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This Week

- 212 Two Human Chromosomes Entirely Mapped
- 212 Dyslexia: Reading words, missing letters
- 213 Protein identified in dinosaur fossils
- 213 Dimmer lasers brighten the photon's future
- 214 Creating crystals to study quantum effects
- 214 New evidence of dust rings around stars
- 215 The reproductive hazards of nitrous oxide
- 215 Taking the measure of Newton's gravity law

Research Notes

- 217 Computers

Articles

- 218 Dancing Dust

Cover: Seemingly out of nowhere a dust storm can appear, leaving in its wake ruined farm fields and damaged equipment. Scientists are beginning to understand how and why these storms occur. (Photo: Soil Conservation Service)

- 222 The Warped World of Mental Maps

Departments

- 211 Letters

Science Service, a nonprofit corporation founded in 1921, 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 Program 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

Misinterpreting AFM

"Microscope's misleading tips" (SN: 6/13/92, p.399) discusses tip artifacts in atomic force microscopy (AFM). Another misleading aspect of AFM is the "atomic resolution" occasionally detected on certain classes of materials. Although the images usually exhibit the correct atomic periodicity, the term "atomic resolution" is often too quickly interpreted. To many people the words imply that a single atom on the end of the tip is responsible for the image contrast. "Atomic resolution" should, however, be considered in light of the following theoretical and experimental observations.

Theoretically, contact mechanics predicts that even with the stiffest materials at the lightest possible loads, contact areas will still be of the order of a square nanometer, due to the extremely high pressures beneath the tip or to strong adhesion between tip and sample ("Friction Flicks," SN: 5/30/92, p.360).

Experimentally, "atomic resolution" is achieved only on specific types of surfaces. No

single-atom defects in periodic structures have been reported. The widths of atomic steps are extremely distorted. The height variation in the periodic structure is sometimes much greater than measured by noncontacting techniques and increases as a function of load. Usually only every other atom in a bi elemental surface appears in an image.

Of course, these observations only serve to cast doubt on single-atom contact. Still to be presented is a theory of AFM image interpretation consistent with the theoretical and experimental evidence.

Nancy A. Burnham
Uwe Hartmann
Nuclear Research Center
Institute for Solid State Physics
Jülich, Germany

Weighty question

I learned as a young child that a thousand times nothing is nothing. With this valuable axiom still etched in my mind, I read "From seaweed, a lighter-than-air solid" (SN: 7/4/92, p.7) and was monumentally unimpressed by

the ability of SEAgel to "support thousands of times its own weight."

As SEAgel is 10 percent lighter than air, is this really a noteworthy accomplishment? How many helium balloons can be stacked atop one another before the bottom balloon crumbles beneath the load?

Stephen Fogelson
Cincinnati, Ohio

CORRECTION

In "Meteorites: To stream or not to stream?" (SN: 8/1/92, p.71), a group of meteorites that some researchers believe traveled to Earth in the same stream was incorrectly described as forming "a broad line in the northern hemisphere that extends for thousands of kilometers." In fact, such a line is apparent only on graph paper, when each meteorite's year of fall is plotted against its day of fall. The group of meteorites does not form a line-like pattern on Earth, because Earth's spin axis is tilted with respect to the plane in which our planet orbits the sun, notes study coauthor Robert T. Dodd of the State University of New York at Stony Brook.

OCTOBER 3, 1992

211