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Cover: Plowing into interstellar gas, a shock wave from a supernova explosion irrevocably alters its surroundings. In recording this false-color, visible-light image of a tiny portion of the Cygnus Loop supernova remnant, the Hubble Space Telescope acted as a thermometer, revealing the temperature structure behind the shocked gas with unprecedented clarity. Blue denotes the hottest emissions, from oxygen atoms; red denotes the coolest emissions, from sulfur. (Image: J. Jeff Hester/NASA)
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Science Service, which publishes SCIENCE NEWS, is a nonprofit corporation founded in 1921. It gratefully accepts tax-deductible contributions and bequests to assist its efforts to increase the public understanding of science, with special emphasis on young people. More recently, it has included in its mission increasing scientific literacy among members of underrepresented groups. Through its Youth Programs it administers the International Science and Engineering Fair, the Science Talent Search for the Westinghouse Science Scholarships, and publishes and distributes the *Directory of Student Science Training Programs for Precollege Students*.

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## Letters

### Characterizing creatinine

I would like to point out that creatinine is not a waste protein ("Treat Hypertension, Nix Kidney Failure." SN: 12/5/92, p.388). It is not even a protein. Creatinine is a derivative of creatine, which in turn is derived from three of the amino acids that occur in proteins. It would probably be more nearly correct to refer to creatinine as a "protein waste," since it is a urinary waste product associated with protein metabolism.

Kenneth Burkhard  
Manhattan, Kan.

### Cosmic confusion

Your cover illustration "Quantum Stars" by G. Dana Berry to highlight the article "Quantum Crystal in the Sky" (SN: 1/16/93) is

fabulous but old hat. It was used as the cover illustration "Cosmic Challenge" two years ago (SN: 4/13/91) to highlight the article "State of the Universe."

Ira Fogel  
San Jose, Calif.

*Our embarrassment is exceeded only by the beauty of the illustration.* —The editors

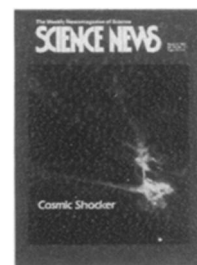
### How random is random enough?

Your article "Monte Carlo physics: A cautionary lesson" (SN: 12/19&26/92, p.422) describes poor results from standard random number generators in certain large-scale simulations. This is likely to cause more concern than is justified; "standard" random number generators have been available in most computer systems for some 40 years, and it is a rare problem for which they give poor results. Users of standard random number generators

might take comfort in noting that poor results are so rare that an occurrence leads to mention in SCIENCE NEWS.

Here "standard" can be taken to mean "simple," as most random number generators for computers are based on simple arithmetic: Each new number is produced by certain simple operations on a few of the numbers previously generated. Such numbers can hardly be considered random, because they are produced in a completely deterministic manner. And yet they work surprisingly well when taken to be random, whether for video games or for sophisticated simulations in high-energy physics.

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Florida State University  
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