

## GEOPHYSICS

# Mixed-Up Sun Seen

A minimum in the solar energy output cycle, with consequent reduced radiation, could mean good news for astronauts who plan to land on the moon in 1969—By Ann Ewing

► A MIXED-UP SUN, spurting one million tons of its matter into space every second, could fool earth by having two low points of energy output in its 11-year activity cycle.

This would be the first time since 1878 that the sun has shown a double minimum. That is, the sun began to flare up, settled down again and then burst forth again. However, the sun is always full of surprises, a panel of solar experts agreed in Washington, D.C.

Whether or not the sun has made a false start in its new cycle of activity, the chances are that the coming high point will not hit such a tremendous outpouring of radiation as occurred during that last maximum of 1958.

Even though no two solar cycles dating back to 1832 resemble each other, there is usually a well-defined low and high point. During 1964, the predicted and actual time of solar minimum, the sun did not display fireworks from the new cycle.

This could mean good news for the U.S. astronauts when they land on the moon, scheduled now for late 1969. Dr. Helen Dodson Prince, associate director of the University of Michigan's McMath-Hulbert Observatory, predicts that no abundance of radiation flooding space between the earth and the moon will harm astronauts at that time. She said the new solar cycle, which first burst into activity in August, 1963, seems to be a little "sick," or mixed up.

This is the reason Dr. Prince believes there could be a double low for the old cycle. She proposes a less active high in this solar cycle because past records indicate the characteristics the sun is now displaying are typical of a reduced maximum.

Solar activity and winds and weather in space were the topics discussed by a panel of experts meeting under the joint auspices of the American Geophysical Union and the International Scientific Radio Union.

They agreed that the International Years of the Quiet Sun, or IQSY, were scheduled correctly for 1964-65.

The IQSY is an international cooperative effort of 71 countries to learn more about the earth and the space around it, and the effects of the sun on terrestrial processes.

IQSY is a sequel to the International Geophysical Year, or IGY, of 1957-58 when the sun was most active. Worldwide experiments being made during IQSY were selected because they could be done only when the sun is less active, in order to compare records with those made at the maximum during IGY, and to foster studies of isolated solar events and their results in interplanetary space or on earth without interference from other flares.

"Increased international cooperation" although not necessarily greatly increased expenditures is the key to the IQSY program, Dr. Martin Pomerantz, director of Bartol Research Foundation, Swarthmore, Pa., and chairman of the U.S. Committee for IQSY, said.

Although one million tons per second appears to be a tremendous amount of matter, it will deplete the sun of only a ten-thousandth of its total mass during the solar lifetime, Dr. Eugene Parker of the University of Chicago noted. He said this outpouring results in winds and weather in space, the solar wind varying from 200 to 500 miles a second.

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## Processed Snow May Be Used for Polar Houses

► THE COLDER the snow is, the stronger it is and the more weight it can support, reported Russell A. Paige, U.S. Naval Civil Engineering Laboratory, Port Hueneme, Calif.

Snow is being studied as a possible construction material in polar regions where it is so abundant and other building materials are so scarce.

Mr. Paige told the members of the 46th annual meeting of the American Geophysical Union that snow can be made stronger for building purposes by processing it with a pulvimixer or Snow Miller. This promotes growth of new bonds of ice between grains and strengthens these bonds. This is called age-hardening, which depends upon the texture of the snow, its density, the amount of radiation from the sun, and most important, time, said Mr. Paige.

The strength of snow constantly adjusts to and depends on temperature. At temperatures from minus 20 degrees to minus 25 degrees Fahrenheit, the snow can support about 80 pounds per square inch, but at temperatures of 25 degrees to 30 degrees Fahrenheit, it can support only about 18 to 25 pounds per square inch.

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**CYCLE OF SUNSPOTS**—Photos of the sun's activity from top to bottom show: Aug. 27, 1954, sun is quiet with little activity; Aug. 2, 1956, sunspots begin to flare up; May 25, 1958, sun is at height of activity; July 18, 1961, sunspots begin to recede; June 26, 1964, the sun is quiet again. →

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