PAWAN NAYAR CLASS XII
MATA JAI KAUR PUBLIC SCHOOL

GROUP EC2
I st

ENERGY CONSERVED IS ENERGY GENERATED

What is energy?

Energy is the capacity to do a useful work. Now you would like to say - "Oh! I thought energy was just electricity."

Yes, electrical energy is the most important form of energy which a lay man knows. With electricity he lightens the darkness of night (and oh! the jolly good fellow leaves the bulb burning, when there is no need of it). With electricity man makes the air circulate by fan. Do you know the massive wastage of electricity, these 'tiring fans do when there are no human in the room.'

You may ask - 'Why I should worry about the wastage of electricity, when I pay my electricity bill duly. Yes, it is a good question. 'why should one worry if Ravanna rules the earth or Rama'. 'Hey man, because of your small wastage of electricity, millions of units of electricity are being wasted every second. When there is a power shortage; you come running, blaming the electricity board. Aren't you responsible. Look inside your heart man and then blame the humanity."

Whenever Oh man! you see electricity being wasted. Save it. Becasue electricity conserved is electricity generated. You waste your LPG (gas) for useless purposes and millions of people are standing in line to receive their cylinders. Your mobike is giving a low average and you don't worry about it. We never mind if you don't pay your income tax but every single drop of petrol you waste means another village home won't receive its share of electricity for yet another day.

One day you will realize that energy conserved is energy generated but by then your vehicles, Your machineries would have wasted enough Petroleum that the petroleum ministry would close down 28 years more and petrol would say 'goodbye' to earth.

You men, never realize the graveness of the situation. Some men may not be affected if third world war took place but, no man would come unaffected by the energy crisis.

If we want to see the locomotives moving on earth, we will have to conserve energy or/find new sources of energy.

When we know that energy conserved is energy generated why not talk about the modern ways of producing energy. Because, the more petrol or coal we use the more early will it reach it's peril.

One must realize that 'attack is the best form of defence'. We must find alternative, undiscovered ways of producing energy. Let's talk about a few.

SOLAR ENERGY - As our world moves into the twenty first century: the solar energy would be the answer to the solution of energy crisis. It has got a large potential. Most of the forms of energy on earth are directly or indirectly produced by the 'everglowing sun'. The most important aspect of Solar energy is that it won't finish for another 5 billion years. The need of today is to develop electrical energy; from solar on a very large scale. (Forgetting the cost factor) if one can send in space for the sole purpose of producing electricity. 24 hours a day, 365 days a year it would be fantastic.

Infact the scientist of superpowers plan to build space cities by the year 2020. Do you know that solar energy would be the only source of energy in the so called 'cities of tomorrow.

RESEARCH ON SUPERCONDUCTIVITY

Research is on; on the above mentioned subjects. Scientists the world over are (wasting) many a nights to discover the ultimate truth. Japan and F.R.G. would soon Launch roads and railway lines on which vehicles would spend less than ten times the energy ordinarilly and the vehicles would run at speeds challenging the concord. It is thought that if the research succeeds it would take only 1 hour to reach Calcutta from Delhi.

PRODUCTION OF ELECTRICITY BY THE DIFFERENCE OF TEMPERATURE OF WATER AT SURFACE AND IN DEEPS.

Engineers and scientist may probably soon generate electricity by the above mentioned principle of mine. It has been found that the temperature of water on surface of sea is about 27°C and temperature of water about 1000 - 1200 m deep in sea is about 4°C.

Let there be our hypothetical power station on the surface of sea. Let there be a motor and a pipe which brings water from the depths of sea. Let this water of 4 °C reach a chamber where NH_3 (Ammonia) is kept. Ammonia would melt and form liquid. Let the chamber be filled by Ammonia. Let there be a passage another chamber and turbines between. Now, if we connect NH_3 with the water of surface of ocean (27°C) it changes into a gas. A gas occupies more volume then liquid, it rushes through the passage to another chamber. In the meantime it turns the turbines and produces electricity.

PRODUCTION OF ELECTRICITY BY EDDY CURRENTS

When a good conductive material like Aluminium is placed in a fast changing magnetic field, currents are produced in the material which are called as eddy currents. Due to their nature these eddies are useless. They are accompanied by a lot of heat. In very strong, changing magnetic fields a temperatues of 6000°C can be reached. Now, it comes to the scientists and the engineers to grab the opportunity and try to produce electricity by the heat being produced.

GEOTHERMAL ENERGY

Production of electricity by the heat of the interior of earth is geothermal energy. Geothermal energy has a vast potential as an alternative source of energy. One must try to produce energy by the heat of earth because till the time man sees the rising sun, earth will remain hot (You can say for another millions of years, the geothermal energy has got a vast potential)

I have written a lot already and suddenly a silly C? thought strikes my mind why not we build a sun of our own. Yes, why not. The sun produces energy by the fusion of 2 protons or you can say a fusion reaction. If man is able to build the devil hydrogen bomb based on the fusion principle why not develop a fusion reactor.

THE FUSION REACTOR or OUR MANMADE SUN

Yes, since the fifties the scientists are working in a hope to produce the manmade sun. They have found that if one can achieve a temperature of 100 million celsius and a fixed number of collisions could take place in fixed time then the fusion reaction takes place.

You may ask how will we produce energy by the fusion reaction. Yes, it's a good question. The answer is when 2 deutarium atoms combine together to form a Helium atom there occurs a loss of mass. This mass is converted into energy by the famous Einstein's equation.

$E = MC^2$ where,
E - Energy produced
M - Loss of Mass
C - Velocity of Light

A 1 kg of matter would produce 9×10^{16} J of energy. Now, you will ask 'how will we achieve such high temperature and what you say the fixed number of collisions.'

Well, the answer is we produce such high temperature in, what is called as a **TOKAMAK**. Now, I can't explain the building of Tokamak, an engineer or a scientist would tell you more about it. But, for simple knowledge of the layman I can inform that a temperature of 200 million degree celsius was reached at a TFTR (U.S.A). But, they were unable to generate the required number of collisions.

Another tokamak in the MIT (U.S.A) was able to generate the required number of collisions but was unable to generate high temperature.

Thus the tokamaks are the ultimate answer to all our energy crisis, energy conservation and energy generation.

These had been the sources which would be an answer to our energy conservation, production, generation problems for the future.

But where do we stand present, today, in reality.

Well here are figures telling when the reserves would finish of the following important sources of energy production.

Petrol (known sources)	-	28 years
Petrol (unknown reserves)	-	about 75 years
Oil shales	-	another 25 years
Coal (unrecoverable)	-	In 250 years
recoverable coal like		
Coal ash etc.	-	In 1500 years
Iron ore	-	another 300 years.

Our generation may see proudly the rising sun but what about our coming generations. What crime had they done that we are making the world a total blackout for them.

If not for today, for tomorrow we must worry. Every drop of oil we save, every grass of coal left unused would mean energy lost. One must remember that all the energy conserved today will form the energy generated for tomorrow.

Today, we have limited sources of energy production. Till the time we develop energy which we would be proud of, we must see that the lights are off when there is no need of them. It is no disgrace to anybody if he switches of the button. As every man has got right to eat food, wear clothes, live in a house, every man must see his duties towards humanity. There must be not be a single place where energy is being wasted. One must remember,

Energy conserved is energy generated.