

PHYSICS

Sun Best Power Source

Present annual consumption of all forms of energy only equal to that from the sun in three minutes. End of shovel and ashpit era foreseen.

► THE PRESENT rate of consumption of all forms of energy in the world in an entire year is equal to the energy received from the sun in only three minutes.

Why not harness that free energy? Why not let the sun help us conserve our supplies of coal, oil and nuclear fuels?

Those are the questions asked by Dr. George O. G. Löf, director of the Institute of Industrial Research of the University of Denver and one of the nation's authorities on solar energy.

"Suppose all the world's coal, oil and wood were burned at a rate liberating heat equal to that received from the sun," the Colorado scientist observed, "in a little over three days those fuels would be completely exhausted.

"Less than an hour of the same rate of conflagration would exhaust the known nuclear fuels.

"Man has had his stone age, his iron age and his machine age—this is the energy age, so why not harness the only really inexhaustible power supply left to man?" he asks.

Dr. Löf has already demonstrated that the sun's rays can economically heat and cool a home. He explains that the ready availability of other fuels and technical and economic problems have delayed utilization of solar energy. But he predicts that within the next decade or so electricity will be generated from the sun's power.

He also forecast an end to the coal shovel and ashpit for home owners who will be using solar energy for temperature control of their houses. This will happen when technical problems are solved on a mass scale and when the costs of other fuels reach a balance with the cost of installing the sun collectors.

Science News Letter, January 27, 1951

PHYSICS

Cosmic Ray Origin in Sun

Rays which shower the earth, forming many kinds of particles by smashing into atoms, now believed not to come from outer space.

► EVIDENCE that cosmic rays, ceaselessly bombarding the earth from outer space with tremendous energies, come from the sun has been put forth.

From studies of the abundance of light elements in cosmic rays, Dr. Bernard Peters and the late Dr. H. L. Bradt, while at the University of Rochester, New York, concluded that the rays probably do not come from outside our own solar system.

Primary cosmic rays, beating down on the earth's atmosphere, smash into atoms high in the upper air, forming in these collisions many different kinds of particles, protons, mesons and neutrons. Their energies are many times greater than those available in man-made accelerators. By studying these mysterious rays and the atomic havoc they cause, scientists expect to learn how and why the atom is held together.

The scientists state that the absence or scarcity of lithium, beryllium and boron in primary cosmic rays indicates that the chemical composition at their source is similar to the average for the universe.

On this basis they argue in favor of solar origin, or, at least, in favor of a source region close enough to the earth to reflect the chemical abundance ratio at cosmic ray origin without need for an accelerating mechanism between the source and earth.

In doing so, they disagree with two current theories on the origin of cosmic rays.

Dr. Enrico Fermi of the University of Chicago has proposed that cosmic ray particles come from within our galaxy and that they attain their great speed by collisions within this galaxy with moving magnetic fields varying in degree.

Dr. Lyman Spitzer, Jr., Director of Princeton University Observatory, has assumed that cosmic ray particles were accelerated as dust grains by radiation pressure in the vicinity of supernova, giant exploding stars that flare up suddenly to many times their usual brilliance.

Since finishing these studies, just announced in the *PHYSICAL REVIEW* (Dec. 15), Dr. Bradt has died. Dr. Peters is now in India investigating further the origin and nature of cosmic rays.

Science News Letter, January 27, 1951

PHOTOGRAMMETRY

War Territory Photos Radioed from Planes

► VITAL battle time is saved by radioing back photographs taken of enemy territory to show battle positions and strength.

This has now been done for the first time under actual fighting conditions, Col. G. W. Goddard, Chief of the Photographic Laboratory at Wright Field, Ohio, reported to the American Society of Photogrammetry meeting in Washington.

The system used is much the same as that by which pictures for newspapers are flashed from one end of the country to the other. The photograph is scanned electrically as it revolves on a drum. These scanned signals are sent out as radio waves and when received are converted back to a picture.

Right now the system is effective for only about 100 miles but is expected to be usable for distances well over 200 miles between plane and ground when perfected. It is also hoped to increase the detail of the radioed photographs by increasing the number of electrically scanned lines from the present 150 to 500 per inch.

The pictures are taken and developed by the Land process, which gives a final print in less than a minute. This process will be standard within the near future for transmission work, Col. Goddard predicted.

Science News Letter, January 27, 1951

NUTRITION

Dehydrated Corn Flour Now Makes Tortillas

► A DRY CORN flour to which water can be added to give tortilla dough in a jiffy is now being sold in Mexico.

The process for making the dehydrated flour was perfected by American and Mexican scientists from the Mexican Institute of Technical Research and the Armour Research Foundation of the Illinois Institute of Technology.

Result of a three-year project, the flour can be used to make dough suitable for tortillas, atoles, tamales and other basic items of the Mexican diet much as similar products available in the U. S. make biscuit or cake dough.

At present Mexican housewives or small shops prepare the needed tortilla dough daily since it spoils in a few hours. The new dehydrated flour is prepared in huge plants with a production aim of over 200 tons of flour per day. Mexican dependence on the year-to-year corn crop will be eased by large storage facilities capable of holding 9,000 tons of corn for future use.

Science News Letter, January 27, 1951

An important use of *molasses* is to mix with grass in a silo to help preserve the grass and give a better livestock feed.