
ECONOMICS, LABOR & BUSINESS

home parks, these dwellings relieve the pressure on government agencies to compel economic and racial desegregation of the suburbs. They also indirectly benefit the middle-class home buyer by diverting demand for housing credit from the real-estate mortgage market to commercial lending institutions which finance mobile-home purchases.

To give families with annual incomes below \$6,500 a better housing break, Weitzman urges federal intervention in the mortgage market to help reduce down payments for conventional low-cost homes and revives the controversial suggestion of the President's Commission on Urban Housing (1968) that the federal government acquire land for lease for subsidized housing unencumbered by local building codes and zoning ordinances.

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Energy by the Acre

"The Long-Range Prospects for Solar-Derived Fuels" by William G. Pollard, in *American Scientist* (Sept.-Oct. 1976), 345 Whitney Ave., New Haven, Conn. 06511.

The long-range prospects for unlocking the solar energy in plant life to produce solid, liquid, and gaseous fuels look promising. So writes Pollard, a physicist and retired executive director of Oak Ridge Associated Universities.

He predicts that methanol and ethanol, made from plant material, will become competitive with gasoline when and if prices for crude oil reach \$50 per barrel, or \$8 per million Btu, in 1975 dollars. The basic method for producing both solid fuels and methanol from biomass is pyrolysis, a process in which wood, leaves, grass, or similar materials (e.g., the organic component of municipal solid wastes) are heated in a closed container by partial burning of the feedstock with air or oxygen introduced in a controlled manner.

The products are a low-Btu gas, volatile vapors, and a solid carboniferous char (a low-ash, sulfur-free fuel with a heat value equal to that of Eastern bituminous coal). The vapors, when condensed, can be mixed with the ground char to form a free-flowing powder, or "char oil." Typically, 450 pounds of char oil are obtained from each ton of undried raw feedstock having a moisture content of 50 per cent.

Liquid alcohol fuels for cars and trucks can be produced by pyrolysis (operating at higher temperatures), by enzymatic hydrolysis, or fermentation (5 million barrels of ethanol can be produced from 3 million tons of cellulose from municipal or agricultural wastes). Methane gas can also be generated from agricultural and animal wastes by anaerobic digestion which has advantages over char-oil production because

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the leftover sludge is rich in plant nutrients and can be used as fertilizer.

Pollard foresees the day when "farmers will derive nearly as much income from the sale of their annual product to an energy-conversion industry as they do from the sale of food and fibre, when forest management will yield an annual income from energy feedstocks comparable to that from logging and pulpwood production."

**Quantities of Quads
Beneath the Gulf**

"A Huge New Reserve of Natural Gas Comes Within Reach" by William M. Brown, in *Fortune* (Oct. 1976), 541 North Fairbanks Ct., Chicago, Ill. 60611.

With public debate focused sharply on the potentials and hazards of atomic power, American scientists are now quietly investigating a vast new domestic source of energy that could surpass the nation's immense coal reserves.

This energy is in the form of methane— CH_4 , the simplest natural hydrocarbon and the chief constituent of natural gas. It lies dissolved under pressure in reservoirs of hot salt water deep beneath the Gulf of Mexico and coastal areas of Texas and Louisiana. Brown, a staff member of the Hudson Institute, reports that the U.S. Geological Survey estimated in 1975 that geopressurized salt water in onshore reservoirs alone contained 24,000 quads of methane within normal



Adapted from Fortune map by Joe Argenciano based on one prepared by Paul H. Jones of Louisiana State University.

Vast quantities of natural gas dissolved under pressure in reservoirs of hot salt water lie deep beneath the Gulf of Mexico and coastal areas of Texas, Louisiana, and northeastern Mexico.