

GEOLOGY

Oil Shortage May Hit U. S. During Next Twenty Years

Bureau of Mines Expert Foresees Increased Use of Coal and Gas For Industrial Power and Home Heating

UNLESS new methods of obtaining and processing petroleum are developed, America may begin to feel the cramping hand of an oncoming oil shortage in from 10 to 20 years. This is the verdict of Dr. Arno C. Fieldner, chief of the technologic division of the U. S. Bureau of Mines.

Dr. Fieldner, speaking as president of the American Society for Testing Materials, outlined the present resources of the nation's fuels in his address entitled, "Fuels of Today and Tomorrow."

Of coal America has plenty, said Dr. Fieldner. Enough to last hundreds and perhaps a thousand or more years. But natural gas and oil obtained by present methods may be exhausted in less than a century, he warned.

Here is the significant forecast of Dr. Fieldner on America's future fuels:

Coal will continue to be the chief fuel for the generation of public-utility and major industrial power. While improved burning of coal might tend to decrease consumption and the further development of water power may be expected to increase, Dr. Fieldner sees an increasing demand for total energy needed by the country so that coal's relative position should be favorable. Moreover, after 10 or 15 years oil resources will become more difficult to exploit, so that the trend will favor the increased consumption of coal.

Any Coal

"Tomorrow's power and central heating plants will burn any kind of coal completely and efficiently," said Dr. Fieldner. "There will be no smoke, no dust, and no sulfurous gases emitted to the atmosphere."

No substitute for metallurgical coke has appeared, continued Dr. Fieldner. The coke-oven industry should expand. Regulations prohibiting the waste of natural gas and the urge for additional markets will lead to the construction of more long-distance pipe lines which already go from Texas to Chicago and to Detroit. Gas will find industrial and domestic use and will displace oil as

well as coal for fuel in some places. As natural gas approaches exhaustion gas from coal will take its place.

Dr. Fieldner sees a further use of automatic coal and gas heating of homes and believes improved insulation will permit heating at about present costs, despite inevitable advances in the price of the fuel.

While oil-fuel Diesel engines on railroads may be expected to increase, Dr. Fieldner foresees coal retaining its predominance as the fuel for freight traffic throughout the age of oil and natural gas.

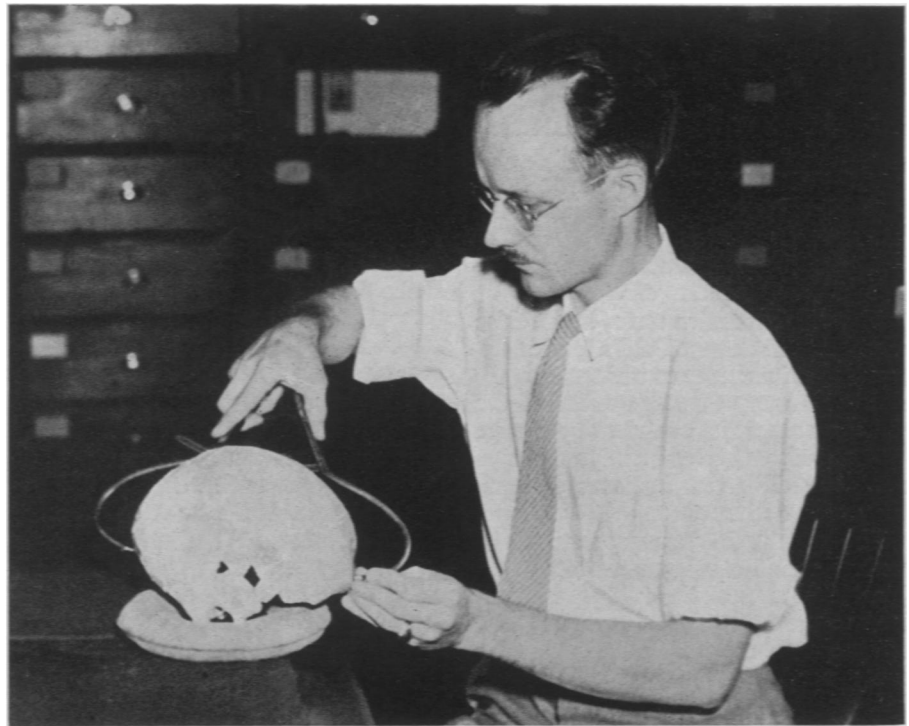
Three-fourths of the world's shipping is now powered by oil fuel. Oil, in fact,

has energized marine transport. Dr. Fieldner foresees further widening of oil as a fuel in ships and predicts that when natural petroleum sources dwindle, oil from shale or from coal may come into use.

On the crucial question of gasoline supplies for automobiles Dr. Fieldner regards present pessimistic fears of a shortage by 1945 as unjustified. Such warnings, he points out, have been issued regularly since the automobile came into use. Scientific research, both in cracking heavy oils to yield more gasoline and the reverse process of polymerization where gasoline is created out of lighter gaseous vapors, should hold the production to levels of demand, states Dr. Fieldner. Improved scientific prospecting for new reserves of petroleum and the drilling of deeper wells to tap now-unreachable sources should be a further aid for the next two decades.

Eventually, admits Dr. Fieldner, gasoline supplies will dwindle. However, improvements in engine construction to take lower-quality fuels and the expected improvements in Diesel engine operation will help materially.

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BIG HEAD

A Virginia Indian had the world's biggest known skull. He may have known Pocahontas, too—he lived at the village where she was once kidnaped. Unearthed in Stafford County, on the Potomac River, the skull is attracting interest at the Smithsonian Institution, Washington, where Dr. T. D. Stewart, anthropologist, is shown measuring it. The skull is estimated to have contained 2,200 cubic centimeters of brain, and is therefore far bigger than the 2,030 cubic centimeter brain of Russian Poet Turgenev, previous record holder. (See next page.)



DISCOVERER

Judge William J. Graham of the United States Court of Customs and Patent Appeals is shown at the Algonkian Indian village site where he found the world's largest skull. He is holding an average skull, showing that the big-headed Indian of the record skull was extraordinary among his people. Judge Graham, long interested in archaeology, has made many notable discoveries.

MEDICINE

Improved Scarlet Fever Vaccine Protects Children

AN IMPROVED scarlet fever toxin for protecting children against the disease has been developed by Dr. M. V. Veldee of the U. S. Public Health Service's National Institute of Health.

The new protective toxin, Dr. Veldee reports in the current Public Health Reports, gave immunity or resistance to the disease in more than four-fifths of the children vaccinated, as shown by change in the Dick test from positive to negative. The Dick test indicates susceptibility to the disease.

The new toxin was prepared by a method which eliminates certain objectionable features of the original material used to protect against the disease. Reactions, such as pain, muscle soreness and temporary illness, were less severe following the use of the new toxin as compared with the old. The new toxin is also absorbed more slowly, a feature which scientists believe increases the degree of resistance to the disease.

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One person in a hundred suffers from hay fever, according to one estimate.

ASTRONOMY

Peruvian Amateur Astronomer Takes Good Eclipse Pictures

SOME of the finest photographs of the sun's corona ever obtained have just been given to Harvard Observatory by an amateur Peruvian astronomer, the result of his first eclipse work.

Made during the solar eclipse of June 8 by Fernando De Romana of Arequipa, Peru, they are expected to be of considerable scientific importance in unraveling some of the mysteries of the bright solar halo, Dr. Donald H. Menzel, Harvard University astronomer, announced.

Using his own hand-operated telescope camera, with special polaroid screens sent by the University, Romana, unofficial and volunteer Harvard observer, obtained four photographs which

clearly illustrate the effects of polarization in the light of the corona. They are so accurately standardized they will enable delicate quantitative studies of coronal polarization. Romana also made four fine pictures of the sun as it appears to the human eye, unaffected by polaroid.

Harvard had decided to make no pictures of the June eclipse but Romana's request for advice resulted in the Observatory's entrusting valuable equipment to him. The negatives are especially welcome, Dr. Menzel declared, since they supplement those taken during the Harvard-Massachusetts Institute of Technology expedition to Russia last year.

Science News Letter, July 17, 1937

ASTRONOMY

Eclipse Astronomers Return; Find Evidence of Coronium

PRELIMINARY scientific evidence of the South Seas eclipse expedition reveals further indication of the presence in the sun of a mysterious element "coronium." This is the announcement of Dr. Irvine C. Gardner of the National Bureau of Standards and John E. Willis of the U. S. Naval Observatory, first members of the party to return.

Whether coronium is really an element unknown on earth or merely some known element existing on the sun in a form not present in the earth is one of the puzzles which the eclipse pictures of the National Geographic Society-U. S. Navy expedition may help to decide. There is some evidence already at hand that coronium is a highly-ionized form of a common earth gas which has been stripped of almost all its outer electrons.

Captain J. F. Hellweg, U. S. N., who was co-leader of the expedition with Dr. S. A. Mitchell of the University of Virginia, timed accurately the eclipse and found that Naval Observatory calculations of the first contact were within a few seconds of their actual occurrence. This newest check and correction of the

time will be extremely valuable to the Naval Observatory in its future calculations on the motions of the sun, moon and earth, which are used in determining accurate time for everyday use.

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SEISMOLOGY

July Starts Off With Two Oceanic Earthquakes

JULY started off with two oceanic earthquakes, reports the U. S. Coast and Geodetic Survey, which has computed the epicenters of the shocks from code data forwarded by Science Service.

At 6:45 a. m., EST, on July 1 seismological stations at Honolulu, Manila and Hongkong reported earth tremors on their instruments. The quake's epicenter was off the west coast of Sumatra.

Also on July 1, but at 9:37 p. m., EST, observing stations at Victoria, B. C. and Honolulu reported another earthquake whose center was in the South Pacific. Lack of further data prevents the exact fixing of the epicenter.

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