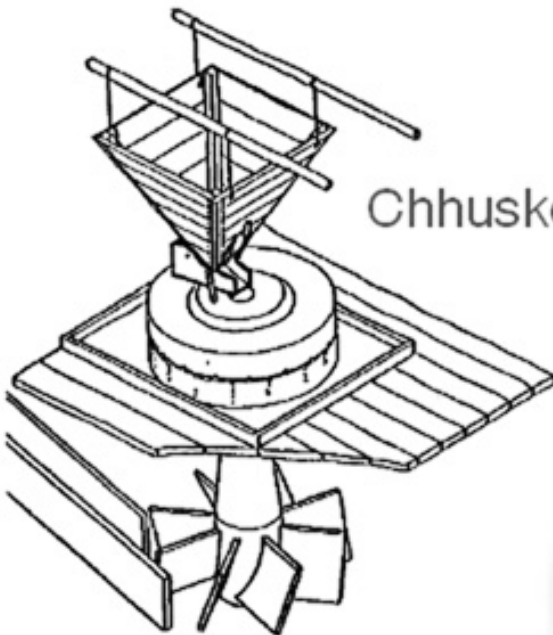


Eureka

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Saur Paush, Sake 1932



Chhuskor

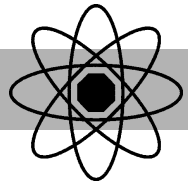


Vikram
Sarabhai



Catalan
Numbers

Expanding your horizon of Science



1. Editorial dialogue
2. Interesting plants of our region
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Dear friends, Greetings to you all!

Jnana Prabodhini has long & enduring relationship with the seven sisters in north eastern part of India. Groups of volunteers regularly visit to interact with people. This science magazine is a part of an effort to keep you all in touch & keep this relationship flourishing forever . Editors of Eureka have taken support from free material available on different websites. We are quite eager to know your response. Even you can contribute your articles for this magazine. Send your feed back / articles on science.eureka@gmail.com.

Vivek Ponkshe

Editorial Dialogue

The debate on construction of dams in Arunachal Pradesh and projects affecting water distribution of Brahmaputra have occupied considerable national discussion since last few months. There are different aspects which are of concern for different people. Some consider dams as an existential threat to their socio-cultural fabric, some have fears of being flooded due to manual tampering with the Brahmaputra waters. Environmentalists are raising the alarm since the dams would be built on a fragile ecological zone prone to frequent earthquakes. Dams can lead to loss of flora and fauna and we may lose a biodiversity hot spot. Also, the issue is of strategic importance as tapping Brahmaputra waters by China cannot be ignored.

The hydro power policy of Arunachal Pradesh however looks at this issue differently. The document states that, "the state provides ideal conditions for development of hydro power projects as most of the major river systems flow in North-South direction and ultimately drain into Brahmaputra. The small rivulets are perennial in nature and therefore provide an ideal condition for developing mini and micro hydel projects."

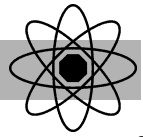
Our Planet Earth has four major spheres- Atmosphere , Hydrosphere , Lithosphere and Biosphere. We obtain the resources for development from these spheres. But each and every activity which takes place on earth requires Energy. Energy is the key for development. The demand for energy is increasing day by day in northeast .We want development in Northeast India, but at the same time we are aware that one of the key factors needed for this development is the availability of energy resources.

Blessed with rich biodiversity, huge hydro-energy potential, oil and gas, coal, limestone, forest wealth, fruits and vegetables, flowers, herbs and aromatic plants, many rare and endemic flora and fauna, NE India has all the potentials for development.

A well-educated and hardworking young population will be at an advantage for IT sector, power, agro-based industries, food processing, hospitality and tourism. In the next 20 years, manpower with technical skills and scientific background will play a vital role in development of Northeast India and "Eureka" is an effort for popularization of science in Northeast India.



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In this section, we will take brief account of some more interesting plant species of North- East India.

The orchids

The orchids are an interesting group of most beautiful plants. They belong to family Orchidaceae which is one of the highly specialized and largest families of flowering plants. Orchids stand apart from rest of the plants because of their own vegetative and floral features. Orchids are known to mankind for last several centuries for beautiful, attractive flowers and as medicinal plants. Orchids have adapted themselves to extreme of the environmental conditions and thus show great variations in vegetative forms. Orchids are renowned for their stunningly beautiful and showy flowers having an immediate appeal to one's aesthetic sense. Flowers are found in an incredible range of sizes, alluring shapes, gorgeous colours and curious ornamentation.

Family Orchidaceae is widely distributed from equator to Arctic circle and from lowland area to almost snowline region. Orchids are herbaceous plants and are capable of growing in nearly every environment of earth's surface and on a variety of substratum like on soil, on tree trunk, on rock surface, growing beneath the surface of substratum and even on dead organic matter.

Biologically orchids are highly specialized and able to grow on a variety of habitats. Following are the main habitats of orchids:



Habenaria grandifloriformis

1. Terrestrial: The term terrestrial referred to ground orchids which grow on soil surface. The terrestrial orchids store reserved food material in swollen, globular, underground organ called rhizomes or tubers to survive unfavorable conditions and drought during summer and winter. The tubers vary in size and shape ranging from round to elliptic. Some of the examples of terrestrial orchids are *Habenaria*, *Malaxis*, *Liparis*.



Terrestrial orchid

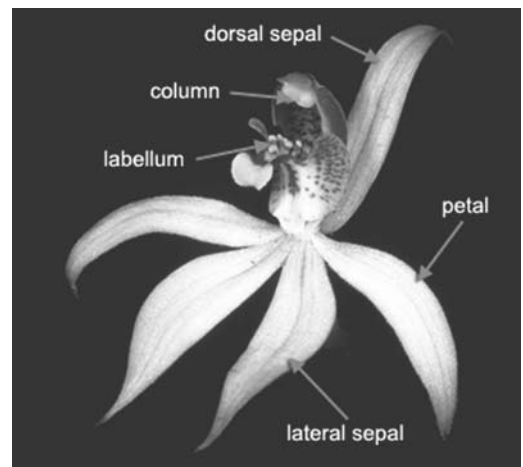
2. Epiphytic: [Epi – upon, phyta – plant]. The majority of orchid species belonging to this group growing on trees but they never draw nutrition from host plant, instead they develop a special kind of aerial roots. These roots are covered with thick sheath of spongy tissue called “Velamen” which can absorb moisture from air. They prepare their food with the help of green leaves through the process of photosynthesis. Examples, *Dendrobium*, *Eria*, *Bulbophyllum*, *Velamen*

The structure of orchid flower and efficiency in carrying out the life processes made them extremely successful. The flower has evolved many complexities for perfecting cross pollination. Orchids are co-evolved with the pollinating agencies living with them. In orchids pollen grains are aggregated in a small pouch like structure called ‘Pollinia’. The aim of these pollinia is fertilizing an exceedingly large number of ovules while avoiding unnecessary wastage of pollens. Pollinia are kept easily accessible and raised position inside the flower on the top of the structure called ‘Column’. The column is formed due to fusion of styles and filaments. The column is unique and characteristic structure of orchid flower. After fertilization orchid produce innumerable dust like seeds inside the fruit. For germination of orchid seeds; they need mutually beneficial fungal association.

An interesting feature of orchid flower is its striking resemblance to various animal forms like bee, butterfly, moth, scorpion, lizard, frog, dove etc. Sometimes they adopt odd postures and attain popular names such as flying duck orchid, soldier orchid, ghost orchid etc. This is the primary introduction of structure of orchid flower. From next issue we will discuss details of these beautiful and lovely orchids.

(References:

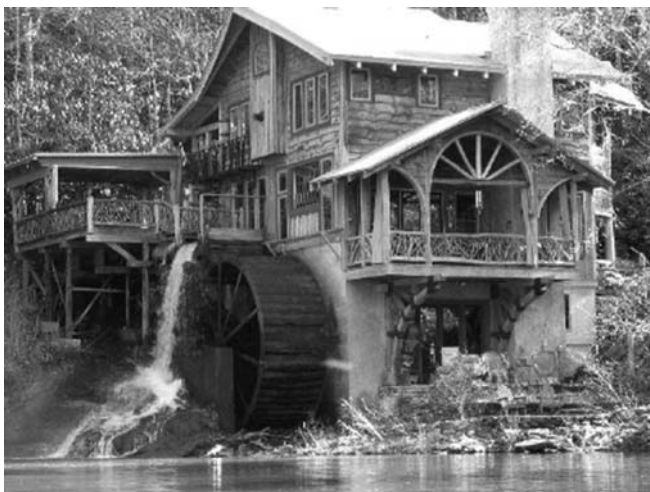
1. Orchids of Orissa, Sarat Misra
2. Orchid flora of Arunachal Pradesh, H.J. Choudhary)



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India's energy demand is increasing rapidly because of its growing economy. And this economy is highly dependent on fossil fuels. Increased energy use is also associated with environmental costs mainly the production of greenhouse gases leading to global warming. There are increasing calls for moving towards renewable energy sources and internalization of social and environmental externalities in energy development.



Hydropower is an indigenous, renewable, economic, non-polluting and environmentally benign source of energy. It is perhaps the oldest renewable energy technique known to the mankind for mechanical energy conversion as well as electricity generation.

Arunachal is famous for the stunning scenery of the Himalayan Mountains, but life in the villages of these mountains and foothills is tough. The difficult terrain limits road access and the journeys often have to be made on foot. In order to process the grain they grow, women and children from farming families often have to carry heavy loads long distances to the nearest water mill and wait hours whilst the grain is slowly ground into flour. For

centuries, these farming communities have relied on traditional water mills to process their grain.

According to rough estimates there are nearly 500,000 water mills in the entire Himalayan region from the North Eastern states to Jammu and Kashmir. Arunachal has more than 50,000 water mills. These water mills or Gharats are of the vertical shaft type, and are used essentially for grinding wheat, rice and maize and also to extract oil. In the absence of appropriate technology, water mills were never used for any purpose other than grinding. Water mills popularly known as 'Chhuskor' have been playing a vital role in the day-to-day life of people of Tawang region for the last several decades. There are about 3 Chhuskors per village in Tawang region.

Chhuskor Dekpa is maintaining the Chhuskor and he has to keep watch on it. He gets his wages in terms of Flour. The quantity of flour depends on the number of hours taken for grinding. The system of Offering in kind is not mandatory, still out of love & affection people used to give generously to the Chhuskor Dekpa.

CONSTRUCTION AND WORKING OF CHHUSKOR:

The traditional Chhuskor will have source of water as the diversion of a stream or river through simple construction of stones or brush wood weirs. Stone channel is extended and led towards Chhuskor through a wooden chute.

The upper wheel of the Chhuskor is called as 'Khakhep' & the lower wheel is called as 'Makhep'. Makhep is stationary while Khakhep is rotating with the shaft.

The gap between Khakhep & Makhep is adjusted to make fineness of the flour with the help of wooden hammer -Laktong.

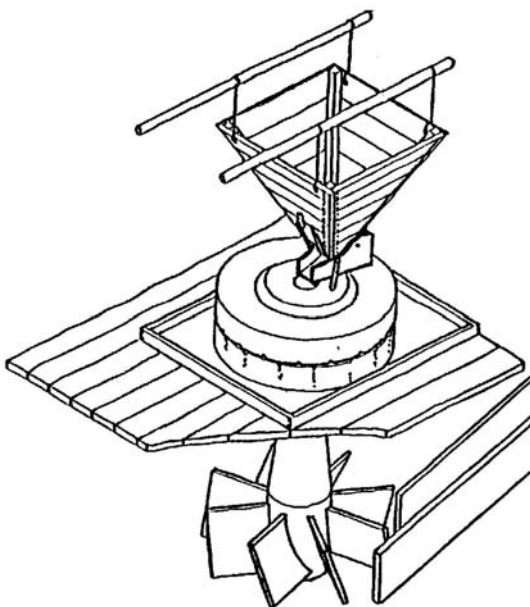
The whole unit is placed in a wooden pot - Zongpu & placed on floor. The wooden pot is adjustable with wooden wedges & the gap is maintained by hammering on wedge. The Chhuskor always rotates in anticlockwise direction whereas Mani rotates in clockwise direction.

The power output ranges from 0.2 kW to 0.5 kW and the grinding capacity ranges from 5-10 kgs maize per hour.

Upgraded water mill generates enough electricity to light home appliances along with grinding grains. Electricity generated from Chhuskors is enough to run TV, refrigerator, cooler, fans and light bulbs.

ADVANTAGES OF CHHUSKOR:

- ⇒ The eco friendly water mills could easily generate enough power for a village unit. When the entire region was in the grip of floods and houses were in darkness, the only lights were from the water mills.
- ⇒ The Chhuskar is situated on an isolated area mainly nala or stream, so there is no problem of noise pollution or hazards to nearby villagers.



⇒ The tailrace water adds to the stream flow of Chhuskar thus enhancing the irrigation capacity for farming.

⇒ No necessity of skilled labour. Usually the Chhuskors are run by an old age or weak persons even handicaps also.

⇒ Maintenance cost is almost zero.

⇒ Installation Cost is very less.

⇒ Indigenous spare parts.

DISADVANTAGES OF CHHUSKOR:

⇒ One person is always engaged to take care of Chhuskor.

⇒ Time required for grinding is much greater as compared to Modern Flour Mills.

⇒ Sometimes there will not be easy accessible roads towards the mill site.

⇒ Suitable sites are required to set up the Chhuskors which all villages don't have.

APPLICATIONS:

A variety of rural appliances which require mechanical/electrical power can be driven using this small micro hydel. Some of the important appliances are:

⇒ For drifting water from canals, wells and rivers for irrigation purpose

⇒ Electric generator

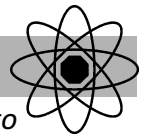
⇒ Floor Mills (Atta Chakki, threshing, oil expelling, etc.)

⇒ Machine tools (Lathe, Drilling machine, etc.)

⇒ For preparing paste of spruce for incense stick.

Studies conducted at different levels reveal that the 500,000 water mills dotting the entire Himalayan region can produce as much as 2500mW of power, assuming each generates 5kW. That is a cash generation of Rs.1200 million per hour! Not only this: it can give employment to 1,500,000 people.

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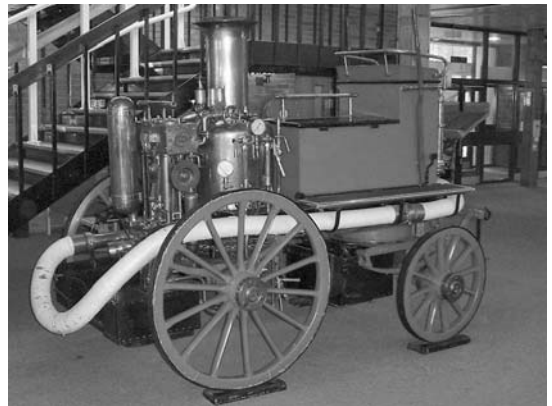


In modern period human lives become more comfortable & faster due to various inventions. Let's understand origin of some of them.

Steam Engine

A steam engine is a heat engine that performs mechanical work using steam as its working fluid. The idea of using boiling water to produce mechanical motion has a long history, going back about 2,000 years. Early devices were not practical power producers, but more advanced designs producing usable power have become a major source of mechanical power over the last 300 years, which enabled the industrial revolution, beginning with applications for mine water removal using vacuum engines. Subsequent developments using pressurized steam and converting to rotational motion enabled the powering of a wide range of manufacturing machinery anywhere water and coal or wood fuel could be obtained. This power source would later be applied to prime movers, mobile devices such as steam tractors and railway locomotives. Modern steam turbines generate about 80 percent of the electric power in the world using a variety of heat sources.

Steam engines are typically external combustion engines. In general usage, the term 'steam engine' can refer to integrated steam plants such as railway steam locomotives and portable engines.

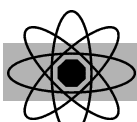


The history of the steam engine stretches back as far as the first century AD. The first recorded rudimentary steam engine being the aeolipile described by Hero of Alexandria. In the following centuries, the few engines known about were essentially experimental devices used by inventors to demonstrate the properties of steam. James Watt developed (1763-75) an improved version of engine, with a separate condenser, which used 75% less coal hence much cheaper to run. This was powered by the vacuum generated by condensing steam instead of the pressure of expanding steam. Cylinders had to be large, as the only usable force acting on them was atmospheric pressure. Steam was only used to compensate for the atmosphere allowing the piston to move back to its starting position.



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Another simple and amazing toy which demonstrates the concept of centrifugal force, is centrifugal pump. Make a pump out of a straw and a skewer and soak all your friends!!! Here are the steps to do it:

Centrifugal pump and Sudarshan Chakra



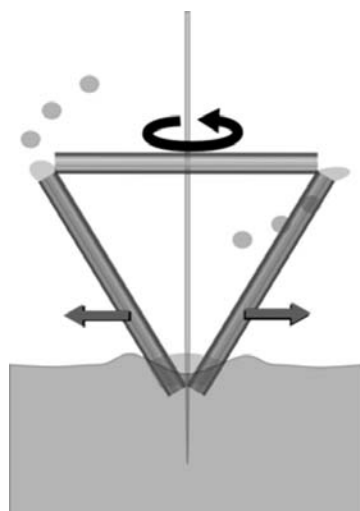
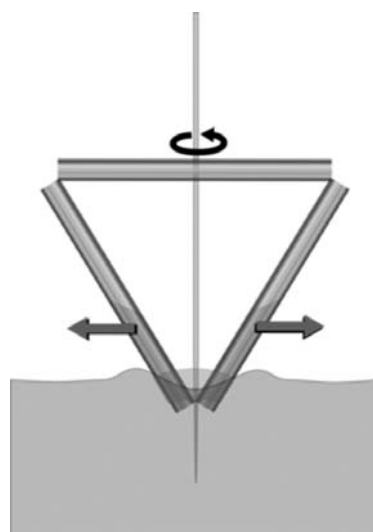
1. Half cut the straw a third and two thirds of the way along its length.
2. Push a wooden skewer through the centre of the straw.
3. Bend the two ends of the straw together and tape them to the skewer. (Take care that the two open ends of the straw will not get covered by the tape.)
4. Place the pointy end of the straw into some water and spin it about the skewer.

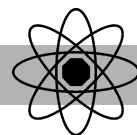
What is going on?

When you spin the straw it forces the water inside to spin. If an object is spinning anything on that object appears to feel a force pushing it outward. This pseudo-force (Pseudo - Non real) is called centrifugal force. This means that in your straw the water is pushed outward and the only way it can move outward is to move up the straw - it is pumped upwards. If you spin the straw fast enough then water will exit the straw and fly outwards as it is now moving quite fast. As the straw is spun centrifugal force pushes the liquid outwards, and the only way it can move outward is to rise. Eventually the water rises above the end of the straw and the water escapes. An object traveling in a circle behaves as if it is experiencing an outward force. This force, known as the **centrifugal force**. It depends on the mass of the object, the speed of rotation, and the distance from the center.

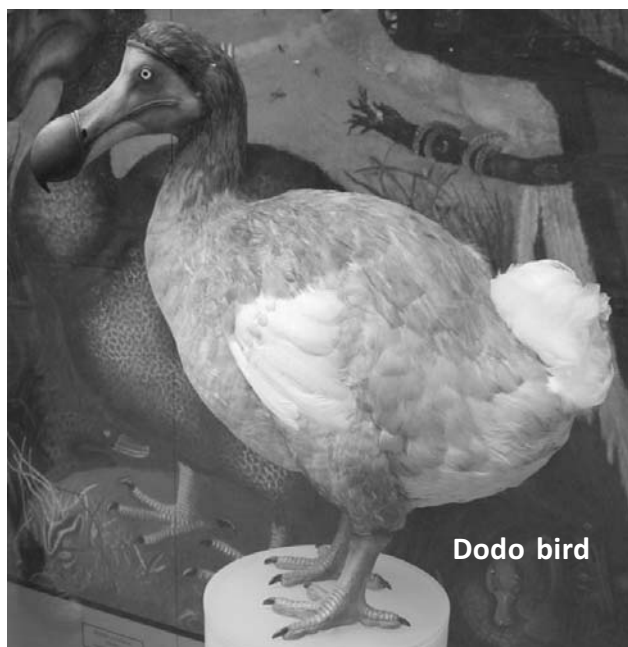
Centripetal force is a force pulling an object toward the center of a circular path as the object goes around the circle. An object can travel in a circle only if there is a centripetal force on it. centripetal force accelerates a particle in such a way that it moves along a circular path.

(Continued on page No. 9)





Plant - Animal Interaction 2



Dodo bird

Way back in the 17th century, a magnificent, flightless bird called 'Dodo' roamed about on the land in the Indian Ocean and Mauritius. But the tragedy of this bird was that it became extinct, and it is speculated that man had a key role to play in its extinction, the way it happened with our Cheetah. Dodo loved to eat the fruits of a plant called *Sideroxylon grandiflorum* (popularly known as 'dodo tree'). It was believed until recently that for the germination of seeds of 'dodo tree', the seeds have to pass through the digestive tract of dodo bird. So as you would imagine, when dodo became extinct,

many researchers thought that dodo tree will soon become extinct too as the seeds may no longer be able to germinate. Though research later on indicated that dodo tree can survive without dodo (though its population size may have decreased), but this dodo tragedy must have thrown light on your understanding of an important aspect of plant-animal interactions.

Like dodo, do birds that we see commonly around us also have favourite food choices? And can these in turn influence the distribution of the birds? The following activity will help you understand the food choices of birds.

What will you need: a handful (each) of three types of grains (do not mix the different types of grains) eg. rice, wheat. Let us call them G 1, G 2 and G 3.

Note: You can use a variety of grains which are available in your market, and can use more than three grain types too. Also, you can use a combination of grains and fruits too.

Activity:

Now go out in the courtyard of your house or school. Carefully place G1, G2 and G3 on the mud. The grains should be kept at such a distance from where you can clearly see the animal feeding on them but the animal cannot see you (your secret place). You can also add your own imagination and creativity –whether you want to spread out the grains or place them like a heap. Or perhaps keep few grains near water or at some height. These are just a few examples. You can add a lot to the list.

Now sit in your secret place for 1 hour in the morning and 1 hour in the evening (keeping the time & duration constant for all three days), and observe which bird feeds on which type of grain. eg. Does sparrow eat only rice or wheat or bajra? Or it eats all the three types of grains? You will be able to answer these questions by doing this activity.

Observations to be taken:

Species and number of each species of birds observed feeding on the grain eg.
10 Pigeons, 5 sparrows

	Day 1		Day 2		Day 3	
	Morning	Evening	Morning	Evening	Morning	Evening
Grain 1						
Grain 2						
Grain 3						



Seeds of *Sideroxylon grandiflorum*

This activity concentrates on graminivores (grain eating birds) but you can repeat this activity by using fruits instead of grains to understand food choices of frugivores (fruits eating birds). Studies on food preferences of birds is very important for their conservation- you never know, by protecting their food plants, you may actually be conserving the bird itself.

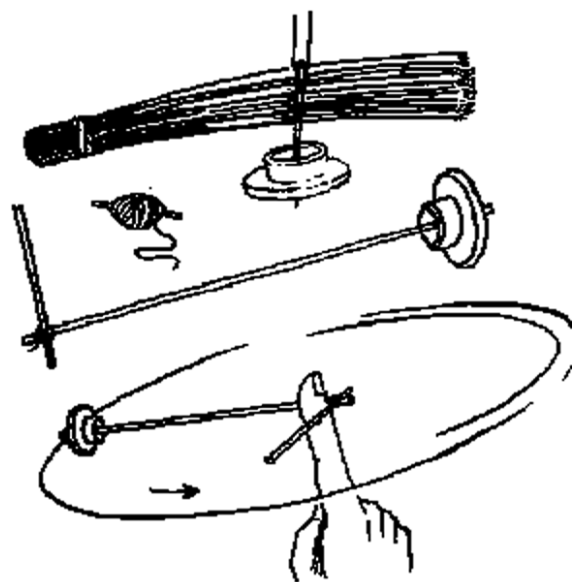
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Here is one more toy !

Cut two sticks from a broomstick - one long 15 cm and the other short 6-cm. Tie the sticks tightly with a string as shown in the drawing. Poke a hole in the rubber cap of an injection bottle, or else, in the eraser from your geometry box. Insert the rubber cap in the long broomstick. Now place the joint of the sticks on your right hand index finger and rotate the assembly as shown. You will be surprised to see that the sticks rotate around your finger like a *Sudarshan Chakra* without falling. As a matter of fact, the faster you rotate the sticks, the more stable and balanced is the assembly.

This simple toy will give children a good feel for Centrifugal and Centripetal force.

Sudarshan Chakra



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Hi friends, in this section, we are looking at various aspects of Maths. Hoping that you have worked on the last exercises and enjoyed them....

Catalan numbers

We look at various different problems in this article.

1. Mountain ranges: Suppose you have n pairs of upstrokes (/) and downstrokes (\) and you would like to form mountain ranges of them. How many 'mountain ranges' can you form so that all stays above the base line? The mountain range means that the mountains will never go below the horizon. In Table 1, we can see all the possibilities for $0 \leq n \leq 3$.

$n = 0$:	*	1 way
$n = 1$:	\wedge	1 way
$n = 2$:	$\wedge\wedge, / \wedge$	2 ways
$n = 3$:	$\wedge\wedge\wedge, \wedge\wedge \wedge, / \wedge\wedge, / \wedge\wedge \wedge, / \wedge \wedge \wedge$	5 ways

Table 1

Note that for $n=0$, we don't have any many mountain range and hence it is considered as exact one possibility. Also it is a good exercise to draw the 14 mountain ranges with $n=4$.

2. Diagonal-Avoiding Paths: Let's now take a grid of $n \times n$ squares. How many paths can we have which are of length $2n$ starting from the upper left corner and ending at the lower right corner and will not touch the diagonal (i.e. the line from upper left corner to lower right corner)? In other words, how many paths stay on or above the main diagonal?

One can easily see that this is the same question as above with mountain ranges running on diagonal as the base line. One such path will correspond to a mountain range as shown in Figure 1.

3. Polygon triangulation: Now let's consider a regular polygon with $n+2$ sides. In how many ways can we triangulate this polygon? Triangulation means we cut the polygon

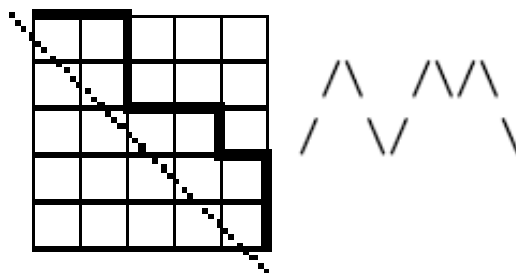


Figure 1

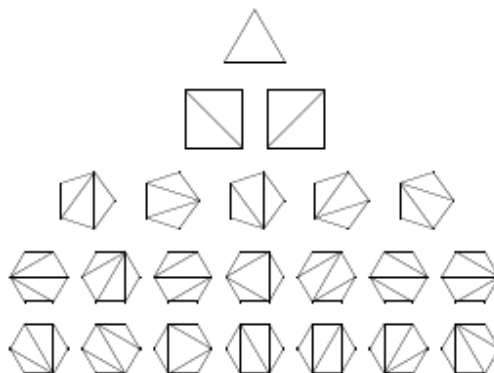


Figure 2

into triangles by joining some of the vertices with straight lines. Figure 2 illustrates the triangulations for polygons having 3, 4, 5 and 6 sides.

As you can see, there are 1, 2, 5, and 14 ways to do this. The “2-sided polygon” can also be triangulated in exactly 1 way, i.e. the case where $n = 0$ also matches.

4. Shake hands: Let there are $2n$ people seated across a round table. They shake their hands with each other at the table such that none of the arms cross each other. In how

many ways this can be done? Figure 3 illustrates the arrangements for 2, 4, 6 and 8 people. Again, there are 1, 2, 5 and 14 ways to do this.

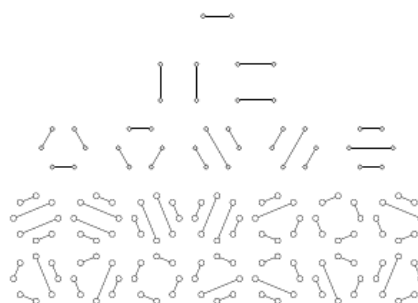


Figure 3

5. Multiplication Orderings: Suppose you have to multiply $n + 1$ numbers, that is you will have to perform n consecutive multiplications. Without changing the order of the

$n = 0$	(a)	1 way
$n = 1$	$(a \cdot b)$	1 way
$n = 2$	$((a \cdot b) \cdot c), (a \cdot (b \cdot c))$	2 ways
$n = 3$	$((((a \cdot b) \cdot c) \cdot d), ((a \cdot b) \cdot (c \cdot d)), ((a \cdot (b \cdot c)) \cdot d), (a \cdot ((b \cdot c) \cdot d)), (a \cdot (b \cdot (c \cdot d))))$	5 ways
$n = 4$	$(((((a \cdot b) \cdot c) \cdot d) \cdot e), (((a \cdot b) \cdot c) \cdot (d \cdot e)), (((a \cdot b) \cdot (c \cdot d)) \cdot e), ((a \cdot b) \cdot ((c \cdot d) \cdot e)), ((a \cdot b) \cdot (c \cdot (d \cdot e))), (((a \cdot (b \cdot c)) \cdot d) \cdot e), ((a \cdot (b \cdot c)) \cdot (d \cdot e)), ((a \cdot ((b \cdot c) \cdot d)) \cdot e), (a \cdot (((b \cdot c) \cdot d) \cdot e)), (a \cdot ((b \cdot c) \cdot (d \cdot e))), (a \cdot ((b \cdot (c \cdot d)) \cdot e)), (a \cdot (b \cdot ((c \cdot d) \cdot e))), (a \cdot (b \cdot (c \cdot (d \cdot e))))$	14 ways

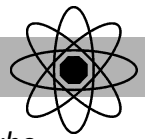
Table 2

numbers themselves, you can multiply the numbers in many orders by putting various brackets. The all possible multiplication orderings for $0 \leq n \leq 4$ are shown in Table 2. There are many such problems which initially appear to be completely different. But they can be shown to be completely equivalent. We have seen that the answers to all the above problems are equal. The solution to each problem is the same sequence of numbers called the Catalan numbers. There are many such special numbers in combinatorics which are related to day to day life problems. We can derive relationships and explicit formulas for the Catalan numbers in many different ways. The Catalan sequence was first described in the 18th century by Leonhard Euler, who was interested in the number of different ways of dividing a polygon into triangles. The sequence is named after the Belgian mathematician Eugène Charles Catalan (1814–1894). The first few Catalan numbers for $n = 0, 1, 2, 3, \dots$ are 1, 1, 2, 5, 14, 42, 132, 429, 1430, 4862, 16796, 58786, 208012, 742900, 2674440, 9694845, 35357670, 129644790.....

One really can enjoy writing down all the possibilities for given n say 4 or 5 in the problems listed above.

Give a try!

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Revolution is not an apple which can fall with ease of gravity!! Scientists, who made the change in the past, also faced hurdles but successfully achieved their goals

Vikram Sarabhai

Vikram Ambalal sarabhai founded the Space Science Research Institute, and the Indian Space Research Organization (ISRO). In 1962, Sarabhai organized space research as chairman of Indian National Committee for Space Research (INCOSPAR). He set up the Thumba Equatorial Rocket Launching Station and began manufacturing sounding rockets in India. Vikram Sarabhai passed away in 1971, and then Vikram Sarabhai Space Center (VSSC) is named after him. On space research he said "There are some who question the relevance of space activities in a developing nation. To us, there is no ambiguity of the purpose. We are convinced that if we are to play a meaningful role nationally, and in the community of nations, we must be second to none in the application of advanced technologies to the real problems of man and society."

Vikram Sarabhai was born on 12 August 1919 in Ahmadabad. His father Ambalal Sarabhai was an affluent industrialist and owned many mills. Vikram sarabhai received the Tripos in Natural Sciences from Cambridge in 1940. Dr. Sarabhai returned to India and joined the Indian Institute of Science in Bangalore and began his research in cosmic rays under the guidance of Sir C. V. Raman.

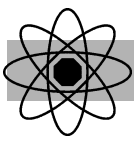
Dr. Homi Jehangir Bhabha, widely regarded as the father of India's nuclear science program, supported Dr. Sarabhai in setting up the first rocket launching station in India. This center was established at Thumba, primarily because of its proximity to the equator. After a remarkable efforts



in setting up the infrastructure, personnel, communication links, and launch pads, the inaugural flight was launched on November 21, 1963 with a sodium vapour payload.

As a result of Dr. Sarabhai's dialogue with NASA in 1966, the Satellite Instructional Television Experiment (SITE) was launched during July 1975 - July 1976 to transmit education to remote villages across India. Dr. Sarabhai established many institutes which are of international repute. Most notable among them; are IIMs (Indian Institute Of Management) which are considered to be the best for their management studies. He received Padma Vibhushan, posthumous in 1972.

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Road To The Future



Electronic Book Reader

Hi friends. I hope you are enjoying the journey of technical world. As you revealed different stations on this journey like DTH, Wi-Fi, Mobile, CD & 3G technology; this time we have arrived at very interesting station called 'Electronic Book Reader'! Interesting huh? You carries your school bags daily while going to school, but what will happened if a single small size device will carry all your classroom notes, homework's & your books! Yes...that's what the electronic book reader actually does. How? Let's see...



What is it?

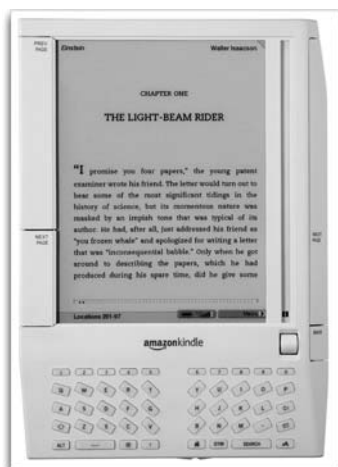
The device is basically design to display digital version of written material from books, magazines, newspapers and other printed sources. Some e-readers also provide access to internet documents like blogs, websites, news feeds etc. Most e-readers offer black-and-white resizable text and they allow users to store a library of titles in a single device, make annotations and highlight the text. Where you can manually add, edit and delete the data saved in the inbuilt memory of your Electronic Book Reader. There are several companies providing different types of e-book readers such as Amazon's 'Kindle', Sony's 'Reader series', the 'Nook' by Barnes & Noble and multiuse devices like the 'EDGE e-book reader' by entourage, the 'QUE' proofreader from Plastic Logic, and the 'iPad' from Apple.

How does it work?

An electronic book reader presents electronic version of text with the help of a display technology designed to reproduce printed papers. It's just like the message box of your mobile where you can read you messages. It has its inbuilt memory which depends upon the model. You can load the text data on your e-readers through wired or wireless connections. The source may be your local computer or online store or a publisher's website. The upcoming technology of e-readers also provides some interesting features like 3G, Wi-Fi, audio tracks, interactive content and color displays.

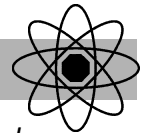
Implications for education

As I know that studying is your favorite hobby! But still, the e-book reader makes your study more easy and why not, less heavy! Only one small device like e-book reader could compact your study books and provide interesting functions like pronunciation glossaries, animated flash-cards, collaborative annotation, and embedded videos. Tablet-style readers could actually change the classroom interactions as an in-structor, communicating with a classroom full of students equipped with e-readers, selects interactive maps, charts, and graphs from the web to elaborate lecture points.



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There was a time when the Internet was used only to get informational. Today, users expect websites to provide a two-way conversation and web logs (or blogs) were born. In the series of Internet: The Virtual World this time we will understand what a blog is.

BLOG

What is a “blog”?

“Blog” is an abbreviated version of “weblog,” which is a term used to describe web sites that maintain an ongoing chronicle of information.

A blog features diary-type commentary and links to articles on other Web sites, usually presented as a list of entries in reverse chronological order.



Blogs range from the personal to the political, and can focus on one narrow subject or a whole range of subjects. Many blogs focus on a particular topic, such as web design, home staging, sports, or mobile technology. Some are more eclectic, presenting links to all types of other sites. And others are more like personal journals, presenting the author’s daily life and thoughts.

Generally speaking, blogs tend to have a few things in common:

A main content area with articles listed chronologically, newest on top. Often, the articles are organized into categories.

An archive of older articles and space for others to leave comments.

A list of links to other related sites, sometimes called a Blogroll*.

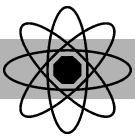
Things Bloggers Need to Know

A lot of blogs feature an **archive** based on dates (like a monthly or yearly archive). The front page of a blog may feature a calendar of dates linked to daily archives. Archives can also be based on categories featuring all the articles related to a specific category.

Feed is a function of special software that allows “Feedreaders” to access a site automatically looking for new content and then post updates about that new content to another site.

Blogroll is a list, sometimes categorized, of links to webpage’s the author of a blog finds worthwhile or interesting. The links in a blogroll are usually to other blogs with similar interests.

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Save Me

Friends, in this article we will be going through various species which are facing vanishing threat.

Hoolock Gibbon

The **hoolock gibbons** are the second largest of the gibbons, after the Siamang. The sexes are about the same size, but they differ considerably in coloration: males are black colored with remarkable white brows, while females have a grey-brown fur, which is darker at the chest and neck. White rings around the eyes and around the mouth give their face a mask-like appearance.



Diet : Hoolock gibbon is frugivorous. Mainly figs comprises the majority of its diet, which also includes leaves, flowers, buds and a small amount of insects and spiders, eggs, small vertebrates.

Scientific Name : Hoolock hoolock

Type: Mammal **Diet:** Omnivores

Size: 46 - 63 cm (18 - 25").

Weight: female 6.0 - 6.6 kg (13.2 - 14.5 lb)
male 6.1 - 7.9 kg (13.4 - 17.4 lb)

Protection status (IUCN): Endangered

Estimated Population : less than 5000

Habitat & Distribution : The hoolock gibbon is found in tropical evergreen rainforest, semi-evergreen, tropical mixed deciduous, and sub-tropical broadleaf hill forest up to 1400 m. It prefers the closed canopy/three-tiered forest vegetation. The hoolock gibbon was formerly widespread from eastern India, through Bangladesh to China and south to the Irrawaddy River in Myanmar. Currently it is thought to occur south and east of the Brahmaputra River in Assam (India), Bangladesh, Southern China and Myanmar.

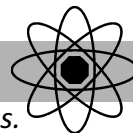
Behavior : The hoolock gibbon sleeps in a sitting posture, with its head buried between its knees. During the hot hours of the day it retires to the lower, more shady trees, where it rests in silence. The hoolock gibbon moves either by leaping or jumping. There are deep social bonds between group members. Mother-infant interactions are common. A hoolock gibbon family group maintains a definite territory, which is defended by loud and frequent territorial songs. The territory of a group usually ranges between 15 - 35 hectares.

Threats & Conservation: The hoolock gibbon has declined mainly & currently threatened by continued habitat loss and fragmentation through shifting cultivation and logging, habitat encroachment by humans, forest clearance for tea cultivation, the practice of jhuming (slash-and-burn cultivation), hunting for food and "medicine", capture for trade. Over the last 30-40 years, Hoolock gibbon numbers are estimated to have dropped from more than 100,000 (Assam alone was estimated to have around 80,000 in the early 1970s) to less than 5,000 individuals (a decline of more than 90%). It is considered to be one of the 25 most endangered primates in world.

It is evaluated as **Endangered** species on the IUCN Red List.

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S(c)quiz Your Brains....!!!



Solve this science quiz. Send your answers to Janana Prabodhini's address.

.....The interesting prize is awaiting you.....!!

Waste management

- Non- Biodegradable waste is?
 - Waste that can be broken down by microbial activities of fungi and bacteria.
 - Human waste, manure waste, sewage and waste from slaughterhouse.
 - Plastic, metal, glass, aluminum, thermocol, nylon, rayon, electronic waste.
 - Degradable and bio degradable waste.
- E- waste is waste generated from?
 - Discarded, surplus, broken, electrical or electronic devices.
 - Solid waste generated due to domestic activities.
 - Chemical fertilizers and pesticides to protect crops from pests.
- Residues generated from the combustion of Coal are?
 - Pesticides and dyes
 - Fly Ash
 - Mercury
- Which metal was responsible for the fatal brain disease that affected people consuming fish caught from the Minamata Bay in Japan?
 - Lead
 - Mercury
 - Iron
- What is incineration?
 - Disposal method that involves combustion of waste material.
 - Biological processing of organic material.
 - Transportation and movement of waste from one location to another.
- Municipal waste is?
 - Gaseous waste from thermal power plant
 - Waste generated in local government area.
 - International Convention on control of transboundary movement of Hazardous Waste and disposal signed in the year 1992?
 - Basel Convention
 - Vienna Convention
 - UN Framework Convention on Climate change
 - A Gas is released on decomposition of accumulated waste which can become highly explosive if not managed properly?
 - Oxygen
 - Methane
 - Nitrous oxide
 - Increase in the concentration of chemical nutrients in an ecosystem to an extent that increases the primary productivity of the ecosystem, is known as?
 - Biomagnification
 - Eutrophication
 - Acidification
 - Waste sanitizing is?
 - Making the waste free of smell, flies, smoke and fires and reducing the leachates.
 - To control the spread of germ and infection in human beings.
 - Disposal of human excreta and fasses.

Nivedita Kulkarni

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- | | | |
|------|---|-------|
| 1) b | Answers to
the quiz of
November
2010 | 6) b |
| 2) a | | 7) b |
| 3) b | | 8) c |
| 4) a | | 9) a |
| 5) b | | 10) b |

Story of Chemistry...

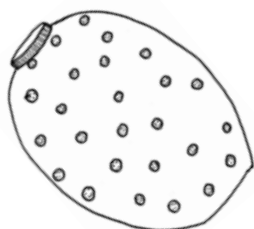
Hey what's up friends? R u enjoying the tour? Hope u r... :) This time we r gone meet famous chemist. Can u Guess the name ...hmm let me give the clue..Gas law-ideal gas... Yes u r right he is **Robert Boyle!**
The father of modern chemistry!



"Aaargh! Let me out! I can't take the pressure in here anymore!"



Irish-born **Robert Boyle** (1627 – 1691) was an amateur investigator working in England. Based on his experimental work he enunciated the inverse relationship of pressure and volume of gases.

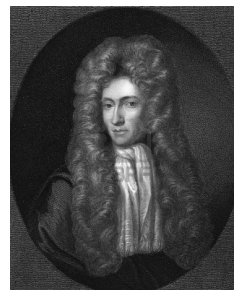


Boyle said, "**Corpuscles – small, solid, physically indivisible particles are the building blocks of nature. Corpuscles are associated into larger groups through**

a number of chemical reactions. These groups act as units and the size, shape and motion of these units give substances their properties."

Democritus's idea of atoms was back. Boyle however did not use the word, rather choosing to use corpuscles. Boyle attempted to present a mechanical picture of chemical reactions, doing away with the idea of forms and qualities of Aristotle.

I am not ambitious to appear a man of letters: I could be content the world should think I had scarce looked upon any other book than that of nature. -Robert Boyle



Robert Boyle

Paper Boats

Day by day I float my paper boats
one by one down the running stream.
In bid black letters I write my name on them
and the name of the village where I live.
I hope that someone in some strange land will find them
and know who I am.
I load my little boats with shiuli flower from our garden,
and hope that these blooms of the dawn
will be carried safely to land in the night.
I launch my paper boats and look up into the sky
and see the little clouds setting thee white bulging sails.
I know not what playmate of mine in the sky
sends them down the air to race with my boats!
When night comes I bury my face in my arms
and dream that my paper boats float on
and on under the midnight stars.
The fairies of sleep are sailing in them
and the lading ins their baskets full of dreams.

Rabindranath Tagore

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