

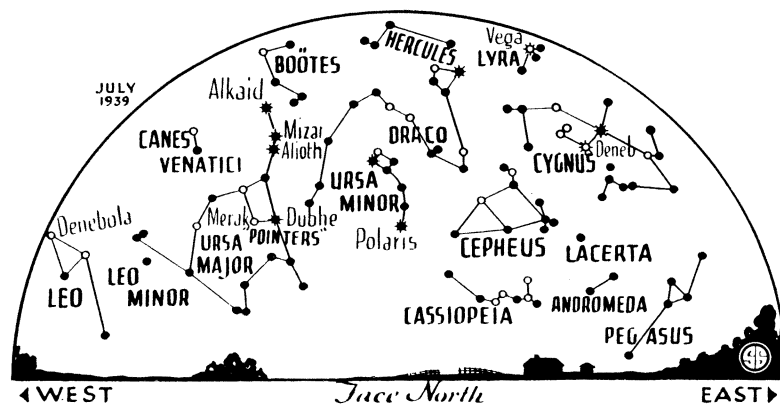
Mars, trying to solve some of its problems. Especially will this be true at the Lowell Observatory, in Flagstaff, Arizona, which has long specialized in planetary studies. Perhaps more will be learned about the elusive markings called "canals." These are peculiar lines that seem to cross the planet's surface, and which are real canals, according to the theory propounded by the late Prof. Percival Lowell. He believed that a race of superintelligent Martians, finding their water supply becoming exhausted, built this elaborate network to bring water from the melting ice of the poles to warmer parts of the planet. Today very few astronomers hold to this idea. Indeed, some think that the so-called canals are only optical illusions, that there are no such markings there at all.

Observations, made this year may help settle the controversy. If not, perhaps the opposition of 1941 will, for then the new 200-inch telescope of the California Institute of Technology will be in operation. Many reliable and expert observers have reported seeing the markings, but no entirely convincing photographs of them have been made. This is because the air, through which we must look at the planet, is continually in motion. The experienced observer occasionally gets momentary glimpses of fine detail, but the photograph, requiring an exposure of several seconds, is blurred.

The 200-inch telescope will gather about five times as much light as the largest telescope now existing, which means that shorter exposures can be given. Hence, the astronomers hope that the new instrument will allow them to photograph everything they can see, in the case of fairly bright objects, like the moon and the planets. If this hope is justified, the year 1941 may see one of the long standing problems of astronomy solved.

Celestial Time Table for July

Saturday, July 1, 11:16 a. m., Full moon. **Monday, July 3,** 5:56 p. m., Moon passes Mars. **Wednesday, July 5,** 9:00 a. m., moon farthest away, at 252,000 miles; 3:00 p. m., earth nearest sun for 1939, 94,452,000 miles distant. **Sunday, July 9,** 12:58 a. m., moon passes Jupiter; 2:49 p. m., moon at last quarter. **Monday, July 10,** 6:58 p. m., moon passes Saturn. **Thursday, July 13,** 2:00 p. m., Mercury farthest east of sun, visible in west at evening twilight. **Sunday, July 16,** 4:03 p. m., new moon; 11:12 p. m. to midnight, all four bright moons of Jupiter invisible, one in front of planet, another behind it, and two in its shadow. Jupiter only visible at this time in eastern part of the country. **Monday, July 17,** 6:00 p. m., moon nearest earth, 223,200 miles away. **Tuesday, July 18,** 1:35 p. m., moon passes Mercury **Saturday,**



July 22, 7:45 p. m., Spica hidden by moon—visible in N. E. United States. **Sunday, July 23,** 3:00 a. m., Mars in opposition; 6:34 a. m., moon in first quarter. **Thursday, July 27,** 4:00 p. m., Mars nearest earth—distance 36,030,000 miles. **Friday, July 28,**

early morning. Meteors of delta Aquarid shower visible. **Sunday, July 30,** 11:13 a. m., moon passes Mars. **Monday, July 31,** 1:37 a. m., full moon. (Eastern standard time throughout)

Science News Letter, June 24, 1939

ENGINEERING

"Liquid Coal" Claimed to Be More Economical Than Gas

Specially Prepared Coal Ground to 300 Mesh Was Suspended in Gasoline or Oil to Run Motor After Start

FORESHADOWING a time when man's immense coal resources, which far outstrip other sources of power available at present, may be put to work in the automobile in place of gasoline, a stock car changed only in one minor respect made a first demonstration run on a new fuel, "liquid coal."

Made of finely pulverized coal suspended in an oil "carrier," the new fuel, whose development has attracted the attention of scientists and engineers during the last twenty years, has enabled the car, an eight-cylinder 1939 sedan, to accelerate up to 35 miles an hour within a block.

Applied to a standard automobile by Dr. Francis W. Godwin, director of the coal research division of the Armour Institute of Technology's research foundation, the fuel is more economical than gasoline although the cost per gallon is about the same, because it contains far more energy.

Neither the carburetor nor the ignition system of the car was changed in any way. One fine-screened filter was removed from the fuel system to accommodate the colloidal fuel, Dr. Godwin said.

(Because coal itself is essentially inconvenient to handle and bulky, sci-

tists have been trying to devise a workable "liquid coal" such as this for many years. Thus far, however, it was stated in Washington, all such fuels have been impossible to use economically in an internal combustion engine because of the ash which coal leaves and which causes great wear and tear on the moving parts of the engine. It is not known whether the new development has overcome this difficulty.)

"Three different types of liquid coal have been successfully used in the tests on the stock model automobile," Dr. Godwin said. The first was a suspension of a specially prepared coal ground to 300 mesh in a mixture of gasoline, fuel oil and lubricating oil. The second was a similar suspension of the coal in a Diesel oil. The third test was made with a very light oil. In each case, the liquid coal was chemically stabilized to hold the coal in suspension.

The demonstration car was started on gasoline. The liquid coal was fed to the motor from an auxiliary tank after the motor had reached "driving heat."

The fuel can be marketed for about ten cents a gallon, Dr. Godwin declared. He foresees its most immediate automotive usefulness in the Diesel field.

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