

सा दिवा या विद्यया ॥

Yantram

A Magazine of Mechanical
Engineering Students' Organisation

April, 2011 Volume: Five

SARAHANA

"Individual play the game, but teams beat the odd"- Justifying the quote, here is the fifth issue of YANTRAM- a result of great teamwork of members of Mechanical Engineering Students Organisation (MESO). It is a reflection of talents our students possess in addition to academic skills.

It has a pleasure to share that Batch passing in year 2010 got 100% placement in reputed companies. Three of the students received dual offers. Mr. Kashyap Patel got offer of ` 4,72,700 per annum in Schulumberger. Our students have also received prizes at various national and state level competitions. The hard work of students and faculty is reflected in the said success of students.

I hope the readers will appreciate the same.

I congratulate the team of MESO for their persistent efforts and look forward for the same in future.

**Prof. Suresh Pareek, Head of Department
Mechanical Engineering Department**

: ACTIVITIES OF MESO:

1. A visit of Kadana dam, Panchmahal District was arranged on 16th August, 2010 for students of IIIrd, Vth and VIIth semester.
2. An interdepartmental quiz competition was arranged on 14th September 2010 – Foundation day of Institute
3. An interdepartmental quiz competition on occasion of Swarnim Gujarat celebration was arranged on 20th September 2010
4. *Crucigrama*-an event based on English Crossword was organized on 24th January 2011.
5. Fourth issue of magazine YANTRAM was published in November 2009.
6. Arranged Annual General Meeting on 11th February 2010 & 16th February, 2011
7. Motivated students to participate in various state and national level events.

Leadership Excellence: Thoughts from The Greatest Leaders of All Times

The aim behind this article to produce more leaders not followers .If you follows the great leaders; you will be a good leader.

Great Political leaders

Nelson Mandela : "Education is the most powerful weapon which you can be used to change the world."
"I am not a saint, unless you think of a saint as a sinner who keeps on trying."
"We must use time wisely and forever realize that the time is always ripe to do right."

Sir Winston Churchill: "We make a living by what we get; we make a life by what we give."
"The empires of the future are the empires of the mind."

Mahatma Gandhi : "Strength does not come from physical capacity. It comes from an indomitable will."
"We must become the change we want to see."
"A small body of determined spirits fired by an unquenchable faith in their mission can alter the course of history."

Martin Luther King : "Our scientific power has outrun our spiritual power. We have guided missiles and misguided men."
"Man must evolve for all human conflict a method which rejects revenge, aggression and retaliation. The foundation of such a method is love."
"The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy."

Abraham Lincoln: "Force is all-conquering, but its victories are short-lived."
"Always bear in mind that your own resolution to succeed is more important than any one thing."
"I am a firm believer in the people. If given the truth, they can be depended upon to meet any national crises. The great point is to bring them the real facts."
"When I do good, I feel good; when I do bad, I feel bad, and that is my religion."

Great Business leaders

Walt Disney: "It's kind of fun to do the impossible."
"I dream, I test my dreams against my beliefs, I dare to take risks, and I execute my vision to make those dreams come true."

Akio Morita: (Sony)	"Flawless execution separates us from others." "Curiosity is the key to creativity."
Henry Ford: Ford Motors	"Failure is simply the opportunity to begin again, this time more intelligently." "If there is any one secret of success, it lies in the ability to get the other person's point of view and see things from that person's angle as well as from your own."
Bill Gates: Microsoft	"Success is a lousy teacher. It seduces smart people into thinking they can't lose." "We've got to put a lot of money into changing behavior."
Larry Page: Google	"Best is not the end point, but a starting point for innovation." "Basically, our goal is to organize the world's information and to make it universally accessible and useful."

Great leaders in the field of science

Albert Einstein:	"Only a life lived for others; is a life worthwhile." "Imagination is more important than knowledge." "Intellectuals solve problems, geniuses prevent them."
Wright Brothers:	"If we all worked on the assumption that what is accepted as true is really true, there would be little hope of advance." "It is possible to fly without motors, but not without knowledge and skill."
Thomas Edison:	"I have not failed. I've just found 10,000 ways that won't work." "I never did a day's work in my life. It was all fun." "The three great essentials to achieve anything worth while are: Hard work, Stick-to-itiveness, and Common sense."

Great leaders in sports

Mohammed Ali:	"I am the greatest: I said that even before I knew I was." "He who is not courageous enough to take risks will accomplish nothing in life." "Its lack of faith that makes people afraid of meeting challenges, and I believed in myself."
Pele:	"I've come to accept that the life of a frontrunner is a hard one, that he will suffer more injuries than most men and that many of these injuries will not be accidental, but I shall fight them out." "Everything is practice."
Michael Jordan:	"Always turn a negative situation into a positive situation." "I've failed over and over and over again in my life and that is why I succeed."

Great leaders in the field of Arts

- Michelangelo: "The greater danger for most of us lies not in setting our aim too high and falling short; but in setting our aim too low, and achieving our mark."
"Lord, grant that I may always desire more than I can accomplish."
- Leonardo Da Vinci: "I have offended God and mankind because my work didn't reach the quality it should have."
"I have been impressed with the urgency of doing. Knowing is not enough; we must apply. Being willing is not enough; we must do."

Great Entertainer

- Charlie Chaplin: "I remain just one thing, and one thing only, and that is a clown. It places me on a far higher plane than any politician."
- Steven Spielberg: You have many years ahead of you to create the dreams that we can't even imagine dreaming."
"The public has an appetite for anything about imagination - anything that is as far away from reality as is creatively possible."

*Shaikh Mazhar, Assistant Professor
Mechanical Engineering Department*

The Old Carpenter

Your life today is the result of your attitudes and choices in the past. Your life tomorrow will be the result of your attitudes and choices today.

This is a story of an elderly carpenter who had been working for a contractor for many many years. He had built many beautiful houses but now as he was getting old, he wanted to retire and lead a leisurely life with his family. So, he goes to the contractor and tells him about his plan of retiring. The contractor feels sad at the prospect of losing a good worker but agrees to the plan because the carpenter had indeed become too fragile for the tough building work. But as a last request, he asks the old carpenter to construct just one last house.

The old man agrees and starts working but his heart was not in his work any more. He had lost the motivation towards work. So, he resorted to shoddy workmanship and constructed the house half-heartedly. After the house was built, the contractor handed over the front door keys to the carpenter and said, this is your new house. My gift to you. The carpenter was shocked and upset. Had he known that he was building his own house, he would have done a better job! Now, he would have to live in the house, which is not worth staying.

Think of yourself as the carpenter. You work hard every day but are you giving your best? We put our least to the work we do like or do not have interest in. Later, we get shocked at the situation we have

created for ourselves and try to figure out why we didn't do it differently.

Enjoy your tasks and carry on your responsibilities with pleasure and not with pain. Life is a do-it-yourself project. Do your job enthusiastically

and with devotion, a positive output and a pleasing life will certainly be on your way.

*Darshan Vaishnav, Assistant Professor
Mechanical Engineering Department*

HUMAN BRAIN

No boundaries can bind it tight,
It travels faster than light.
It has reached every depth,
It has touched every height.

From a single micro-scopic cell,
To the great, vast & Unlimited
universe.
To the heights of the sky and,
To the depth of the oceans.

It works from north to south, &
It stimulates from east to west.

It is known to find the reason,
Why there is rain &
Change in season!

In all parts of the body,
It happens to be the main,
It controls everything, &
It's the human brain.

*Prajapati Smit N.
09DME035*

THE HISTORY OF ATM MACHINES

The history of the ATM dates back to New York city in 1939 when inventor Luther George Simjian got a bank to publicly try the Machine. The effort failed due to Lack of customer

interest at that time. In 1960 a bank in New York city had a cash machine predecessor (the bankograph) installed that would free up tellers by accepting utility bill payments.

The next automated cash dispenser development was development in 1964. An electronic ATM was set out in north London (UK) but it was very different in the way it worked than modern equipment this machine would dispense ten pound sterling amount of cash in exchange for a teller purchase voucher.

The current machine style was a creation of British engineer James Goodfellow. In 1965 he patented the cash machines that were the forerunners of what we use to day. There was one type of ATM introduced in 1968 that always ate the prepaid plastic card & users would then have to buy a replacement from a teller.

In 1969 Donald C. Wetzel developed for Docutel the first machines utilizing the cards with magnetic strips. The public still had problems with accepting & trusting money machines. The machine proved to be very costly to operate.

Docutel led the way to the modern ATM machine in 1971, when they produced a full function ATM called total teller. By 1973, these machines were capable of cash in variable amounts. By 1974 the online networking component was added

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which led to ATMs as we know them now.

Today automated cash machines are more common than drinking fountains and are so prevalent they are very easy to locate. They are found worldwide, even as distant as Antarctica. The ability to use a small plastic debit or credit card to withdraw cash as needed from these machines is just so easy. Some banks use ATM stations for speed and convenience, replacing regular human tellers. The popularity isn't surprising considering the convenience.

Consumers no longer be concerned about carrying cash, a stack of credit cards, checks or other financial instruments. ATM machines can be adjusted for ticket selling, concert ticket sales and gift certificates.

Really the ATM Machine's invention is truly amazing & helpful, too.

Parmar Shubham(09DME009)

HAPPIER IN LIFE

Sometimes in life we feel so Blue
But some one somewhere is not happy,
As somewhere for at the border when a soldier sleeps,
Missing his loves ones he silently weeps,
Somewhere a mother painfully sighs
Coz her new born baby didn't open her eyes,
Somewhere a poor dad silently cries
When he sees his son begging for a bout of rice,
So at times, a reason to smile you may not have any,
Say to yourself but you are happier to many

Because Life is beautiful -----

Haradwala Juned (09DME003)

Take to our Life

Take time to work
It is the price of Success
Take time to think
It is the Source of power
Take time to play
It is the secret of perpetual youth.
Take time to read
It is fountain of wisdom
Take time to be friendly
It is the road to happiness.
Take time to love and be loved
It is nourishment for the soul
Take time to share
It is too short a life to be selfish
Take time to laugh
It is the music of the heart
It is the to dream
It is hitching your wagon to a star

*Vijay Bhadani
(09 DME 033)*

Fun facts:

- Thailand is the only Country where canned crocodile in curry sauce is available.
- Japan is the only country where octopus flavoured ice-creams are sold.
- China is the Country where charcoal ice creams are sold.
- During a lifetime an average person eats about 35 tones of food.
- The founder of Mc Donald's has a bachelor degree in hamburgerology.
- In France people eat approximately 500,000,000 snails per year.
- A portion of water you drink has already been drunk by someone else, may be several times over.
- There are around 15000 varieties of rice.
- There are around 400 varieties of natural cheeses.
- Live octopus is eaten in Japan.
- The world's rarest coffee cost & 300 a pound it is called ' kopi Luwak' and it comes from Indonesia

Parmar Shubham

(09DME009)

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MAGLEV TRAINS

In today's fast-paced and technological society, efficiency is critical. One essential factor in our lives is transportation--traveling between our home and workplace and moving goods to marketplaces--to name a few examples. Consequently, other than airplanes, the conventional methods of transport such as cars, buses, and ships, are incomparable to more advanced transportation methods, such as maglev trains.

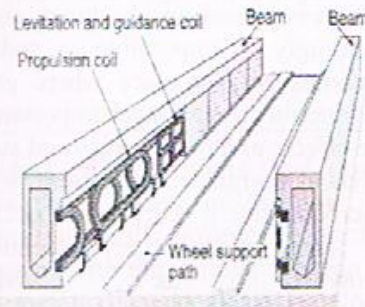
Maglev, which stands for magnetic levitation, is a system of transportation that levitates, guides, and propels trains, with magnetism. Electromagnets along the guide-way beams and magnets underneath the train allow for repulsions and attractions, which move the train along the track. Steel wheels and tracks are removed to create a frictionless ride, allowing for speeds above 500 km/h.

How Magnetic Fields are used?

Specifically, only magnetic fields are relevant to the maglev train. Metal coils lining a guide-way become electromagnets when an electrical current runs through them, to begin the movement of the maglev train. The magnetic field created by this electromagnet is used to levitate the train 1-10 cm above the track by repelling the large magnets attached to the underside of the train. The beams on either side of the track also contain metal coils used for propulsion. Once the train begins to levitate, an electric

current is supplied to these propulsion coils, which creates a combination of magnetic fields that push and pull the train along the track. The electric current in these coils constantly alternate to change to polarity of the electromagnets. This change in polarity causes the magnetic field in front of the train to pull it forward, while the magnetic field behind it adds more forward thrust. It is the lack of friction and the train's aerodynamic design that allow for speeds over 500 km/h.

All can benefit from the maglev train, and especially those who travel regularly. The benefit extends to individuals, allowing people to reach their destinations quickly and efficiently. In addition, the benefit also ext



ends to the country, by allowing for the employment of engineers in many countries around the world to perfect new construction methods, being a source of revenue for the country, and by reducing energy consumption, air pollution, and noise pollution.

Unfortunately, maglev trains have also had a negative impact on society. Due to its relatively recent invention, the maglev train's potential issues are not completely known, and therefore two major accidents have occurred in the past two years. One was a train that

caught on fire as a result of electric problems, in Shanghai. The second was in Germany, in which a collision with a repair car left on the track, killed most of 29 passengers. However, recent innovations to the design of the guide-way and the electrical conduction throughout the train have significantly reduced the number of accidents.

Ultimately, maglev trains have the potential to change the lives of people around the world, with unprecedented ground transportation speed.

*Jigar Gajjar
(07 DME 043)*

MEMS

Imagine a machine so small that it is imperceptible to the human eye. Imagine working machines with gears no bigger than a grain of pollen. Imagine these machines being batch fabricated tens of thousands at a time, at a cost of only a few pennies each. Imagine a realm where the world of design is turned upside down, and the seemingly impossible suddenly becomes easy--a place where gravity and inertia are no longer important, but the effects of atomic forces and surface science dominate. Welcome to the microdomain, a world now occupied by an explosive new technology known as MEMS (MicroElectroMechanical Systems) or, more simply, micromachines. Sandia National Laboratories, motivated by a guiding vision for MEMS, has become a recognized leader in this emerging field.

Welcome to the wonderful world

MEMS is the next logical step in the silicon revolution. The silicon revolution began over three decades ago, with the introduction of the first integrated circuit. The integrated circuit has changed virtually every

aspect of our lives. The hallmark of the integrated circuit industry over the past three decades has been the exponential increase in the number of transistors incorporated onto a single piece of silicon. This rapid advance in the number of transistors per chip leads to integrated circuits with continuously increasing capability and performance. As time has progressed, large, expensive, complex systems have been replaced by small, high performance, inexpensive integrated circuits. While the growth in the functionality of microelectronic circuits has been truly phenomenal, for the most part this growth has been limited to the processing power of the chip.

We believe that the next step in the silicon revolution will be different, and more important than simply packing more transistors onto the silicon. We believe that the hallmark of the next thirty years of the silicon revolution will be the incorporation of new types of functionality onto the chip; structures that will enable the chip to not only think, but to sense, act and communicate as well. This revolution will be enabled by MEMS.

MEMS is a relatively new technology which exploits the existing microelectronics infrastructure to

create complex machines with micron feature sizes. These machines can have many functions, including sensing, communication and actuation. Extensive applications for these devices exist in both commercial and defense systems. Recent studies by Systems Planning Corporation have estimated the market for Intelligent Micromachine based systems to be around \$100 Billion/year.

Sandia National Laboratories is a recognized leader in this emerging field. Sandia has developed unique technologies which enable the realization of complex mechanical systems on a chip, and the integration of these mechanical systems with on-chip control and communication electronics. This enables the creation of intelligent microsystems which know where they are, and what is going on around them. Sandia is continuing to advance this exciting new field, through the development of

state-of-the-art MEMS technologies, through the education of new scientists and engineers entering this field, and by educating the public regarding our work and vision.

Every day we're finding more applications for micromachine technology. Our program focuses on a variety of defense and commercial applications; we are pursuing projects ranging from inertial sensors for large scale commercial applications to locking mechanisms for weapon systems. Since we believe that joining our resources with collaborators will further fuel the upcoming silicon revolution, we are actively seeking partners in this exciting venture.

Sarita Kashyap
Assistant Professor
Mechanical Engineering Department

Should I Decide with My Head or My Gut?

What is intuition? Simply put, intuition is when we know something or know what to do without necessarily knowing why. What to do just comes to us in a flash of insight. Some intuitions are instinctive. For instance, if someone starts running after you with an ax, you will most likely have the instinctive (and intuitive) response of either defending yourself or running away. Moreover, your reaction would be highly rational.

Other intuitions are the result of years of training and knowledge building. Police officers, firefighters, military leaders, emergency medical care

providers, airline pilots and many others spend years in learning and honing their skills in order to react in an instant with the optimal solution. In fact, society expects these people to make high quality intuitive decisions quickly and with resolve.

A surgeon with many years' experience in the operating room has much better intuition than a neophyte. The same goes for a highly experienced fire captain. In his bestseller *Blink*, Malcolm Gladwell describes how a veteran firefighter was able to "sense" a change in situation and order all of his crew out of a house just before it collapsed. This individual was unable to identify the steps in his decision. He just "knew" that it was

time to get out. The same goes for experienced leaders and executives in all walks of life. After years of commanding and leading a variety of soldiers in all kinds of circumstances as a military officer, he could sense when someone was being honest with me or lying. He could also see when a young NCO or officer had potential for rapid promotion. It was the same for many of colleagues. With that level of human experience, you can just tell if someone "has it" or doesn't, and no amount of rational deliberation with convince you otherwise.

It is critical to understand, however, that not all intuitive decisions are equal. The problem with intuition is that it can be wrong, sometimes very wrong. For instance, I'm not a surgeon, so my intuition about where and how to cut to start an operation is worthless. On the other hand, a general practitioner, while not trained in the manner, would have at least a reasonable intuition given prior medical and physiological knowledge. By extension, some situations are so novel, that intuition is also next to useless and can even be counterproductive. In that case, deliberate decision making is needed in order to think through the factors impinging on the decision and to ensure that a variety of courses of action are considered.

The key is to know when to follow your intuition and when to adopt a more deliberate and rational approach. In general, the following situations are more amenable to intuitive decision making: during emergencies requiring an immediate response in order to save lives;

when there are direct threats to physical safety; when a group has grown lethargic and overly reactive to the face of danger or risk and requires inspirational leadership to change situation.

Just about all other situations have enough time built in to them to allow at least some level of deliberate, analytical, deliberative, decision making. It is often wise to involve outside experts and to form an advisory team when faced with novel situations that will require imagination and resolve to turn around. Ironically, intuition can play a role in deliberate decision making because it is often useful for generating insight and innovative solutions.

*Kava Roh
(07DME03)*

MAINTAIN YOUR BIKE YOURSELF

How can I maintain the bike myself? you might wonder? Well, here is a list of things which can you can take care of:

- Main chain and sprocket
- Battery pack
- Greasing of joints
- Adjustment of Brakes
- Washing
- Adjustment of Control levers
- Adjustment of Hinges (if any).

The above is applicable for almost all kinds of two wheelers.

Main Chain & Sprocket

This is a really important part of the bike, and as you might know, the bike

won't move at all if it's in bad condition. During the monsoons, bike that have an open chain and sprocket against a covered one would need regular oiling, but at the same time, oiling for a closed chain and sprocket can be done just once in two weeks or something. The conventional way for lubricating chains was by using molten grease. This procedure was quite lengthy and used to take almost 12 hours to complete the job. But now you get special sprays for lubricating the chain system.

Along with the sprays, engineers would also advice on greasing the chain. But an open chain system requires either grease or spray due to the fact that grease or oil is a real magnet for dust and dirt; you might realize this when you look at a well greased chain after a week or so of riding. The usual interval for greasing the chain varies depending on the weather and the riding conditions. It's usually recommended to grease it once in one or two weeks.

For people who can't seem to find sprays, or prefer another way of doing it, follow the directions below. There are two methods that I'm explaining here:

1st method: Remove the chain from the machine; Dip it in clean diesel for at least 5-6 hrs. Then use the brush (plastic type bristles) for cleaning the mud out of it, and then re-wash it in clean diesel. If possible, hand it for about 2-3 hours to allow the diesel to drip out of the chain. This process would make the joints and the links on the chain free and smooth, the next step would be to dip the chain in EP90 oil or in 20W40 engine oil. There is no

need to buy expensive or branded oils for it. You can buy oil which could be affordable, because the ultimate aim is to clean and lubricate the chain links in order to keep it from rusting, coming back to where we left off, after dipping it in the oil keep it that way for 4-5 hrs. And then allow it to hand in order for the oil to drip away, after you have done all of the above, simply install the chain back onto the machine.

2nd method: This is a more common method used for chain cleaning. Follow the same steps as above until the part where you allow the diesel to drip off from the chain, after that, take about half a kilogram of AP3 grease and heat it up so that it turns into a molten liquid. After its liquid enough, pour the same onto the chain and wait till the grease turns solid. After making sure that the grease is cold, remove the chain from the drive system and remove all the extra grease by wiping with the help of a soft cloth. This would make the chain ready to use again and so you can install it back on to the machine.

Battery

This happens to be an essential spare in a two wheeler. On our Indian roads, the horn and warning lights are an important element; these systems require the battery for functioning.

A battery is made up of lead, which is dipped in acid water. Acid water also means electrolyte, this means that the battery acid can actually damage the paint job and cause corrosion to other parts as well, so when you handle a battery, make sure you do so with care. Also, one common problem that batteries face is the oxidation or

terminals. Each battery has a positive (+) and negative (-) terminal and overtime, the reactions in the battery cause these terminals to oxidize and that in turn reduces the voltage it can deliver.

So, how this can be avoided? Well in the market there are special sprays available for battery terminals. 'Battery Coat' is the best spray in my opinion and this can be sprayed on the terminals to remove or avoid oxidation. The spray avoids the terminals from direct contact to the air. If the spray is not readily available then the best and the most conventional way to solve this problem is by using VASELINE petroleum jelly. By applying some amount of petroleum jelly the oxidation will not take place. The main drawback of this jelly is that it has a low melting point and during summer seasons, you might find that you need to do it a little often.

Greasing Points

Control levers, brake springs, brake pedals are some of the common points where it's advisable to apply grease. Different climates also dictate the use of different types of lubrication. When it rains, it would be unadvisable to use oil for lubrication as it would get washed away easily. Grease would be the best for the monsoon. In summer as we know the temperature is high and it's usually always dry. Generally air flows with dust particles. So in summer using oil is the best option for some of the spares. In rains, generally, the temperature becomes very low. At this time greasing would be the best option rather than oiling. Grease attracts dust very fast and could create resistance in moving parts.

Brake Adjustment

This process is very simple and can save you a lot more than money. Every vehicle would have its own basic tool kit. Generally all motorcycles, scooters have 13mm nut size for adjusting the rear brakes. A suitable tool for this job would be in the tool kit. There needs to be a little caution applied while tightening the brakes as a tight setting can jam the brakes and cause a lot of problems like engine and brake overheating and also low mileage. At the same time a loose brake setting can slow your reaction time down. Adjust it as required.

Washing

One of my friends used to wash his Bullet for at least 6-7 hours. Well, you wash for 6-7 hours, wondering why? Passic He used to wash with brush, diesel cleaning soap etc.

Many washing centers simply use soap mixture and a dirty towel (which can really scratch your paint job). They would just do it for the money. You should know your vehicle well and so it would be easy for you to clean it. Here are a few tips that can help you. Oil stains can be removed easily by using solvents like diesel or kerosene. First spray some water on the machine and then use diesel or kerosene. Then spray water for cleaning it. If you own a new machine you can keep its paint looking like new every time by following some simple steps. Use a soft, clean towel and try to wash the mud (on the painted part

out rather than scrape it off. Also, as much as possible, use a Ph neutral shampoo. Look on the label before purchasing it. After washing don't forget to oil or grease the joints or parts as said above. Avoid greasing or oil before wash as it may become useless.

Control Levers

These levers are made up of some kind of alloys. But since it is a moving part that a rider would use frequently, make sure you grease the joints well.

Hinges

These are usually found on Royal Enfield Bullets and Honda scooters. These hinges always require oil and rust cleaner spray to keep rust away and they can break loose if not well maintained.

I have explained how you can easily maintain your bike rather than spend

money by sending it to the workshop. No dealer would keep reminding the

rider to service the bike all the time. These are factors which the riders would need to keep track of in order for the machine to be in service flawlessly for a long time and always remember, respect the machine, the machine respects you.

*Parameshwaran Nair
(08DME305)*

Hasgulla

Teacher: Maria please point to America on the map.
Maria: This is it.
Teacher: Well done. Now class, who found America?
Class: Maria did.

PARTS OF THE AIRCRAFT

1. FUSELAGE



The body of the plane is called the fuselage. It is generally a long tube shape. The wheels of a plane are called the landing gear. There are two main wheels on either side of the plane fuselage. Then there is one more wheel near the front of the plane. The brakes for the wheels are like the brakes for

cars. They are operated by pedals, one for each wheel. Most landing gear can be folded into the fuselage during the flight and opened for landing.

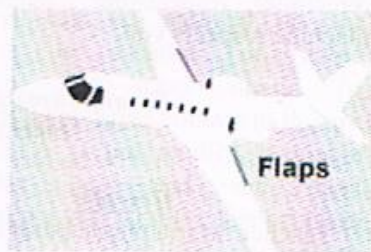
2. WINGS



All planes have wings. The wings are shaped with smooth surfaces. There is a curve to the wings which helps push the air over the top more quickly than it goes under the wing. As the wing

moves, the air flowing over the top has farther to go and it moves faster than the air underneath the wing. So the air pressure above the wing is less than below it. This produces the upward lift. The shape of the wings determines how fast and high the plane can fly. Wings are called airfoils.

3. FLAPS



The hinged control surfaces are used to steer and control the airplane. The flaps and ailerons are connected to the backside of the wings. The flaps slide back and down to increase the surface of the wing area. They also tilt down to increase the curve of the wing. The slats move out from the front of the wings to make the wing space larger. This helps to increase the lifting force of the wing at slower speeds like takeoff and landing.

4. AILERONS



The ailerons are hinged on the wings and move downward to push the air down and make the wings tilt up. This moves the plane to the side and helps it

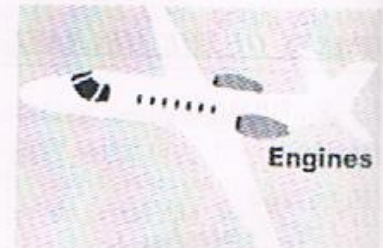
turn during flight. After landing, the spoilers are used like air brakes to reduce any remaining lift and slow down the airplane.

5. TAIL



The tail at the rear of the plane provides stability. The fin is the vertical part of the tail. The rudder at the back of the plane moves left and right to control the left or right movement of the plane. The elevators are found at the rear of the plane. They can be raised or lowered to change the direction of the plane's nose. The plane will go up or down depending on the direction of that the elevators are moved.

6. ENGINES



An aircraft engine is a propulsion system for an aircraft. Aircraft engines are almost always either lightweight piston engines or gas turbines.

*Rishita Acharya
(09DME006)*

DETERMINATION AND PERSISTENCE- KEY TO SUCCESS

This is a real life story of engineer John Roebling building the Brooklyn Bridge in New York, USA back in

1870. The bridge was completed in 1883, after 13 years.



In 1870, a creative engineer named John Roebling was inspired by an idea to build a spectacular bridge connecting New York with the Long Island. However bridge building experts throughout the world thought that this was an impossible feat and told Roebling to forget the idea. It just could not be done. It was not practical. It had never been done before.

Roebling could not ignore the vision he had in his mind of this bridge. He thought about it all the time and he knew deep in his heart that it could be done. He just had to share the dream with someone else. After much discussion and persuasion he managed to convince his son Washington, an upcoming engineer, that the bridge in fact could be built.

Working together for the first time, the father and son developed concepts of how it could be accomplished and how the obstacles could be overcome. With great excitement and inspiration, and the headiness of a wild challenge before them, they hired their crew and began to build their dream bridge.

The project started well, but when it was only a few months underway a tragic accident on the site took the life of John Roebling. Washington was also injured and left with a certain amount of brain damage, which resulted in him not being able to talk or walk.

"We told them so." "Crazy men and their crazy dreams." "It's foolish to chase wild visions."

Everyone had a negative comment to make and felt that the project should be scrapped since the Roeblings were the only ones who knew how the bridge could be built.

In spite of his handicap Washington was never discouraged and still had a burning desire to complete the bridge and his mind was still as sharp as ever. He tried to inspire and pass on his enthusiasm to some of his friends, but they were too daunted by the task.

As he lay on his bed in his hospital room, with the sunlight streaming through the windows, a gentle breeze blew the flimsy white curtains apart and he was able to see the sky and the

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As he lay on his bed in his hospital room, with the sunlight streaming through the windows, a gentle breeze blew the flimsy white curtains apart and he was able to see the sky and the

tops of the trees outside for just a moment.

It seemed that there was a message for him not to give up. Suddenly an idea hit him. All he could do was move one finger and he decided to make the best use of it. By moving this, he slowly developed a code of communication with his wife.

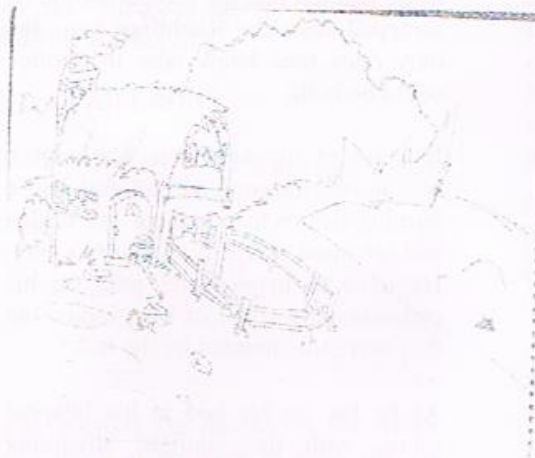
He touched his wife's arm with that finger, indicating to her that he wanted her to call the engineers again. Then he used the same method of tapping her arm to tell the engineers what to do. It seemed foolish but the project was under way again.

For 13 years Washington tapped out his instructions with his finger on his wife's arm, until the bridge was finally completed. Today the spectacular Brooklyn Bridge stands in all its glory as a tribute to the triumph of one man's indomitable spirit and his determination not to be defeated by circumstances. It is also a tribute to the

engineers and their team work, and to their faith in a man who was considered mad by half the world. It stands too as a tangible monument to the love and devotion of his wife who for 13 long years patiently decoded the messages of her husband and told the engineers what to do.

Perhaps this is one of the best examples of a never-say-die attitude that overcomes a terrible physical handicap and achieves an impossible goal. Often when we face obstacles in our day-to-day life, our hurdles may seem to be greatest to us, but they are very small in comparison to what many others have faced and overcame. The Brooklyn Bridge shows us that dreams that seem impossible can be realized with determination and persistence, no matter what the odds are.

**Hani Chotai, Assistant Professor
Mechanical Engineering Department**

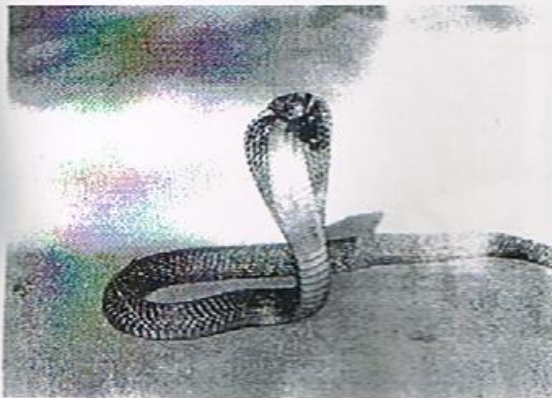


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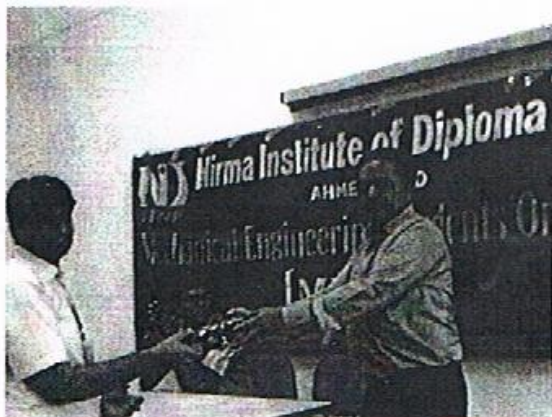


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*Sanchania Manan (09DME205)-First Prize
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AGM held on February 16, 2011



वा विद्या या विमुक्तये ॥

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