look after her ailing mother and the episode took a grievous turn. She started feeling pain all over her body, getting extremely tired, and blotches and rashes began surfacing over her face. Moreover, she started putting on weight. These were all the classical symptoms of SLE, according to the CDC study.

Things were really getting unbearable for her and a heavily swollen Monideepa had to rush to a physician of proverbial fame. As usual, after getting tested for all possible markers, she was advised the first-generation steroid, Prednisolone, and another drug, Hydroxy chloroquine. These acted promptly and her remitting fever also started subsiding. She was feeling better but not to that extent that would enable her continue late night duties at the advertising agency. To add to her woes, she lost her mother in the meantime. She was alone and there was no one to hold her with a firm hand as she decided to remain single long back.

The storm was yet to blow over. Doctors generally prescribe steroids as the last resort because these primal wonders were found to alter glycaemic levels of the body, raise creatinine, and change blood pressure. Monideepa was no exception. Things started worsening again and Monideepa had to close her all the advertising accounts.

A hard-core professional like her, however, cannot remain idle. She did not and within a few days she got a call from a reputed hospital to join a special cell to approach donors for money to help poor patients from the countryside. "I was compassionately involved in the new responsibility," she recalls. Her widening fame led to getting a fresh call from another hospital that was rebuilt after a fiery blaze had burnt a wing leaving many patients and people dead. This time she had to head a similar cell where she had continued till her retirement three years ago, The connection did not at all snap then. In her new Avatar she continues to write blogs for the hospital enlightening people with new medical stories. Another feather in her laurel was getting recognized for her research project on role of house journals in a hospital from a well known management and communications institution in Pune. Maybe now in a "state of flare," she can think of a book in future with her lifelong experiences so long! What can the possible title be? The story of an SLE warrior!

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Dizziness From Diesel?

Amit Krishna De

Stuck in a traffic jam! Feeling dizzy? Wait, there are valid reasons behind it. For, exposure to diesel fumes, particularly emitted by vehicles, have shown to cause changes in brain activity of humans. Recent research has shown that people exposed to air pollution may be more likely to develop different types of neuro-degenerative diseases and mental health problems.

This report was published in the January 14 issue of the journal Environmental Health. The researchers divided the subjects into two groups. One group was exposed to filtered air and the other to air mixed with diesel exhaust for 2 hours while they rode an exercise bike at a relaxed pace. Functional magnetic resonance imaging (fMRI) of the brain activity of the subjects was taken immediately after the exposure. MRI can detect increased blood flow to active neurons thus giving an indirect indication of the brain activity.

The researchers also examined how exposure to diesel impacts the default mode network (DMN), which is involved in self-reflection and a person's internal thoughts. Actually, people with psychic disorders including anxiety and depression show distinct changes in the DMN. After exposure to the diesel fumes it was found that the brain activity of the subjects has increased very much. There were significant changes in both MRI and DMN of these subjects. However, exactly what effects these changes will create in the brain and its future consequences is yet to be found out in detail.

Fumes from diesel have already been known to cause chronic cough, mucus, chest tightness, wheezing leading to decreased lung function. Patients suffering from asthma, chronic bronchitis, lung cancer and heart diseases get affected very much and the conditions may worsen. However, little was known so long about the effects of diesel fumes on brain function.

Probably now you can guess why you feel dizzy sometimes when you are stuck in a traffic jam for a long time.

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Return of A Slogan

Sabyasachi Chatterjee

The World Health Day is approaching with an old slogan. The 7th April - Health Day - is not very far. This year the World Health Organisation (WHO) highlights the old commitment of the health movement that is 'to achieve health for all.' Basically, the aim of the WHO is to commemorate its seventy-five years. The WHO was established in 1948 and for the last seventy-five years it has been trying to establish the concept of health for all. All of us know that the health has two major aspects; one is curative and the other preventive. We usually visit doctors if we feel illness. The doctors examine us and treat us with medicine, either orally or by injecting it in our body. Sometimes, doctors execute operation to treat our ailment. These all are curative approach. It applies to individuals. On the other hand, preventive approach is something different. In this case, we take medicine or vaccine to prevent any particular disease. Children are vaccinated from time to time as per the policy of the national or international body to get rid of infectious disease like mumps, pox, measles etc. We may mention the Pulse polio programme, which is being organised worldwide to eradicate polio.

However, preventive medicine is not confined within medicine and even within an individual. Rather it deals with the society. We have also heard about the malaria eradication campaign where people are advised to stay in mosquito-nets so that mosquito can't bite them. Even it is said that stagnant water is the breeding ground of mosquito, we should take appropriate measures so that there would be nothing that could act as the breeding ground of mosquito.

The pandemic of 2020 has taught us that attention should be paid to have proper infrastructure in the health sector so that people would get proper health-

care. People need nutritious food, pure water, and also healthy environment. As WHO defines that health is not only 'mere absence of disease' but also as 'physical, mental and social well-being,' literally health for all can be achieved through this.

The Alma-Ata Conference in 1978 declared that the health for all should be achieved by 2000. We could not make it happen. The return of the slogan reminds us that our responsibility still remains. And it is the high time to convert these words from slogan to oath that is to taken to commit that we shall overcome.

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Janaki Ammal: The Great Indian Botanist

Shreya Roy

The year was 1924. The unabating rains and gusts of loud-mouthed winds caused much destruction in the cantonment town of Tellicherry on Malabar Coast; even as the great deluge drowned most parts of the town, a 27-year-old Thiya woman, burning with desire to become an exceptional scientist, was preparing to set out on her maiden voyage across the oceans to America.

It was as if she had walked on water, or the rivers had parted for her, for unsubdued by the floods and devastation, she surfaced astonishingly in Madras 10 days later. Her boat had departed already for the shores of New York, but she would find a berth on the next steamer, and reach her university in time for her course.

In 1931, when she was awarded a doctorate by the University of Michigan, she was the first ever Indian woman to achieve this academic milestone in the botanical sciences. Her name was Edavaleth Kakkat Janaki Ammal (Nov. 4, 1897-Feb.7, 1984). Janaki's birth into a progressive Thiya family of Tellicherry accorded with the dawn of the disciplines of 'cytology and genetics,' in which she would specialize.

Using cytogenetics, agronomy, plant geography, geology, history, and anthropology together with a sound knowledge of the cultural uses of plants, Janaki mapped the origin and evolution of cultivated plants across space and time, to contribute to a magnificent history of 'human evolution'. Her concerns were moulded not only by contemporary ideas in cytology and genetics, especially evolutionary biology, but also by the vital prerequisite to provide an antidote to the aggressive nationalist strategies adopted by Indian agronomists in the name of food security and progress following India's independence.

Janaki claimed multiple belongings as a nomad, the result of her deterritorializing wanderings (escapes) across myriad landscapes; she saw herself as a citizen of the world and as belonging to 'a transnational macrocosm of science', a view based on the belief that science knows 'no national, class or racial boundaries'. This ontological position found epistemological translation in her science, as archipelagic thinking (as opposed to continental thinking) which, disrupting the notion of narrow-mindedness, viewed the world as a collection of interconnected islands rather than as closed continental forms.

Janaki was a curious pilgrim; not only was mobility 'a way of being for her', but also eminently 'a way of making knowledge.'

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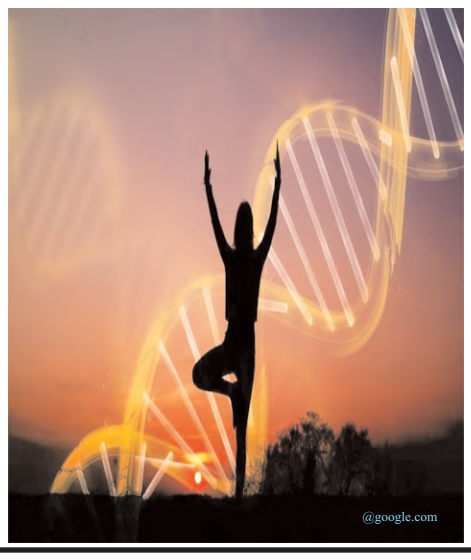
Yoga Sinks Cancer Risk At Bio-level

Minakshi De

Millions around the world enjoy the health benefits of yoga but are unaware that the benefits begin at the source of the body's biology i.e., deoxyribonucleic acid or DNA, which is the hereditary material in humans and almost all other organisms. Doing Yoga regularly does not only help relaxation but also works on the genetic code to improve our health on the molecular level. It has the power to "reverse'' molecular reactions in our DNA which causes depression, stress, and even cancer.

A study published a few years ago had reviewed a decade worth of data and analysis of the impact of mind-body intervention (MBIs) activities like Yoga, Taichi and, meditation on the behavior of our genes. The 11-year research published in the journal Frontiers in Immunology in 2017, evaluated 18 studies involving 846 participants to conclude that there's an observable pattern in the changes that the body undergoes from MBIs like Yoga. The study also shed light on how these Yoga-induced changes to the DNA improve our physical and mental health.



The combined research from Coventry University in UK, and Radboud University in the Netherlands analyzed how MBIs affect gene expression. This means the way in which our genes are activated and produces proteins which influences our body, brain and immunity. A stressful event triggers the 'fight-or-flight' response which comes from the sympathetic nervous system (SNS).

On the molecular level, it amplifies the production of nuclear factor kappa B (NF-kB) molecules which activate genes to produce proteins called cytokines. Cytokines cause inflammation at cellular level that translates into stress. This inflammation, useful for impulse amid 'fight-or-flight' situations, is extremely unhealthy for the body when it persists in the long term. Persistent stress not only leads to psychiatric disorders like depression but also heightens the risk of cancer and accelerates aging. But those who practice Yoga showed the opposite effect in the study. Yoga decreased the production of NF-kB and cytokines, thus reversing of the "pro-inflammatory gene expression pattern" leading to the risk on "inflammation-related diseases and conditions." In today's extremely stressful environment, longer-term pro-inflammatory gene expression is found to be common leading to an increasing number of psychiatric and health problems. MBIs like Yoga helps the body cope up with these ill-effects induced by our fast-paced, stressful lives.

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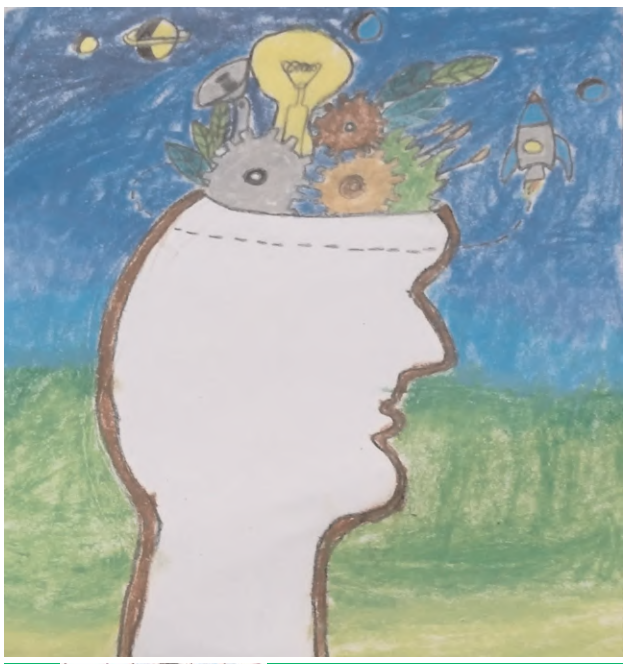
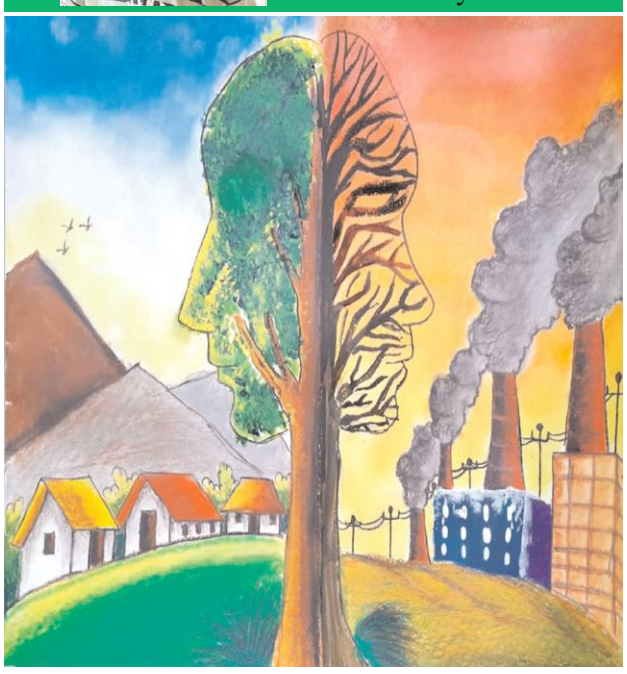


Baibhab Das
Class: 5
School: MP Birla Foundation Higher Secondary School

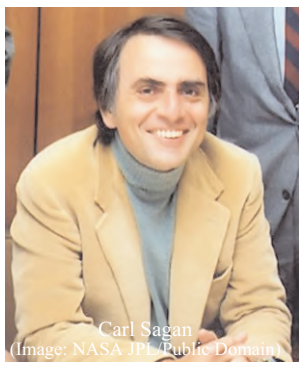


Srijani Mandal
Class- 7
School: Kendriya Vidyalaya Ranaghat

Somdeep Ghosh
Class: 7
School: Bhavans Gangabux Kanoria Vidyamandir

Carl Sagan: The Super-salesman Of Science

Manas Chakrabarty


Carl Sagan
(Image: NASA JPL /Public Domain)

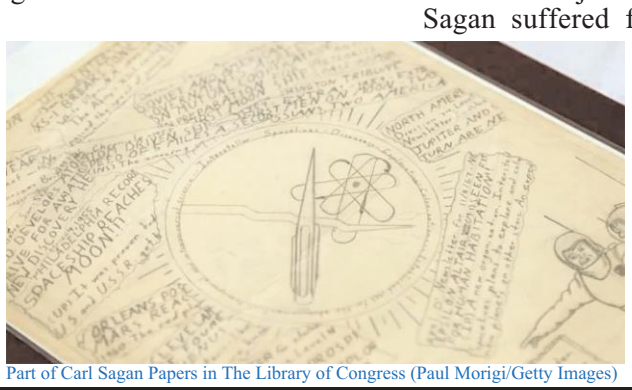
The pursuit of science has a two-fold objective – to unveil Nature and to communicate science to the public at large in order to help them acquire a scientific temper for their wellbeing.

Science Communication is of immense importance these days. This domain immediately brings to fore the great American astronomer Carl Edward Sagan, dubbed as "America's most effective salesman of science" by the Time magazine. Sagan spent the whole of his career to educate the public by presenting hard-to-understand astronomical information in an easily comprehensible manner. His (writer and presenter) 13-part TV series 'Cosmos: A Personal Voyage' (debut: October, 1980) was witnessed by more than 600 million people in over 60 countries, and won two awards. This TV serial alone catapulted Sagan to being the "most recognizable … science communicator of all time."

Sagan wrote and edited more than 20 books, a few important ones being 'The Dragons of Eden' (1977; winner of 1978 Pulitzer Prize), 'Broca's Brain' (1979), Cosmos (1980), 'Pale Blue Dot' (1994) and 'The Demon-Haunted World: Science as a Candle in the Dark' (1995).

Sagan,a reformed Jew, was born in Nov., 1934 in Brooklyn, New York. His father, Samuel Sagan, was a migrant from Ukraine. Sagan did his Ph.D. (astronomy and astrophysics) in 1960 from the University of Chicago. After a brief postdoctoral work, he taught first at Harvard University (1963-68), and then at the Cornell University, New York till the end of his life. Pertinently, Sagan's IQ was 170 which is higher than that (IQ 160) of Albert Einstein. Sagan's contribution to planetary science is immense. He also did the groundwork for Exobiology (study of extraterrestrial life). He was the Founder President of The Planetary Society and served as a trustee of SETI (Search for Extraterrestrial Intelligence) Institute. He received many awards and honours, and an asteroid, inter alia, was named after him. Strangely, Sagan was denied the membership of the National Academy of Sciences, although later the Academy honoured him with a Medal for his contributions in public under standing of science.

Carl Sagan admired the Hindu View of Cosmology, which in his opinion forms the basis of modern cosmology. Curiously, Sagan was a user and advocate of marijuana.


Part of Carl Sagan Papers in The Library of Congress (Paul Morigi/Getty Images)

Sagan suffered from a rare bone-marrow disease, Myelodysplasia. Finally, he contracted pneumonia and breathed his last on December 20, 1996. The sad demise of such 'a truly irreplaceable planetary scientist' and science communicator is a loss to humanity indeed.

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...Green Revolution

A large chunk of the greenhouse gases that blanket the Earth and trap the sun's heat are generated through energy production, by burning fossil fuels to generate energy in various forms. And here comes the need of green revolution once again, but this time to cater to the cleanliness of our daily energy need. To avoid the worst impacts of climate change, emissions need to be reduced by almost half by 2030 and reach net-zero by 2050.

And the need is already being entertained by investing in alternative sources of energy that are clean, accessible, affordable, sustainable, and reliable. By now most of us are familiar with natural energy sources like solar power, wind energy, tidal energy. As the world needs more and more power every day, energy-storage strategies are currently shaped gradually from one-time useable batteries to rechargeable ones. Prior generations of rechargeable batteries used lead and acid, nickel-cadmium mixes, and nickel mixed with other materials which are currently being replaced by lithium, a lot less toxic and lighter material. It holds its charge better when not in use, and is less susceptible to developing the "battery memory" problem in which ageing batteries fail to fully recharge.

It's the magic ingredient in the lithium-ion batteries that power almost everything from our smart phones and watches to the increasingly in demand electric vehicles. This is the White Gold for a Green Revolution. South America has the world's largest lithium ore reserve, 53% of world's total lithium ore comes from the "Lithium Triangle" - Bolivia, Chile, and Argentina. Next come Australia and China in this list. China is the world's leader in the manufacture of electric vehicles. Beijing currently has 55% of the chemical lithium supply needed for battery-powered electric vehicles and one of the largest EV battery suppliers to India.

Now India also moves a step forward in being a global super power with the discovery of 59 lakh (5.9 million) tonnes of lithium reserves in the Reasi district of Jammu and Kashmir. India now has the sixth largest resource of lithium. Apart from use in modern gadgets and EVs, lithium is critical for harnessing solar power and wind energy — key aspects of India's efforts to move towards its low carbon growth path in the pursuit of reaching carbon neutrality (net zero emission goal) by 2070. The Government of India has already stepped to promote EV development by offering a production-linked incentive scheme (in advanced cell chemistry) and subsidizing the end product. This can now expect a boost with this recent discovery accompanied by new scope. of employments in the automobile and power sectors, although several challenges to be faced yet. This may take years to get into commercial production of batteries. But challenges are inevitable in any endeavour and they just pave the path to success.

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Some Glimpses From The 14th Science Communicators' Meet

Janssen – The New Exoplanet

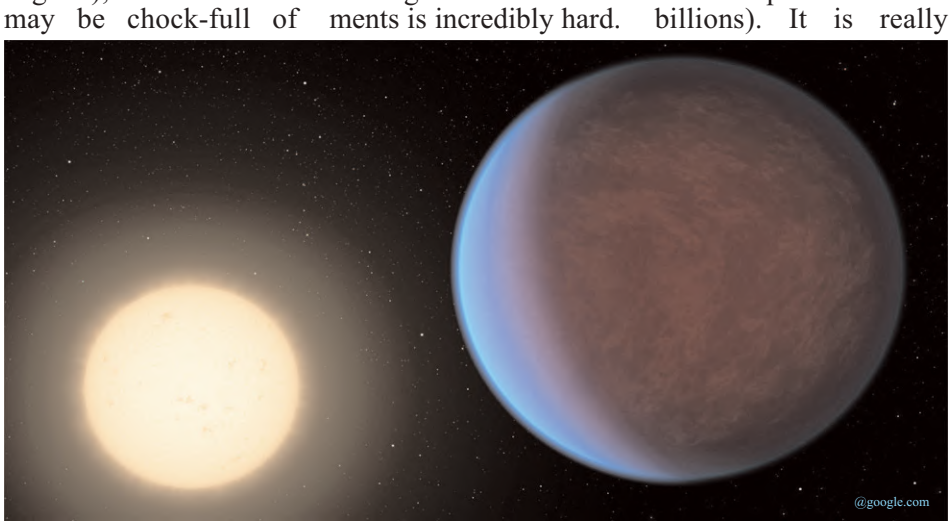
Debabrata Sur

Our solar system, after all, is the only place in the cosmos where we know life exists. It is also as flat as a pancake – all the planets orbit within a few degrees of one another, having formed from the same disk of gas and dust. When exoplanet-hunting missions started discovering worlds around distant stars, they found many planets that didn't orbit their host stars on a flat plane. This raised a question of whether our pancake-like solar system is truly a rarity.

A new sun-like star called Copernicus at a distance of 40 light years from Earth and its planetary system was recently discovered by a scientist. Its nearest planet was named as Janssen which orbits its star so closely that a year lasts just 18 hours. Its entire surface is a giant lava ocean (temperature around 2000 deg. C.), and its interior may be chock-full of diamond. Copernicus has five exoplanets including Janssen which orbits at different planes, unlike our solar system. Janssen has a similar density to Earth and is eight times as massive and twice as wide compared to Earth. Upon its discovery and confirmation, Janssen became the first known example of an ultra-short-period planet. Its orbit has a radius of roughly 2 million kms (for example, Mercury's is 46 million kms and Earth's is around 147 million). It orbits Copernicus along the star's equator – unlike its four planets which are on such different orbits that they never even cross between the star and Earth. As Copernicus is spinning, the centrifugal force causes its midsection to bulge outward slightly and its top and bottom to flatten. That asymmetry affected the gravity felt by Janssen, pulling the planet into alignment with the star's thicker equator.

Determining Janssen's path around Copernicus could reveal much about the planet's history but making such measurements is incredibly hard. Astronomers have studied Janssen by measuring the dip in Copernicus' brightness every time the planet comes between the star and Earth. The resulting difference in starlight is immeasurably small. Scientists have tried before but couldn't accurately determine the planet's orbital path. However, Lowell Discovery Telescope in Arizona offered the precision needed to notice the light's tiny red and blue shifts.

The planet is so hot that nothing could survive on its surface. Still, the new findings could help scientists to better understand how planets are formed and move around over time. Such information is critical to finding out just how common Earth-like environments are in the universe and, therefore, how abundant extra-terrestrial life may be. Janssen is the first 'super-Earth' discovered around a main sequence star. The planet is made of carbon in the form of diamond and would be worth 26.9 nonillion dollars (1 nonillion is 1.0 to the power of 21 billions). It is really worth studying more about the planet and understand the way of formation of our Earth.



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ChatGPT: Boon or Bane?

Shefalika Ghosh Samaddar

ChatGPT (Chat Generative Pre-Trained Transformer) from OpenAI was launched in Nov., 2022. With the introduction to ChatGPT, the users are blinded by its capabilities: the capability of generating speeches, songs, marketing copy of advertisements, news articles, and student essays, human like text with minimal input from the user. Some of the necessary inputs can be used by ChatGPT upon generative research even if such inputs are not provided by the users.

The charisma of capabilities of ChatGPT is even scary for the CBSE which promptly prohibited use of AI based ChatGPT during class X and XII board examinations in all the centres over the Nation, "Mobile, ChatGPT and other electronic items…". Does ChatGPT promote unfair means?

ChatGPT is able to generate believable text in English posing a risk to English speaking populations – a boon that takes no time to transform itself to a bane for the receiver promoting fraudulent activities. In the near future, it will be available in most commonly spoken languages of the world. The generative creation is highly appreciated upon its introduction, but again, question becomes evident that how to leverage AI and ML based end point detection systems themselves. One may think of ChatGPT as an alarming tool that can only be limited by an evil imagination of Satan. The creator, OpenAI, has built barriers and warning generation to bar malicious content/text creation, on the platform, but the cyber criminals are always a step ahead by enabling spear phishing at scale using ChatGPT. Spear phishing is creation of an e-mail or electronic communications scam targeted towards a specific individual/system/ organization/account.

A very realistic phishing e-mail is the outcome of the efforts of little educated cyber criminals. Even casual conversations can be held between machine generated prose and human-written free text by AI and natural language processing systems. A step further – creation of synthetic media such as Deep Fakes presents an adversary to pose as a trusted person on a video call. Thus, ChatGPT is not only an assisting tool for creating spear phishing but also possess the capability of advance romance scam.

Business e-mail can be easily compromised by breaching ChatGPT's mode (access rights). At present, ChatGPT's access mode is based on user's IP address/payment cards/phone numbers. But use of OpenAI's API can bypass these barriers as the research by M/S Check Point proves, active chatter in underground fora removes these barriers by creating Telegram bots that use the API. Such bots are regularly advertised in hacking forums on the Dark Web attempting to use ChatGPT to give them enough exposure to the cyber criminals for phishing lures. Even it is possible for cyber criminals to develop crypto currency payment systems with real-time currency trackers, - a Check Point view. Thus the victims end up investing in non-existent crypto currencies.

ChatGPT is a perfect candidate to offer Malware-As-A-Service. Thus, writing malware is a child's play, if you use ChatGPT.

It is time to look for a solution. One can train and deploy one's own AI engines to give warning whenever malicious requests are detected or a possible phishing lure can be recognized or social engineering attacks can be known through malicious click-invites. Use of authorization and authentication for running of OpenAI engine may curb the possibility of misuse of ChatGPT, Machine learning (ML) based endpoint detection system can go a long way for threat and vulnerability hunting.

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UNEP@50

Ratul Datta

The United Nations Environment Programme (UNEP) is responsible for coordinating responses to environmental issues within the United Nations system. It was established by Maurice Strong, its first director, after the United Nations Conference on the Human Environment in Stockholm in June 1972. In 2022-23, UNEP is celebrating its 50th anniversary for the global environment since 1972. UNEP's aim is to inspire, inform and enable nations and peoples to improve their quality of life without compromising that of future generations.

Background: UN 1st took up environmental mantle in1968. The UN Secretary-General U Thant delivered a report, Activities of United Nations Organizations and Programmes Relevant to the Human Environment. This report called for the convening of the UN Conference on the Human Environment.

Formation of UNEP in 1972: Held in Stockholm, Sweden, in June 1972, the United Nations Conference on the Human Environment places the environment on the global agenda and leads to the formation of UNEP.

Maurice Strong 1st elected Head UNEP: After successfully leading the United Nations Conference on the Human Environment, the UN General Assembly in 1972, elected Maurice Strong, a Canadian, as UNEP's first Executive Director. He led UNEP until 1975.

UNEP 1st HQ @ Nairobi: On 2 October, Kenya's first President Jomo Kenyatta inaugurated UNEP's headquarters at the Kenyatta International Convention Centre. In 1975, UNEP moves to a new location on the site of an old coffee farm on the outskirts of Nairobi, where it remains to this day, Geneva, in June 1973.

International Convention 1973 for the Prevention of Pollution from Ships: Known as MARPOL, the treaty imposes strict rules on the shipping industry, helping to prevent spills and pollution from routine operations.

1st World Environment Day, 1974: The world cele brates the first World Environment Day organized by UNEP on 5 June under the theme "Only One Earth."

Regional Seas and Maritime Diversity Conservation Programme 1974: The programme of environmental diplomacy, brings neighboring countries together to reduce ocean pollution and protect marine life. Today, more than 143 states participated in 13 regional seas programmes, which has stretched from the Mediterranean to the Caribbean to the South Pacific.

1st Mediterranean Action Plan, 1975 approved: The first UNEP initiative developed under the Regional Seas Programme and the 22-nation accord comes into force with the Mediterranean suffering from rampant pollution.

Barcelona Convention, 1976: The Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention) was adopted on 16 February 1976 in Barcelona and entered into force in 1978.

Bonn Convention, 1979: The accord provides a global platform for the conservation of migratory animals and their habitats. It would come to protect more than 600 creatures, from great white sharks to monarch butterflies.

World Conservation Strategy, Water for Life Decade begins in1980: The UN General Assembly designates the 1980's as the International Drinking Water Supply and Sanitation Decade. Clean water, once abundant, is becoming scarce and the world unanimously agrees to conserve this precious resource.

Cartagena Convention and Oil Spills Protocol, 1983: The Protocol on Marine Pollution is the first regional legally binding agreement on marine pollution. It enters into force in 2010. The Protocol on Oil Spills ensures the safe handling, transport, and use of organisms that have been modified using modern biotechnology.

Vienna Convention, 1985: It was the convention for the Protection of the Ozone Layer and it provided a framework that allows states to share information on the root causes of ozone depletion.

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Science And Spirituality: A Vivekananda Perspective

Tanmoy Paul

Swami Vivekananda was the greatest scientific visionary of all time. He firmly believed that a scientific attitude was the key to the pursuit of truth. Swami Vivekananda's major contribution was to bring a scientific temperament to religion. Swamiji firmly believed in the unified single force behind all the forces of nature.

According to him, physics will peak on the day this force is discovered. Swamiji talked about it, When? When Maxwell's equations connecting electricity and magnetism and the relationship between Joule's heat and motion were reborn, and Einstein had not yet emerged to connect many things. Also in chemistry, Swamiji talked about one element from which all other elements are derived. Swami talked about when the atomic indivisibility and uniqueness of each element formulated by Dalton was the only general theory.

The theory of relativity is a theory that has been used to help resolve the inter-relatedness and inter-dependence of four major parameters namely, Space, Time, Matter and Energy. At this point, Swami Vivekananda, endowed with Vedantic knowledge, proclaimed it could be concluded that the four were not only interconnected but energy and matter were interchangeable in space and time.

However, at that time there was no mathematical formulation available that would describe the necessary theory related to energy and matter and their inter-convertibility. The mathematical proof of this principle was only 10 years later when Einstein published his paper of relativity and formulated E=mc2 and mentioned that matter is just potential energy.

A corollary to the theory of relativity is the

existence of the ether. So, before Einstein rejected the ether theory in 1920, he was the first to reject the ether theory. The theory of unity states that even an individual atom of the universe cannot move without affecting the entire universe. These intuitive scientific claims are difficult to test or disprove.

But with the advent of quantum physics, many gaps have been filled. Soeren Prell's famous Nobel Prize-winning theory suggests that at the deep and fundamental level, the separate parts of the world are connected in an intimate and immediate way as any change in one immediately and undiluted causes changes in the other. Vivekananda's words on science have had a lasting impact on the history of science, and they are especially relevant today. On the theory of evolution by Darwin, he showed that all species of life descended from a common ancestor, and that this matching pattern of evolution was the result of a process he called natural selection or survival of the fittest.

Holistic science is a fusion of science and theology. While science is widely considered to be a ingenious 'vignana', theology is seen as a 'jnana'. Science and theology have an important universal effort to reveal the ultimate facts to affirm human morality and human wealth. Just as an unbiased curiosity for the unknown characterizes the scientific temperament, a passionate inclination for the 'truth' is often the greatest driving force for spiritual seekers.

Holistic science is an incredible science dealing with the deliberate and integrative use of the full faculties of human consciousness to be removed from the whims of existence and to establish a participatory connection with nature. can be called mainstream science has a grand ideal of absolute supremacy and domination of nature. Eminent scientist Nikola Tesla was inspired by the analogy of Samkhya's theory of matter and energy with modern science.

In fact, in 1895, Vivekananda and Tesla shared the idea that matter and energy are one and asked him to prove it through mathematics, but Tesla was unsuccessful. Vivekananda also interacted with two other giants of Western science: William Thomson (Lord Kelvin) of New York and von Helmholtz. Finally, ten years later, in his 1905, Albert Einstein proved the unity of matter and energy (E = mc2). Vivekananda's exploration of the universe was much deeper than what science revealed after his death.

ISNA Student
and Science Communicator

JBNSTS Programme For Children with Special Needs

By A Correspondent

The Right to Education mandates every child with special needs irrespective of the degree of disability to being provided with quality education. Teachers play a crucial role in inclusive education and have a significant impact on how well a child is educated. Teachers frequently lack the resources and are unable to meet the needs of differently-abled student.

A sufficient number of well-trained and prepared teachers are necessary for inclusion. Teachers should get specialised support to enable inclusive methods in their classrooms. To enable them modify the learning environment to fit a variety of requirements, teachers should also be oriented, especially on policies and practises to promote the right of individuals with disabilities to participate in the educational process at all levels.

This is a phenomenal initiative of the Department of School Education, Government of West Bengal through JBNSTS, which is targeted towards teachers and resource persons of Primary, Upper Primary, Secondary, Higher Secondary, Shishu Shiksha Kendra (SSK) and Madhyamik Shiksha Kendra (MSK), Government and Government aided schools from all across West Bengal. JBNSTS has designed an integrated approach of training the teachers of our state by preparation of specialised education plan, resource support and research with special focus on pupils with special needs.

The institute aims at elimination of existing barriers to inclusion and bottlenecks in the academia by equipping our teachers with academic support to reach out to the learners regardless of individual difficulties or limitations thereby creation of a sub-structure of education for special children as an integral part of the education system within the framework of general education.

Being responsive to the diverse needs of the learners such as strategies that ensure equality and reaffirm all the pupils with special needs avail the fundamental right of quality education in their formative years as mentioned in New Education Policy. JBNSTS has conducted the first phase of Teachers' Sensitization cum Orientation & Training Program on Inclusive Education for Children with special needs on the digital platform for school teachers of rom all across West Bengal.

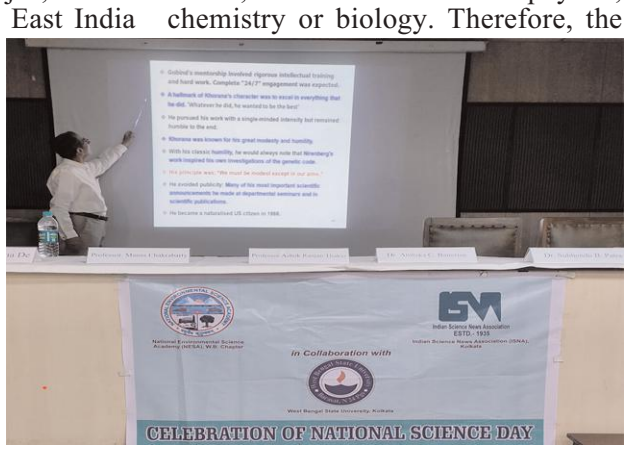
National Science Day

ISNA Remembers Raman, Khorana

By A Correspondent

The Indian Science News Association in collaboration with the National Environment Academy, WB Chapter, and the West Bengal State University jointly observed the National Science Day. The programme was held at the N.R. Sen Hall, in the Rajabazar Science College campus on March 1.

Dr. Ambika C. Banerjee, former Corporate Advisor, R&D, East India Pharmaceutical Works Limited, Prof. Ashok Ranjan Thakur, Vice Chancellor, WB State University, and the WB University of Technology, Dr. Amit Krishna De, Chairman of NESA, and Prof. Manas Chakraborty, Secretary, ISNA, were among the speakers.

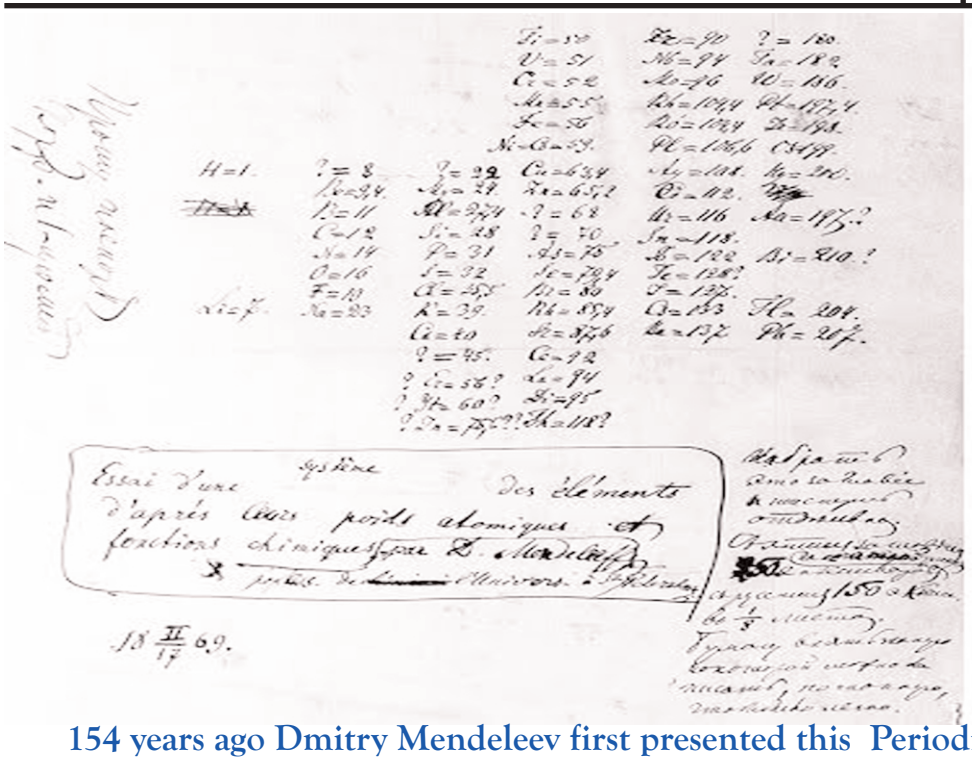


The highlight of the programme was a presentation by Dr. Ambika C. Banerjee about Nobel Laureate Dr. Har Govind Khorana and his legendary work in solving mysteries of life, which was highly applauded by the select gathering.

In his welcome address, Dr. De spoke about the contribution of NESA and ISNA for science popularization. Prof. Chakraborty elaborated on the works, and different publications by ISNA. Remembering Dr. C. V. Raman on the occasion of NSD he also elucidated on the Raman Effect.

Vice Chancellor, Dr. Thakur emphasised on the need of scientific temperament. He pointed out that in nature, there is no division like physics, chemistry or biology. Therefore, the younger generation should keep this in mind and become scientifically more conscious.

Dr. Subhendu Patra, Convenor, NESA, WB chapter proposed the vote of thanks.



но въ ней, мнѣ кажется, уже ясно выражается примѣнимость вы
ставляемаго мною начала ко всей совокупности элементовъ, пай
которыхъ извѣстенъ съ достовѣрностію. На этотъ разъ я и желалъ
преимущественно найдти общую систему элементовъ. Вотъ этотъ
опытъ:

			Ti = 50	Zr = 90	? = 180.
			V = 51	Nb = 94	Ta = 182.
			Cr = 52	Mo = 96	W = 186.
			Mn = 55	Rh = 104,4	Pt = 197,4
			Fe = 56	Ru = 104,4	Ir = 198.
			Ni = Co = 59	Pl = 106,6	Os = 199.
H = 1			Cu = 63,4	Ag = 108	Hg = 200.
	Be = 9,4	Mg = 24	Zn = 65,2	Cd = 112	
	B = 11	Al = 27,4	? = 68	Ur = 116	Au = 197?
	C = 12	Si = 28	? = 70	Sn = 118	
	N = 14	P = 31	As = 75	Sb = 122	Bi = 210
	O = 16	S = 32	Se = 79,4	Te = 128?	
	F = 19	Cl = 35,5	Br = 80	I = 127	
Li = 7	Na = 23	K = 39	Rb = 85,4	Cs = 133	Tl = 204
		Ca = 40	Sr = 87,6	Ba = 137	Pb = 207.
		? = 45	Ce = 92		
		?Er = 56	La = 94		
		?Yt = 60	Di = 95		
		?In = 75,6	Th = 118?		

154 years ago Dmitry Mendeleev first presented this Periodic Table before the Russian Chemical Society on March 6

Tuhin Sajjad Sk

Scientifica Communica

Kolkata, March 17, 2023, Vol.2, Issue.2

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UNEP@50

Montreal Protocol, 1987: World adopts the Montreal Protocol on Substances that Deplete the Ozone Layer. The landmark multilateral environmental agreement regulates the production and consumption of nearly 100 man-made chemicals referred to as ozone depleting substances.

Intergovernmental Panel on Climate Change (IPCC) launching, 1988: The IPCC is launched by UNEP and the World Meteorological Organization. Its aim is to provide governments with scientific information that they can use to develop climate policies.

Basel Convention, 1989: Signed by 183 states, the treaty places strict rules on the movement and disposal of hazardous waste. It enters into force in 1992. Since 2013, the secretariats of the Basel, Rotterdam and Stockholm conventions have been merged into one.

Rio Earth Summit, 1992: The UN Conference on Environment and Development, also known as the Earth Summit, takes place in Rio de Janeiro. Some 175 countries adopted the landmark Rio Declaration on Environment and Development and launch Agenda 21, a plan to achieve sustainable development in the 21st century.

UN Convention to Combat Desertification 1994: States adopt, along with climate change and the loss of biodiversity, were identified as the greatest challenges to sustainable development during the 1992 Rio Earth Summit and 2 years later, the convention is the sole legally binding international agreement linking environment and development to sustainable land management.

Rotterdam Convention, 1998: The convention would help developing countries make informed decisions about whether to import a range of pesticides and industrial chemicals,

Global Ministerial Environment Forum formation and issue of Millennium Declaration Goal 7: The gathering, in Malmo, Sweden, in 2000, is designed to make environmental policy more coherent. It is a direct response to a 1998 report from the Secretary-General. Leaders issued Millennium Declaration Goal 7 sets specific targets for biodiversity loss, forest cover and access to safe drinking water.

Stockholm Convention, 2001: The treaty helps protect human health and the environment from dangerous, long-lasting chemicals by restricting and ultimately eliminating their production, trade and use. It enters into force in 2004.

Carpathian Convention, 2003: Signed by seven countries (Czech Republic, Hungary, Poland, Romania, Serbia, Slovak Republic, Ukraine), the treaty helps to protect one of Europe's last great wilderness areas, the Carpathian Mountains.

Millennium Ecosystem Assessment Report launched 2005: The report provides a framework for considering progress towards the Millennium Development Goals and the new Sustainable Development Goals.

World Migratory Bird Day 2006: The day aims to raise awareness of migratory birds and the importance of international cooperation to conserve them. World Migratory Bird Day is celebrated on two days each year – on the second Saturday in May and on the second Saturday in October.

Climate panel wins a Nobel Prize in 2007: The Intergovernmental Panel on Climate Change, which was created in 1988 by UNEP and the World Meteorological Organization, is awarded the Nobel Peace Prize following the release of its Fourth Assessment Report earlier in the year. Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) also launched.

UNEP becomes carbon-neutral in 2008: This multi-agency partnership supports 65 countries in reducing forest-related emissions, enhancing forest carbon stocks and strengthening indigenous rights, while contributing to sustainable development.

Copenhegen Conference 2009: Close to 115 world leaders attend the high-level meeting, making it one of the largest gatherings of world leaders outside UN headquarters in New York. Countries agreed to "take note" of a document which includes the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels.

Nusa Dua Declaration 2010: The declaration, adopted in Bali, Indonesia, underscores the vital importance of biodiversity, the urgent need to combat climate change and the advantages of a "green" economy.

Decade on Biodiversity (2011-2020): The UN General Assembly declares 2011-2020 the UN Decade on Biodiversity.

RIO+20 Conference, 2012: UNEP is strengthened and upgraded. The United Nations General Assembly establishes the universal membership of UNEP's governing body during the United Nations Conference on Sustainable Development, also known as RIO+20.

Minamata Convention on Mercury, 2013: The convention aims to protect human health and the environment from the adverse effects of mercury. Major highlights include a ban on new mercury mines, the phase-out of existing ones, the phase-out and phase-down of mercury use in products and processes, control measures on emissions and the regulation of small-scale gold mining.

1st UN Environment Assembly (UNEA): In 2014, the bi-annual event, convened by UNEP, sets the agenda for dialogue on environmental issues. UNEA has since become the world's highest-level decision-making body on the environment, with a universal membership of all 193 Member States.

Paris Agreement, 2015: The United Nations Climate Change Conference, also known as COP21, leads to a landmark climate agreement. At the meeting in Paris, France, 195 countries adopt the world's first universal and legally binding global climate deal.

Sustainable Development Goals: In 2015, UNEP adopted humanity's blueprint for a better future, the 17 goals are part of a new global agenda on sustainable development. Several focus on environmental issues are raised like: Life Below Water, Life on Land, Climate Action, Clean Water and Sanitation and Affordable Clean Energy.

UN Decade on Ecosystem Restoration: World Environment Day 2021 marks the start of the UN Decade on Ecosystem Restoration, which aims to mobilize hundreds of millions of people to prevent, halt and reverse the degradation of ecosystems.

UN Ocean Decade begins: 2021 marks the end of leaded petrol worldwide, after it has contaminated air, dust, soil, water and crops for the better part of a century. Formally known as the UN Decade of Ocean Science for Sustainable Development (2021-2030), it provides a common framework to ensure that ocean science can support countries' actions to sustainably manage the oceans and to achieve the 2030 Agenda for Sustainable Development.

UNEP@50 anniversary, 2022-23: On 3-4 March, Member States and other stakeholders commemorated UNEP's 50th anniversary. On June 2-3, leaders came together in Sweden for the "Stockholm+50 gathering. The event commemorated the starting of 50 years anniversary since the United Nations Conference on the Human Environment.

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Editors' Note

We are happy to find a good response to the 'Child Science' page for school children.
Kudos!
Your articles would be published along with your photos.

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Published By
Dr Amit Krishna De and Dr T V Venkateswaran,
Conveners, 35th Trainning Program on Science Communication and Media Practice on behalf of Indian Science News Association,
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