

Do You Know?

The cost of *highway* improvement is nearly double that of 1940.

A coin-in-the-slot, self-service *gasoline station* is in use in Australia.

The consumption of *natural rubber* exceeded that of the synthetic product during 1947 for the first time since 1943.

On the second day of this year the *earth* was at its closest point to the sun; it was some 4,000,000 miles nearer than the 94,451,000 miles that separated the two on July 5, 1947.

Airplanes on the North Atlantic transoceanic route are voluntarily acting as *relay stations* to forward to others radio messages received on very high frequency when normal frequency is interrupted by magnetic storms.

AGRICULTURE

Potential Fuel Wasted in Processing Farm Products

► NINE billion gallons of potential fuel are wasted each year in processing agricultural products, three U. S. Department of Agriculture scientists state.

The untapped sources of synthetic fuel include corncobs, peanut shells and countless other agricultural wastes. Writing in the *Journal of the American Society of Agricultural Engineers* (Jan.), J. W. Dunning, P. Winter and D. Dallas of the Department of Agriculture's synthetic liquid fuels project explain that the farm wastes could be hydrolyzed into sugars which could be converted to fuels.

These synthetic fuels could not compete with natural fuels, but they would help meet demands in situations such as the present shortages.

A Department of Agriculture semi-works plant at Peoria, Ill., has begun experiments which indicate that a single ton of the farm waste can produce 90 gallons of fuel. Estimating the total of such material wasted each year at 200,000,000 tons, the scientists put the annual fuel potential at 9,000,000,000 gallons.

In addition to serving as reserve for petroleum fuels, the fuels from farm wastes also may find special applications in industry, the scientists suggest.

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ENGINEERING

New Home-Heating Device

Made of electrically conductive rubber, these panels are set in the ceiling and require no wires in their heating area. Also claimed to be economical.

► ELECTRIC heating panels set in the ceiling are the latest in home-heating devices. Their heating element is a special electrically conductive rubber; there are no wires in their heating area.

These radiant heating panels are a development of the United States Rubber Company of Passaic, N. J., and were made under the direction of C. W. Higbee. They provide an efficient system for home heating, he says, and an economical one if electricity does not cost over one and one-half cents per kilowatt hour. They have already been tested in a dozen homes throughout the country.

The panels, when properly installed, can not be distinguished from the rest of the ceiling. They look like ordinary wallboard, and are a quarter of an inch thick. Some 70% of the ceiling is covered with them in an average installation, the rest of the ceiling being covered

with standard material. The whole is then painted, papered, plastered or covered with a fabric so that the ceiling is uniform in finish.

The panels, which are four by four feet in size, consist of a layer of the rubber, which has been made conductive by a chemical process, between several layers of a phenolic plastic which is an insulator. The whole is made rigid with a backing of asbestos board, and aluminum foil is placed on the upper side to keep the heat from going upward.

Wires bring electric current to the edges of the conductive rubber, whose resistance is enough to create heat. The panels operate on 220-volt current, and are made for wattage densities of either 17 or 22 watts per square foot. The trade name for the new radiant heating panel is Uskon.

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PALEONTOLOGY

Reptile Bones Fill Gap

► SPECIMENS of therapsida, a "missing link" between reptiles and mammals, have been unearthed by the University of California Expedition in South Africa. The finds were made by Dr. Charles Camp and Dr. Frank Peabody in the Karoo desert, near Bethlehem, Cape Province.

Therapsida, dog-like in form, was the most mammal-like of reptiles and came from the same stock as the dinosaurs. It appeared in the Upper Permian, just short of two hundred million years ago. During the hundred-million-year reign of the dinosaurs it quietly evolved into true mammals, which took over on the demise of the dinosaurs. The Upper Permian rocks of North America and other parts of the world except South Africa and northern Russia are barren of Upper Permian fossils. Thus the African species may help fill a gap in the ancestry of modern living forms.

Dr. Camp said the reptiles were particularly mammalian in the structure of the lower jaw. A typical reptile has a number of bones in its lower jaw, which are

reduced to single jawbone in mammals. Dr. Camp reports excellent specimens of ictidosauria, most mammalian type of therapsida, which had an almost mammalian lower jaw. He also collected fossils of tiny reptiles and amphibians. There is one reptile skull about the size of an almond, with skeleton proportionately tiny.

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Science Service Radio

► LISTEN in to a discussion on earthquakes on "Adventures in Science" over Columbia Broadcasting System at 3:15 p.m. EST Saturday, March 6, Ralph Bodle, geophysicist at the U. S. Coast and Geodetic Survey, of the Department of Commerce, will be the guest of Watson Davis, Director of Science Service. Mr. Bodle will tell you interesting facts about earthquakes—what causes them, how they are recorded, where they occur, and other highlights.

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