SOLAR ENERGY NOW USED IN MANY WAYS

Direct Application Impractical But Indirectly Sun's Heat of Great Value.

Solar heat as a means for warming our houses and obtaining power for running engines is a posibility according to Prof. G. D. Swezey of the astronimical department at the state university. But he expreses doubt as to whether there ever will be any commercial use of solar heat. He adds however, that there is a plant in the region of the Nile river in Africa where the sun's rays heat is used to run a steam engine. Large mirrors are used and these reflect the sun's rays on a boiler and thus a little steam engine is made to run. This plant is used for the purpose of irrigation, water being drawn to irrigate small patches of ground.

Some of the text books like Young's astronomy describe such plants and give illustrations. Perhaps these are no more than a demonstration or a toy. He says:

"It would be possible to do considerable work with solar heat but the question is rather one of feasibility and cost. The heat could be stored to run a little engine but the real problem is 'would it pay?' Large areas of land would have to be used and crops could be grown on them. Some method would have to be devised of converging the sun's heat over large areas with a huge curved mirror by impinging the light on a boiler. Or it might be possible to use many small mirors and send all the heat converged towards one point. Theoretically I do not see why it could not be done. There are all sorts of ways of storing energy.

Water Power Offers Most

"But really the future development of energy is pretty likely to be along the line of water power. This, caught in the mountain regions and converted into electricity, could be sent to the cities where it was needed. It is possible to send energy in this way long distances. The energy of Niagara is conveyed by wire to light Canadian cities. In like manner in California they are harnessing the power of Lake Owens in the northern part of the state and are establishing a plant which will light many cities and run machinery. So, while it may possibly be feasible to use heat, it is very doubtful whether it could ever be made to compete with our tried methods of transmitting water power. There is no feasible way of storing it for a length of time to use later.

"But getting water power in the mountains we really are taking advantage of sun heat. For it is by sun heat that water is evaporated from the surface of the ocean, lifted and discharged as rain on the high land. It is rather a question of what is most practical and most valuable. Practically every kind of energy we use on the face of the earth is developed from run power. All forms of energy come directly or indirectly from the sun. It can be shown that wind, water power and fuel are all stored solar energy.

Sun Heat Produces Wind.

"What makes the wind mill go? The sun has heated the air in one location and thus a movement has set in, the wind blows and makes the wind mill revolve. In the case of water power it is the sun that raises the water from the sea to the hills and the water in its effort to return to the sea gives us the power. Why does wood burn? The sun so acts upon the growing plant that a chemical process takes place the result of which appears in the formation of wood. When wood is burned the constituents of it are dissolved and separated and carbon gas is set free. It is the sun that makes all this possible.

"There is no evidence that the sun is growing les warm or is giving out. It does not appear that it is less hot than ever before. When we read the writings of Herodotus we seem to find that antiquity had the same climatic conditions as these in our own day. The same rivers would then freeze over. Yet theoretically the sun must be losing energy into space.'

"Will the sun sometime become cold and the world come to an end?" the professor was asked. "There is not," said he, "the slightest scientific reason for thinking that the sun is coming to an end. It has always been true that people looking close hand at a season which seemed unusual to them have drawn wrong conclusions The weather records thus far taken tend to show that cold and heat are just about equalized thru time. It the sun is a gaseous thing as some think the shrinking of it, a mechanical motion, would keep up or even increase the output of heat. The sun possesses immense stores of heat. It is not because we are nearer the sun in summer that that season is warmer. As a matter of fact we are three million miles nearer the sun in winter than we are in summer. There are two reasons why summer is warmer. This northern hemisphere is then turned more nearly or directly towards the run. That makes the days longer and the nights shorter.

Glacial Period Coming

"The earth's orbit is changing and growing all the time more eliptical This means that the distance of its remote point from the sun will be much greater for the diameter of the ellipse in longer than the diameter of the more nearly circular orbit which the sun has hitherto maintained. When the sun's orbit has attained this elliptical form it may be expected that the earth will again experience a glacial epoch. Possibly every 100,000 years or so this thing may occur. The world has experienced, as geologists believe, several ice ages. The geological ages were tens and possibly hundreds of thousands of years long. This theory of the charge of the earth's orbit and the consequent far remoteness of the earth from the sun at the end of the elliptical orbit is believed by Croll to be the cause of the ancient ice epochs. Then the earth may again pass and will pass into a glacial era. This would come gradually. Perhaps something like 20,000 years would elapse between two glacia' periods. We find that there that there were three or four periods in the main ice age humanity would have to become cave men. There is evidence that human beings were contemporary with the ice age.

'Evolutionists say that these men of the glacial period were the ancestors of the present people. For example they find the bones of human beings along with the bones of animals known to have been of the glacial period. One of these is the hairy mammoth with long fur. The elephant of today has a nature adapted to the changed conditions in which he now finds himself. Yet he is an evolutionized form of the glacial hairy mammoth.

"Astronomers may by mathematical processes measure the earth's orbit and calculate the lengths of these great ages of the glacial and interglacial epochs. Geologists try to do so by examining the strata of rocks and the amount of wearing away of them. But this does not give accurate information with which to make precise calculations. The changing of the earth's orbit is due to the attracting of different celestial bodies."

The Formation of Coal

"In all this changing history of the ages how did coal come to be formed?" the professor was asked. Here is his answer.

"In ancient times there were great swamps filled with the heavy vegetation of a warm or rather torrid climate. The vegetation types were mostly tree ferns. This is proved for ye nd many fosils imbedded in the coal deposits. The vegetation was much like the tropical of today. The modern types of trees had not yet developed.

"Then upheavals of the earth occurred and these swamps became buried at greater or less depths. Great oceans swept over the areas and deposited much sediment completely burying the ancient swamps. Coal is the product of heat and pressure in their combined infiluence on this early vegetation.

"Coal is found today in layers with rock formation between. This rock shows marine forms and is the result of ocean sediment. In some places numbers of strata of marine rock and terrestial coal deposits occur. Most of the rocks of Nebraska are oceanic. Even the coal beds we now find on the surface of the earth were probably once deeply bedded. Erosion has taken off the upper layers.

Origin of Anthracite the Same.

"Anthracite and bituminous coals come from the same forms as of ancient vegitation. The difference we now find in them is due to the fact that anthracite was more deeply bedded and so underwent greater pressure. This sort of coal is found in the mountainous areas where the earth upheavals were the most severe. Anthracite has had the pitch and oil all cooked out of it and is pretty nearly pure carbon. Bitumen has much oily and pitchy matter blended with the coal."

Profesor Sweezy has visited the coal mines at Newcastle on the edge of the Black Hills. In that region they tunnel into the mountain and, digging out a room like space, they drill by power six or eight holes, put in blast get out of harms way, blow up and then return to dig out the coal which is loaded onto cars and taken by tracks to the freight trains which will carry it to distant markets. In this region there is no deep shafting. Often the roof has to be supported over the miners as they work or else they leave coal columns to support the roof.

Professor taught one year at Moline, Illinois, which is to the coal region of that state. Here the coal has been eroded so that the mines are what is known as strip and the coal in near the surface. In the deep coal regions of other states it is necessary to sink shafts hundreds of feet. One layer of coal may be exhauster but by digging deeper another may be reached and more coal obtained.

Coal contains fresh water fossils, says the professor and the rock strate which alternates with the coal deposits contain marine fossils and this proves that thru the reach of the years the same territory has been alternately covered with terrestrial swamps and oceanic water beds.—Evening State oJurnal.