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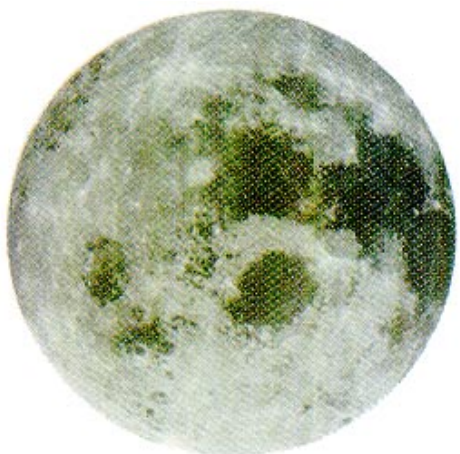
HEAT AND LIGHT FROM THE FAR SIDE OF THE MOON

BILLIONS OF RESEARCH dollars have been invested in fusion energy—the nuclear reaction that keeps stars burning. For these bets to pay off big, ever, the wo could use mo helium-3, ar isotope that seems to be the optimum fusion fuel. Helium-3 is extremely ra on earth, researchers looking at the moon.



Helium-3 has many advantages over the radioisotope tritium, which is now the main fuel candidate. Helium-3 would give off very little neutron radiation when fused with hydrogen, so it would take longer for helium-3 fusion plants to become hazardous. They would also cost less. Another advantage over tritium: Helium-3 wouldn't lead to by-products that are both toxic nightmares and vulnerable to theft by terrorists for use in weapons.

To secure a supply of helium-3, the U.S. Geological Survey has teamed up with space scientists at the universities of Arizona and Hawaii. Their computer ations point to ndant helium- deposits on the moon, particularly on the far side—enough to last for centuries.

How did it et there? Re- rchers say the n-3 blows in on the solar wind, the stream of particles emitted by the sun's own fusion reactions. Because the moon is not sheltered from the solar wind by an atmosphere, helium-3 has been accumulating there, atom by atom, for millennia. Of course, mining the moon cost-effectively may prove nearly as challenging as perfecting a safe, economic fusion reactor. *Otis Port*