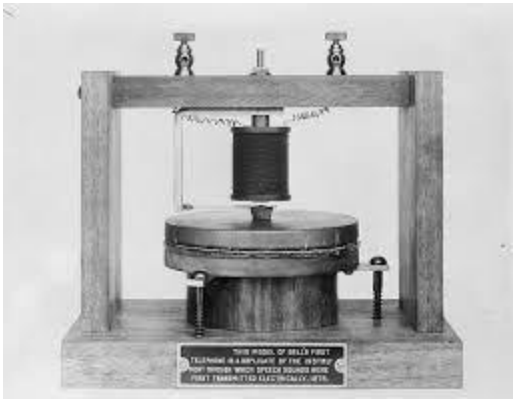
Technological Innovations: Global benefits

Written & Compiled by:

Bonani Dhar, Adviser FSDC, CDGI.
Development Sociologist, Gender & Training Specialist
Ex-World bank & UN .

Technological innovations are the brain waves of thinking minds who try to apply knowledge into practical lives. Engineers and Architects, Planners and Scientists are striving to bring innovative solutions which are technologically advanced for greater user friendly devices with environmental concerns. You are young engineers and you can be one of them if you have a thinking mind. Think of Wright brothers, Thomas Alva Edison, Alexander Graham Bell, (in the picture Alexander with his first Telephone.



Journey of a Telephone to Smart Phones

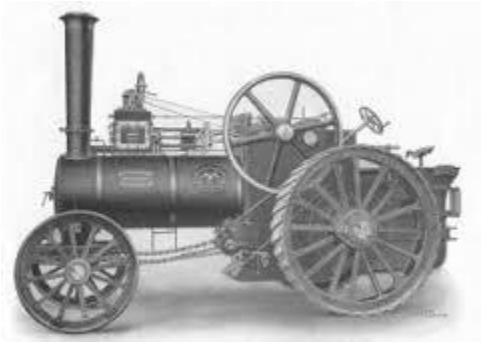
I preferred to bring in the telephone because you now have the smart phones in your hands and you know the benefits and the journey of its advancements have been full of innovative hard work of scientific and engineering experts, hence, constant betterment.

Ultra-private Smart Phones

As concerns over personal privacy grow, particularly in terms of new technology, a Maryland-based company seeks to provide an alternative. Silent Circle, encrypts clients' voice calls, text messages, and file attachments. Encryption prevents potential eavesdroppers from listening in on phone calls and protects metadata. Silent Circle has big plans for the future including a secure smartphone called Blackphone. Blackphone will utilize encryption tools currently used by Silent Circle, as well as other software that will help secure data.

From a Locomotive to a Bullet Train

- The *aeolipile* (also known as a Hero engine) described by Hero of Alexandria in the 1st century AD is considered to be the first recorded steam engine. Torque was produced by steam jets exiting the turbine.
- **Thomas Savery**, in 1698, patented the first practical, atmospheric pressure, steam engine of 1 horsepower (750 W). It had no piston or moving parts, only taps. It was a *fire engine*, akind of thermic syphon, in which steam was admitted to an empty container and then condensed. The vacuum thus created was used to suck water from the sump at the bottom of the mine. The "fire engine" was not very effective and could not work beyond a limited depth of around 30 feet (9.1 m).



- **Thomas Newcomen**, in 1712, developed the first commercially successful piston steam engine of 5 horsepower (3,700 W). Its principle was to condense steam in a cylinder, thus causing atmospheric pressure to drive a piston and produce mechanical work.
- **James Watt**, in 1781, patented a steam engine that produced continued rotary motion with a power of about 10 horsepower (7,500 W). It was the first type of steam engine to make use of steam at a pressure just above atmospheric to drive the piston helped by a partial vacuum. It was an improvement of Newcomen's engine.

See also: Steam power during the Industrial Revolution
https://en.wikipedia.org/wiki/Steam_engine#/media/File:Wiktionary-logo-v2.sv

World's Fastest Train with a speed of 360kmph in Chaina

Shanghai Maglev, also known as Shanghai Trans rapid, is currently the fastest train in the world. CRH 380A running between Beijing and Shanghai, was manufactured by CSR Qingdao Sifang Locomotive & Rolling Stock. AGV Italo, touted to be the most modern train in Europe, has a maximum operational speed of 360kmph.Aug 29, 2013

http://www.railway-technology.com/features/feature-top-ten-fastest-trains-in-the-world

https://www.youtube.com/watch?v=aIwbrZ4knpg

Elctro-Magnets to run the fastest train

Train is designed to float 10mm over the track with the help of magnet. Train is tested in Northern Germany with 400kmph. German Trans Rapid System and Japanese Maglev are pioneering the effort. However the cost factor is high. The research is on for a much more faster train achieving 3500kmph which can reach from London to Tokyo in 3and half hours.

https://www.youtube.com/watch?v=aIwbrZ4knpg

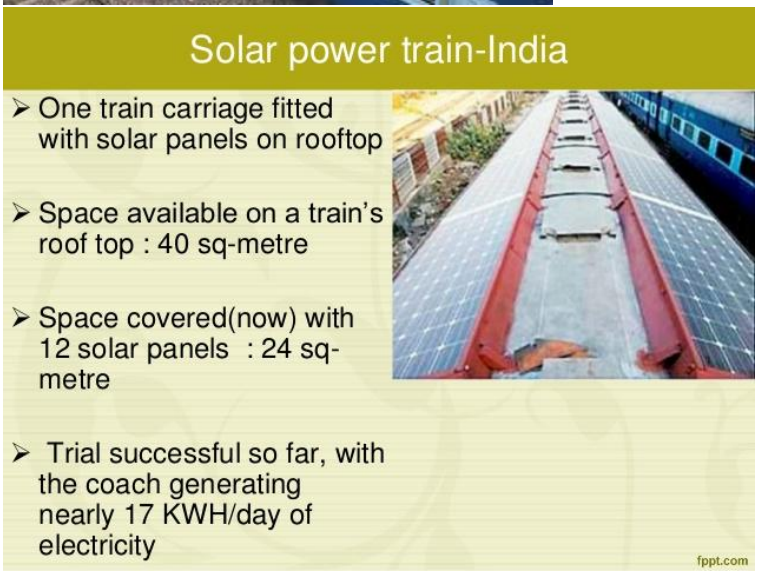
https://www.youtube.com/watch?v=rxdYzFvqgWU

With new innovations and to promote technological advancements Hon'ble Prime Minister Sri Narendra Modi ji has established a Railway University and now **Spanish train" Talgo"** is being tested for higher speed between Agra and Delhi. However, for a higher speed train we need completely different tracks. Also Solar energy is being generated as testing models on Railway coaches roof tops for use in the train itself.

High Speed Bullet Train in japan

In 1891, the pioneer Károly Zipernowsky (1853–1942) proposed a high-speed line from Vienna to Budapest for electric railcars at 250 km/h (155 mph).[7]

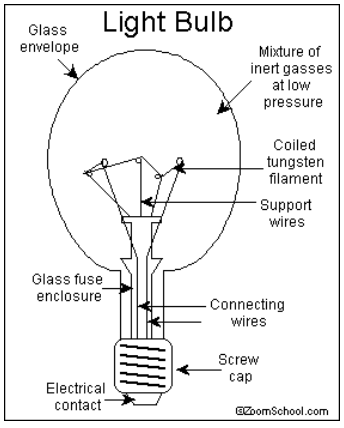
From Steam Engine to Bullet Trains



http://www.financialexpress.com/economy/indias-first-solar-powered-train-all-you-want-to-know-about-indian-railways-green-initiative/264505/

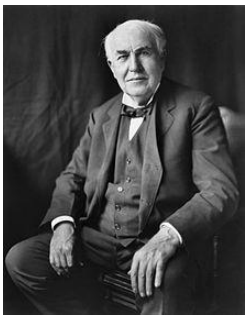
http://www.thebetterindia.com/55261/indian-railways-solar-panelled-trains-trial/

From an Ordinary Electric Bulb to LED and to Solar Energy



Humphry Davy

Invention of the Light Bulb: **Davy**, Swan and **Edison** - EnchantedLearning.com. The first electric light was made in 1800 by **Humphry Davy**, an English scientist. He experimented with electricity and invented an electric battery. When he connected wires to his battery and a piece of carbon, the carbon glowed, producing light.



Thomas Alva Edison (February 11, 1847 – October 18, 1931) was an Americaninventor and businessman. He developed many devices that greatly influenced life around the world, including the phonograph, the motion picture camera, and the long-lasting, practical electric light bulb. Dubbed "The Wizard of Menlo Park",[2] he was one of the first inventors to apply the principles of mass production and large-scale teamwork to the

process of invention, and because of that, he is often credited with the creation of the first industrial research laboratory.[3]

https://en.wikipedia.org/wiki/Thomas_Edison

A trio of scientists from the US and Japan won the Nobel Prize in physics today for inventing something that you'll most likely find in your pocket or on your desk—the world's first blue light-emitting diodes (LEDs). Aside from popping up in our electronic gadgets, these LEDs are helping change the way we light up our world, facilitating the development of environmentally friendly, energy-efficient light sources that offer a dramatic improvement from the incandescent bulbs pioneered at the beginning of the 20th century.

The three scientists are 85-year-old Isamu Akasaki, a professor at Meijo University, 54-year-old Hiroshi Amano, a professor at Nagoya University, and 60-year-old Shuki Nakahmura, a Japanese-born professor currently at the University of California, Santa Barbara.

http://www.iflscience.com/physics/nobel-prize-physics-awarded-scientists-who-invented-blue-led/

A bulb-shaped modern retrofit LED lamp with aluminium heat sink, a light diffusing dome and E27 screw base, using a built-in power supply working on mains voltage

https://en.wikipedia.org/wiki/Light-emitting_diode#/media/File:LED_light_emission_cones_from_2D_plane_emission_zone.png

Blue, green, and red LEDs in 5 mm diffused case

Working principle	Electroluminescence
Invented	Oleg Losev (1927)[1] James R. Biard (1961)[2] Nick Holonyak (1962)[3]
First production	October 1962
Pin configuration	Anode and cathode

Electronic symbol

Solar Energy: Green Energy

On a vast manmade lake on the outskirts of London, work is nearing completion on what will soon be Europe's largest floating solar power farm – and will briefly be the world's biggest.

But few are likely to see the 23,000 solar panels on the Queen Elizabeth II reservoir at Walton-on-Thames, which is invisible to all but Heathrow passengers and a few flats in neighboring estates.

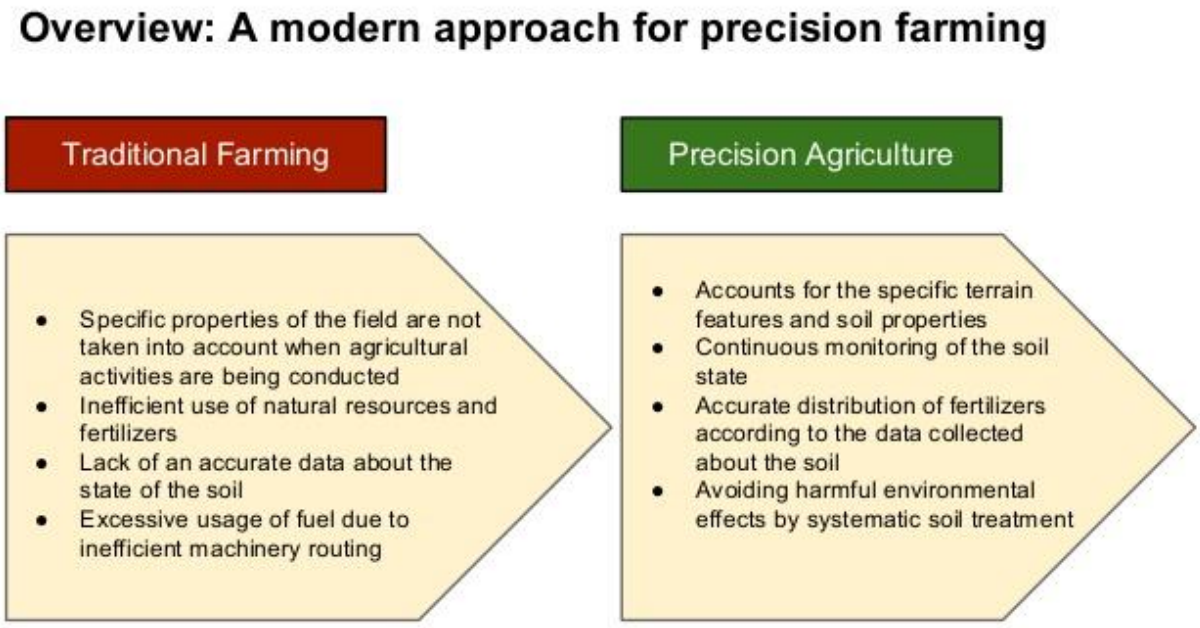
"This will be the biggest floating solar farm in the world for a time - others are under construction," said Angus Berry, energy manager for Thames Water, which owns the site. "We are leading the way, but we hope that others will follow, in the UK and abroad."

Cochin International Airport is the first in India developed under a public-private partnership (PPP) model and was funded by nearly 10,000 non-resident Indians from 30 countries.[4]

On August 18, 2015, it became the **world's first fully solar energy powered airport**with the inauguration of the dedicated solar plant.[5][6]

Agricultural Drones

Farmers have begun to use agricultural drones adorned with cameras to improve the treatment of their crops. The drones allow farmers a unique perspective that previously-used satellite imagery could not provide. They help to expose issues with irrigation treatment, soil variation, and distressed plants at a much lower cost than methods like crop imaging with a manned aircraft. The success of the drones is made possible by technological advances in GPS modules, digital radios, and small MEMS sensors. Together, these advances allow farmers to bring greater precision to their craft in order to reap greater rewards.

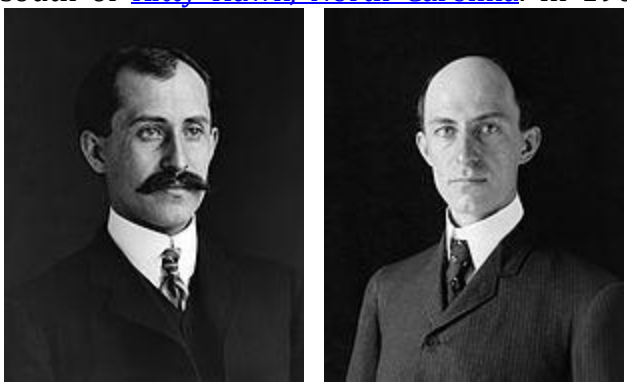


Micro-scale 3-D Printing

The potential of 3-D printing technology has many people excited about new applications. But current printers have important limitations. Up until recently, most 3-D printers can only use plastic. A group of researchers at Harvard University, led by Jennifer Lewis, have started to develop new 3-D printer inks. Her team prints intricate objects using materials that are chosen based on their mechanical properties, electrical conductivity, or optical traits. Eventually new inks will enable a wider variety of functions, including artificial organ creation.

From the Wright Brothers' Flight to Super Sonic Jets

The **Wright brothers**, **Orville** (August 19, 1871 – January 30, 1948) and **Wilbur** (April 16, 1867 – May 30, 1912), were two American brothers, inventors, and aviation pioneers who are generally credited[1][2][3] with inventing, building, and flying the world's first successful airplane. They built on the works of British engineer Sir George Cayley dating from 1799, when he set forth the concept of the modern airplane.[4] They made the first controlled, sustained flight of a powered, heavier-than-air aircraft on December 17, 1903, four miles south of Kitty Hawk, North Carolina. In 1904-1905 the brothers developed their flying machine into the first practical fixed-wing aircraft. Although not the first to build and fly experimental aircraft, the Wright brothers were the first to invent aircraft controls that made fixed-wing powered flight possible.



Orville and Wilbur Wright in 1905

The brothers' fundamental breakthrough was their invention of three-axis control,

Born	**Orville**: August 19, 1871, Dayton, Ohio **Wilbur**: April 16, 1867, Millville, Indiana
Died	**Orville**: January 30, 1948 (aged 76), Dayton **Wilbur**: May 30, 1912 (aged 45), Dayton
Ethnicity	German, Dutch, English, Swiss
Education	Orville 3 years high school; Wilbur 4 years
Occupation	**Orville**: Printer/publisher, bicycle retailer/manufacturer, airplane inventor/manufacturer, pilot trainer **Wilbur**: Editor, bicycle retailer/manufacturer, airplane inventor/manufacturer, pilot trainer
Spouse(s)	None (both)

Orville Wright

Wilbur Wright

https://en.wikipedia.org/wiki/Wright_brothers

which enabled the pilot to steer the aircraft effectively and to maintain its equilibrium.[5][6][7][8] This method became and remains standard on fixed-wing aircraft of all kinds.[9][10] From the beginning of their aeronautical work, the Wright brothers focused on developing a reliable method of pilot control as the key to solving "the flying problem"

Wilbur looks on as Orville pilots
the first powered flight

http://www.eyewitnesstohistory.com/wright.htm

A-380 Airbus

The **Airbus A380** is a double-deck, wide-body, four-engine jet airliner manufactured by European Union manufacturer Airbus.[4][5][6] It is the world's largest passenger airliner, and the airports at which it operates have upgraded facilities to accommodate it. It was initially named **Airbus A3XX** and designed to challenge Boeing's monopoly in the large-aircraft market. The A380 made its first flight on 27 April 2005 and entered commercial service in 25 October 2007 with Singapore Airlines.

The A380's upper deck extends along the entire length of the fuselage, with a width equivalent to a wide-body aircraft. This gives the A380-800's cabin 550 square metres (5,920 sq ft) of usable floor space,[7] 40% more than the next largest airliner, the Boeing 747-8,[8] and provides seating for 525 people in a typical three-class configuration or up to 853 people in an all-economy class configuration. The A380-800 has a design range of 8,500 nautical miles (15,700 km), serving the second longest non-stop scheduled flight in the world, and a cruising speed of Mach 0.85 (about 900 km/h, 560 mph or 490 kn at cruising altitude).

Super Sonic Jets

https://en.wikipedia.org/wiki/Supersonic_transport

Fighter Jets

A **fighter aircraft** is a military aircraft designed primarily for air-to-air combat against other aircraft,[1] as opposed to bombers and attack aircraft, whose main mission is to attack ground targets. The hallmarks of a fighter are its speed, maneuverability, and small size relative to other combat aircraft.

Many fighters have secondary ground-attack capabilities, and some are designed as dual-purpose fighter-bombers; often aircraft that do not fulfill the standard definition are called fighters. This may be for political or national security reasons, for advertising purposes, or other reasons.[2]

A fighter's main purpose is to establish air superiority over a battlefield. Since World War I, achieving and maintaining air superiority has been considered essential for victory in conventional warfare

https://www.google.co.in/search?q=fighter+jets&ie=utf-8&oe=utf-8&client=firefox-b-ab&gfe_rd=cr&ei=i6yMV7yLHILT8ge0sIeIAw

The world is advancing everyday on innovaations. Scientists and Engineers and striving hard to make life more livable, more comfortable with innovations. It is the works of thinking minds, whose minds are constantly looking and searching for new things. Many scientists were not first graders, yet they gifted the human race some innovative things which have illuminated their names for ever.

Dr. Joy Banerjee,
An Alumnus of IIT (KGP), Arthur D. Little Boston, USA, Ex-World Bank, USA
Group Director
Chameli Devi Group of Institutions
Indore, M.P.
Email: director@cdgi.edu.in
Phone: 0731- 4243602, +91-9617426564, +919811021727