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This Week

Research Notes

Articles

Cover: Scanning tunneling microscopy is rapidly becoming one of the most important techniques for studying the atomic, chemical and electronic properties of surfaces. Pictured is a computer-processed image showing the characteristic pattern made by rows of liquid-crystal molecules lying side by side on a graphite surface. Each molecule consists of a phenyl-pyrimidine head (green) and a hydrocarbon tail (red). (Photo: IBM Almaden)

Departments

Letters

Holocaust or baby boom?

According to "The hidden lives of massive stars" (SN: 2/11/89, p.88), we are witnessing a holocaust of massive stars – they're dying in supernova explosions 20 times faster than they're being born in molecular clouds. Such a death rate can continue only for another half-million years, when the estimated 20,000 massive stars will be dead.

What's going on? Was there a "baby boom" in massive stars a few million years ago, or is there a typographical error in your published birth/death rates?

Michael A. Pelizzari
Sunnyvale, Calif.

The researchers established a lower limit on the formation rate of massive stars. That estimate is based on the number of sources identified in an Infrared Astronomical Satellite survey. However, each source may consist of one or more massive stars. Therefore, the actual formation rate of massive stars is likely to be much higher, matching the death rate. – I. Peterson

In "The hidden lives of massive stars," you report that "10 to 20 percent of all massive stars are surrounded by clouds. This implies that a typical massive star spends a like fraction of its lifetime inside a molecular cloud."

Something is missing. Twenty to 25 percent of all human beings are surrounded by mainland China, but that does not imply that a typical human being spends a like fraction of his/her lifetime inside China.

Richard Dachler-Wilking
Charleston, S.C.

Astronomers assume all massive stars are born surrounded by molecular clouds. The best way to account for the absence of clouds around many such stars is to postulate that the clouds were driven away or disrupted earlier in the star's lifetime. Although some stars may spend a longer time enveloped in clouds than others, the average massive star would spend about 10 to 20 percent of its lifetime in such a state.
– I. Peterson

First things first

"First light at an Irish tomb" (SN: 2/11/89, p.88) implies that while "earlier scholars [before Tom P. Ray] had suggested the possibility of astronomical alignments," these suggestions were somehow poorly considered or unsubstantiated.

Martin Brennan's book, *The Stars and the Stones: Ancient Art and Astronomy in Ireland* (1983, Thames & Hudson) describes a number of astronomical alignments for Newgrange, as well as for other mounds in the Boyne Valley and in the Longcrew Mountains. Archaeologist Michael J. O'Kelly's observation of the 1969 winter solstice from inside the Newgrange mound is also described.

Archaeoastronomy seems to be slowly becoming legitimate in the eyes of the archaeological establishment. Surely its early investigators deserve recognition for having spoken their truth in the face of ridicule and derision.

Andrew I. S. Vaughn
Towson, Md.