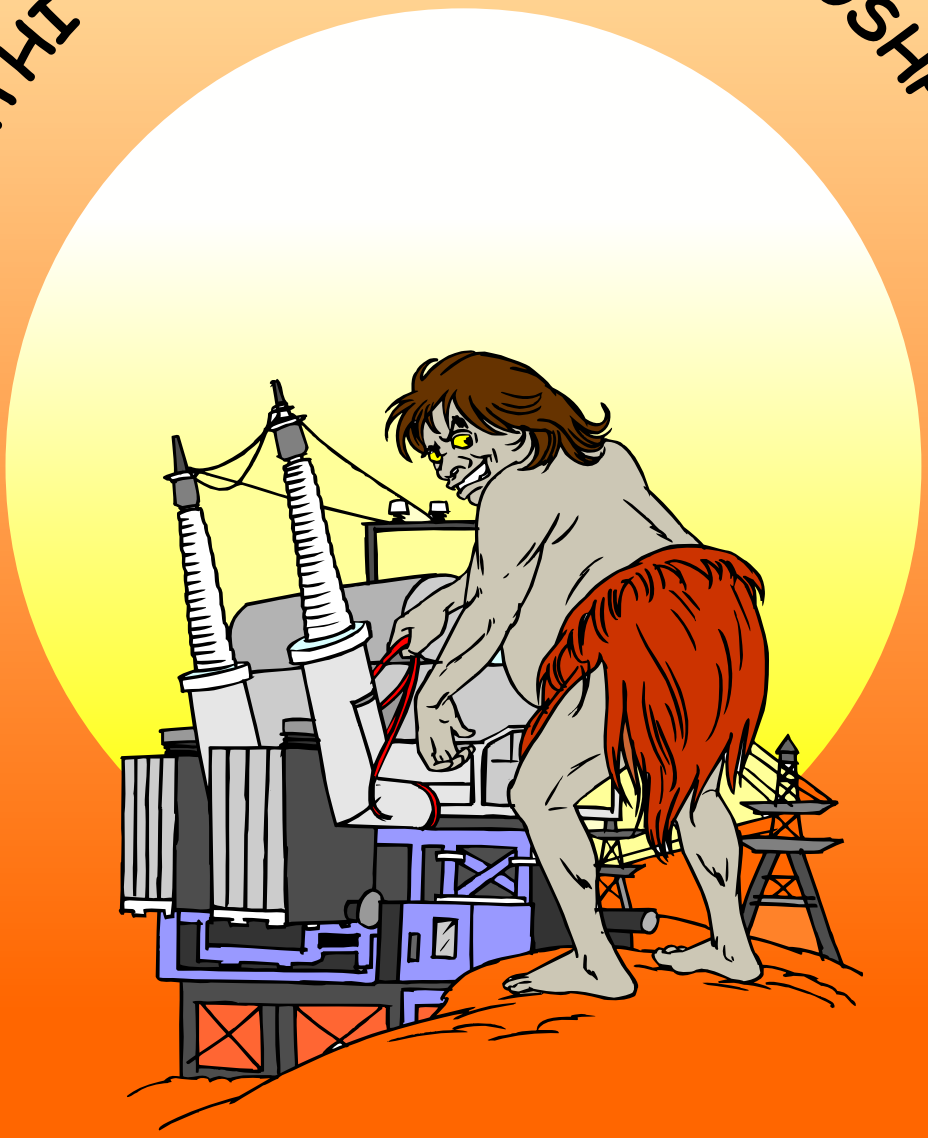
Environment For Children

KIRTHI BRINGS JOY TO SANTOSHPURI



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ABOUT THE AUTHOR

Mrs. Chhaya Ramachandran has a master's degree in English. She was a university first rank holder, gold medallist and recipient of a prize for overall proficiency in her subjects.

She started her career as a lecturer of the English language in a Chennai college. She served the banking sector for more than 30 years and retired as a chief manager.

She has gained expertise in communication, public relations and liaising, administration, planning and organizing from the rich work experience she acquired over the years.

Writing has always been her passion. Various in-house bank magazines and bulletins published her articles. She has penned reviews on books, which have been featured in `The Hindu'

She divides her time now among her interests, which are writing, sketching, teaching, music and photography.

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Editor

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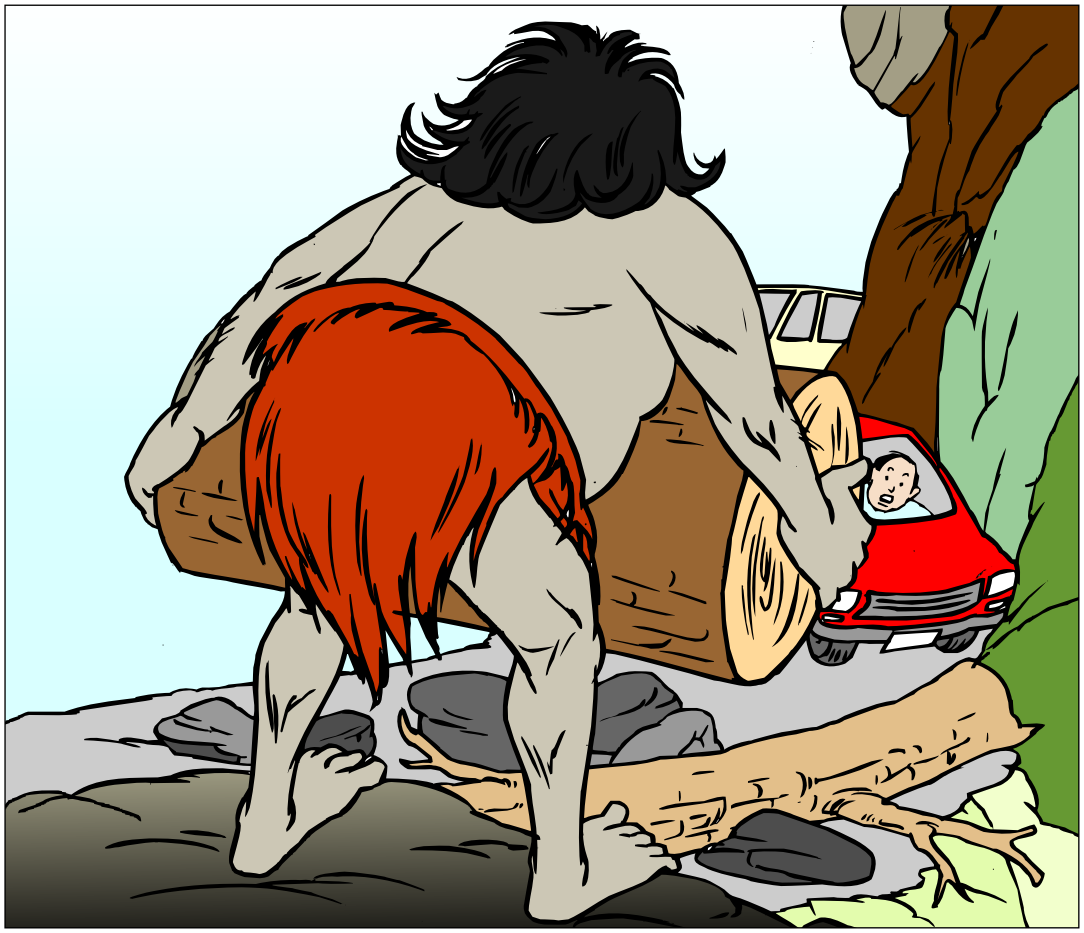
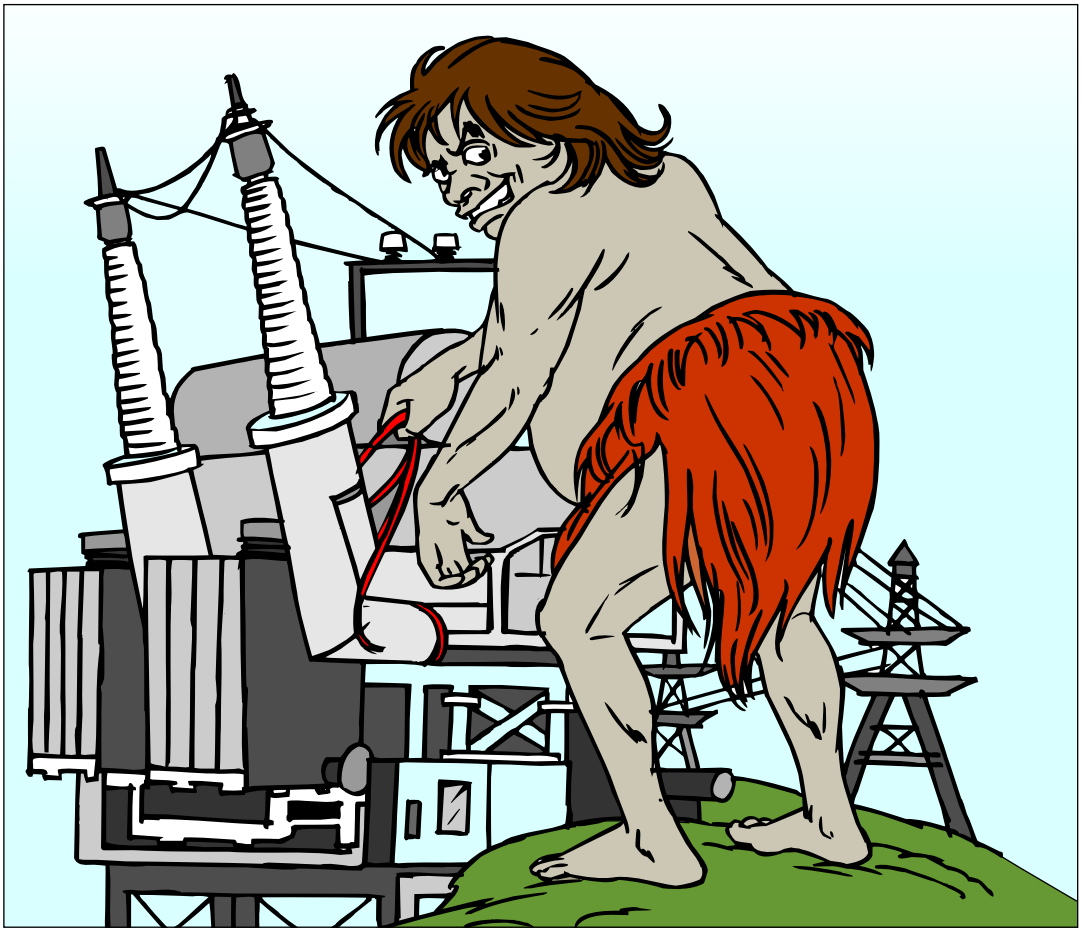
KIRTHI BRINGS JOY TO SANTOSHPURI

By
Chhaya Ramachandran



Would you like to hear the story of a foolish fiend who could not keep up with modern innovations? Yes, there lived on the outskirts of Santoshpuri a fiend called KillJoy. He was physically strong. He was foolish and wicked: he loved attacking people from his hideout, shoving cars and bikes off the roads with the pressure of his body , causing major accidents. He kept throwing huge stones on animals and hurting them, pulling down trees and placing them across the roads to stop traffic, frightening children and so on. People were sick of him. He was always devising ways to trouble families, upset their happiness and slow down their progress. Though he had his

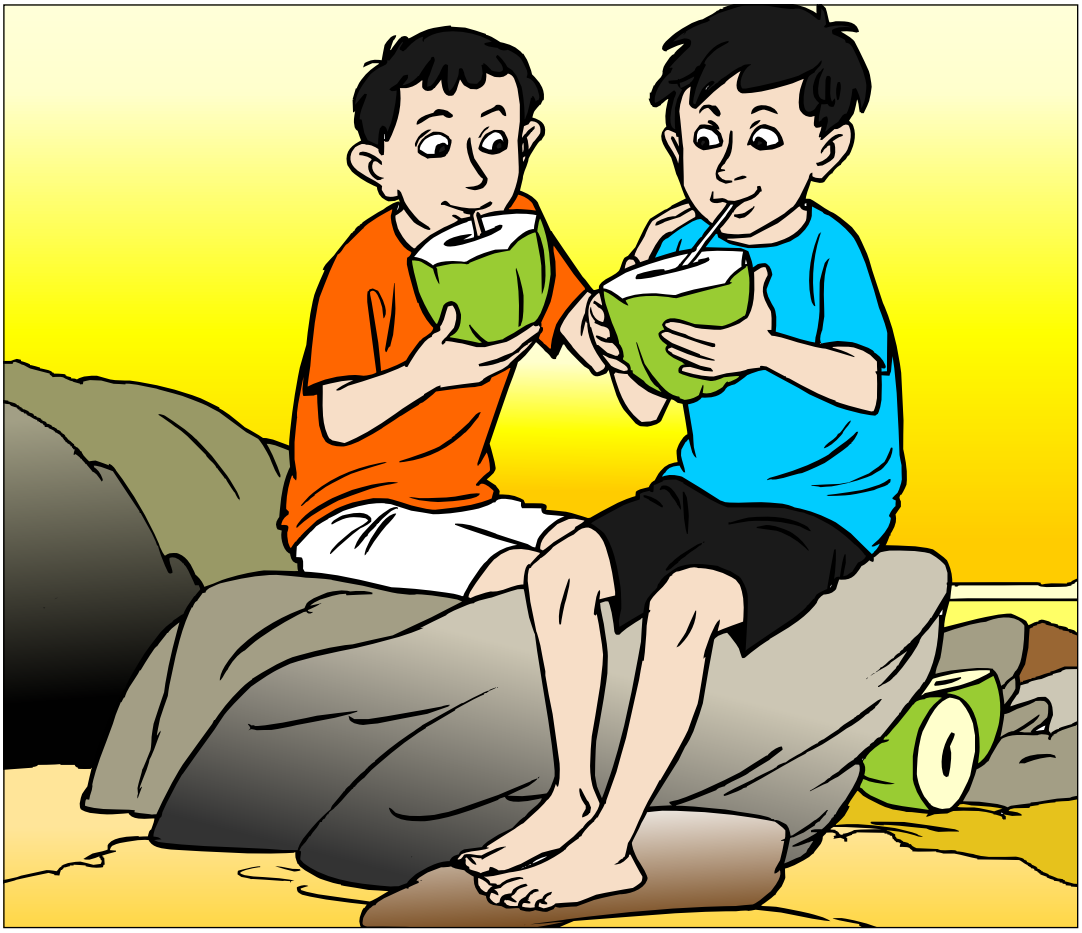


mental limitations, he was their permanent problem!

One day he decided to block the supply of electricity to Santoshpuri for an hour, as he had recently discovered the main transformer that carried electricity to the town. The next day, he switched off power for half a day, then almost the whole of the day next, and so on. He used the grid like a toy. He was greatly amused to see workshops coming to a grinding halt, homes suffering without light, heaters and refrigerators, children unable to prepare for examinations, hotels forced to close early, and office work everywhere coming to a standstill. A

number of people used generators to overcome the problem, but it was tedious, noisy and expensive. The local government authorities were unable to find a solution, either.

Kirthi was the young hero of Santoshpuri, slim and strong. He was a smart and intelligent lad with smiling lips and helping hands. Kirthi loved his city and its people. He wanted to find a way out of the power-cut problem. He suspected that KillJoy, and not the Electricity Board, was behind the problem now, but none could directly challenge and fight the Wicked One with brutal strength.



It was a hot day, and Kirthi and his friend Suman were sipping tender coconuts and discussing the matter.

Kirthi said, "We can't go on like this. Life is miserable. We can't fight evil face to face, we should do something!"

Suman said, "You have helped our people so often, like when together we outwitted the bank robbers…"

"Yes, and the serial car thieves..."

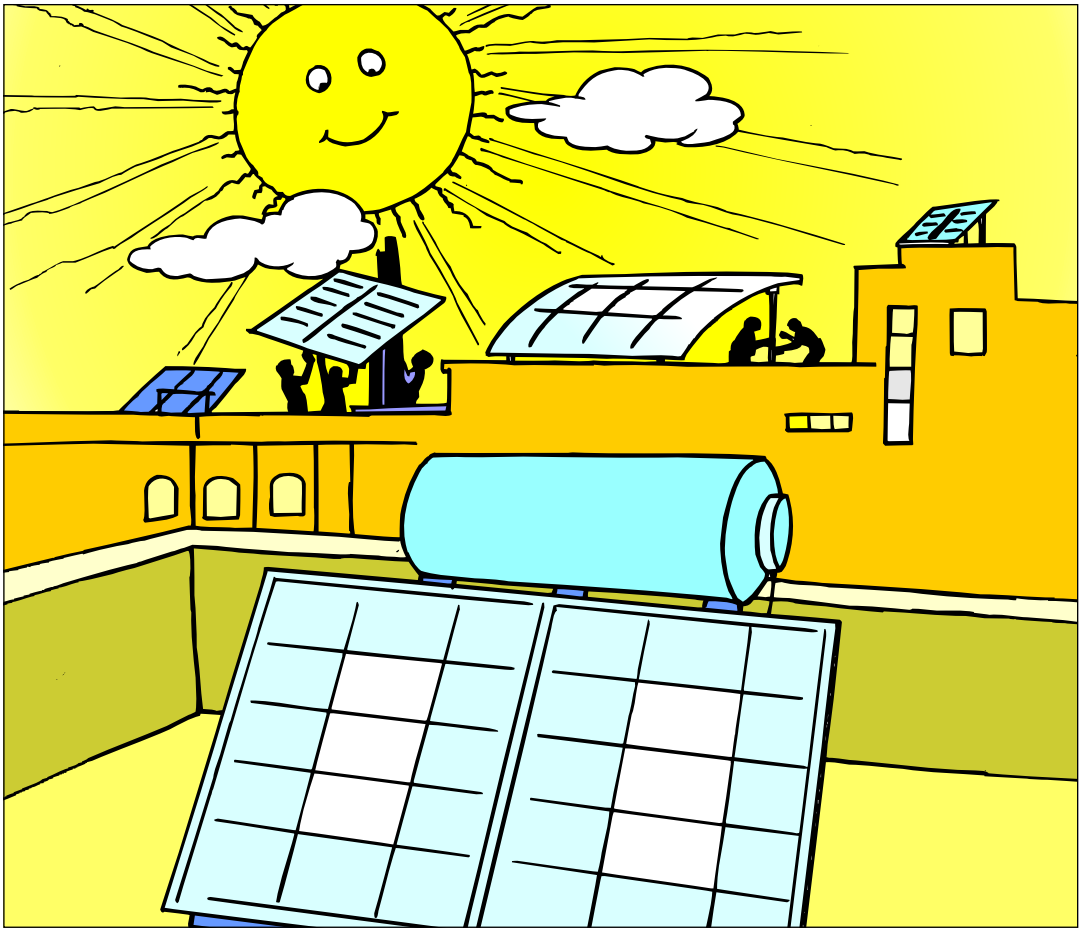
They had many memories of helping the people on so many

occasions, and knew they had to act now.

Kirthi said, "Well, we know KillJoy is only powerful after sunset. Water scares him too. Let us see! The immediate problem is the restoration of power."

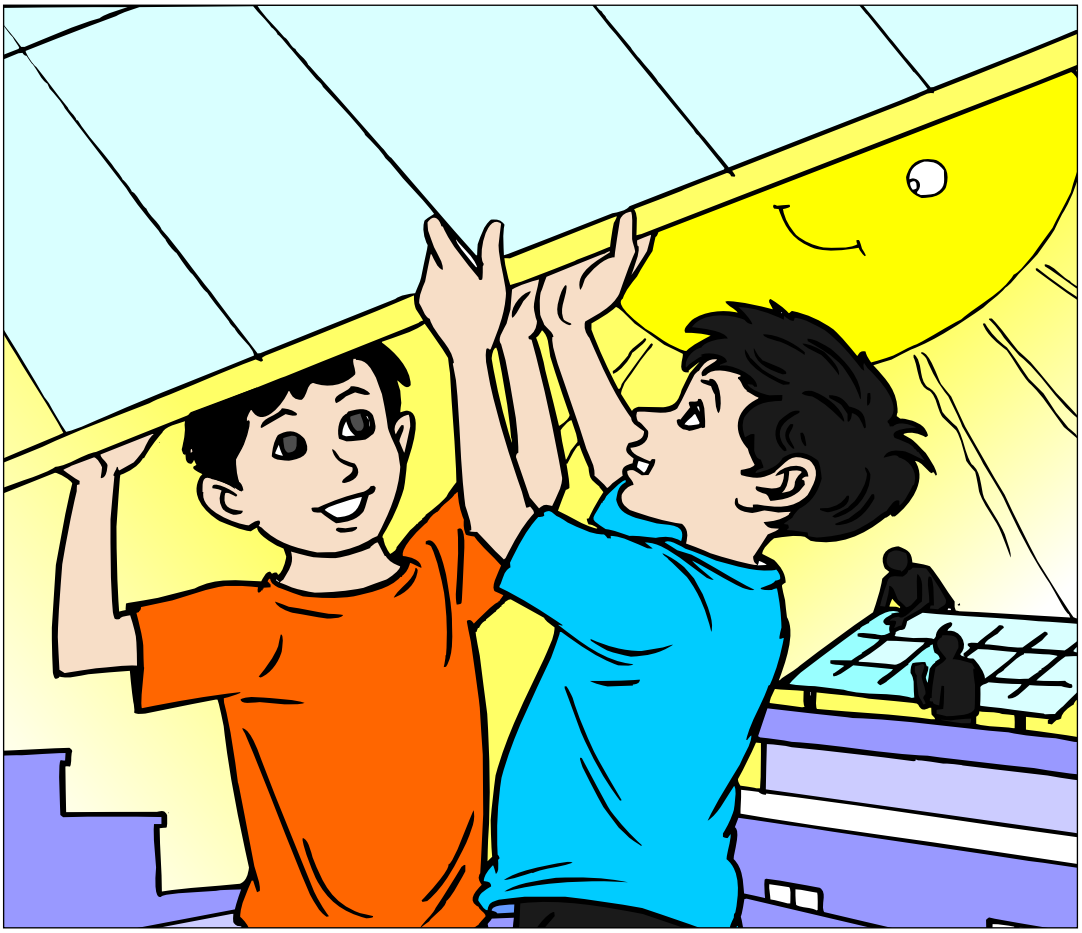
They knew power could not be restored unless the Fiend was outwitted and defeated. They discussed a specific plan for this before going home.

During the next two weeks, they referred to many books in the Town Hall library, met a few industrialists who welcomed Kirthi as a friend, visited the City Corporators, and got meetings



organized on a war footing. Kirthi knew the citizens looked up to him to bring them relief in their hour of crisis. They were still under pressure because of KillJoy cutting off power.

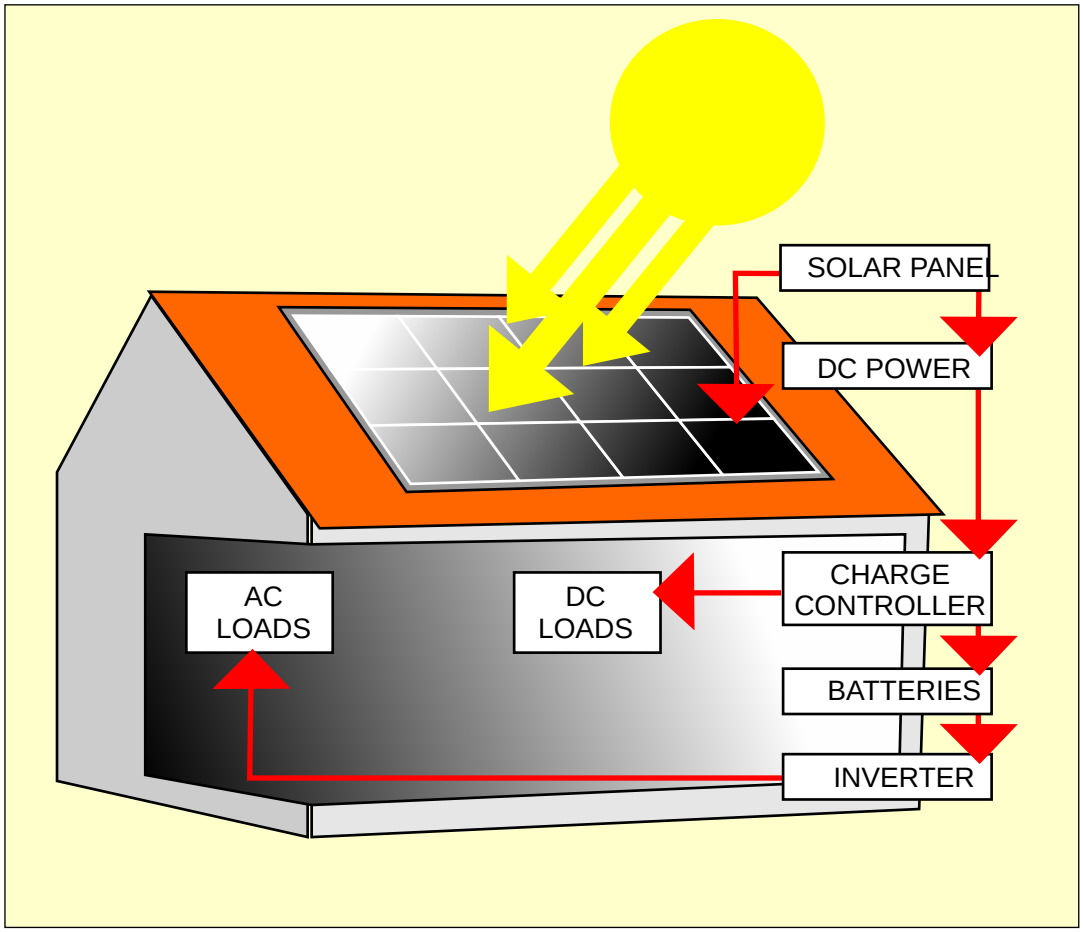
A few weeks later, as Kirthi had planned it with the guidance of the corporators, the citizens started working on sourcing energy from Nature itself. This energy, alternative to electricity, was obtained from a natural source which meant no destruction of the environment. It was received directly from the greatest and most visible natural resource, the Sun. Whenever there was electricity available, metallic structures were fabricated, and all other work was dropped during daytime. Many structures were handmade, too.



"Necessity is the mother of invention", said Suman.

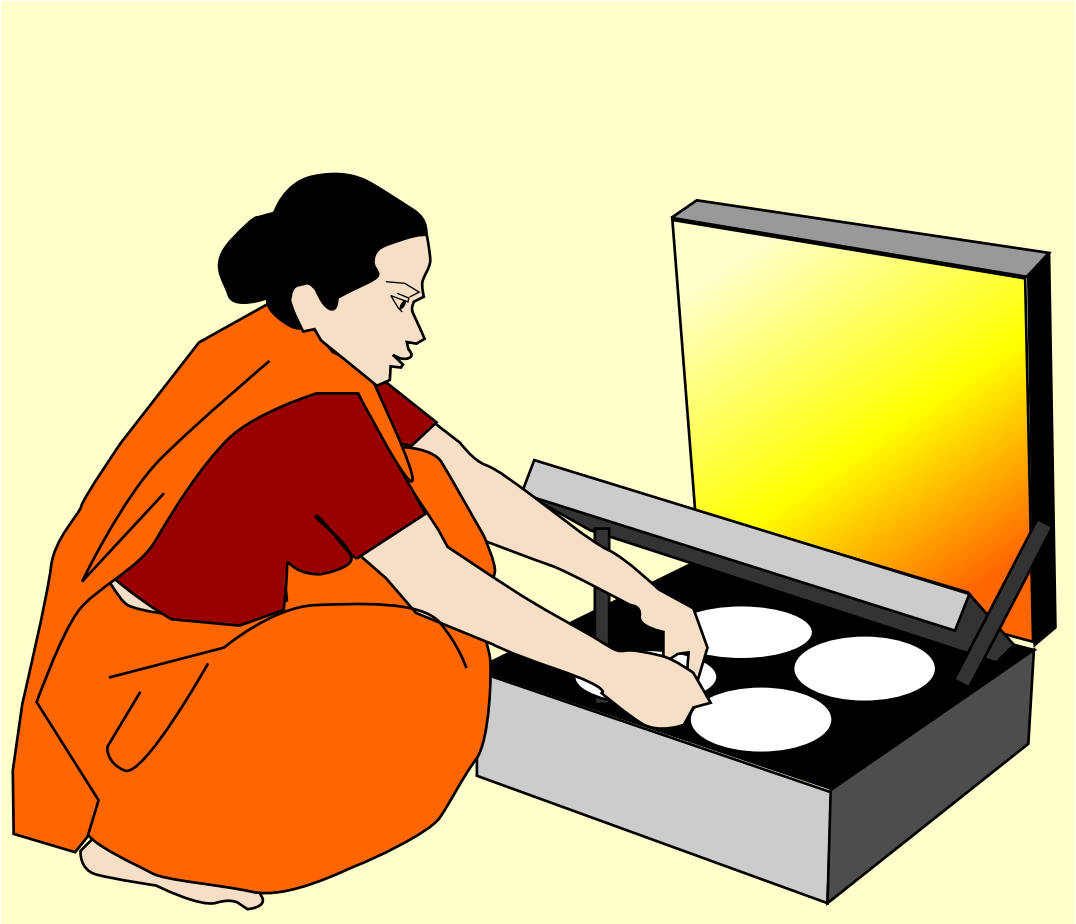
"And the Sun is the father of solar energy we are now harnessing in a big way!" quipped Kirthi.

They were on their rounds as junior members of the Monitoring Committee, inspecting the erection of hundreds of solar discs and equipment which caught sunlight in their reflectors and stored it for a fairly long time. This power was supplied to a number of connections for domestic and factory use. The cost was shared among the affluent industrialists and businessmen. The Town Authority made it cheaper for them by bearing some



of the cost by way of subsidy. These citizens were also assured that they would pay reduced taxes later.

As solar energy was available, Kirthi was happy to monitor power for kitchens coming from it. People could save the more expensive liquefied petroleum gas. A solar box cooker, an insulated transparent topped box with a reflective lid, was designed to capture solar power and keep the inside warm. The solar cooker's lid was usually of aluminum foil, sometimes aluminum sheet or plate and occasionally a glass mirror in order to lower the radiative heat loss. The top was moved aside for cleaning and to handle the food. Solar cookers were usually made



out of locally available materials. They were often small cardboard devices suitable for cooking a single meal when the sun was shining, or wood and glass boxes built into the sunny side of a house with thermal time constants of a number of hours. Thus they could cook even when the sun was behind a cloud.

The volunteers ensured that solar cookers were installed in all homes, and also solar water heaters in every house and factory in the city on terraces. All this work went on while the Fiend's energy levels were low, that is, in the mornings. However, the people benefited the whole day, especially as Santoshpuri had extended summer months.

KillJoy woke up one day and found life going on normally at Santoshpuri. People ate and went about their work, workshops were running and light and heat were on! He was furious. He came down thundering, and screamed at the people. He was looking fierce, with huge rolling eyes, sharp and large yellow teeth, large hands and feet, a balloon like tummy, a garland of pebbles around his neck, and a rubber baton in his hand, which he kept turning round. He wore a piece of skin around his waist. He called for Kirthi, for he knew the boy was up to some 'mischief'.

He hurled his heavy baton at Kirthi and shouted at him. Kirthi ducked and yelled, "Why are you troubling us, KillJoy? Go your way. We do not want to see you!"

"How come everything's working? What are those contraptions on the rooftops I never saw before? I shall destroy them in a jiffy!" he proclaimed loudly.

"Go ahead, if you want! But you cannot stop us! We have other sources to get our power from!" challenged Kirthi.

KillJoy was confused and felt weak in the knees and went back limping as the sun's rays were already scorching by then.

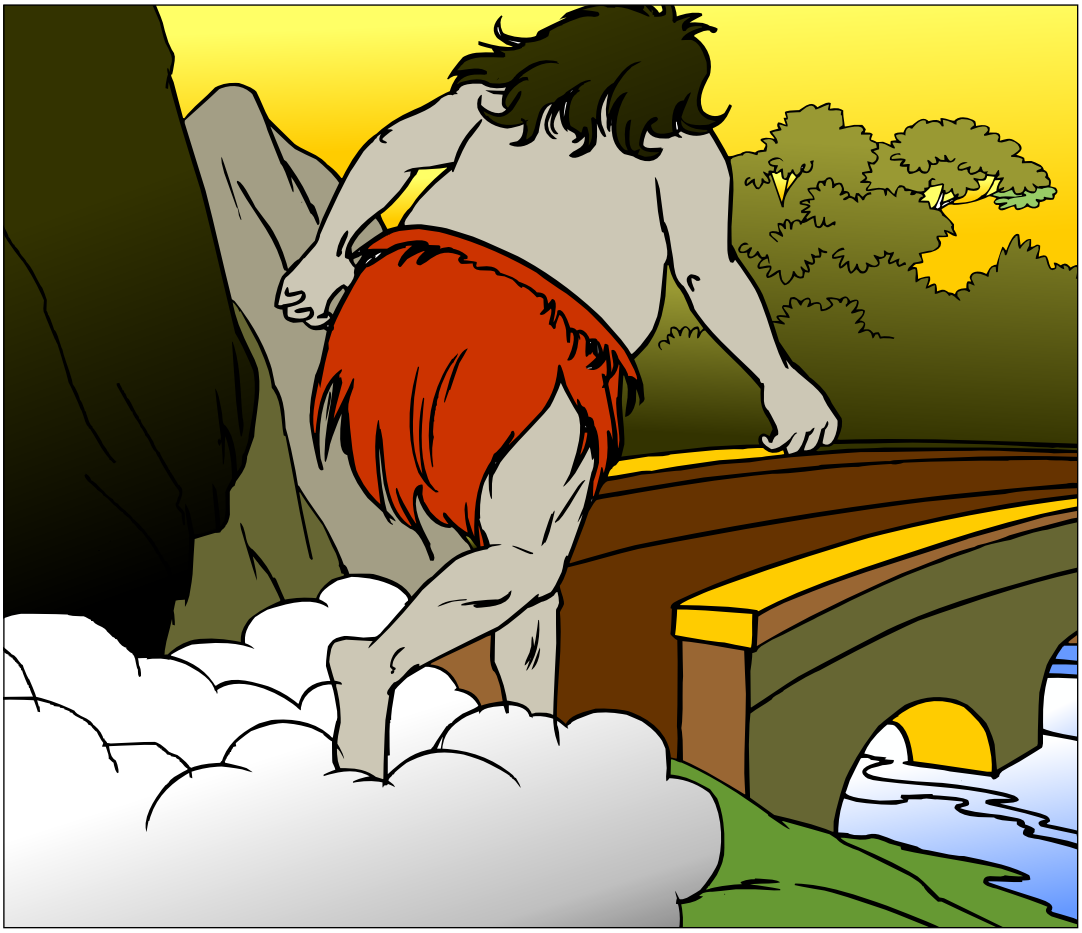
"Now I know what to do to keep KillJoy away for ever!" said Suman, excited. "We must increase the power of heat and light when KillJoy is around and he will run away!"

"No, that will not do, we shall be straining ourselves..." said Kirthi. "We have to first prevent him from damaging the equipment already installed. Also, we must forever get rid of him!"

That night they could hear the Fiend stomping across terraces, but the retained light and heat in the solar equipment must have kept him at bay.

Next morning, after meeting a select group of friends who followed them, the two boys went up the hill where KillJoy lived, and called him out. It was a daring act, but they had to do it before the brute resumed his destructive deeds.

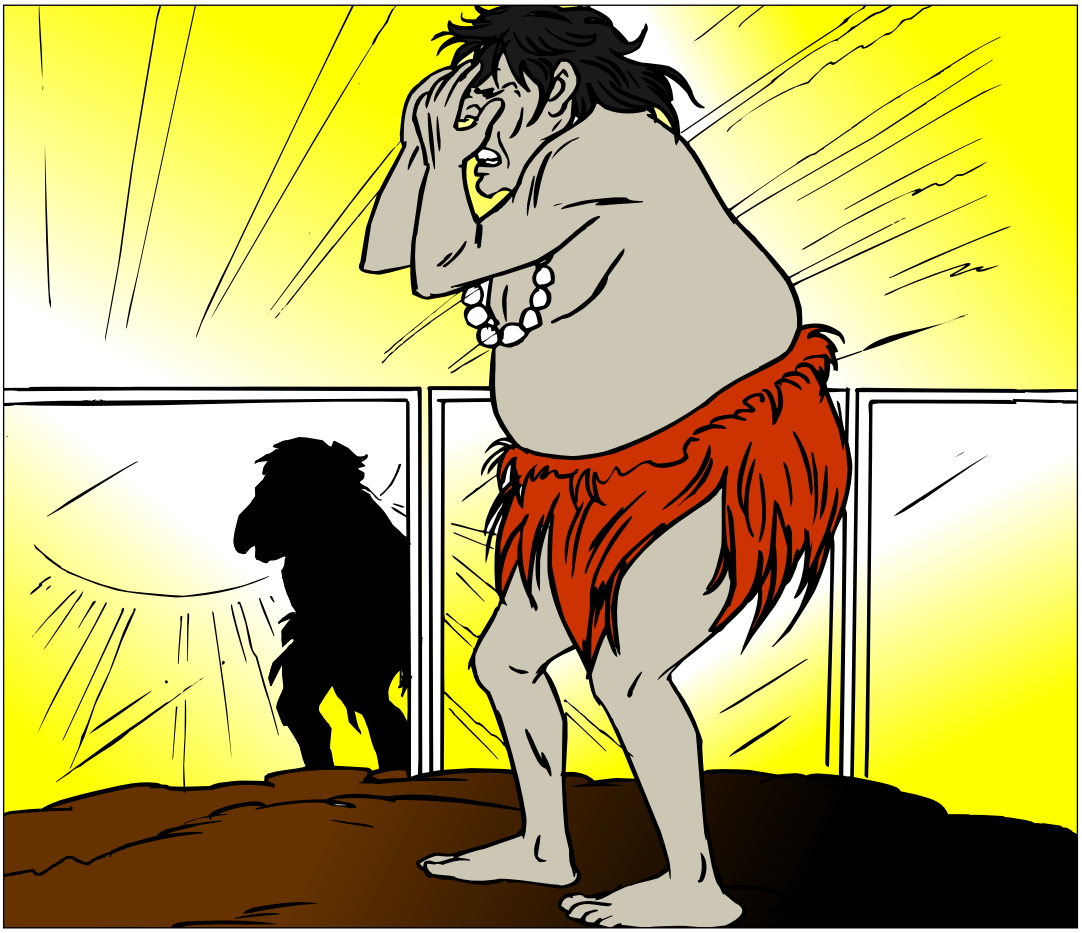
"Hey, KillJoy! If you want to know how we still get power after you stopped it, come to the Lily Pond Woods right now!"



KillJoy hesitated. "No, you are playing a trick on me!" he said cautiously.

"Come out and take a look, if you dare!" said Kirthi.

Immediately, he rushed out with a trail of dust, ran down the hill across the bridge that led to the woods. There was an open ground in its centre near a huge pond. It was dawn but the Fiend was still powerful. "Look, that's the stuff you were asking about!" said Suman. They walked half a kilometre to reach the place Suman had pointed at. They were walking slowly so that the sun could rise meanwhile.



The sun was up, a bright globe in the eastern sky. They stayed behind and shouted at KillJoy to look in front. Something in front of the Fiend was gleaming, and next something more, and again next, more glimmering… The Fiend closed his eyes, screamed in pain and writhed at the sudden focused shafts of light and heat that hit him all over the face and body. It was strong reflected light from the rows of a hundred-odd mirrors that were lined up there in angles that would catch and reflect the sunlight.

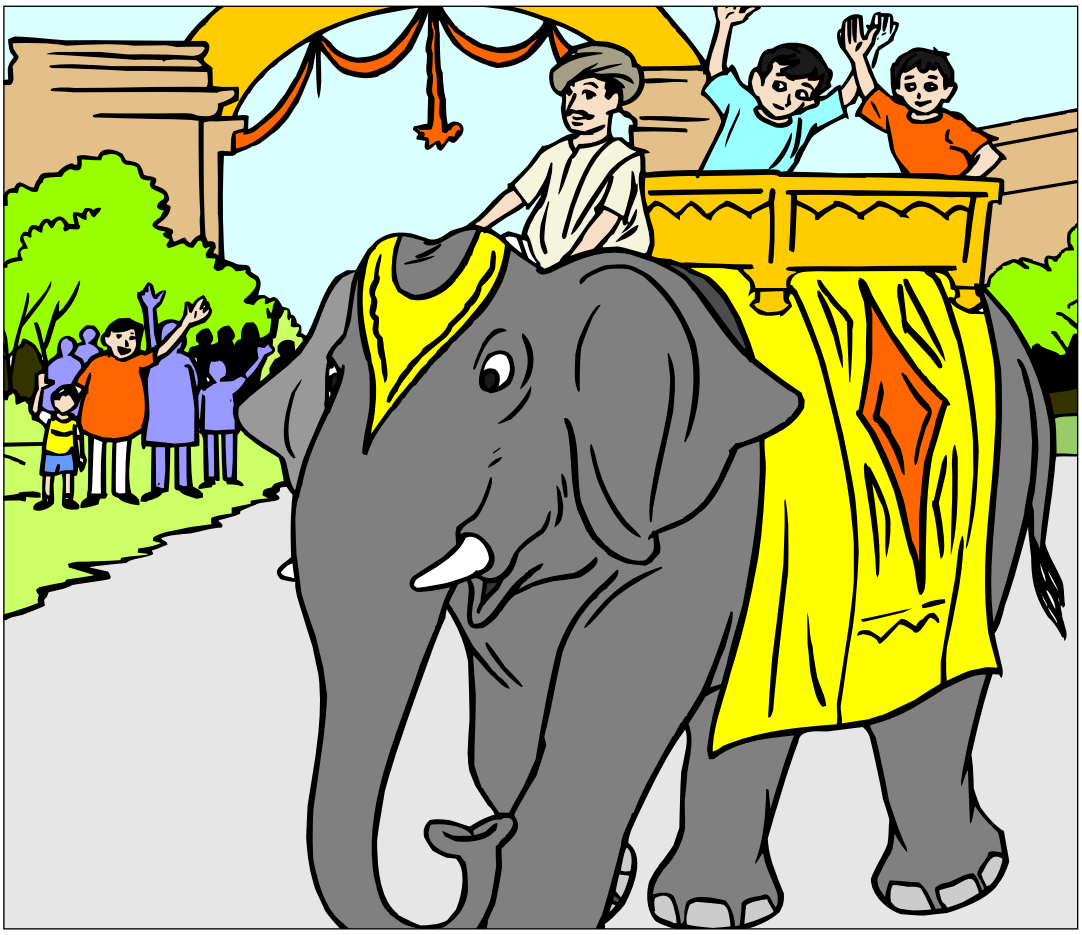
"Stop it! What's all this? Yeoooowww!!!" he howled.

"Oh, they are our Protectors you see there, they will kill you if you touch even one of our Energy Machines!" said Kirthi loudly and clearly.

He was pointing to the mirror images of the Fiend rows upon rows in front of him, looming large, turning and shouting. KillJoy had never seen mirrors, therefore never his own reflection! He was terribly scared of the images, the light and the burning heat, and turned to run towards the hill at a great speed, screaming for life. He was already feeling weak with daylight upon him. As Kirthi's other friends had placed large patches of thorny bushes on the way by now, he stumbled on them.

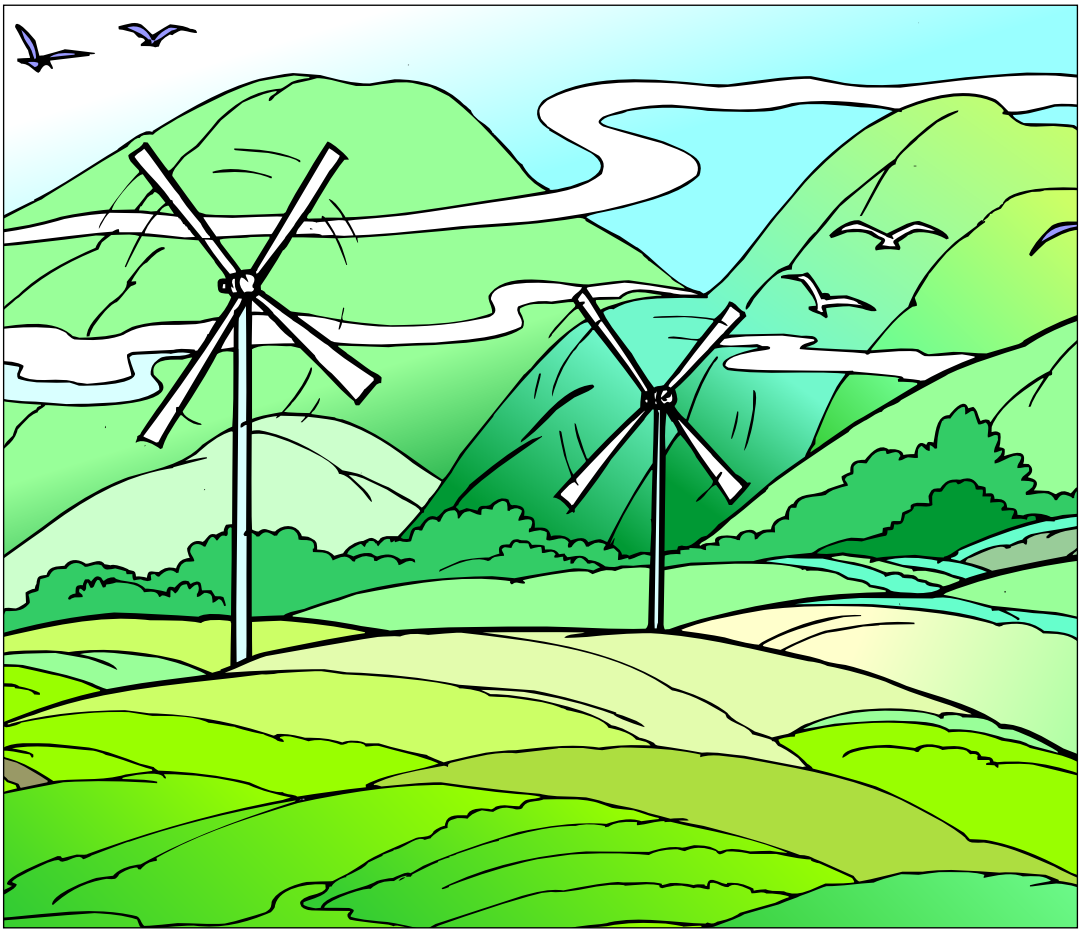
He turned in a different direction, and fell into the huge pond, which was almost a lake! The foolish Fiend did not know swimming, and so did not surface. Kirthi and Suman knew he would not come back to disturb them, at least for a long time to come! They could now go back with relief to their electrical installations and still maintain the solar equipment as alternative or reserve.

The citizens, who had by then gathered, shouted in joy. All had heard the news of the Fiend's disappearance and began applauding the boys. Their mirrors, used for solar cookers as reflectors, had helped!



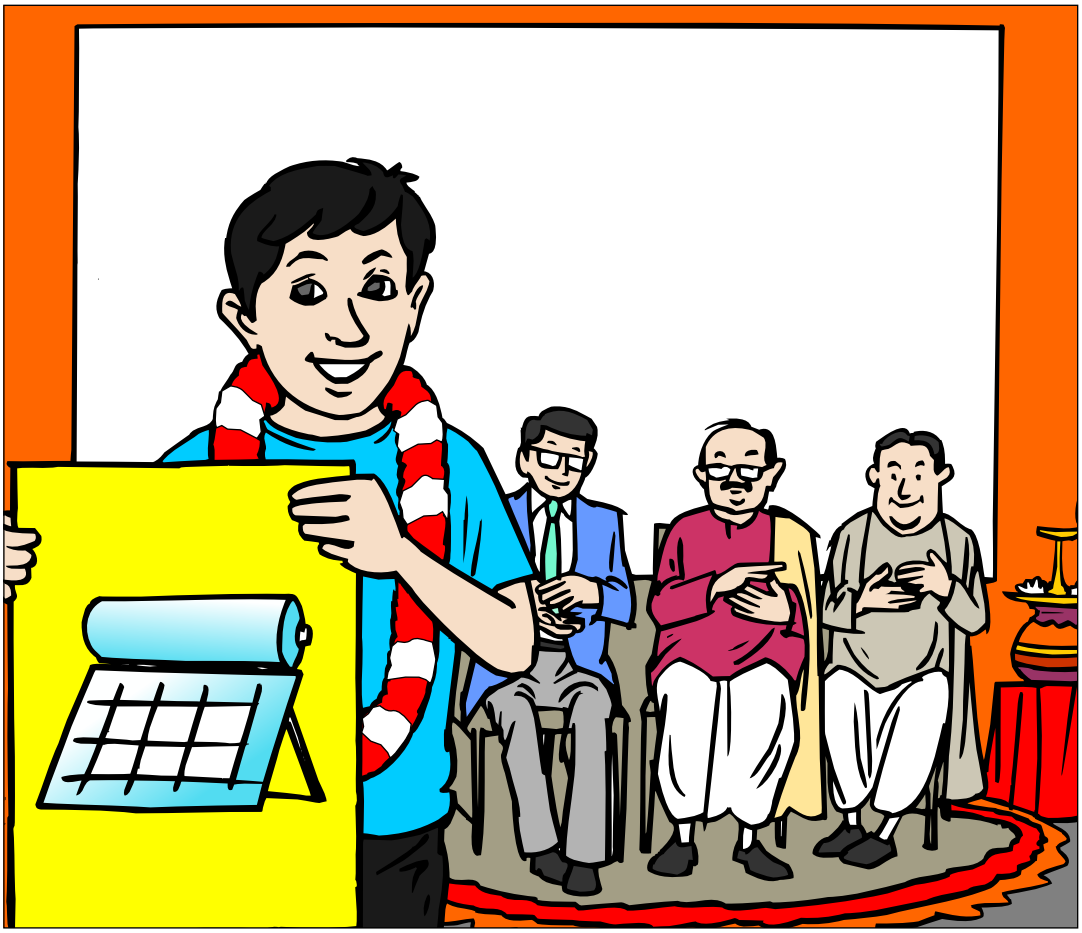
Kirthi explained that they had taken a chance, knowing Killjoy was scared of light and heat. Luckily, it so happened that he had not seen mirrors too!

Shortly, Kirthi, Suman and his friends were taken on elephant-back in a procession to the Town Hall for celebrations. Kirthi said there were more sources from which to tap energy, for which Government support and subsidy were also available. Suman and he had taken the trouble to make beautiful, illustrated charts for school children on these sources and distributed them. They were about wind power, tidal power, hydro-electric power, geo-thermal power, and so on. These



required planning at Government level and initiative from industrialists.

In fact, the wide open spaces outside Santoshpuri could be used for harnessing wind power to produce electricity, said the Mayor, who addressed the gathering. It seemed that these had been identified as spaces where the wind blows at very high velocity. He said some industrialists from the town were already on the job with Bank help and Government subsidy. The power that could be produced for their use with a wind-mill facing the wind of 22 km. per hour, would be around 50 watts.



All knew that they could no longer take electricity for granted, that it would always be there. They had to train themselves to find other sources of energy as they had now learnt to use solar energy, as electricity was precious and so much in demand.

Kirthi said, "Well, KillJoy was a blessing in disguise! We now know how good solar energy is! Only because he put off the power grid, we took steps to install so many solar-based devices in such a short time!"

Santoshpuri was stepping into an era of happiness and prosperity, indeed!!

Facts

Alternative energy sources hold the key to the future, for, without them, our planet will one day head into a blackout, or go back to the Middle Ages when there was no power.

Studying in detail the more popular renewable energy types, we come to know their advantages and disadvantages :

Solar Energy - Advantages

Clean, non-polluting.
Renewable, endless supply that belongs to no one.
Works best in the sunniest, often the poorest, parts of the world.
Fits with other clean systems.
Flexible and modular - systems can be resized.
Safe

Solar Energy - Disadvantages

At present solar electricity produced is more expensive than grid electricity as initial expenditure and maintenance are more difficult and costly. Solar panels collect dust and require cleaning. Dust on the panels significantly reduces the transfer of energy from solar radiation to electric current.
Cannot be used in cloudy places as the single alternative energy system
Energy has to be stored in batteries, hydrogen, water or other matter.

Wind Energy -Advantages

Wind energy is clean and non-polluting. The generation of wind power does not produce any by-products that could be harmful to the environment.

Wind supply is plentiful, so wind energy is a renewable supply.

Suitable for less sunny regions. This creates the possibility of generating energy non-stop, during day and night.
Fits well with other systems. The generated wind energy can be used full time in residential or commercial applications combined with regular power supply. It can also act as a back-up in case your residential supply line fails.
Simple technology. There is nothing too complex, mechanically, in terms of designing and building wind turbines.
Cheap electricity. Wind energy is cheaper than other sources, as the infrastructure requirements are relatively low and last for a long time.

(However, land cost changes from time to time! It is increasing now.)

Safe, if properly maintained.

Wind Energy - Disadvantages

Irregular nature of the wind. We do not know when the wind will blow.. Constructions companies try to place turbines in the most windy areas, even though at times, it still might not be as windy.
Affects bird population. Birds and other flying creatures have trouble seeing the turbines. But special coloring patterns and slower moving blades have reduced this problem.
Wind farms generate noise in quiet, rural sites. Construction companies in India are yet to solve this, but abroad they have done so, by moving the turbines offshore (in the middle of a lake or a river).

Biomass energy - Advantages

Biomass production involves using garbage or other renewable resources such as corn or other vegetation to generate electricity. When garbage decomposes, the methane produced is captured in pipes and later burned to produce electricity. That way, nothing on this Earth can be wasted. The result is less demand on the Earth's resources, and a higher carrying capacity for Earth because non-renewable fossil fuels are not consumed.

Biomass is abundant on Earth and is generally renewable. In theory, we will never run out of organic waste products as fuel, because we are continuously producing them. In addition, biomass is found throughout the world, a fact that should lessen energy pressures in third world nations.

When methods of biomass production other than direct combustion of plant mass are used, such as fermentation and pyrolysis, it does not pollute environment.

Since CO_2 is first taken out of the atmosphere to make vegetable oil and then put back after it is burned in the engine, there is no net increase in CO_2. Vegetable oil therefore does not contribute to the problem of greenhouse gas. (Greenhouse gases are essential to maintaining the temperature of the Earth; without them the planet would be so cold as to be uninhabitable. However, an excess of greenhouse gases can raise the temperature of a planet to dangerous levels.)

Vegetable oil is generated from sunlight and CO_2 by plants. It has a higher flash point and therefore is safer than most fossil fuels. (The **flash point** of a flammable liquid is the lowest temperature at which it can form an ignitable mixture in air.)

Changing over to vegetable oil could be quite easy as biodiesel works wherever diesel works, and straight vegetable oil also is a good substitute which needs very little modification.

Biomass Energy Disdvantages

As it is direct combustion carbon-based fuel without emission filtering, it generally leads to air pollution similar to that from fossil fuels.

Current production methods would require enormous amounts of land to produce biomass energy to replace all gasoline and diesel used in the world today and for future use. Land used for food production and water mass have to be exclusively used for those purposes and there may not be enough land that can be made available for biomass energy production.

Other sources of alternative energy :

Electricity from batteries for transportation, hydroelectric energy, nuclear energy, geothermal energy and tidal/ocean energy.

[Tidal/Ocean energy involves the process in which, the regular rise and fall of the water level in the earth's oceans, is capable of producing energy. The rise and the fall is a result of the gravitational forces between the earth, moon, and sun **]**

Gobar gas - or gas produced from animal dung in large scale in farms produces enough fuel from kitchen gas ovens to small factories in rural areas, especially in India. Government subsidy and loan schemes are available for production of this type of energy.

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Activities:

1. The simplest example of solar energy use is your **calculator** powered by solar energy.. The solar cells on a calculator are called photovoltaic cells and are made of semiconductors, like silicon.

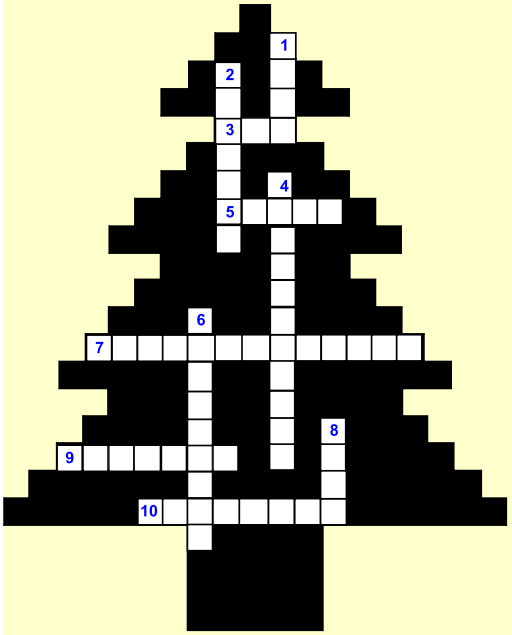
Hold the calculator away from light and see what happens. The figures do not show. As long as there is light in the room, the calculator will always work by converting light into useful energy.

2. Greenhouses and solariums are common examples of the direct use of solar energy. A greenhouse is a structure with a glass or plastic roof and frequently glass or plastic walls; it heats up because incoming solar radiation from the sun warms plants, soil, and other things inside the building. Air warmed by the heat from hot interior surfaces is retained in the building by the roof and wall. These structures range in size from small sheds to very large buildings. They have glass surfaces that allow the passage of visible light from the sun but slow down the escape of heat and infrared energy.

The glass used for a greenhouse works as a selective transmission medium for different spectral frequencies, and its effect is to trap energy within the greenhouse, which heats both the plants and the ground inside it. This warms the air near the ground, and this air is prevented from rising and flowing away.

This can be demonstrated by an experiment: Open a small window near the roof of a greenhouse: the temperature drops considerably.

3. Here is a **crossword puzzle** which is all about energy sources. Think of the suitable words you know relating to the subject and fill the tree grid!



Clues

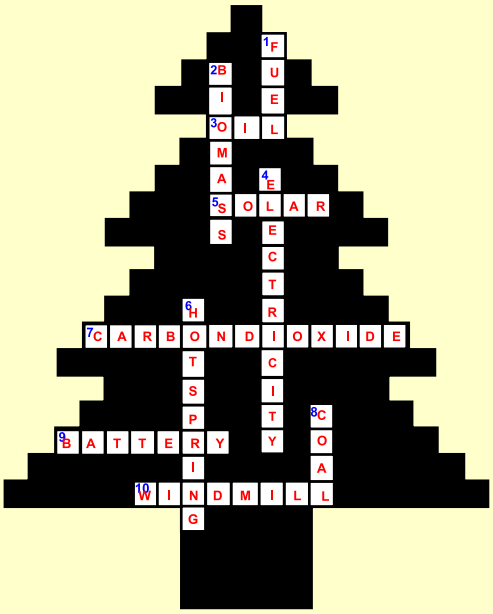
Across

3 .Black Gold (3)
5. Adjective of Sun (5)
7. Plants breathe this in, we breathe it out. (6-2-5)
9. Storage cell (7)
10. Energy producing turbine (4-4)

Down

1. Any flammable substance that provides energy (4)
2. Renewable energy source from garbage (7)
4. The power city you can't live in (11)
6. A fountain of hot, bubbling water (3-5)
8. A black fossil fuel (4)

Solution to crossword



4. Practise these ideas to actively implement saving of energy in real situations at home and outside:

Play outside!

By exploring the great outdoors you will learn about nature and save electricity at the same time.

Avoid stand-by and turn off lights

Turn off televisions, videos, stereos and computers when they are not in use - they can use between 10 and 60% of the power they use when on "stand by". Turn off lights when you don't need them - it saves energy already after a minute or two. Turn off computer monitors when you take a break.

About your fridge

Do not leave fridge doors open for longer than necessary, let food cool down fully before putting it in the fridge or freezer, defrost regularly and keep at the right temperature. Where possible don't stand cookers and fridges/freezers next to each other.

Getting around and on your way to work and school

When you want to make short journeys, try walking! Use a bicycle for short trips and local shopping. It keeps you fit too and is fun too! Besides valuable petrol/diesel is saved. Make more use of public transport, such as buses and trains, for longer journeys. Share car journeys by making car pools with neighbours / colleagues or friends and save several litres of fuel every day.

Fluorescent lamps are cheaper in the long run

Ask your parents to replace the lights you use most with compact fluorescent lamps. (CFL) They initially cost more than ordinary lamps but you end up saving

money because they use only around one-quarter of the electricity to prove the same light. And they last four times as long as a normal light bulb!

Tell your friends and family

Recruit your friends and family for the struggle to save our climate, our planet and our health. We must enlist other people - many thousands of them - if we are to win the fight.

Play this game: Switch 'em off - interactive game screen capture.

Dirty power stations are polluting our atmosphere, causing climate change and global warming. Play an interactive online game from WWF, "switch them off as fast as possible to save our planet's treasures".

The link to the game is:

Http://www.panda.org/about_wwf/what_we_do/climate_change/what_you_can_do/tell_friends/index.cfm

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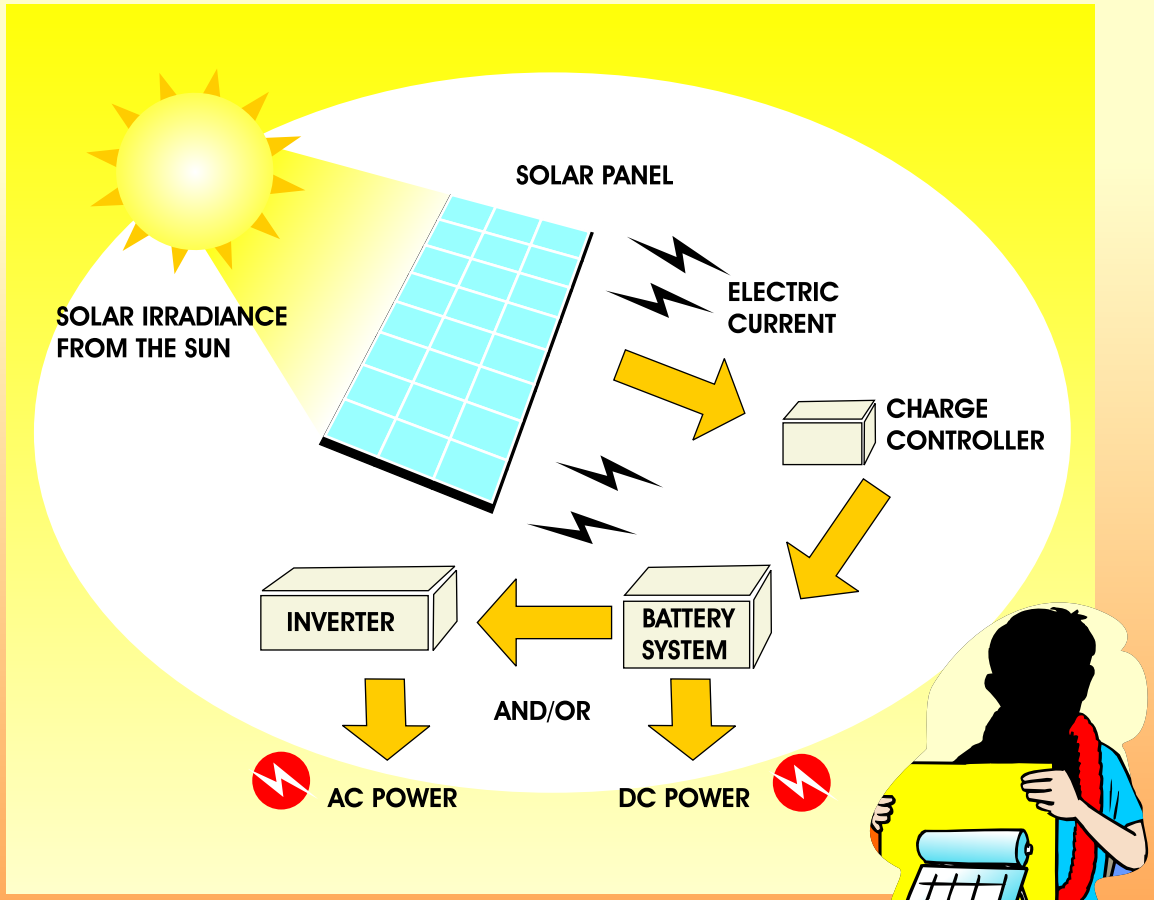

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