

# XTRONICS

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# **Scientist of the MONTH**

## **T. V. Raman**

T. V. Raman is a blind computer scientist. His accessibility research interests are primarily auditory user interfaces and structured electronic documents. He has worked on speech interaction and markup technologies in the context of the World Wide Web at Digital's Cambridge Research Lab (CRL), Adobe Systems and IBM Research. He presently works at Google Research. He was born in Lahore, Pakistan and raised in Pune, India.

Raman became blind at the age of 14 due to glaucoma, being previously partially sighted and able to see with his left eye. To deal with his blindness he had his brother, his mentors, and his aide read out textbooks and problems to him. Although unable to see, he was able to solve Rubik's Cube with a Braille version, write computer programs, and perform mathematics. Some of his works are,

- AsTeR -- Audio System For Technical Readings
- Aural CSS -- producing rich auditory presentations from Web content
- Emacspeak -- the complete audio desktop
- XForms -- Next Generation Web Forms
- XML Events -- A reusable eventing syntax for XML
- XHTML+Voice -- Enabling the multimodal Web via voice interaction
- RDC -- Reusable Dialog Components

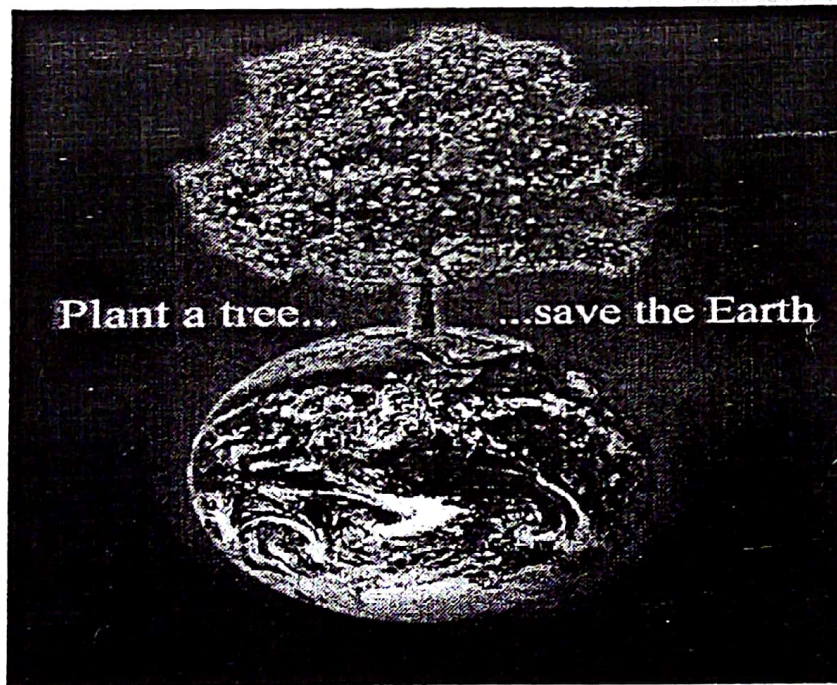
***Gundu Radha Kaveri, 3<sup>rd</sup> ECE-A***



# **World Environment Day**

**5 June**

World Environment Day (WED) is one of the principal vehicles through which the United Nations stimulates worldwide awareness of the environment and enhances political attention and action. The agenda is to give a human face to environmental issues; empower people to become active agents of sustainable and equitable development; promote an understanding that communities are pivotal to changing attitudes towards environmental issues; and advocate partnership which will ensure all nations and peoples enjoy a safer and more prosperous future.



***J Mohini, 4<sup>th</sup> ECE-B***



## **Air into Water**

Johathan Ritchey has invented the Watermill, which is an atmospheric water generator. It converts air into fresh water.

This latest technology invention produces fresh water at a cost of about 3 cents a liter (1 quart). Originally designed for areas that do not have clean drinking water, the Watermill is for households that prefer an eco-friendly, cost effective alternative to bottled water.

Atmospheric water generators convert air into water when the temperature of the air becomes saturated with enough water vapor that it begins to condense (dew point).

"What is unique about the Watermill is that it has intelligence," says Ritche. This makes the appliance more efficient. It samples the air every 3 minutes to determine the most efficient time to convert the air into water.

It will also tell you when to change the carbon filter and will shut itself off if it cannot make pure clean water.

**KEDARI AYYAPPA 2<sup>nd</sup> ECE-B**



## **TECHNICAL ZONE**

### **Paper battery**

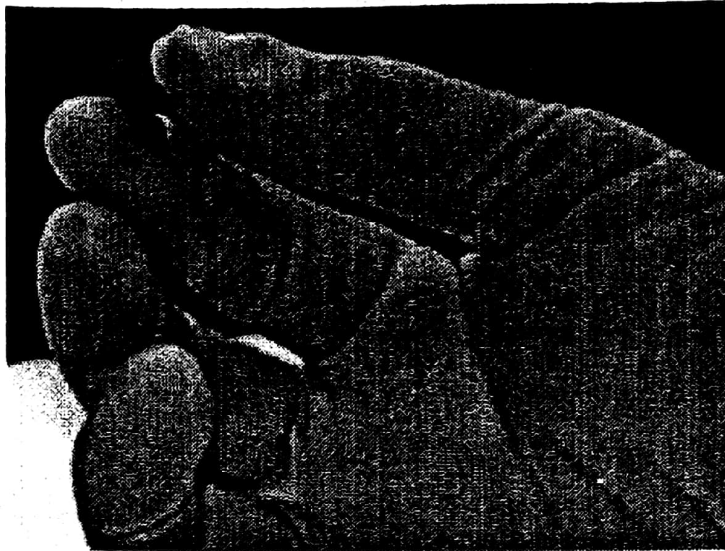
A paper battery is a flexible, ultra-thin energy storage and production device formed by combining carbon nano tubes with a conventional sheet of cellulose-based paper. A paper battery acts as both a high-energy battery and super capacitor, combining two components that are separate in traditional electronics. This combination allows the battery to provide both long-term, steady power production and bursts of energy.

Nontoxic, flexible paper batteries have the potential to power the next generation of electronics, medical devices and hybrid vehicles, allowing for radical new designs and medical technologies.

Paper batteries may be folded, cut or otherwise shaped for different applications without any loss of integrity or efficiency. Cutting one in half halves its energy production. Stacking them multiplies power output.

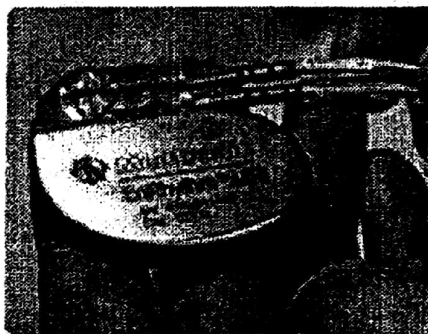
Early prototypes of the device are able to produce 2.5 volt s of electricity from a sample the size of a postage stamp. The unique form factor and rapidly customizable production enables integrating power storage with a variety of structural and functional materials.

While multiple applications open up in many areas ranging from disposable medical and consumer products to toys and high end computing electronics, the company is focused on high value-added applications that are unique to its products' feature set.



The paper battery is designed to use a paper-thin sheet of cellulose (which is the major constituent of regular paper, among other things) infused with aligned carbon nano tubes. The nano tubes act as electrodes, allowing the storage devices to conduct electricity. The battery will currently provide a low, steady power output, as well as a Super capacitor's quick burst of energy. While a conventional battery contains a number of separate components,

The paper battery integrates all of the battery components in a single structure, making it more energy efficient and lighter.



*A V Sri Harsha , 2<sup>nd</sup> ECE-B*



## **NANO EAR THAT CAN HEAR BACTERIA**

Physicists at the Nano systems initiative Munich (NIM) have created a nanoeear that can detect sound levels as low as -60 dB.

The Nano ear is a single gold nanoparticle kept in a state of levitation by a laser beam. Upon weak acoustic excitation; the particle oscillates parallel to the direction of sound propagation.

To test the nano-ear, the researchers placed the gold particle, which is just 60 nanometres across, inside the laser beam. They then took some other microscopic gold particles and heated them using a laser. The sound vibrations given off by this heating then travelled past the nano-ear. The movement of the particles revealed not just the exact decibel level created by the heated particles, but also what direction they had come from.

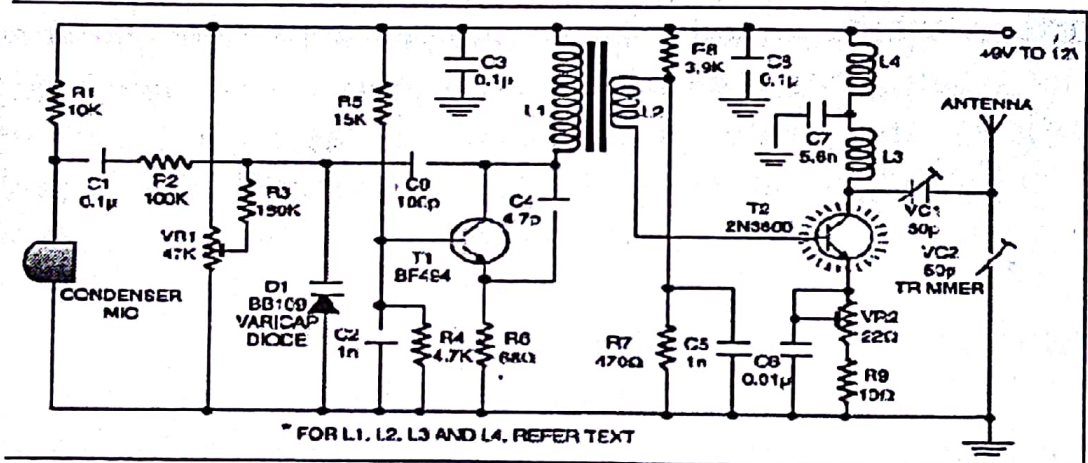
Admittedly, the nano-ear only worked when placed in a carefully controlled, perfectly arranged environment. For it to be of any use as an acoustic microscope, the researchers come up with a way for the nano-ear to distinguish with the sound vibrations and the occasional random movement by the trapped molecule.

*Mutta Lakshmi Chaitanya 2<sup>nd</sup> ECE-B*



## Long Range FM Transmitter

Several circuits for constructing FM transmitters have been published in EFY. The power outputs of most of these circuits were very low because no power amplifier stages were incorporated. The transmitter circuit described here has an extra RF power amplifier stage, after the oscillator stage, to raise the power output to 200-250 mill watts. With a good matching 50-ohm ground—plane antenna or multi-element Yagi antenna, this transmitter can provide reasonably good signal strength up to a distance of about 2 kilometres. The circuit built around transistor T1 (BF494) is a basic low-power variable-



frequency VHF oscillator. A vari-cap diode circuit is included to change the frequency of the transmitter and to provide frequency modulation by audio signals. The output of the oscillator is about 50 milli watts. Transistor T2 (2N3866) forms a VHF-class A power amplifier. It boosts the oscillator signals' power four to five times. Thus, 200-250 milli watts of power is generated at the collector of transistor T2. For better results, assemble the circuit on a good-quality glass epoxy board and house the transmitter inside an aluminium case. Shield the oscillator stage using an aluminium sheet. Coil winding details are given below



L1 - 4 turns of 20 SWG wire close wound over 8mm diameter plastic former. L2 - 2 turns of 24 SWG wire near top end of L1. (Note: No core (i.e. air core) is used for the above coils) L3 - 7 turns of 24 SWG wire close wound with 3mm diameter air core. L4 - 7 turns of 24 SWG wire-wound on a ferrite bead (as choke) Potentiometer VR1 is used to set the centre frequency whereas potentiometer VR2 is used for power control.

For hum-free operation, operate the transmitter on a 12V rechargeable battery pack of 10 x 1.2-volt Ni-Cd cells. Transistor T2 must be mounted on a heat sink. Do not switch on the transmitter without a matching antenna. Adjust both trimmers (VC1 and VC2) for maximum transmission power. Adjust potentiometer VR1 to set the centre frequency near 100 MHz. It is used for educational purposes.

*Pasupuleti Ganesh 2<sup>nd</sup> ECE-B*

## **Power-Felt Generates Electricity at the Touch of a Hand**

A new material, known as Power Felt, is able to generate an electrical charge from changes in temperature, such as being touched by a warm hand. Developed by researchers from Wake Forest University, the thermoelectric material is made up of carbon nano tubes incorporated in flexible plastic fibres. Power Felt looks and feels like fabric, and could have a range of applications, including automotive, clothing, and medical. High costs have kept thermoelectric materials from being commercially viable, and the developers hope the costs will go down as demand in volume increases.

*Kodamanchili Manisha, 2<sup>th</sup> ECE-C*



## **The Hidden Diamond**

Long back a farmer was digging his field to cultivate crops, suddenly his axe stroked with a stone beneath his field. He took out the stone and sharpened his axe on it. But it was not an ordinary stone, it was a diamond stone. The poor chap had no knowledge of it and kept it aside. Meanwhile a jeweller was passing through his field and at a glance he recognized that stone and put his intention to buy it in front of the farmer. As the stone was of no use to the farmer he sold it in just Five rupees.

The jeweller hided it in his bag and very gladly brought to his shop, the moment he tried to take out the concealed gem, it broke into four pieces. The jeweller started weeping and in pain asked from the stone, that why did it break here and not there when that farmer was sharpening his axe on you?

A crying voice came from the stone and replied to the jeweller "you know that the farmer didn't know mine value so it was not his mistake but being a jeweller you underestimated my value and just bought in Five rupees and that made me depressed and I broke in four pieces."

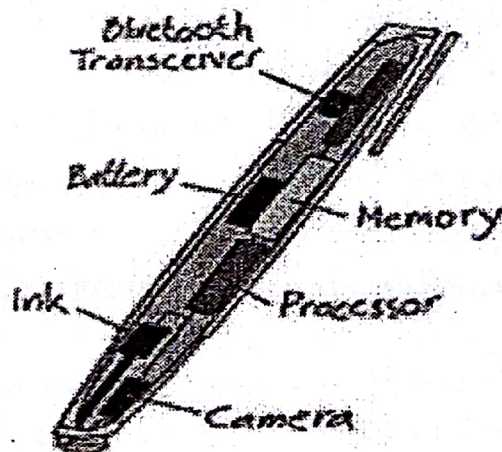
Similarly man is a also a potential stone with hidden jewel, so in life never underestimate value of a person who has done something for you or you suppose that your motivation can put him in a great place. We should respect talent of everybody and whenever we are not in the state of motivate so one thing should be in mind that we should never discourage any one.

**KOLLEPARA SAI VAMSI 3<sup>rd</sup> ECE-B**



## Digital pen

A digital pen is an input device which captures the handwriting or brush strokes of a user, converts handwritten analog information created using "pen and paper" into digital data, enabling the data to be utilized in various applications. For example, the writing data can be digitized and uploaded to a computer and displayed on its monitor. The data can then be interpreted by handwriting software (OCR) and used in different applications or just as graphics. A digital pen is generally larger and has more features than a stylus. Digital pens typically contain internal electronics, and have features such as touch sensitivity, input buttons, memory, writing data transmission capabilities, and electronic erasers.



*I Sindhuja, 4<sup>th</sup> ECE-B*

## **JET MAN**

Inventor and former Swiss Air Force fighter pilot, Yves Rossy, jumped from a plane over Calais, France and flew 200 mph crossing the English Channel in 13 minutes before landing in Dover, England.

Earlier this year he unfolded the wings on his back and flew 186 mph (300 kilometers) above the Swiss Alps. Using four small jet engines attached to his carbon wings, he climbed at 200 ft per minute before executing a series of stunts for a crowd of reporters watching from a mountain top.

The spectacular demonstration was the first public revelation of his latest invention, which he spent five years developing. "It is absolute freedom" says Rossy.

The inventor says his 120 lb Jetman suit will eventually be available to the public but it's still a few years away.

The flight over the English Channel was his second public demonstration. He is planning his next flight through the Grand Canyon.

Update: Yves Rossy has completed his flight over the Grand Canyon. He jumped out of a helicopter at 2,440 metres (8,000 feet) and soared over the Canyon at 330 km (205 mph) for eight minutes before deploying his parachute.

"My first flight in the US is sure to be one of the most memorable experiences in my life, not only for the sheer

**KESANA KALYANI<sup>3rd</sup> ECE-B**



## EASY MULTIPLICATION

Let  $N1$  and  $N2$  be two numbers near to a given base in powers of 10, and  $D1$  and  $D2$  are their respective deviations from the base.

Then  $N1 \times N2$  can be represented as

$$\begin{array}{r} N1 \ D1 \ [BASE] \\ N2 \ D2 \\ \hline \end{array}$$

$$(N1+D2) \text{ OR } (N2+D1) / (D1 \times D2)$$

For better understanding see an example.

3. Find  $97 \times 94$ .

Sol:

Here base is 100 (numbers near to a given base in powers of 10 i.e. 100 here)

Deviation of 97 from 100 is -03

Deviation of 94 from 100 is -06

$$97 \ -03 \ [BASE \ 100]$$

$$94 \ -06$$

$$(97-06) \text{ or } (94-03) / (3 \times 6) \Rightarrow 91 / 18$$

Answer is 9118

**GAMIDI ROHITHA 4<sup>th</sup> ECE-B**

# How Did The First Phone Call Work?



**How did Alexander Graham Bell's first telephone work and what was it made of?**

*Read on to find out*

A man operating Alexander Graham Bell's first telephone Alexander Graham Bell's big breakthrough came on 10 March 1876 when he used what he called a 'liquid transmitter'. This was a vertical metal cone with a piece of parchment stretched like a drum over its narrow end at the base. On the outside of the parchment, Bell had glued a cork with a needle stuck in it, pointing into a tiny cup of diluted sulphuric acid.

When he shouted into the open end of the cone, his voice made the parchment vibrates, so the needle moved slightly in relation to a contact in the cup. The needle was wired to a battery and the movement varied the strength of the current passing between the contacts, thus converting sound waves into an electric signal which travelled along a wire to a receiver. While setting up the experiment, Bell spilt some acid on his trousers. Shouting to his assistant, Thomas Watson heard the message on the receiver in another room and rushed through to Bell, who had just made the first phone call.

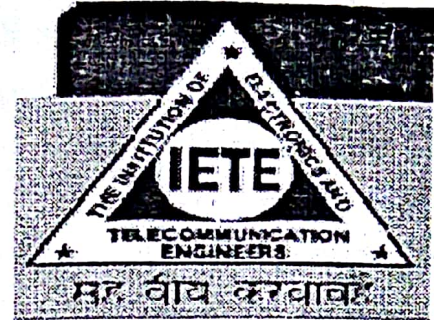
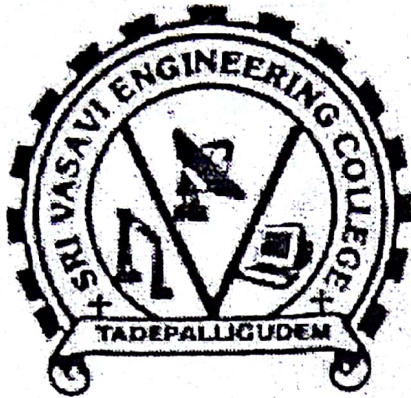
***K Uma Samyuktha, 3<sup>rd</sup> ECE-A***



# Factronics

- $111,111,111 \times 111,111,111 = 12,345,678,987,654,321$
- TYPEWRITER is the longest word that can be made using the letters only on one row of the keyboard.
- Wearing headphones for just an hour will increase the bacteria in your ear By 700 times.
- RHTHYM is a six letter word which has no vowel.
- The longest regularly formed English word is Praetertranssubstantiationally which contains 37 letters.
- Octopus have three hearts.
- 250 people have fallen off the Leaning Tower of Pisa.
- The word "queue" is the only word in the English language that is still pronounced the same way when the last four letters are removed.
- "Almost" is the longest word in the English language with all the letters in alphabetical order.
- More people are killed each year from bees than from snakes.
- It is impossible to sneeze with your eyes open The typewriter was invented by Hungarian immigrant 'QwertYuiop', who left his "signature" on the keyboard.
- Men's shirts have the buttons on the right, but women's shirts have the buttons on the left.

*Chinta Sriyothi<sup>2nd</sup> ECE-B*



*VEDA*

Department of E C E

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