

SCIENCE NEWS®

The Weekly Newsmagazine of Science

Science Service Publication
Volume 148, No. 22, November 25, 1995

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SCIENCE NEWS (ISSN 0036-8423) is published weekly on Saturday, except the last week in December, for \$49.50 for 1 year or \$88.00 for 2 years (foreign postage \$6.00 additional per year) by Science Service, Inc., 1719 N Street, N.W., Washington, D.C. 20036. Second-class postage paid at Washington, D.C., and additional mailing office. **POSTMASTER:** Send address changes to SCIENCE NEWS, P.O. Box 1925, Marion, Ohio 43305. Change of address: Four to six weeks' notice is required — old and new addresses, including zip codes, must be provided. Copyright © 1995 by Science Service, Inc. Title registered as trademark U.S. and Canadian Patent Offices. Printed in U.S.A. on recycled paper. ♻️
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Cover: Emerging data suggest that the evolution of ideas and innovations in cultural groups has supplanted genetic evolution and spurred the growth of modern societies and institutions. (Photo: David Madison/TSI)



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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

Too much of a good thing

"Pine forest thrives on high-CO₂ diet" (SN: 8/12/95, p.101) seems to contradict "Smothered pine trees reveal unseen killer" (SN: 8/26/95, p.134).

Does one pine thrive and the other one die?

James A. Robinson
Cave Junction, Ore.

The difference is the amount of CO₂. A little more helps trees, but a lot more kills them.

— R. Monastersky

Heat enough for microdiamonds?

"Microscopic diamonds crack geologic mold" (SN: 7/8/95, p.22) implies that a new environment for making diamonds has been discovered. However, it seems to me that a crucial bit of information is missing.

It is possible that the diamonds were deposited in the sediments that later became

the sedimentary rocks that were metamorphosed. How was this possibility eliminated?

Robert M. Lorkowski
Apple Valley, Calif.

Haggerty ruled out the possibility that the diamonds were created in another spot and then deposited as sediments because similar microscopic diamonds found in Kazakhstan do not show any of the typical wear features seen in those that have endured transport by water.

— R. Monastersky

Recent research suggests that extreme pressure is not essential for nucleation of microdiamonds. The presence of garnet and eclogite in the metamorphic rock indicates temperatures in excess of 750°C, temperatures necessary for the nucleation of diamond from graphite. Rising temperatures during metamorphism will cause a corresponding rise in thermal stresses and expansion in the host rock.

The possibility of increasing temperatures

and pressures is even greater at asperities, frictional points, and shear planes. Some microdiamonds are indeed found in high shear stress planes, where temperatures could be in excess of 750°C and pressures could be 20 to 30 kilobars.

The high temperatures and relatively low pressures required for microdiamond formation may be present during continental collisions or other high-grade metamorphic events. Thus the subduction-abduction of crystal rock is not necessary.

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