Hope begins in the dark. The stubborn hope that if you just show up and try to do the right thing, the dawn will come. You wait and watch and work: you don't give up.
- Anne Lamott.

Understanding the call from the Govt
No lessons learnt from lockdown ?

Government has relaxed lockdown to allow livelihood activities. As individuals, we must continue COVID prevention measures like social distancing, wearing face mask and washing hands with soap always. It must be remembered that 80 pc of COVID positive persons had no symptoms. So preventive measures should never be neglected. Please limit outdoor movement only to essential and unavoidable tasks. This was the National Health Mission and Directorate of Health Services, Government of Manipur in some of the leading Imphal based newspapers on May 4 and one may also add this line, Green Zone does not mean that a region cannot become an Orange or even a Red Zone. This is best exemplified by Davangere district in Karnataka which was a Green Zone but reported 21 positive cases of COVID-19 on May 3 and in the process recorded the highest single-day rise amongst all the districts in Karnataka. This should more than say how a Green Zone area can easily go on to become an Orange or a Red Zone and this should be no reason for Manipur, a Green Zone State, to remain lax. Now that the lockdown has been eased, traffic has started to become heavy on the roads of Imphal and in many ways this reminds one of the days before the COVID-19 triggered lockdown from March 25. Day I of the easing of the lockdown was in so many ways reminiscent of the earlier days and traffic personnel were all over the place to regulate the flow of traffic. That nothing has changed in the mindset of the people could be gauged from the fact that it was more like a case of 'me first', resulting in mindless blowing of the horn in some parts of Imphal and traffic snarls in other parts.

Day II was no different with many more rushing out on whatever grounds they may have had. There is a reason why the Government has sounded the call for the people to limit their outdoor movements, but a look at the roads of Imphal after the lockdown restrictions were eased, could have led one to believe that the COVID-19 issue has been settled for good. Unfortunately this is not the case and a look at Davangere district of Karnataka should remind all of the huge possibility of how a region under the Green Zone tag could suddenly become a COVID-19 hotspot. Nobody would want that to happen in Manipur but judging by the manner in which people have been rubbishing the call of the Government to take preventive measures paints an alarming picture. The number of violators pulled up daily and the fines collected from them should tell a significant story. So on Day I of the lockdown being eased, police detained at least 311 persons and collected a total of Rs 67,150 from the violators. The violation was primarily the refusal of the people to wear a face mask when they go out in the public sphere. It was not only on Day I that such a huge number of people were detained, booked and fined but earlier too. A look at the number of people detained, why they were detained and how much was collected as fines should tell the story of a people refusing to acknowledge that the fight against COVID-19 is far from over. This is frightening for this is dangerous for all.

Science News

Weird Science Facts

* The world's fastest land animal was a cheetah called Sarah. At age 11, she ran a staggering 100m in 5,95 seconds. And before you say ''Yeah, but, you know, we got Usain Bolt'', Sarah actually beat him by a few seconds.

* Bird feces are not actually white. The white stuff that you see on your car every morning is actually uric acid (the bird equivalent of urine), a substance which they excrete along with the feces.

* Male giraffes taste the pee of females to determine if they are ready to mate.

* There are certain animals considered to be immortal (lobsters and jellyfish), at least from a biological perspective. While they can and do die, it is always due to injury and diseases, and not from aging.

* There is a Volcano in Guatemala, called Santa Maria, that has been erupting every hour for the last century. No need for an alarm clock in Santa Maria.

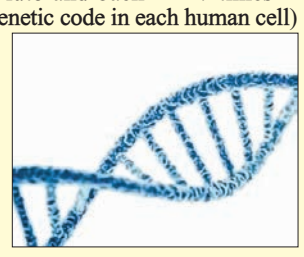
* Weirdly enough, Strawberries and Raspberries are not berries. Even more bafflingly, bananas, pineapples, eggplants and tomatoes are.

* Apples are made of 23 % air, which is what allows them to float.

* Honey can't go bad because it's made up of 80% sugar, which helps inhibit the growth of fungi and bacteria and prevents fermentation. It also has antibacterial properties.

* There is enough DNA in the average person's body to stretch from the Sun to Pluto and back — 17 times

The human genome (the genetic code in each human cell) contains 23 DNA molecules (called chromosomes), each containing from 500,000 to 2.5 million nucleotide pairs. DNA molecules of this size are 1.7 to 8.5 cm long when uncoiled — about 5 cm on average. There are about 37 trillion cells in the human body, so if you were to uncoil all of the DNA encased in each cell and place the molecules end to end, it would sum to a total length of 2×1014 meters — enough for 17 Pluto round-trips (the distance from the sun to Pluto and then back again is 1.2×1013 meters). As an added bonus, you should know that we each share 99% of our DNA with every other human — just to show that we're far more alike than different.



Intergenerational model gives hope even during pandemics

Anjali Sunil, B Sai Sushma, Parv Julania, Pranav Raghuraman, Priya Sahu, K Shree Shantha

"The COVID-19 pandemic is causing untold fear and suffering for older people across the world", said United Nations Secretary General Antonio Guterres last week on the launch of the policy brief on older persons and coronavirus disease (COVID-19). "The fatality rate for older people is higher overall, and for those over 80, it is five times the global average." Beyond its immediate health impact, the pandemic is putting older people at higher risk of poverty, discrimination and isolation. It is likely to have a particularly devastating effect on older people in developing countries, added Guterres.

The World Health Organization (WHO) also declared, "older people are at highest risk from COVID-19, but all must act to prevent community spread." In India, government data shows that although only 19% of confirmed COVID-19 cases were among the elderly, 63% of deaths happened among them.

According to the United Nations Population Fund (UNFPA), population ageing has reached a level where it is having a significant impact on all sectors of the economy. To deliver the UN Sustainable Development Goals (SDGs), governments need to ensure that people of all age groups can live healthy, active and fulfilling lives. We cannot leave the older people behind! The UNFPA adds: "In order to cope with the ageing of the population, it is therefore no longer sufficient to meet the expectations and needs of the older population only, but it requires a more comprehensive approach to address its effects on all population groups." It recommends taking a life cycle approach. Preparing for old age from youth time will be very useful for a better life in old age and reduce the health burdens that may occur if unprepared otherwise. One generation can learn from one another, and aid each other to build stable, healthy and wholesome communities.

Intergenerational approach

In the ongoing Sustainable Development e-Talks (#SDGtalks) series, co-hosted by Indian Institute of Management Indore and CNS, Chu Viet Nga from HelpAge International in Vietnam, shared that any programme aimed at helping the elderly should not merely focus on food and medication. It should be fulfilling in a multitude of ways. One of the critical ways they try to achieve this is through an intergenerational approach, where the focus is on building interaction between different generations, such as children and the elderly. The children train and spend time with the elderly and they, in turn, teach the children traditional arts and skills.

UN Secretary General Antonio Guterres had also underlined this aspect and said: "While physical distancing is crucial, let us not forget we are one community and we all belong to each other. We need improved social support and smarter efforts to reach older people…". He added, "that is vital to older people who may face great suffering and isolation under lockdowns and other restrictions."

That is why the intergenerational approach was developed for older people to help all generations stay supported in these times in Vietnam. The elderly are denied their rights and are neglected even as they face new struggles that accompany new age. Dealing with age-discriminant workplace practices and lack of social support simply add to their woes. This involves a multidimensional approach towards psychological, social and financial support. HelpAge International has adopted and structured various activities around the intergenerational approach to bridge the gap between the generations in an admirable effort.

"When individuals reach old age, the various problems that they have to experience include a decline in health conditions, retirement, financial problems, loneliness and dependence upon others," wrote Dr Radhika Kapur, in her research paper: "Problems of the Aged People in India". Chu Viet Nga rightly pointed out that health support is not the only support that needs to be extended, and that is the gap which this intergenerational model aims to fill. According to Chu Viet Nga, social-psychological care is the first crucial part of the process. It primarily includes befriending lonely people, updating them on the latest information, especially about COVID-19 in the current scenario, and helping accompany them to nearby places. They try to find other ways to provide support by reciting poetry to them and spending more time with them, for example.

The second most crucial part is personal care support which is essential to elders as they grow older and doing mundane tasks, such as cooking and cleaning, becomes difficult for them. HelpAge makes use of its volunteers to pitch in and help them out with cooking food, cleaning the house and surrounding areas and other such tasks. Apart from this, the volunteers also help in the maintenance of personal hygiene such as taking care of nails, hair and bathing.

Thirdly, living support care is quintessential. Living support includes having enough money (through local fundraising), helping them access their pension and helping them out in their gardening and farming. Living support also includes procuring devices such as walking sticks or wheelchairs that will help them live with dignity.

Finally, the important thing in these uncertain times is health. There are regular check-ups for diabetes and hypertension patients as well as informing them about the ways they can/should take care of themselves. In case their health situation deteriorates, referring them to the nearest hospital/medical centre is also an integral responsibility taken up by HelpAge volunteers.

No person, young or old, is expendable

This is a pandemic, that needs not only individual awareness but also a collective awareness and action, and thus there is a lot to learn from this model adopted by HelpAge International. There are particular challenges we, Indians, face as a country. Though we are the second-most populous country in the world, we do not have secure enough public health systems and social security, and this has given us serious setbacks. António Guterres, the UN Secretary-General, pointed out last week that "No person, young or old, is expendable and that older people have the same rights to life and health as everyone else." He also added that, "Difficult decisions around life-saving medical care must respect the human rights and dignity of all." Social isolation, self-quarantine and the fundamental concern for the well-being of others can take us all ahead by significant leaps and bounds. This pandemic serves as a grim reminder that if even a single person amongst us gets struck with the virus, we all are in danger. While we can go ahead and contribute our money for the cause in various relief funds set up all over the country in this time of dire need, we can also do more by taking up the psychological and social approach on a personal level.

As countries move into lockdowns, it not only affects the economy of the country but can also affect the people in the country emotionally and mentally. Especially in increasing feelings such as, a sense of doom, depression, anxiety and loneliness. This is especially prevalent in people living alone. Being in touch with others despite distances is not difficult these days. A simple message, a timely phone call to your grandparents, and sharing a meme on Instagram can go a long way to help people those who have access to these methods for a virtual connection. The lonely student in your class? Your maternal grandmother you have not spoken to in the last few months? Your mom living in a different city alone? They are just a text message away. These small activities not only promote emotional support, but they also play a role in strengthening our bonds, because whether we like it or not, the pandemic is going to change us and our future significantly.

(The authors are students of Indian Institute of Management (IIM) in Indore, India and part of the CNS (Citizen News Service) internship programme)

Giant planets, terrestrial planets and major satellites

Dr HH Mate

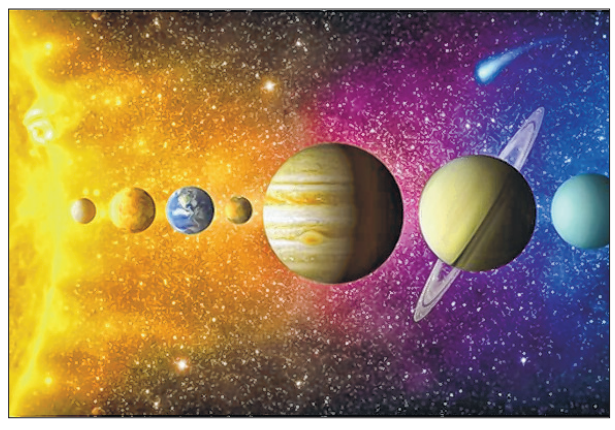
The giant planets are Jupiter, Saturn, Uranus and Neptune. Let me explain about Jupiter and Saturn, Uranus and Neptune, which are the giant planets of the solar systems.

Jupiter : Jupiter, the most massive planet in the solar system, is only about 1/1000 of the mass of the sun. It comes closest in composition to that of the sun itself. If the composition of Jupiter truly matches that of the sun, then it would contain in its total mass the equivalent of about one earth mass of rocky material. However, the best attempts to construct models of the interior of Jupiter indicates the amount of material heavier than hydrogen and helium is significant in excess of that which would be expected for the solar composition. There are probably something like 10 to 20 earth masses of rock and ice in the interior of Jupiter, which is an enrichment of a factor of three to six over the solar composition if the ice-to-rock ratio in the interior of Jupiter is the solar ratio, which is not known. Even this enhanced amount of material amounts to only a few percent of the total mass of Jupiter. The considerable uncertainty in the amount of heavy element enrichment in the Jovian interior results from the uncertainties in the extrapolation of the properties of hydrogen and helium to very high pressures and temperatures such as those found in the interior of Jupiter. It is not even clear whether these heavier materials have settled to the centre of Jupiter, or whether they are suspended in the atmosphere which is being continually mixed throughout the different interior levels of Jupiter due to convective motions.

One of the interesting properties of hydrogen at higher pressures is its tendency to form a conducting metal, metallic hydrogen. Because hydrogen is a simple substance, the physical calculations that lead to the expected transformation from molecular to metallic hydrogen are reasonably certain, but the precise pressure at which this transformation takes place is still quite uncertain. It appears to be somewhat in excess of 10^6 atm or 10^{11} Pascal's. Most of the mass of Jupiter exists at a pressure considerably in excess of this amount, so that metallic hydrogen is anticipated to form a substantial portion of the interior mass of the planet.

Saturn : Saturn has about only one third of the mass of Jupiter, but nevertheless it also is predominantly composed of hydrogen and helium, and in this case it is definitely clearer that there are heavier elements in excess of solar composition within the interior of Saturn. Again, it is not known whether these heavy elements maintain the solar composition ratio between the ices and rocky materials, and the precise amount of enrichment is therefore uncertain, depending upon this ratio. However, the total amount of heavy materials in the interior of Saturn is comparable to the excess amount in Jupiter.

Heat flow and helium segregation : Attempts have been made to construct evolutionary sequence of models of Jupiter and Saturn which would follow the changes in structure that take place as the planets cool off after their formation. The research has suggested that Jupiter should still be radiating away its interior heat of formation at about the rate which is actually observed as an excess heat flow from the interior, whereas the amount of primordial heat still emerging from Saturn is expected to be much less than is observed. The explanation of this discrepancy may lie in another interesting property expected for a mixture of helium and hydrogen at higher pressures. Below some temperature which is still quite uncertain, it is expected that helium will collect to form small bubbles within the hydrogen, these bubbles, being heavier, will then sink through the hydrogen toward the center of the planet. Not only does this lead to a greater mass concentration toward the center of the planet, but it also releases additional gravitational potential energy, thereby



enhancing the heat flow from the interior.

It has been suggested that the interior of Jupiter is still sufficiently hot to have prevented this segregation of helium from hydrogen, whereas the interior of Saturn is sufficiently cooler so that a significant amount of such segregation has and is continuing to occur, thus leading to the observed heat outflow from Saturn.

Uranus and Neptune : Uranus and Neptune are quite similar planets, being 14.5 and 17.2 times the mass of the Earth, respectively. Approximately three quarters of this mass is expected, on the basis of model building, to consist of materials heavier than hydrogen and helium. The precise numbers will depend upon whether these materials are in the solar ratio of ice to rock, which is not known. If one assumes this ratio to be valid, then each of the planets contains approximately four earth masses of rock and approximately twice that much in the form of ices. The remaining hydrogen and helium form a very deep atmosphere.

Physical Compositions : Nowhere in the interiors of the giant planets can anything resembling a solid surface be expected. The temperature in the interiors are very uncertain and be estimated only as the result of model construction, but they tend to be thousands to tens of thousands of degrees celcius. The pressures range upto the order of 10^7 atm and higher. Under these circumstances all material, behave like fluids. There may be a certain amount of compositional stratification, with denser fluids underlying lighter ones.

This issue of stratification is significant in connection with one of the interesting properties of the interior, the transport of gravitational potential energy released in the deep interior to the surface. The thermal conductivity within the interiors of these planets appears to be much too small to do this job efficiently, even in regions of metallic hydrogen. Conduction may be required to transport heat from a layer of one composition to a neighbouring layer of different composition. But within a layer of any given composition, the transport of heat appears to require convection. Convection consists of an irregular pattern of overturning motions within a liquid, similar to that which occurs when one boils water within a pot. It has been argued on this basis that the interiors of the giant planets are primarily engaged in convective motions which transport heat outward.

Terrestrial Planets : The terrestrial planets include Mercury, Venus, Earth and Mars. The Earth's moon may also be considered as terrestrial planet.

Earth : The phototype for the terrestrial planets, and the one about which the most is known, is the earth. The Earth consists of a thin upper crust composed of rocks of relatively low density and low melting points, overlying a much thicker mantle composed predominantly of metallic silicates and oxides, which in turn overlies a substantial core, which is composed of much denser materials, believed predominantly to be iron with other elements, either alloyed or in solution. Most of the core is liquid, but there a smaller inner core which appears once again to be solid, and which probably has some compositional differences relative to the outer core.

On the scale of volatility, the Earth is a very refractory place. Most of the materials in its composition condense at quite high temperatures in a gas of solar composition, usually considerably in excess of 2200°F or 1200°C. Under such circumstances, most of the iron is expected to be metallic, and since metallic iron is so much heavier than other typical rocky material, such as magnesium silicates, it is natural for the metallic iron to collect at the center of the planet. The detailed seismic evidence indicates that the cone of the Earth is not pure iron, but also has some admixture of oxygen, silicon and sulphur. Several percent of the core must also be nickel, which has properties very similar to that of iron.

The overlying mantle is composed of the oxides and silicates of the metals which are more abundant in nature. Many phase changes take place as such material is subjected to increasing pressure, and some of the increasing density with depth in the Earth's mantle is due to such phase changes.

Among the many different mineral phases which are present within the Earth, there is a natural sorting process for those minerals which combine a relatively low melting point with low density. Such minerals melt easily and tend to find their way to the surface of the Earth through such cracks or pores as become available. In this way the crust of the Earth is formed predominantly of such materials through tectonic activity.

One of the major revolutions in thinking in the earth sciences has come with the realization that the Earth is a very dynamic place. The position of the earth's pole has changed dramatically in location with respect to the surface throughout the history of the Earth, and the land masses themselves have drifted about from one part of the surface to another. This continental drift is rendered somewhat easier by the relatively large mass of the Earth and hence the fairly rapid rate with which the temperature increases into the Earth's interior, thereby weakening the materials and allowing them to deform and flow more easily.

Venus : The next most massive planet within the inner solar system is Venus, which has slightly more than four-fifths of the mass of the Earth. Venus has a very thick atmosphere, and the temperature at its surface is very much larger than a typical of the Earth's surface.

The conditions make it very difficult to land spacecraft which can operate for appreciable lengths of time such as would be acquired to obtain seismic signals from the interior of the planet. On these grounds it can only be conjectured that the interior of the planet is probably much like that of the Earth, with a core, a mantle, and a crust.

The pioneer Venus orbiter radar altimeter has found some major structural features on the surface of the planet, suggestive of extensive tectonic activity, but also, to the extent that some of the features are correctly determined to be large craters, indicating that surface weathering processes take place very slowly. The extent to which the crust of Venus is subject to extensive continental drift motions is quite unknown.

to be continued...

(The author is researcher, educationist, sociologist and author of books. He can be reached at drhhmate@gmail.com)

Taking care of the migrant worker population during lockdown

In wake of global Corona pandemic, a nationwide lockdown was announced which resulted in lakhs of migrant workers getting stuck at their places of work, away from their homes. Financial and nutritional support and organizing transport for them to enable them to reach home safely have been the priority of the Central government.

In Manipur, thousands of migrant workers are stranded because of the lockdown. State government is meeting the challenge of providing a large quantity of food grains in every district of the state and to distribute it to the needy. The respective district administrations have already set up various relief measures under PMGKAY and other relief funds. Special efforts are being made by the State Government in lifting and distribution of PDS rice allocated for the month of April, 2020 under Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) scheme and Open Market Sale Scheme (OMSS) for all the districts of State.

The migrant workers were mostly engaged as daily wage earners. They come to Manipur with or without their families to make a living , are temporarily settled in every nook and corner of the state. The administration provided relief materials including rice, dal, salt and cooking oil to the migrant workers in the wake of the COVID-19 lockdown.

The fact that the efforts of the government are bearing fruit is evident in the number of stories that we hear from the ground level. Sukhal Yadav a migrant worker, staying at Kakching, Manipur has got rice free of cost under PMGKY. Fellow migrant worker, Muna Thakur from Bihar, working as a barber and staying at Kakching has also received 5 kg of rice from Ann Yojana and other relief materials from district administration.

Ramji Ram a migrant worker from Bihar, staying at Kakching, Manipur got 10 kg of rice. He is grateful to the Central and state government for the support they have given. Similarly, Arvin Kumar from Bihar works as a labourer and stays at Kakching, Manipur. He said he and his group of friends from Bihar have been stranded and were worried how they were going to cope with the lockdown. But he is grateful to the government for coming to their rescue by providing free food grain and other essential items. Jugindra Ram a migrant worker from Patna Bihar runs a small time business at Kakching and stays there. He has got rice, vegetables, dal and cooking oil.

Sushin is a migrant worker from Bihar and works as a labourer at Kakching bazaar and stays at Kakching, Manipur. After the lockdown he is out of work and was facing great hardship. But the government and local MLA have been a great help to him. He received free rice, cooking oil, vegetables and dal. For this he has given his sincere gratitude to the government.

Umesh also a migrant worker from Bihar living at Kakching says that he feels safe here and hasn't faced any hardship whatsoever. He would like to thank the government for their support and relief they have provided in form of food grain, dal and vegetables.

Yasin Ali works as mason at Senapati district has got 5 kg of free rice twice under PMGKY. Jagat Bista, a migrant worker residing in Senapati district, said he has also got 5 kg of free rice twice. This fight against the virus disease is a responsibility for everyone no matter where we are. And the government has made it possible to be a soldier in the fight with its PMGKY package. The need of the hour is to keep our morale high and determination strong. *PIB*