ASTRONOMY

Sun Refuels Self From Space; It Sweeps Up Hydrogen Gas

Something Like 110,000,000 Tons of Gas Taken Up Each Second If New Astronomical Theory Is Correct

EVERY second the sun sweeps up something like 110,000,000 tons of hydrogen from the space through which it is passing if a new astronomical theory is correct!

Other stars pick up similar amounts of the interstellar gas, and thus keep refueled. This is the suggestion of two Cambridge University astronomers, Dr. R. A. Lyttleton and F. Hoyle. A summary of their theory, answering certain objections that had been made to it, is given in the latest issue of the Monthly Notices of the Royal Astronomical Society, just received in the United States.

During the last few years astronomers have generally accepted the idea that the stars keep going by a transmutation process in which hydrogen turns into helium, giving off energy as it does so. However, the Cambridge scientists state, "the available astronomical evidence, particularly from double stars, led us to the view that a further potential source of energy must be introduced from outside the stars, either continually or intermittently replenishing the hydrogen in the star."

As it is now known that space between the stars is not the perfectly empty void it was once thought to be, but contains about as much matter as the stars themselves, in the form of diffuse clouds, they concluded that the stars might sweep up hydrogen from these clouds as they went through them. Though these clouds consist largely of calcium and sodium, which would not add to the stars' lives, as little as 10% of their mass in hydrogen in the form of molecules would suffice to keep the stars going. Recent observations have shown that molecules containing hydrogen actually are present in the cosmic clouds.

They also suppose that the cloud is irregular, and is concentrated towards the central plane of the Milky Way. Here, they calculate, the density would be such that a gram of matter (which is about a twenty eighth of an ounce) would be contained in a cube some 1300 miles on a side. Studies of other systems like the Milky Way have shown that they are about as dense as this in their centers. Dr. Lyttleton and Mr. Hoyle regard as supporting evidence for this idea the fact that the brightest and most massive stars are in the plane of the Milky Way. Evidently these pick up more matter and fuel than stars in thinner regions.

"The real need at present in this problem," they conclude, "is for trustworthy observations leading to information of the density distributions and velocities of the stars relative to the cloud." These might confirm the theory, disprove it, or require it to be modified. "At present," it is stated, "in regard to stellar evolution, the choice is between the consistent theory based on the idea of accretion and no theory at all."

Science News Letter, November 15, 1941

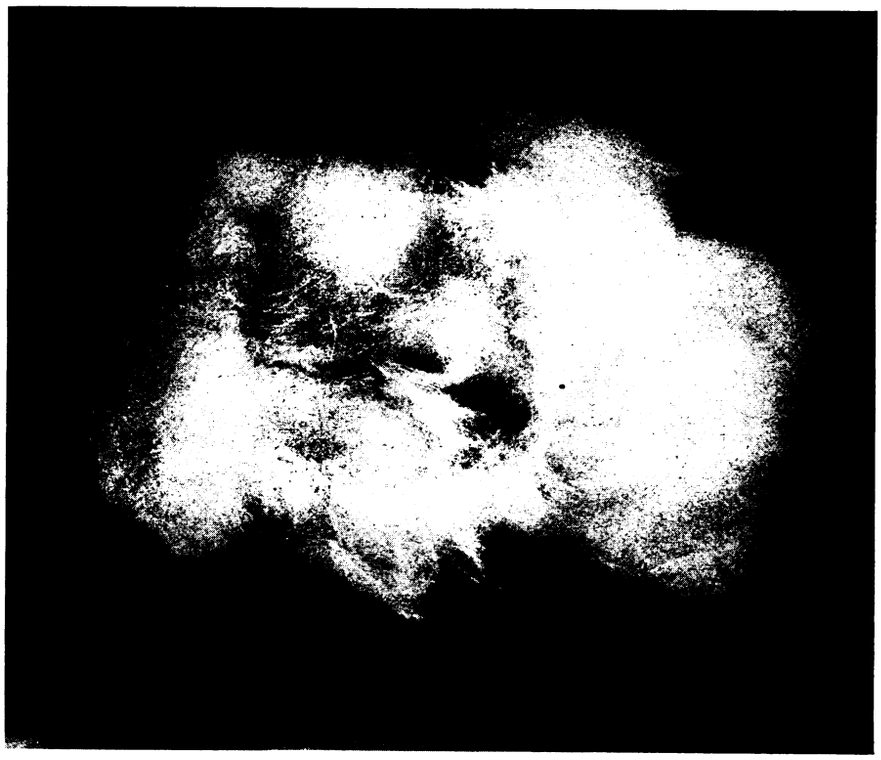
ENTOMOLOGY

Electron Microscope Shows Insect Body Structure

MINUTE structures in the tiny anatomy of an insect, hitherto unknown and unsuspected, have been disclosed under the hundred-thousand-fold magnifications of the electron microscope in the RCA laboratories. The breathing tubes in the sides of a mosquito's body are shown to be lined with elastic hoops a fifty-thousandth of an inch broad. These in turn are covered with submicroscopic spines less than a quarter-millionth of an inch high.

Other submicroscopic studies are being made on skin, wings and bristles of butterflies, bees, flies, beetles and cockroaches. The powerful instrument is being used to disclose details of the shells of their tiny eggs.

Science News Letter, November 15, 1941



FIBER FROM MILK

Here it is cut into short lengths for blending with other fibers used in the textile industry, such as cotton, wool, mohair, rayon or hat fur. But the milk fiber can be cut to any length desired from a half inch to a half mile.