



Silver Jubilee year

Swamy Vivekananda Vidya Samsthe (R), Shikaripura

KUMADVATHI COLLEGE OF EDUCATION



Aided, Permanently Affiliated to Kuvempu University, Recognised by NCTE & UGC Act 2(f),
Section 12(B) & NAAC Accredited

Shivamogga Road

Shikaripura – 577 427

Shivamogga District

☎ : 08187 – 222383, 222

E-Mail:kumadvathibed@gmail.com

science



Science club : 2021-22

ಶಿವಮೊಗ್ಗ ಜಿಲ್ಲಾ ಆರೋಗ್ಯ ಕೇಂದ್ರ

Shot on OnePlus

By Veena



INDEX

Sl. No.	Particulars	Pg. No.
i	SCIENCE CLUB: 2021-22	
ii	SCIENCE CLUB: 2021-22 MEMBERS ADDRESS LIST	
1	UNBELIVABLE SCIENCE FACTS - Pooja K	1-2
2	WORLD WETLANDS DAY - Sowmya L	3-4
3	HOW RAINBOW IS FORMED - Shafee Qunnisa	4-5
4	SOLAR ECLIPSE - Sushma Pujar	6-7
5	WONDER OF SCIENCE - Amrutha C R	7-8
6	THE FUTURE OF SCIENCE IN SPACE M G Chandan	9-10
7	ROTATION OF THE EARTH - Chaithra H R	10-11
8	THE FUTURE OF TRANSPORTATION: ELECTRIC CARS, HYPER LOOPS, AND MORE - Lava M K	12-13
9	GLOBAL WARMING - Geetha A M	13-15
10	SCIENCE IN THE NEW - Teaswini D C	15
11	ARTIFICIAL BLOOD - Shreya P G	15-18
12	5G ERA - S G Veenashree	18-20
13	IMMUNE SYSTEM OF OUR BODY Indhumani.D. B	20-23
14	MANGROVE FOREST - Vinutha S R	23-25
15	LIFE ON MARS - Ayesha siddiqa	25-27
16	KNOWLEDGE IS TREASURE - Bhagyashree H D	27-28
17	MENTAL HEALTH - Sahana K B	28-31
18	TECHNOLOGY IN CLASSROOM - Divya H	31-33
19	WORLD SCIENCE DAY - Adithi A R	33
20	STAR - Ramya D H	33-34
21	WHY PEOPLE YAWN Anupa H R	34-35
22	SOLAR SHINGLES - Kavya H S	35-37
23	MESMERISING ANIMATION REVEALS OUR ENTIRE SOLAR SYSTEM DOESN'T EXACTLY ORBIT THE SUN - Leela P M	37-39
24	FROM A GENOMIC PERSPECTIVE WE ARE ALL AFRICANS - Prajwal Naik S	39-40
25	GREEN COMET - Nishchitha N R	40-42
26	SAPTARISHIMANDAL - Suma K C	43-44
27	PUZZLE - Sunitha C P	45-46
28	DRAWING - SAVE NATURE - Sudha S	47

SCIENCE CLUB 2021-22

Patron



Dr. Shivakumar G. S
Principal

Mentors



Dr. Yadukumar M
Assistant Professor



Sri. Nagendrappa S
Assistant Professor

President



Mr. Prajwal Naik S
II year B.Ed Student Teacher

Vice President



Mr. Lava M K
I year B.Ed Student Teacher

Secretary



Miss Veenashree S G
II year B.Ed Student Teacher

Joint Secretary



Miss Meghana H M
I year B.Ed Student Teacher

Treasurer










Miss. Bhagyashree H D
II year B.Ed Student Teacher

Co - Treasurer



Miss. Sunitha C P
I year B.Ed Student Teacher

Science Club 2021-22 Members Address List

Sl. No.	Address	Phone number & E - Mail ID	Photo
1	Adithi A R D/o Ravindra Gowda, Arehalli (V) Kammaradi (P), Thirthahalli - 577125 Shivamogga Dist	8197094638 adithiravidragowda@gmail.com	
2	Anupa A R D/o Ramappa, Arekoppa, Hirekasavi (P) Soraba - 577429 Shivamogga Dist.	9591368765 anupahr23@gmail.com	
3	Ayesha Siddiqua D/o Syed Raqeeb, Hirekasavi (P) Soraba - 577429 Shivamogga Dist.	9632542977 ayeshasiddiqua7783@gmail.com	
4	Bhagyashree H D D/o H M Dhananjaya Swamy, B M Mahadevaya Badavane, Anavatti Road, Shiralakoppa (P), Shikaripura - 577428 Shivamogga Dist.	7348953056 bhagyashree.h.d55@gmail.com	
5	Divya H D/o Hanumanthappa P, Sutuukote (V), Bilavani (P), Soraba -597429 Shivamogga Dist.	9606582513 divyahdiyah1999@gmail.com	
6	Indumani D B D/o Basavarajappa D H, Basavasadhana, 3rd parallel road, Jayanagara, Shivamogga- 577201	7996818448 indhumanidb08@gmail.com	
7	Kavya H S D/o Shivarajappa H, Surahonne (V), Nyamathi (T) - 577223 Davanagere Dist.	6361299815 hskavya1999@gmail.com	

8	Leela P M D/o Puttappa, Yelagere (V), Shikaripura - 577433 Shivamogga Dist.	9353824124 leelapmsagar@gmail.co m	
9	Nischitha N R D/o Ramachandra N G, Gerupura (V), Hosanagara (T) - 577418 Shivamogga Dist	9481691820 nischithanis@gmail.co m	
10	PrajwalNaik S S/o Shanthakumar, Chunchinakoppa (V), Kappanahalli (P), Shikaripura - 577427 Shivamogga Dist	6361840418 mputteshnaik@gmail.co m	
11	Ramya D H D/o D B Hitnalli, Konsur (V), Siddapur (T) - 581355 Karawar Dist.	8660203785 ramyahitnalli@gmail.co m	
12	Veenashree S G D/o Suresh Rao Ghatge, Opp. Eshwari Vidyalaya, Old hospital road, Shikaripura - 577427 Shivamogga Dist	9945251478 veenashree15140@gmai l.com	
13	Sahana K B D/o Karibasappa, Kodakani (V), Soraba - 577429, Shivamogga Dist.	9606398574 sahanakaribasappa@gm ail.com	
14	Suma K C D/o Chandrappa K, Maalligenahalli (V), Belaguthi (P), Nyamathi (T) - 577223 Davanagere Dist.	9513279014 sumakcsuma20@gmail. com	
15	Vinutha S R D/o Ravikumar S R, Hithala (V), Shikaripura - 57728 Shivamogga Dist.	9164683286 vinuthasr79@gmail.com	

16	Aishwarya R D/o Ramesh T, Opp. Primary School, Teru Beedi, Gama, Shikaripura - 577214 Shivamogga Dist.	9019570528 aishugama8@gmail.com	
17	Aishwarya R S D/o Ramappa G, Channakeshava nagara 10th B Cross, Shikaripura - 577427 Shivamogga Dist.	7411270476 aishwaryaaishwarya68891@gmail.com	
18	Amrutha C R D/o Rajappa Channakeshava Nagara 9th Cross, Shikaripura - 577427 Shivamogga Dist.	9686612334 amruthacr312@gmail.com	
19	Archana P N W/o Nandhish H M, Doddapete, Beside Vittala Temple, Shikaripura - 577427 Shivamogga Dist.	7411997232 archananchu8022@gmail.com	
20	Chaithra H R D/o Ravi Naik Hanumasagara (Thanada) Honnalli - 577217 Davanagere Dist.	8296543171 chaithrahr2001@gmail.com	
21	Geetha A M , D/o Anurajappa, Bannur, Saluru (P), Shikaripura - 577214 Shivamogga Dist.	7760467310 geethaam8722@gmail.com	
22	Lava M K S/o Karibasappa M, Anjaneya Street, Gama, Shikaripura - 577214 Shivamogga Dist.	9916164828 lava123@gmail.com	
23	M G Chandan S/o Ganapathi K, Kadakeri, Tyarsi(P), Siddapura - 581355 Uttarakannada	9945722385 mgchandan0710@gmail.com	

24	Meghana H M, D/o Mallikarjua,15th Cross, Vinayaka Nagara, Shikaripura - 577427 Shivamogga Dist.	8884912895 meghanasonu248@gmai l.com	
25	Pooja K, D/o Krishnappa, Nyarshi, Chandragutti, Soraba - 577429 Shivamogga Dist.	7338033901 poojaksorab@gmail.co m	
26	Priyanka H, D/o Halesh Naik Yelaneerkoppa main road, Harogaoppa(P), Shikripura - 577427 Shivamogga Dist.	6363236205 hpriyanka351@gmail.co m	
27	Roshni M, D/o Asifulla, Shanti Nagar, Anavatti, Soraba - 577413 Shivamogga Dist.	953562687 roshnimm601@gmail.co m	
28	Shafeequinnisa D/o Dastageer Sab,Haliyur, Aryara keru, Shikripura - 577427 Shivamogga Dist.	9686832974 shafeequinnisad@gmail. com	
29	Shreya P G D/o P Ganesh, Kiran Tailors, Doddapete, Shikripura - 577427 Shivamogga Dist.	9986971499 shreyapg0@gmail.com	
30	Shushma Pujar D/o Channabasappa P, Channakeshava Nagara 19th Cross, Shikripura - 577427 Shivamogga Dist.	6366649138 sushmacp1997@gmail.c om	
31	Sowmya L D/o Lingamurthy, Haledoopadalli, Shikripura - 577427 Shivamogga Dist.	9900850814 lingamurthisowmya@g mail.com	

32	Sudha S D/o Shekar Naik, Hanumasagara (Thanda), Honnali - 577217 Davanagere Dist.	8296543171 sudhas3171@gmail.com	
33	Sunitha C P D/o Channabasappa P, Channakeshava Nagara 19th Cross, Shikripura - 577427 Shivamogga Dist.	7349078554 sunithacp22@gmail.com	
34	Tejaswini D C D/o Chandrappa D, PWD Colony, Soraba - 577429 Shivamogga Dist.	9449428396 tejaswinidc3@gmail.com	

UNBELIEVABLE SCIENCE FACTS

- 1. 50% of the world's oxygen is produced by the sea:** Our first thought may be the rainforest. But did you know half of the world's oxygen is actually produced by plankton, seaweed and other ocean-based photosynthesis.
- 2. The human stomach can dissolve razor blades:** Acids are ranked on a scale 0-14 (the lower the PH level, the stronger the acid). The human stomach is typically rated 1.0-2.0 meaning it is impeccably strong.
- 3. Animals use the magnetic field to know where they are:** According to the U.S Geological Survey, "evidence suggests that some animals (including sea turtles) have the ability to sense the Earth's magnetic field and to use this sense for navigation."
- 4. There are more trees on the planet than stars in the solar system:** According to experts from NASA, there are up to 400 billion stars in the milky way galaxy – but the number of trees on Earth is estimated to be more than 3 trillion.
- 5. One letter doesn't exist in the periodic table:** If you have studied science in KS3 it is highly likely you will have come across the periodic table. It contains a large number of letters (or multiple letters) associated with elements, but one letter in the alphabet doesn't feature: the letter 'J'.
- 6. Water can boil and freeze at the same time:** What is known as 'triple point' exists in science. It occurs when temperature and pressure is just right for three phases (gas, liquid and solid) of a substance to coexist in thermodynamic equilibrium.
- 7. Spacecraft are hurtling towards the edge of our solar system:** The New Horizons place probe (which already flew past Pluto) is travelling at speeds of 36,000 mph. The SR-71 Blackbird (the fastest aircraft on earth) travels at speeds of 2,700 mph.
- 8. 8: If you spin a ball as you drop it, it will fly:** The Magnus effect occurs as the air on the front side of the spinning object is going in the same direction as the spin. The means the ball is dragged outwards as well as

downwards. Watch the video below for more information.

9. Babies have more bones than adults: Have around 300 bones at birth. This extra flexibility means they pass through the birth canal and enable rapid growth. With age, many of the bones fuse. Most adults have 206 bones in their skeleton.

10.The Eiffel Tower grows in summer: As substances are heated up, particles move more and take up a larger volume. This effect is most dramatic in gases but it also affects liquids and solids too. It is the reason see bridges built with expansion points.

11.Some chemicals cannot live with oxygen:Potassium, sodium and lithium are so reactive that they oxidise when they come into contact with the air. This is because they are built with an outer electron shell, and alkali metals contain only one electron in this shell which they would pass on to an element at the first opportunity via elemental bonding.

12.Hawaii moves closer to Alaska every year:The Earth's crust is split into segments known as tectonic

plates. Hot, less-dense rock rises before cooling and sinking. The consequence of this is a minute shifting of where rock (and the land above it) is placed. The Pacific Plate is drifting slowly north towards the North American Plate. Meaning it is around 7.5cm closer every year.

13.Life cannot exist on Earth in 2.3 billion years due to temperature:

The Earth's temperature is rising every year, as discussed in our recent climate change blog post. In this time period, temperatures will be high enough to evaporate the oceans, and Earth will become a vast desert, similar to Mars today.

14.It takes eight minutes for light to travel from the Sun to Earth:

Travels 300,000km per second. There is around 150 million kilometres between us and the Sun, so this equals around 8 minutes, 19 seconds.

15.Infrared cameras don't really work on polar bears:

Bears are experts at conserving heat. They have multiple levels to keep them cosy on the chilliest on arctic day.



**By,
Pooja.K**

WORLD WETLANDS DAY

World Wetlands Day is celebrated each year on 2 February to raise awareness about wetlands. This day also marks the anniversary of the Convention on Wetlands, which was adopted as an international treaty in 1971. On 30 August 2021 the UN General Assembly adopted Resolution 75/317 that established 2 February as World Wetlands Day.

Nearly 90% of the world's wetlands have been degraded since the 1700s, and we are losing wetlands three times faster than forests. Yet, wetlands are critically important ecosystems that contribute to biodiversity, climate mitigation and adaptation, freshwater availability, world economies and more. It is urgent that we raise national and global awareness about wetlands in order to reverse their rapid loss and encourage actions to conserve and restore them. World Wetlands Day is the ideal time to increase people's understanding of these critically important ecosystems. Wetland Restoration the theme for 2023 highlights the urgent need to prioritize wetland restoration Wetlands are

valuable for flood protection, water quality improvement, shoreline erosion control, natural products, recreation, and aesthetics.

Wetlands in India

India is endowed by a rich diversity of wetlands ranging from high altitude wetlands of Himalayas, floodplains of mighty rivers as Ganges and Brahmaputra, lagoons and mangrove marshes on the coastline and reefs in the marine environments. As per National Wetland Atlas, India has nearly 4.6% of its land as wetlands, covering an area of 15.26 million hectares.

India became a party to the Ramsar Convention in 1982, and as on 14 August 2022 has 75 sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of 13,26,677 ha hectares, the highest in South Asia.

The Ministry of Environment, Forest and Climate Change, as the nodal Ministry for wetlands conservation have been assisting State Governments since 1985 in design and

implementation of integrated management plans. Financial assistance has been provided to State Governments for implementation of management plans for 180 wetlands. In 2017, the Ministry has also notified the Wetlands (Conservation and Management) Rules as the regulatory framework for wetlands in the country. Several states have also notified wetland authorities and acts and rules

for conservation and wise-use of wetlands.

World Wetlands Day is open to everyone from international organizations, governments, wetland practitioners, to children, youth, media, community groups, decision-makers, to all individuals as these ecosystems are important for us all.



By,
Sowmya L

HOW RAINBOW IS FORMED



Rainbow is formed due to sunlight and atmospheric conditions. Light enters a water droplet, slows down and bends as it goes from air to water, which is denser. The light reflects off inside the droplet separating into its component wavelengths or colours. When light exits the droplet, it creates a rainbow. This happens when the rays from the sun come into contact with the raindrop at a certain angle. Some of the sunlight is reflected

When the rays from the sun strike or come into contact with droplets of water, the light from the sun is reflected. In the process, the light obeys the law of reflection. It can be better understood when we see through a glass window, but, at the same time, our own reflection can be seen. This is because the window both transmits and reflects light. Water can do this too.

Rest of Light Gets Refracted

The light that is not refracted crosses the boundary layer of air and water and slows down since water is denser than air. The reduction of speed makes the path of the light to bend, which is called refraction. This is the reason why the rainbow is always curved or bent towards the normal line.

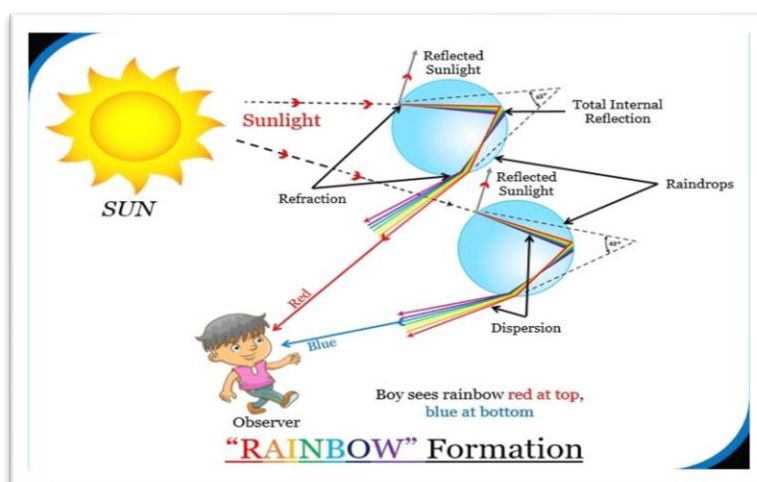
Lights Get Reflected Behind the Rain Drop

When light hits water-to-air interface at the rear of the raindrop, it forms an angle. If the angle of incidence is greater compared to the critical angle,

Total Internal Reflection occurs, and the rainbow can be seen. Whereas, if the angle is lesser than the critical angle, the rainbow formed will not be visible.

Red light, for example, has the longest wavelength and only bends at an angle of about 42 degree. Whereas the Violet light has the shortest wavelength and bends at an angle of around 40 degrees before it exits the water droplet. As the wavelength of red light is longer, it mostly appears on the outer edge of the rainbow. Thus, Red will be on the top and Violet on the bottom.

“Teach them with the rainbow appearance after A storm to be remained them that light begins and end with all colours”



By,
ShafeeQunnisa

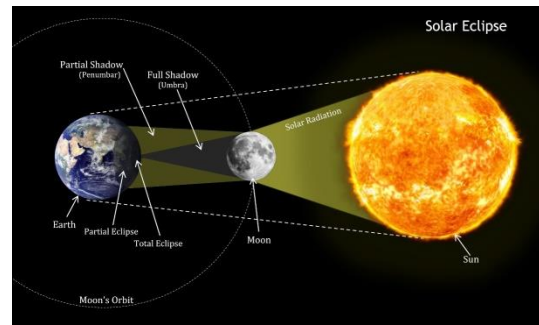
SOLAR ECLIPSE

Humans have recorded solar eclipses for millennia, and references to them can be found in some of humanity's earliest texts, such as ancient Chinese academic documents. Debate even swirls around a line from Homer's *Odyssey*—"The sun has been obliterated from the sky" and whether it can be tied to a historic eclipse.

Through the ages, the sudden darkening of the sun has been seen as a signal of the displeasure of the gods or an omen of bad things to come. But once astronomers figured out how solar eclipses worked, they became events to be studied and celebrated.

Solar eclipses happen only during a new moon, when the lunar orb moves between Earth and the sun. However, because the moon orbits Earth at a slight angle, the three bodies will only periodically line up on the same plane to create a solar eclipse.

During a total solar eclipse, the moon is in just the right position to briefly cast a shadow on our planet. As the moon moves and Earth spins, this



shadow races across the planet's surface at some 1,400 miles an hour, creating a relatively narrow line called the path of totality. Only sky watchers within this line typically 10,000 miles long and just 100 miles wide experience a total solar eclipse. People near it see only a partial solar eclipse, in which not all of the sun is blotted out, while those farther away see no change at all.

Seeing a solar eclipse can be an unforgettable experience, but experts urge caution. Looking directly at the sun with your naked eyes, or through unprotected telescopes or binoculars, can cause eye damage and even permanent blindness. Special eclipse glasses that filter out the sun's most damaging rays can allow you to view the phenomenon safely, as can instruments fitted with solar filters, or simple devices called pinhole cameras that let you see a solar eclipse indirectly.

A total solar eclipse begins as a barely perceptible nibble out of the sun. Over the next hour or so, the darkness spreads and eventually consumes the solar disk, turning day to night. This state, called totality, can last as long as seven and a half minutes, although it is

The only visible part of the sun during totality is its corona, the faint and normally unseen outer atmosphere that shimmers in the darkness like a fiery ring. Astronomers can use solar eclipses to study the corona from the ground, gathering clues to its behavior that may one day help solve the mystery of why the sun's upper atmosphere is actually hotter than its surface.

In 1919 Sir Arthur Eddington's expedition to watch a total solar eclipse from the island of Príncipe, off the west coast of Africa, helped confirm Einstein's general theory of relativity.

usually less than that. During totality, some stars and planets become visible, the air temperature drops, and animals from insects to cows may change their behavior. This brief phase is the only time it's safe to look at an eclipse with your naked eyes.

According to Einstein's work, gravity from massive objects should warp the fabric of spacetime and so bend light.

Eddington realized that a total solar eclipse would provide the perfect test bed for this prediction, since light coming from much more distant stars should get bent ever so slightly as it passes by the sun, and the eclipse would allow scientists to see stars close enough to the sun's edge to detect this minuscule change. The experiment was a success, and news of the result helped launch Einstein into scientific stardom.



By,
SushmaPujar

WONDER OF SCIENCE

Science is an amazing blessing to human beings. It is the age of science. It makes our daily life easier and comfortable. It has made dreams

and imaginations of man true. Science is knowledge about the natural world that is based on facts learned through various experiments and observation. It

is a systematic way of observation there are many wonders of science. We can't think of our life without science.

Scientific inventions: Scientist have invented several things and machines big and small through observation of very simple events, water in a kettle has given us the idea of railways engine, falling of apple from tree has helped Newton law of gravity.

Means of transport: Trains, buses, cars and airplanes have made our travel easier and comfortable. Now man can reach any part of the world within hours, the day is not very far when men will be able to travel easy to other stars and planet.

Electricity:Electricity is the greatest invention of man, electricity keep our houses cold and warm. It has removed darkness from the world modern life impossible without electricity.

Means of communication: Science has given many new means of communication such as mobile, telephone, wireless, internet etc... We can talk to our friends and relatives at any time and it is only possible with the help of science



Medicine and surgery: Science has cured man from very dreadful disease, it has made man healthier in the field of surgery science has done many wonders; Science has controlled incurable disease like T.B, leprosy and cancer etc...

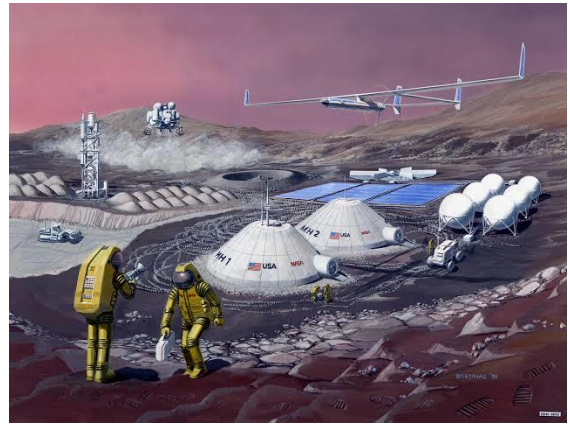
Conclusion: Science is a great helper to the modern man, it properly used it can make the life of man healthier and happier; truly it is because of science that man is called the master of the world.



By,
Amrutha C R

THE FUTURE OF SCIENCE IN SPACE

Space exploration is one of the most rapidly developing sciences which is known for its high financial implications and advanced cutting-edge technologies. Life beyond the planet was always an object of researches and investigation. Many new developments, equipment, and discoveries from space are notably useful and efficient for improving the level and the quality of life on the Earth. The history of that kind of researches started in ancient times when philosophers tried to investigate the night sky to find out the system of stars arrangement. Since then, studies in this field have progressed in a significant way, and now people even have their own space station in Earth orbit. Nowadays, there are specialized organizations such as the Aerospace Industries Association or American Astronautically Society the goal of which is to explore space. The purpose of this paper is to describe the particularities of space exploration, taking into consideration its advantages and disadvantages for humanity, ethical



questions, and predictions about the future of this industry.

It is an erroneous belief that the exploration of space does not have any impact on the life of ordinary humans. It improves the quality of the life of millions of people every day: the technologies designed for space studies are now used in the medical sphere and for conducting other experiments (Rai et al., 2016). Nevertheless, space research also poses many ethical questions to society concerning colonization, financial resources, and ecological issues. With the advancement of this science, increasingly more questions rest without any answers. For many people who are not very familiar with the topic, it seems to be a complete waste of the governmental budget and just a way for experts to entertain themselves.

The industry of space studies plays an essential role in the political, social, and economic spheres. If there were more money invested, it might result in a financial crisis in the country. Even though space exploration is supposed to have many non-material benefits and unexpected advantages in the nearest future. For example, the recent developments would be directly integrated into different fields of science. The robotics like the mechanic hand or neurotransmitter are now saving and improving thousands of Robotics to space technologies. The level of intellectual needs in this sphere would encourage cultural and cognitive growth for many people interested in this area of study (Crawford, 2019). If the specialists would not find any place for colonization, it may influence the attitude of the society to the planet and its beautiful nature. People might

become more accurate and carrying about the ecological situation on Earth.

In the modern world, space exploration has its benefits and negatives. The advantages are mostly non-economical and concern the social sphere of life, while the disadvantages are centered around the high costs of the researches. Nevertheless, there are several ways to improve the financial situation and to make the price lower: by using the experience of previous generations or by optimizing the process. Ethical questions should also be taken into consideration and make humanity reflect on ecological and moral questions. Space study is one of the fascinating spheres of science in the 21st century.



By,
M G Chandan

ROTATION OF THE EARTH

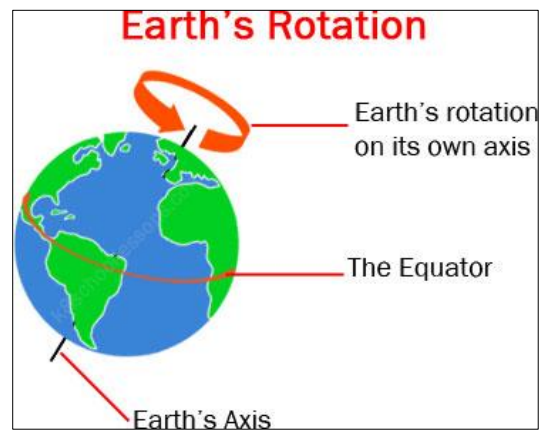
How fast does the earth rotate in the 24 hours obviously for the is how we define our day. That is how fast the surface of the earth .where we lives rotate. what about other part of the earth. That seems silly question

because if this from 100 kilometre below the surface the inside of the earth rotate at different speed the friction between that and the outside would split the crust apart. So the whole earth has to rotate at the same speed but that

question is not silly After all the core of the earth is believed to be iron it is liquid up to the some depth it must be something worth seeing huge iron crystal 2400 kilometer in diameter as massive as the moon that gives the earth the freedom it needs.

The solid core separated core separated from the outer hulk of the earth by the liquid in between can rotate at the different speed this was pointed out by two American scientists Gary Glatzmeier and Paul Robert. They did some calculation and suggested that the inner core should be rotating slightly foster than 24 hours. Geologist Xuedong song and Seismologist Paul Richard have found that Glatzmeier and Robert were absolutely right the inner core goes around in one second less than a day to put it more dramatically the inner core that was below the Western tip of Africa in the year 1900 is under our feet today. The seismic waves of earthquake.

When the tremor take place in Antarctica and is recorded in Alaska.



The seismic wave has travel through the earth core because this waves is going Eastward. It should be carried slightly faster through the core another wave going waste westward for instance when an earthquake in new Zealand is recorded in Norway will be slower checking such earthquake data song and Richard found that the westward wave were indeed a fraction of a second slower than the eastward ones. As is known to physicists. Such a difference in speed gives rise to a current. Such a current must be causing a magnetic field as well as in this linked to the magnetic field of the earth.



**By,
Chaitra H R**

THE FUTURE OF TRANSPORTATION: ELECTRIC CARS, HYPER LOOPS, AND MORE

The future of transportation is rapidly evolving, and new technologies are poised to change the way we travel in the coming years. Electric cars, hyper loops, and autonomous vehicles are at the forefront of this transformation, offering new and exciting ways to get from one place to another. In this article, we'll explore the current state and future potential of these technologies.

Electric Cars: Electric cars have become increasingly popular in recent years as concerns about the environment and sustainability have come to the forefront. Unlike traditional gasoline-powered vehicles, electric cars use batteries to store energy and electric motors to drive the wheels. They emit fewer pollutants and greenhouse gases, making them a greener alternative to gasoline-powered cars. Additionally, electric cars are becoming increasingly affordable, making them a more viable option for the average consumer.

One of the biggest challenges facing electric cars is the limited range

that they can travel on a single charge. Currently, the average electric car can only travel around 200 miles on a single charge. However, this is rapidly changing as battery technology improves, and new models are emerging that can travel much farther on a single charge. In addition, the number of charging stations is increasing, making it easier to recharge on the go.

Hyper loops: Hyper loops are an exciting new technology that offer the promise of ultra-fast and efficient travel. Using vacuum-sealed tubes to reduce air resistance and friction, hyper loops can reach speeds of up to 700 mph. This technology is still in its early stages, but the potential for revolutionizing travel is enormous. For example, a trip from San Francisco to Los Angeles, which currently takes over 6 hours by car, could be completed in just 30 minutes using a hyper loop.

One of the biggest challenges facing hyper loops is the high cost of building and maintaining the

infrastructure needed for this technology. Additionally, there are still many technical and regulatory hurdles that need to be overcome before hyper loops can become a reality. However, the potential benefits of this technology are enormous, and it is likely that we will see continued progress in the coming years.

Autonomous Vehicles: Autonomous vehicles are another exciting technology that is rapidly evolving and has the potential to transform the way we travel. With the ability to drive themselves, these vehicles have the potential to reduce the number of accidents caused by human error, while also making transportation more accessible to those who are unable to drive, such as the elderly and disabled.

There are still many technical and regulatory hurdles that need to be overcome before autonomous vehicles can become a reality. For example,

there are still questions about how these vehicles will interact with other road users, and how they will handle unexpected situations. Additionally, there are concerns about cyber security, as these vehicles will be vulnerable to hacking and other types of cyber attacks.

Conclusion: The future of transportation is rapidly evolving, and new technologies are poised to change the way we travel in the coming years. Electric cars, hyper loops, and autonomous vehicles are just a few examples of the exciting new technologies that are shaping the way we think about mobility. Whether it's reducing our carbon footprint, increasing efficiency, or making transportation more accessible, these technologies are poised to make a big impact in the coming years.



By,
Lava M K

GLOBAL WARMING

In 1800, due to the deforestation of a large chunk of North-Eastern American, besides forested Parts of the world.

Global warming processes in which the temperature of the earth rises steadily and constantly. It is a

threatening problem which will bring great danger to all living beings.

Similarly, there are many reasons for this phenomenon. The enhanced levels of carbon dioxide, as well as greenhouse gases, contribute to it greatly. If we do not take measures to tackle this problem now, the living beings will soon face their doom. Moreover, we need to realize its harmful consequences so we can work on fixing it quickly.

Everyone must be made aware of how they contribute to the increasing level of global warming. Most importantly, we must find an alternative that will help in tackling this issue at the very earliest to save earth and life on it.

Global warming or climate Change has today become a major threat to the mankind. The Earth's temperature is on the rise and there are various reasons for it. Such as greenhouse gases emanating from carbon dioxide emissions burning of fossil fuels or deforestation.

The rise in the levels of carbon dioxide leads to substantial increase in temperature. It is because carbon



dioxide remains concentrated in the atmosphere for even hundreds of years. Due to activities of fossil fuel combustion for electricity generation, transportation, and heating, human beings have contributed to increase in carbon dioxide concentration in the atmosphere.

Recently years have been unusually warm, causing world-wide concern. But the fact is that the increase in CO₂ actually began.

According to the Intergovernmental Panel on climate change (IPCC), global temperature is likely to rise by about 1-3.5 Celsius by the year 2100. The sea levels are constantly rising as brackish water marshlands, low-lying cities, and islands have been inundated with seawater. Glaciers are gradually

melting. Animal Populations are gradually vanishing as there has been a widespread loss of their habitat.

“Global warming is too serious for the world any longer to ignore its

danger or split into opposing factions on it.”



By,
Geetha A M

SCIENCE IN THE NEW

You will create your own version of a modern medical magazine! Make the publication one that reflects your interest and curiosities! You may choose to have a “Big Idea” for your magazine such as “The Heart” or “Modern Genetics” or “Health” or “The Nervous System” etc..or you can create a general medical publication and include a variety of topics that interest you..

Some Possible Topics:

- Genetics/DNA (modern technology/discoveries, genetic disorders, etc..)
- Modern Medical Treatments and technology.

- Preventions and Cures for Diseases.
- The Nervous System (or any body system and its disorders/treatments etc..)
- The Heart (health news, new technologies, disorders, surgeries, etc..)
- Viruses (dangers/treatment)
- The Brain (memory, injuries, new research, control centers)
- Physical Fitness (relation to disease prevention and overall body functioning)
- Sleep (connections to health, sleep patterns, etc.....)



By,
Tejaswini D C

ARTIFICIAL BLOOD

Artificial blood is a Product made to act as a substitute for red blood cells. While true blood serves many

different functions, artificial blood is designed for the sole purpose of transporting oxygen and carbon dioxide



throughout the body. Depending on the type of artificial blood, it can be produced in different ways using synthetic production, chemical isolation, or recombinant biochemical technology. Development of the first blood substitutes dates back to the early 1600s, and the search for the ideal blood substitute continues. Various manufacturers have products in clinical trials; however, no truly safe and effective artificial blood product is currently marketed. It is anticipated that when an artificial blood product is available, it will have annual sales of over \$7.6 billion in the United States alone.

The ideal artificial blood product has the following characteristics.

- It must be safe to use and compatible within the human body.
- It must be able to transport oxygen throughout the body and release it where it is needed.

- It must be shelf stable.

There are two significantly different products that are under development as blood substitutes. They differ primarily in the way that they carry oxygen. One is based on PFC, while the other is a hemoglobin-based product

Perfluorocarbons (PFC): PFC is biologically inert materials that can dissolve about 50 times more oxygen than blood plasma. They are relatively inexpensive to produce and can be made devoid of any biological materials. From a technological stand point, they have two significant hurdles to overcome before they can be utilized as artificial blood.

- a) They are not soluble in water.
- b) They have the ability to carry much less oxygen than hemoglobin-based products

Hemoglobin-based products

Artificial blood based on hemoglobin takes advantage of this natural function. Unlike PFC products where dissolving is the key mechanism, oxygen covalently bonds to hemoglobin. These hemoglobin products are different than whole blood in that they are not contained in a membrane so the problem of blood typing is eliminated.

The modified hemoglobin's are stable and soluble in solutions. Theoretically, these modifications should result in products that have a greater ability to carry oxygen than our own red blood cells. It is anticipated that the first of these products will be available within one to two years.

Raw materials :Depending on the type of artificial blood that is made, various raw materials are used. Hemoglobin-based products can use either isolated hemoglobin or synthetically produced hemoglobin. To produce hemoglobin synthetically, manufacturers use compounds known as amino acids. These are chemicals that plants and animals use to create the proteins that are essential for life. There

are 20 naturally occurring amino acids that may be used to produce hemoglobin. It also requires a specific type of bacteria and all of the materials needed to incubate it. This includes warm water, molasses, glucose, acetic acid, alcohols, urea, and liquid ammonia.

For other types of hemoglobin-based artificial blood products, the hemoglobin is isolated from human blood. It is typically obtained from donated blood that has expired before it is used. Other sources of hemoglobin come from spent animal blood. This hemoglobin is slightly different from human hemoglobin and must be modified before being used.

Conclusion: Currently, there are several companies working on the production of a safe and effective artificial blood substitute. The various blood substitutes all suffer from certain limitations. For example, most of the hemoglobin-based products last no more than 20-30h in the body. This compares to transfusions of whole blood that lasts 34 days.

Also, these blood substitutes do not mimic the blood's ability to fight

diseases and clot. Consequently, the current artificial blood technology will be limited to short-term blood replacement applications. In the future, it is anticipated that new materials to carry oxygen in the body will be found.

Additionally, longer lasting products should be developed, as well as products that perform the other functions of blood.



**By,
Shreya P G**

5G Era

India became the last major Asian economy to kick off a 5G network, marking a new wave of spending by indebted carriers on high-speed wireless technology that's touted to revolutionise everything from gaming to manufacturing and health care.

Prime Minister Narendra Modi made the first 5G video call on October 1 to school students to demonstrate use of the service in education. "5G is the beginning of an infinite space of opportunities," especially for the country's youth, he said. Calling it a "step towards the new era", Modi launched the much-awaited services that aim to provide seamless coverage, high data rate, less delay in internet connectivity, and highly reliable communications in presence of India's telecom leaders in New Delhi.

The launch in select cities will cover the entire country over the next couple of years, a government statement said. Though fifth-generation mobile technology — first introduced in South Korea three years ago — has been viewed by consumers as underwhelming so far because of a dearth of matching applications, local operators led by billionaire Mukesh Ambani's Reliance Jio Infocomm Ltd. are betting that will change. They are counting on the nation's 600 million-plus smartphone users to switch to the new network in due course and also on industries gearing for a digital transformation.

Carriers agreed to fork out \$19 billion just two months ago for airwaves at a government auction, with Reliance's \$11 billion bid topping the list. The conglomerate proposes to

invest two trillion rupees (\$25 billion) more. Billionaire Sunil Mittal's BhartiAirtel Ltd. and Vodafone Idea Ltd. haven't disclosed their spending plans as yet.

While Reliance raised more than \$25 billion from marquee investors in 2020 to help fund digital expansion, the need to spend big on 5G could weigh on the finances of rivals. Bharti and unprofitable Idea have a combined net debt of \$37 billion, and the latter staved off bankruptcy by giving 36 per cent of its equity to the Indian government earlier this year in lieu of back fees it couldn't pay.

At the launch event on October 1, Ambani said Jio's 5G network will cover the entire country by December next year, while Mittal said BhartiAirtel plans to do so by 2024. Given the scale of spending, some experts said carriers are unlikely to undercut each other on prices once again something that was tried in 2016 when Jio entered the market by offering free calls and cheap 4G data plans, which ended up putting some rivals out of business.

"They will likely provide 5G services to those segments of the market that are willing to pay higher and try and recover as much as possible before making it available to others," said Rajat Kathuria, a senior visiting professor at the Indian Council for Research on International Economic Relations in New Delhi.

"India may have started a little late, but we'll finish first by rolling out 5G services that are of higher quality and more affordable," Ambani said at the launch event. The technology can bring affordable, superior education and skill development to ordinary Indians and deliver high-quality healthcare to rural and remote areas, he said.

Offering low latency and data speeds about 100 times faster than 4G, the technology has the potential to enable a variety of advanced applications such as holograms, 3D avatars of people in metaverses, and telemedicine, in which near-instantaneous transmission of video and data would allow surgeons to operate remotely using a robotic scalpel. So far, such applications have been too slow to evolve. For average

users, 5G has mostly meant faster video games and content streaming.

To capitalise on 5G, China has been rolling out smartphone apps and industrial projects such as super high-definition live streaming, remote manufacturing, virtual reality, and robotic surgery arms. The country's three state-owned carriers have introduced more than 25,000 such applications, according to a news article posted by the State Council on its website in August. In South Korea, despite mobile operators' efforts to come up with killer apps, average revenue per person has only climbed slightly since the 4G era.

In India's race to roll out 5G, the only winner to emerge so far has been the government: The airwave auction was set to raise a record amount,

Telecom Minister AshwiniVaishnaw said in July. Proceeds from the spectrum auction could provide a big financial boost to Modi's administration, which has been seeking to tame inflation and rein in fiscal deficits as economists warn of a looming global recession.

The government said that the cumulative economic impact of 5G on India is expected to reach 450 billion by 2035. Research agency OMDIA projects that with 369 million 5G subscriptions — over half the total global 5G subscriptions currently — India will be just behind China and the US in world rankings by 2026. India would have ousted Japan from the third spot with 147 million customers, according to Business Standard.



By,
S G Veenashree

IMMUNE SYSTEM OF OUR BODY.

The term “Immunity” originated from the Latin term “Immunise” meaning “exempt”, that is, the state of protection from infectious diseases.

Immunity refers to protection, particularly protection from infectious



diseases. Immune system, it is the cells and the molecules which are

responsible for immunity which constitute the immune system. Then immunology is the study of both structure and functioning of immune system it actually deals how host respond, when the foreign substance is introduced into the tissue and how it tries to eliminate them.

History:Man, always tried to protect himself from infectious diseases like, Bubonic Plague, Small pox etc.

Where, Indians and Chinese who discovered that, person once who cured from Small pox, did not get infected again. So, they deliberately infected their children with scab materials and induce infection, so that, they can protect.

Later, Lady Mary Wortley Montague, introduced this technique in western Europe and this method is referred as Variolation.

In 1798 Edward Jenner, he observed that the milk maid, who had recovered from cow pox, never contracted small pox during their life. He injected the materials collected from cow pox pustules into human beings and none of them got infected again. He coined this process as

vaccination and vaccine mean “from cow”. Because of his first step in development of immunology. Edward Jenner is referred as “Father of immunology”.

Immune system is the basic defence system of our body they protect us from harmful pathogens and diseases. They consist of different types of cells, proteins, that kill the invading harmful pathogens and protects our body.

The development of immune defence mechanisms begins early during foetus life but is not yet completed at birth. The earliest haematopoietic stem cells, which gives rise to the lymphocytic and myelomonocytic cell lines, appear between the 4th - 8th week post conception. T- cells, responsible for cellular immune defence mechanisms, are first detectable at 12th week and seems to acquire their functional capabilities in the 16th week. B lymphocytes, responsible for humoral immunity, can be identified in the foetal liver at 8th week and they are functional at the 12th and 13th week. Thus, the foetuses of more than 16th

weeks can produce a full immune response.

Immunity which is more complicated, it is on duty to keep and monitor to keep our body healthy.

We have invaders, foreign materials coming inside our body, like Bacteria, viruses they are more dangerous, they destroy our body system, our body cells and their components, ultimately made us sick. So that our body protects against bacteria, viruses, parasites, protozoans and all other different pathogens.

Immune system consists of 3 layers, they protect our body from invaders, they are

1. Barriers.
2. Innate immunity.
3. Acquired immunity.

Where barriers which belongs to innate immunity.

Barrier immunity is the 1st layer of defence in human immune system, these barriers prevent the entry of pathogens, such as Bacteria and virus in to the organisms. The most important barriers are skin, our body is covered with skin and skin is large

organ of our body. And other barriers are mucosa layer in intestine, gastric juice, which is released stomach to kill bacteria.

When these barriers become weak, and when the foreign body get successful to break the barrier, it becomes easy for invaders to enter into the body. At this condition, our body is ready to fight with invaders, as there is a presence of innate immune system.

Innate immune system always presents on, as it comes from birth, present in tissues and blood cells. Which shows immediate response and fight against it right at beginning.

There are two mood of immune system, another mood which is activated after the entry of antigens and after its activation, which takes longer time to develop but they are more specific. When the innate system is not enough to fight against the bacteria, and they want more specific response to kill that bacteria.at that time specific response is obtained from these acquired immunities.

In this case the immunity is developed once the pathogens enters and shows its properties, by reading

these properties of antigen, they start producing specific antibodies against those. antibody response is more specific though it will take more time to development.

They will produce cells known as lymphocytes, there are 2 type of cells, they are T- cells, B-cells. T-cells helping other cells, that they are activate B-cells, after that these B-cells gets activated and produce antibodies, these antibodies are more specific against antigens and pathogens and kill them.

So that there is a link between innate and acquired immunity.these innate immunity gives signals to acquired immunity to grow.

Immunity system which contains, white blood cells, antibodies, bone marrow, complementary system, spleen, lymphatic system.

Where fever is an immune system response, a rise in body

temperature or fever, can happens with some infections. This is actually an immune system response. A rise in temperature can kill some microbes.

Disorders of immune system, it is common for people to have an over or under active immune system. Which causes allergic diseases, autoimmune diseases, immunodeficiency etc. These diseases need therapy for over come from this, called as immunoglobulin therapy.

So, at the end we come to know that, the immune system is a complex network of cells and proteins that defence the body against infection, and immune system which keeps a record of every germs(microbes) it has ever defeated, so it can recognise and destroy the microbe quickly if it enters the body again.



By,
Indhumani.D. B

MANGROVE FOREST

Mangrove forests, also called mangrove swamps, mangrove thickets or mangals, are productive wetlands

that occur in coastal intertidal zones. Mangrove forests grow mainly at tropical and subtropical latitudes

because mangroves cannot withstand freezing temperatures. There are about 80 different species of mangroves, all of which grow in areas with low-oxygen soil, where slow-moving waters allow fine sediments to accumulate.

Many mangrove forests can be recognised by their dense tangle of prop roots that make the trees appear to be standing on stilts above the water. This tangle of roots allows the trees to handle the daily rise and fall of tides, which means that most mangroves get flooded at least twice per day. The roots slow the movement of tidal waters, causing sediments to settle out of the water and build up the muddy bottom. Mangrove forests stabilise the coastline, reducing erosion from storm surges, currents, waves, and tides. The intricate root system of mangroves also makes these forests attractive to fish and other organisms seeking food and shelter from predators.

Mangrove forests live at the interface between the land, the ocean, and the atmosphere, and are centres for the flow of energy and matter between these systems. They have attracted

much research interest because of the various ecological functions of the mangrove ecosystems, including runoff and flood prevention, storage and recycling of nutrients and wastes, cultivation and energy conversion. The forests are major blue carbon systems, storing considerable amounts of carbon in marine sediments, thus becoming important regulators of climate change.

Marine microorganisms are key parts of these mangrove ecosystems. However, much remains to be discovered about how mangrove microbiomes contribute to high ecosystem productivity and efficient cycling of elements.

Ecosystem

The unique ecosystem found in the intricate mesh of mangrove roots offers a quiet marine habitat for young organisms. In areas where roots are permanently submerged, the organisms they host include algae, barnacles, oysters, sponges, and bryozoa, which all require a hard surface for anchoring while they filter-feed. Shrimp and mud lobsters use the muddy bottoms as their home. Mangrove crabs eat the mangrove

leaves, adding nutrients to the mangal mud for other bottom feeders In at least some cases, the export of carbon fixed in mangroves is important in coastal food webs Mangrove plantations host several commercially important species of fish and crustaceans.

In Puerto Rico, the red, white, and black mangroves occupy different ecological niches and have slightly different chemical compositions, so the carbon content varies between the species, as well between the different tissues of the plant (e.g., leaf matter versus roots). There is a clear succession of these three trees from the lower elevations, which are dominated by red mangroves, to farther inland with a higher concentration of white mangroves.

Mangrove forests are an important part of the cycling and storage of carbon in tropical coastal ecosystems. Knowing this, scientists seek to reconstruct the environment and

investigate changes to the coastal ecosystem over thousands of years using sediment cores. However, an additional complication is the imported marine organic matter that also gets deposited in the sediment through the tidal flushing of mangrove forests.

Mangrove forests can decay into peat deposits because of fungal and bacterial processes as well as by the action of termites. It becomes peat in good geochemical, sedimentary, and tectonic conditions. The nature of these deposits depends on the environment and the types of mangroves involved. Termites process fallen leaf litter, root systems and wood from mangroves into peat to build their nests. Termites stabilise the chemistry of this peat and represent approximately 2% of above ground carbon storage in mangroves. As the nests are buried over time this carbon is stored in the sediment, and the carbon cycle continues.



By,
Vinutha S R

LIFE ON MARS

The possibility of life on Mars is a subject of interest in astrobiology due to the planet's proximity and

similarities to Earth. To date, no proof of past or present life has been found on Mars. Cumulative evidence suggests

that during the ancient Noachian time period, the surface environment of Mars had liquid water and may have been habitable for microorganisms, but habitable conditions do not necessarily indicate life. Scientific searches for evidence of life began in the 19th century and continue today via telescopic investigations and deployed probes. While early work focused on phenomenology [clarification needed] and bordered on fantasy, the modern scientific inquiry has emphasized the search for water, chemical biosignatures in the soil and rocks at the planet's surface, and biomarker gases in the atmosphere.

Mars is of particular interest for the study of the origins of life because of its similarity to the early Earth. This is especially true since Mars has a cold climate and lacks plate tectonics or continental drift, so it has remained almost unchanged since the end of the Hesperian period. At least two-thirds of Mars's surface is more than 3.5 billion years old, and Mars may thus hold the best record of the prebiotic conditions leading to life, even if life does not or has never existed there, which might

have started developing as early as 4.48 billion years ago.

Following the confirmation of the past existence of surface liquid water, the Curiosity, Perseverance and Opportunity rovers started searching for evidence of past life, including a past biosphere based on autotrophic, chemotrophic, or chemolithoautotrophic microorganisms, as well as ancient water, including fluvio-lacustrine environments (plains related to ancient rivers or lakes) that may have been habitable. The search for evidence of habitability, taphonomy (related to fossils), and organic compounds on Mars is now a primary NASA and ESA objective.

In June 2018, NASA announced the detection of seasonal variation of methane levels on Mars. Methane could be produced by microorganisms or by geological means. The European ExoMars Trace Gas Orbiter started mapping the atmospheric methane in April 2018, and the 2022 ExoMars rover Rosalind Franklin was planned to drill and analyze subsurface samples before the programme's indefinite suspension, while the NASA Mars

2020 rover Perseverance, having landed successfully, will cache dozens of drill samples for their potential transport to Earth laboratories in the late 2020s or 2030s. As of February 8, 2021, an updated status of studies

considering the possible detection of lifeforms on Venus (via phosphine) and Mars (via methane) was reported.



By,
Ayesha Siddiqa

KNOWLEDGE IS TREASURE

In this Generation some people only who understand how important knowledge is. While every educated person may not be intelligent, it is true that every qualified person has an Education.

It may seem like a strange statement but it is true. When you have the treasure of knowledge, you can drive a car or even fly an aeroplane. Similarly, you can crack puzzles and solve riddles with knowledge.

Therefore, it allows you to do the little as well as big things. When you have the knowledge, you can stop yourself from falling into the same trap. Also, you cannot buy knowledge. It is very essential to note this in this essay on knowledge is power.

It is a treasure that cannot be bought. You gain it and you earn it



with your hard work. Therefore, the real gem is that of knowledge that will make you a successful person in life and help you gain power and respect.

Once you taste the nectar of knowledge, you cannot restrain your desire for it. You only get the desire to gain more wisdom and acquire more knowledge. There is a proverb that tells us that people will worship the king in his kingdom alone but they will worship a man of knowledge all over the world.

In other words, a person with knowledge can find a home in any part of the world. The ocean of knowledge gives us broad thinking and makes us fearless. Moreover, our vision becomes clear through it.

Knowledge is the treasure but Practice is the key to it.

Also, when you get the knowledge of various things like science, medicine, politics, and more,

you can work for the betterment of the world. Knowledge gives birth to inventions and discoveries.

All in all, knowledge allows people to flourish in life. Similarly, it also helps to hold off wars and abuse. It is responsible for bringing peace to the world and helping nations prosper. It can open doors to success and unite people like never before.

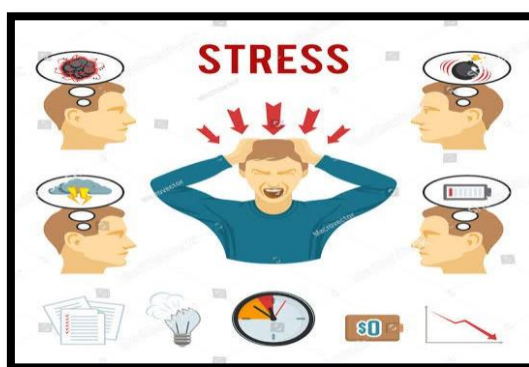


By,
Bhagyashree H D

MENTAL HEALTH

Mental health refers to a person's psychological, emotional, and social well-being; it influences what they feel and how they think, and behave. The state of cognitive and behavioral well-being is referred to as mental health. The term 'mental health' is also used to refer to the absence of mental disease.

Mental health means keeping our minds healthy. Mankind generally is more focused on keeping their physical body healthy. People tend to ignore the state of their minds. Human superiority over other animals lies in his superior mind. Man has been able to control life



due to his highly developed brain. So, it becomes very important for a man to keep both his body and mind fit and healthy. Both physical and mental health are equally important for better performance and results.

Importance of Mental Health

An emotionally fit and stable person always feels vibrant and truly

alive and can easily manage emotionally difficult situations. To be emotionally strong, one has to be physically fit too. Although mental health is a personal issue, what affects one person may or may not affect another; yet, several key elements lead to mental health issues.

Many emotional factors have a significant effect on our fitness level like depression, aggression, negative thinking, frustration, and fear, etc. A physically fit person is always in a good mood and can easily cope up with situations of distress and depression resulting in regular training contributing to a good physical fitness standard.

Mental fitness implies a state of psychological well-being. It denotes having a positive sense of how we feel, think, and act, which improves one's ability to enjoy life. It contributes to one's inner ability to be self-determined. It is a proactive, positive term and forsakes negative thoughts that may come to mind. The term mental fitness is increasingly being used by psychologists, mental health practitioners, schools, organizations,

and the general population to denote logical thinking, clear comprehension, and reasoning ability.

Negative Impact of Mental Health

The way we physically fall sick, we can also fall sick mentally. Mental illness is the instability of one's health, which includes changes in emotion, thinking, and behaviour. Mental illness can be caused due to stress or reaction to a certain incident. It could also arise due to genetic factors, biochemical imbalances, child abuse or trauma, social disadvantage, poor physical health condition, etc. Mental illness is curable. One can seek help from the experts in this particular area or can overcome this illness by positive thinking and changing their lifestyle.

Regular fitness exercises like morning walks, yoga, and meditation have proved to be great medicine for curing mental health. Besides this, it is imperative to have a good diet and enough sleep. A person needs 7 to 9 hours of sleep every night on average. When someone is tired yet still can't sleep, it's a symptom that their mental health is unstable. Overworking oneself can sometimes result in not just

physical tiredness but also significant mental exhaustion. As a result, people get insomnia (the inability to fall asleep). Anxiety is another indicator.

There are many symptoms of mental health issues that differ from person to person and among the different kinds of issues as well. For instance, panic attacks and racing thoughts are common side effects. As a result of this mental strain, a person may experience chest aches and breathing difficulties. Another sign of poor mental health is a lack of focus. It occurs when you have too much going on in your life at once, and you begin to make thoughtless mistakes, resulting in a loss of capacity to focus effectively. Another element is being on edge all of the time.

It's noticeable when you're quickly irritated by minor events or statements, become offended, and argue with your family, friends, or co-workers. It occurs as a result of a build-up of internal irritation. A sense of alienation from your loved ones might have a negative influence on your mental health. It makes you feel lonely and might even put you in a state of despair. You can

prevent mental illness by taking care of yourself like calming your mind by listening to soft music, being more social, setting realistic goals for yourself, and taking care of your body.

Surround yourself with individuals who understand your circumstances and respect you as the unique individual that you are. This practice will assist you in dealing with the sickness successfully. Improve your mental health knowledge to receive the help you need to deal with the problem. To gain emotional support, connect with other people, family, and friends. Always remember to be grateful in life. Pursue a hobby or any other creative activity that you enjoy.

What does Experts say

Many health experts have stated that mental, social, and emotional health is an important part of overall fitness. Physical fitness is a combination of physical, emotional, and mental fitness. Emotional fitness has been recognized as the state in which the mind is capable of staying away from negative

thoughts and can focus on creative and constructive tasks.

He should not overreact to situations. He should not get upset or disturbed by setbacks, which are parts of life. Those who do so are not emotionally fit though they may be

physically strong and healthy. There are no gyms to set this right but yoga, meditation, and reading books, which tell us how to be emotionally strong, help to acquire emotional fitness.



By,
Sahana K B

TECHNOLOGY IN CLASSROOMS

The main argument for technology in the classroom is that emerging students should be able to apply classroom concepts to daily life, and a large part of daily life revolves around technology.

Students today are apt at using technology, and tools such as laptops, smartphones, and tablets are already second nature to them. Taking technology out of the learning equation would be removing an integral part of the students' abilities.

1. Pace of change & cost: It's not easy for schools to keep up with the rapidly changing technology.

While many have quietly accepted purchasing a every two years as a part of life, schools doing anything close to the same represents a major financial

investment. Further, purchasing the hardware is only the beginning of the investment. Curriculum, assessment, and instruction must all work together with the hardware to leverage its potential. This, of course, requires considerable planning and design thinking—and ongoing training for teachers.

2. Different social dynamics: Technology adds complexity to everything—support, teaching, learning,, etc. It's inherently 'disruptive.'

Take for example the added social dynamics of modern technology. Privacy, footprint, and digital citizenship are all as important as the content being learned and how learning is being measured. Even entirely new approaches like eLearning don't offer

the same social benefits of a regular school. Without a classroom where students can form friendships and relationships with their peers, they may not learn the same social cues as regular students. Without any real face-to-face time with their teacher, they may take the classes less seriously.

3. Limited perceived effectiveness of technology: This is not to say that technology isn't effective. It's difficult to say if chalk is 'effective' or graphing calculators are 'effective' or if that computer lab is 'effective' because it's not always clear how we're measuring that effectiveness. If this isn't accurate, precise, transparent, and communicated among all shareholders in a school or community, it will be difficult to know if the technology is 'working.'

4. Lack of alignment between technology, curriculum, and instruction: There are also discrepancies as to how much of a crutch technology can be to a student. Schools once debated whether or not certain types of calculators should be allowed in class, as they essentially solved the problems for students that struggled with math. The same may be

true for apps that supply quick, accessible answers for problems that a student should actually be thinking about in greater depth.

5. Lack of clarity about the purpose of 'school': The New York Times article "In Classroom of Future, Stagnant Scores," discusses a school in the Kyrene School District that has fully implemented technology in the classroom. Since 2005, the school has invested aroundnlin technology, par a passing vote. Children use laptops and tablets for their work and integrate things like Facebook groups into regular projects. Unfortunately, the school is also suffering from low standardized test scores.

While statewide test scores have risen, Kyrene School District remains stagnant in the face of all of its innovation. Teachers worry that while the technology is engaging on a creative level, the students may be missing out on basic concepts like math and language. Other proponents of technology point out that standardized test scores may not be the best gauge of student intelligence and creativity. Still others yet reason that there's no reason

to spend millions of well-earned tax dollars on a system before knowing whether or not it is sincerely helpful for educational growth.



By,
Divya H

WORLD SCIENCE DAY

Celebrated every 10 November, World Science Day for Peace and Development highlights the significant role of science in society and the need to engage the wider public in debates on emerging scientific issues. It also underlines the importance and relevance of science in our daily lives.

By linking science more closely with society, World Science Day for Peace and Development aims to ensure that citizens are kept informed of developments in science. It also underscores the role scientists play in broadening our understanding of the

remarkable, fragile planet we call home and in making our societies more sustainable.

The Day offers the opportunity to mobilize all actors around the topic of science for peace and development from government officials to the media to school pupils. UNESCO strongly encourages all to join in celebrating World Science Day for Peace and Development by organizing your own event or activity on the day.



By,
Adithi A R

STAR

Star is an astronomical object comprising a luminous spheroid of plasma held together by its gravity. The nearest star to Earth is the Sun. Many other stars are visible to the naked eye at night, but their immense distance from Earth makes them appear as fixed points of light in the sky. The most

prominent stars have been categorised into constellations and asterisms, and many of the brightest stars have proper names. Astronomers have assembled star catalogues that identify the known stars and provide standardized stellar designations. The observable universe contains an estimated 1022 to 1024

stars. Still, most are invisible to the naked eye from Earth, including all individual stars outside our galaxy, the Milky Way.

Star's life begins with the gravitational collapse of a gaseous nebula of material composed primarily of hydrogen, along with helium and trace amounts of heavier elements. The total mass is the main factor determining its evolution and eventual fate. A star shines for most of its active life due to the thermonuclear fusion of hydrogen into helium in its core. This process releases energy that traverses the star's interior, radiating into outer space. At the end of a star's lifetime, its core becomes a stellar remnant: a white dwarf, a neutron star, or—if it is sufficiently massive—a black hole. Stellar nucleosynthesis in stars or their remnants creates almost all naturally occurring chemical elements heavier than lithium. Stellar mass loss

or supernova explosions return chemically enriched material to the interstellar medium. They are then recycled into new stars. Astronomers can determine stellar properties—including mass, age, metallicity (chemical composition), variability, distance, and motion through space—by carrying out observations of a star's apparent brightness, spectrum, and changes in its position in the sky over time.

Stars can form orbital systems with other astronomical objects, as in the case of planetary systems and star systems with two or more stars. When two such stars have a relatively close orbit, their gravitational interaction can significantly impact their evolution. Stars can form part of a much larger gravitationally bound structure, such as a star cluster or a galaxy.



By,
Ramya D H

WHY PEOPLE YAWN

You yawn, I yawn, we all yawn. Reading or thinking about it makes you more likely to yawn. (Did you just yawn?) You can even “catch” yawns

from other people, and from other animals like dogs. Thanks, biology but what purpose does yawning serve?

Ideas abound, but none seem to hold up to scientific scrutiny. One is that yawning helps to cool the brain by increasing blood flow to the jaws, neck, and sinuses, and then removing heat from this blood when inhaling a big breath. Counterintuitively, yawning occurs less frequently in hot weather, when air has less ability to cool the body. In short, yawning “fails precisely when we need it,” Dr. Adrian Guggisberg told WebMD. One hypothesis that has not (yet) been discarded: yawns “serve as a signal for our bodies to perk up, a way of making sure we stay alert,” Maria Konnikova wrote in *The New Yorker*. “A yawn is usually followed by increased movement and physiological activity, which suggests that some sort of ‘waking up’ has taken place.”



And why are yawns contagious? A recent study in *PLoS ONE* suggests they’re way of showing empathy. But another newer study concluded the opposite. So it goes.

Therefore, yawning helps us bring more oxygen into the blood and move more carbon dioxide out of the blood. Yawning, then, would be an involuntary reflex (something we can’t really control) to help us control our oxygen and carbon dioxide levels.



By,
Anupa H R

SOLAR SHINGLES

Solar shingles are small solar panels designed to resemble and replace traditional roofing materials. They are incorporated into the roof itself to generate energy.

While solar shingles are an effective source of solar power, they aren't the most efficient or economical option. To



shed more light on this method of generating solar power and new developments in the technology, here is

a closer look at solar shingles, including how they work and how they compare with other solar options.

Solar shingles have been commercially available since 2005. They are designed by merging solar panels with the roof instead of just mounting them on top of it.

All solar shingles are designed to function as both roofing materials and power sources, but they can achieve that dual purpose in a few ways. Some solar shingles use silicon as a semiconductor, as do most conventional solar panels. Others rely on thin-film solar cells, which feature super-thin layers of certain photovoltaic materials.

The thinness of these solar cells makes them lighter and more flexible. While older versions of flexible thin-film solar roofing had to be installed on top of another roofing material, newer products are rigid and sturdy enough to serve as shingles themselves. Solar shingles look like asphalt shingles. Solar tiles are another type of solar roofing but are made to resemble other roofing types, like terracotta

Working of Solar shingles :

Like traditional rooftop panels, solar shingles convert solar energy into electricity by harnessing the flow of electrons released when sunlight hits a semiconducting material. While solar shingles and solar panels generate electricity with the same fundamental photovoltaic effect, they have significant installation differences.

Solar shingles are not mounted on racks like other solar panels. Instead, they are attached directly to the roof deck in place of conventional roofing shingles.

Solar shingles are typically installed at the same time as the roof, either during new construction or when replacing an old or damaged roof. This helps homeowners avoid replacing older but functional shingles before necessary and can be performed by a single roofing contractor.

Solar Shingles vs. Solar Panels:

Solar shingles are sleek and durable. Their benefits include:

- Aesthetics - solar shingles enable homeowners to generate electricity with a sleek roof.

- Endurance - many solar shingles are designed to withstand hail and hurricane-force winds, which can be difficult for mounted panels.
- Solar shingles can be less efficient and more expensive. Their disadvantages include:
 - Cost - renders solar shingles impractical in many cases unless they're part of a newly constructed or rebuilt roof.
 - Availability - solar shingles may not be offered by some solar installers, and the cost can vary widely between providers.
- Efficiency - there can be issues with sunlight exposure depending on the slope of the roof.

The advantage of solar shingles is largely aesthetic. They are known for being more expensive and less efficient than standard solar panels, although they may become more practical for many people as better technology improves their performance.



By,
Kavya H S

MESMERISING ANIMATION REVEALS OUR ENTIRE SOLAR SYSTEM DOESN'T EXACTLY ORBIT THE SUN

It's common knowledge that the Sun is the centre of the Solar System. Around it, the planets orbit – along with a thick belt of asteroids, some meteor fields, and a handful of far-travelling comets. But that's not the whole story. Instead, everything orbits the Solar System centre of mass," James O'Donoghue, a planetary scientist at the Japanese space agency, JAXA, recently explained on Twitter. "Even the Sun." That



centre of mass, called the barycenter, is the point of an object at which it can be balanced perfectly, with all its mass distributed evenly on all sides. In our Solar System, that point rarely lines up with the centre of the Sun. To

demonstrate this, O'Donoghue created the animation below, which shows how the Sun, Saturn, and Jupiter play tug-of-war around the barycenter, pulling our star in looping mini-orbits. In his free time, O'Donoghue makes animations to show how the physics of planets, stars, and the speed of light work.

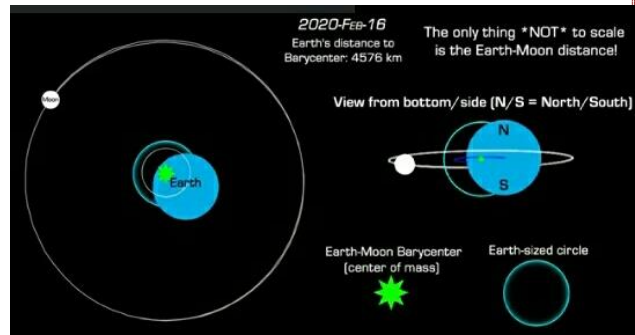
"The natural thinking is that we orbit the Sun's centre, but that very rarely happens," he said.

"It's very rare for the Solar System's centre of mass to align with the Sun's centre."

The Sun's movement is exaggerated in the video above to make it more visible, but our star does circle millions of kilometers around the barycenter – sometimes passing over it, sometimes straying away from it.

Much of that movement comes from Jupiter's gravity. The Sun makes up 99.8 percent of the Solar System's mass, but Jupiter contains most of the remaining 0.2 percent. That mass pulls on the Sun ever so gently.

"The Sun actually orbits Jupiter slightly," O'Donoghue said.



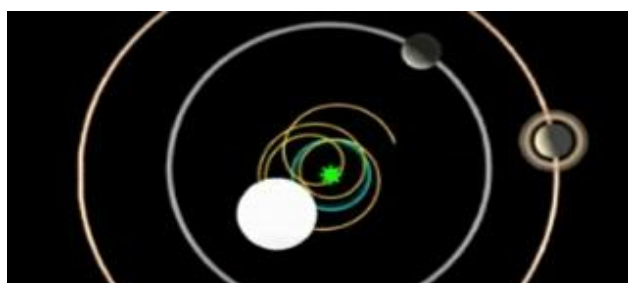
Within the Solar System, planets and their moons have their own barycenter. Earth and the Moon do a simpler dance, with the barycenter remaining inside Earth. O'Donoghue made a video of that, too.

The animation also shows how the Earth and Moon will move over the next three years, in 3D. (The distance between Earth and the Moon is not to



scale.)

Pluto and its moon, Charon, do something similar, but with a unique twist: The barycenter is always outside of Pluto.



So, every planetary system orbits an invisible point, including the star or planet that appears to be at the centre. Barycenters sometimes help astronomers find hidden planets circling other stars, since they can calculate that the system contains mass they can't see.

"The planets do orbit the Sun of course," O'Donoghue said. "We are just being pedantic about the situation."



By,
Leela P M

FROM A GENOMIC PERSPECTIVE WE ARE ALL AFRICANS

Svante Pääbo is a Swedish geneticist and Nobel Laureate who specialises in the field of evolutionary genetics. As one of the founders of paleogenetics, he has worked extensively on the Neanderthal genome. In 1997, he became founding director of the Department of Genetics at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. Since 1999, he has been an honorary professor at Leipzig University; he currently teaches molecular evolutionary biology at the university. He is also an adjunct professor at Okinawa Institute of Science and Technology, Japan. He was able to sequence the genome of Neanderthal, a species of humans that existed on the earth and went extinct around 30,000 years ago. He also



discovered Denisova – a previously-unknown hominin. (Hominins are extinct members of the human lineage).

If modern humans interbreed with Neanderthals and Denisovans and produced children, why did these species become extinct? The likely reason is that the children of the unions between humans and Neanderthals or Denisovans remained with the humans. Over thousands of years, the population

sizes of the hominin species started to shrink, and they became extinct.

Ancient DNA analysis has also taught scientists many lessons about biological evolution in relation to human exposure to pathogens and other factors. Research has shown that Neanderthal DNA contributed to genes of the immune system. When humans came out of Africa into Europe, they encountered new pathogens. Neanderthals had lived with these pathogens for generations, and their immune system genes were adapted to fight them off. When humans and Neanderthals interbred, children who received from Neanderthals the

immune genes with the variants that conferred resistance had a better chance of survival than those who did not. Such resistance variants obtained from Neanderthals have been found among Europeans but not among Africans.

Pääbo was awarded the Nobel Prize this year “for his discoveries concerning the genomes of extinct hominins and human evolution”. Indeed, his discoveries were startling, laid to rest many incorrect theories about human evolution, and provided many deep biological insights into what made us human.



By,
Prajwal Naik S

GREEN COMET

The word comet derives from the Old English cometa from the Latin comēta or comētēs. That, in turn, is a romanization of the Greek κομήτης 'wearing long hair', and the Oxford English Dictionary notes that the term (ἀστὴρ) κομήτης already meant 'long-haired star, comet' in Greek.

A comet is an icy, small Solar System body that, when passing close to the Sun, warms and begins to release



gases, a process that is called outgassing. This produces a visible atmosphere or coma, and sometimes also a tail. These phenomena are due to the effects of solar radiation and the solar wind acting upon the nucleus of

the comet. Comet nuclei range from a few hundred meters to tens of kilometers across and are composed of loose collections of ice, dust, and small rocky particles. The coma may be up to 15 times Earth's diameter, while the tail may stretch beyond one astronomical unit. If sufficiently bright, a comet may be seen from Earth without the aid of a telescope and may subtend an arc of 30° (60 Moons) across the sky. Comets have been observed and recorded since ancient times by many cultures and religions.

What is the 'green comet'?

After approaching the sun in the middle of January, it is now moving away from it, along its own orbit. ZTF's co-principal investigators are Tom Prince and the University of Maryland's Michael Kelley, the facility's comet expert. Kelley told Space.com: "The orbit indicates it comes from the edge of our solar system, a distant reservoir of comets we call the Oort cloud."

The Oort cloud is thought to be a big, spherical region of outer space enveloping our sun, consisting of

innumerable small objects, such as comets and asteroids.

NASA terms it "the most distant region of our solar system" and "Home of the Comets". The Guardian reported that the green comet could be at a distance of 2.5 light minutes from Earth, meaning a "mere" 27 million miles.

When and where can the green comet be seen?

NASA stated that if this one continues its current trend in brightness, it'll be easy to spot with telescopes, binoculars, and in some cases even to the unaided eye under dark skies.

Observers in the Northern Hemisphere will find the comet in the morning sky, as it moves swiftly toward the northwest during January. It'll become visible in the Southern Hemisphere in early February. According to Weather.com, in Indian skies, when looking in the northwest direction, one might spot it 16° above the horizon in the Bootes constellation. But with lights from buildings and streetlights on, it can be difficult to make it out without equipment.

But why is it green in colour?

Comets are frozen rocky or gas-filled objects that are remnants of the formation of the solar system. Due to their composition, characteristics and the path they move in, they tend to leave a light “behind them”. Here, the comet itself is green (called the head of the comet) and emits a whitish light behind it (often called the tail of the comet).

Just like other bodies in space, comets also have orbits. They are sometimes pulled in close to the sun because of the sun’s gravity acting on them. NASA explains that as they orbit near the Sun, “They heat up and spew gases and dust into a glowing head that can be larger than a planet”. The remains of dust following this burning up, from a distance, look like a trail of light to humans on Earth. Comets, therefore, have often been seen giving out blue or whiteish light, or even green.

In this case, the green glow “is thought to arise from the presence of diatomic carbon – pairs of carbon atoms that are bound together – in the head of the comet. The molecule emits

green light when excited by the ultraviolet rays in solar radiation,” The Guardian reported.

Is the green comet rare?

Coming under the category of long-period comets, which take more than 200 years to orbit the Sun, the green comet is not easily spotted. With a highly elliptical orbit, the comet will head back to the Oort cloud and make its next appearance roughly 50,000 years later. But given their orbits, it’s not unique for comets to reappear close to Earth only after many, many years.

Appearing near Earth after nearly 50,000 years, and next estimated to come close to us after as many years, it might be possible to see a recently discovered “green comet” in the next week.

The comet is estimated to come closest to Earth around February 2. Termed the C/2022 E3 (ZTF), the comet was named to refer to those who first spotted it – astronomers using the wide-field survey camera at the Zwicky Transient Facility (ZTF) in the US, in March 2023



By,
Nishchitha N R

SAPTARISHIMANDAL

As a child, I was always fascinated by the night sky full of stars and the constellations. Back then the nights were clear, the skies were pollution-free and I used to spend hours on my terrace just gazing at the sky and thinking if I could ever land up there and play with some of them! My father first introduced me to the constellation called Saptarishi Mandal. The name Saptarshi Mandal is given to the constellation of seven stars as per the Indian Hindu Mythology. This constellation is also known as Ursa Major in Europe and The Big Dipper in the US.

It is believed in Indian Hindu Mythology that each one of these seven stars represents the Greatest Sages of present Manavanatara (cyclic age in Hindu Cosmology). Here is a short introduction to these seven sages of the Saptrishi Mandal:-

1. Atri: Maharishi Atri was one of the Manasputra of Lord Brahma. He was married to Devi Anasuya and was father to Dattatreya, Durvasa, and Chandra. Maharishi Atri is the composer of the 5th Mandala of Rig

Veda. Maharishi Atri's name is mentioned in both the great Indian Epic Ramayana and Mahabharata. When the Kaurava-Pandava war was raging with great fury, many Maharishis went to Drona and advised him to stop the battle. Atri Maharishi was one of them. As per Uttara Ramayana, Atri was among the Maharishis who visited Sri Rama on his return to Ayodhya after the war with Ravana.

2. Bharadwaja: Maharishi Bharadwaja was the son of Sage Bhrispati. Bharadwaja Rishi is known for his immense contribution to Vedas. He was also a well-known physician mentioned in Charaka Samhita - a Sanskrit text on Ayurveda. He is the father of the great Brahmakshatriya Dronacharya - the guru of Pandavas and Kauravas.

3. Gautama: Maharishi Gautama is a Rigvedic sage in Hinduism who also finds a mention in Buddhism and Jainism. Gautama was married to Ahalya whom he later cursed to turn into stone - that's a story for another day!

4. Jamadagni: Maharishi Jamadagni was a descendant of sage Bhrigu. He was born to sage Richika and Satyavati, daughter of Kshatriya king Gaadhi.

5. Kashyapa: As per Valmiki Ramayana, Maharishi Kashyapa was the youngest brother of Marici. Since Marici was one of the spiritual sons of Lord Brahma it implied that Kashyapa was also the son of Lord Brahma.

6. Vishwamitra- Gayatri Mantra, which is one of the most powerful Hindu prayers, was created by Maharishi Vishwamitra. He is also accredited to be the author of the majority portion of the Mandala 5 of the Rig Veda. He was a descendant of Sage Kusha and the son of King Gaadhi.

7. Vashishta- Maharishi Vashishta is the author of the Mandala 7 of the Rig Veda. He is also one of the Manas Putra of Lord Brahma and was said to

be born from the breath of Lord Brahma. The tiny star in the Saptarishi Constellation next to Vashishta is said to be his wife Arundhati.

At the present kali yugaby worshipping the saptarishis, we can get their blessings, and our sufferings also would be reduced to a certain extent. All of the Saptarishis would appear in the form of stars, and they mostly would not be visible to our eyes. But if we keep sincere bhakti on them, then they may be visible to our eyes. Lot of wonderful stories are associated with the Saptarishis, and all these rishis have crossed several hurdles in their life, before becoming Saptarishis. Though it is not possible for us to become like Saptarishis, at least we can get some peace of mind by chanting their names regularly.



By,
Suma K C



By,
Sudha S



Orientation Programme on Vermicomposting plant by the Student Teachers for Thimlapura Villagers



Jal Shakti Abhiyan Catch the Rain 2022 Awareness programme in Internship schools



Interaction Programme
Concept : Environmental Conservation



Student Teachers involved in Seed Sowing Feast

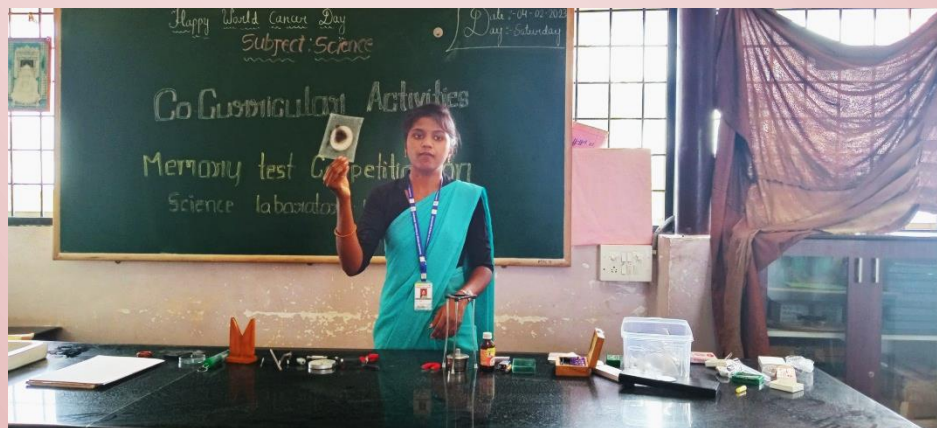


Presentation Session with interaction on eve of World Anti- Tobacco Day



Special Lecturing Programme on the topic AIDS Causes, Effects & Remedies

Science Club Members organised various programmes in Internship Schools





Jatha Programme on
Jal Shakti Abhiyan Catch the Rain – 2022

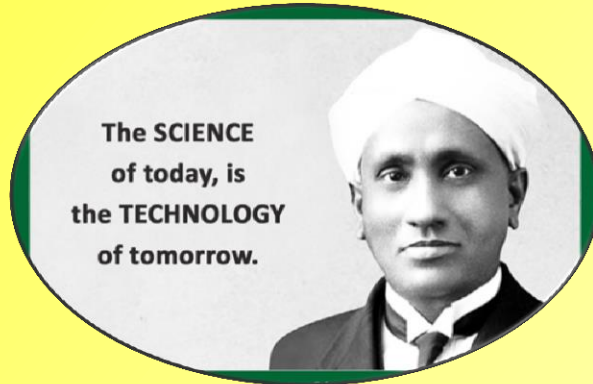


Plantation Programme on eve of World Environment Day



Zero Shadow Day





Swamy Vivekananda Vidya Samsthe (R), Shikaripura

KUMADVATHI COLLEGE OF EDUCATION

Aided, Permanently Affiliated to Kuvempu University, Recognised by NCTE & UGC Act 2(f), Section 12(B) & NAAC Accredited with B Grade (2.70 CGPA)

Shivamogga Road

Shikaripura – 577 427

Shivamogga District

Karnataka State