ISSN 0036-8075
8 JANUARY 1993
VOLUME 259
NUMBER 5092

SCIENCE

AMERICAN
ASSOCIATION FOR THE
ADVANCEMENT OF
SCIENCE

177
Cosmic ray observatories

NEWS & COMMENT

RESEARCH NEWS

ARTICLES

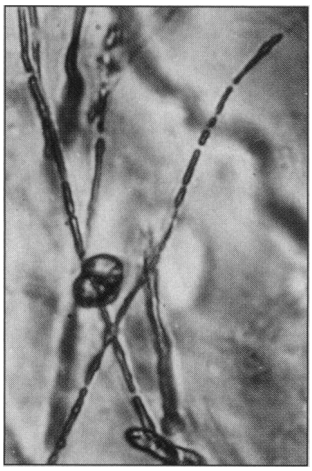
RESEARCH ARTICLE

REPORTS

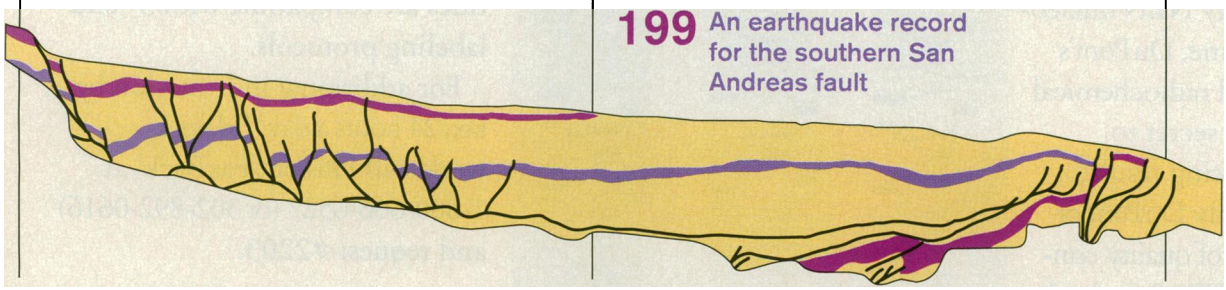
DEPARTMENTS

COVER

Six crystals of silicate spinel, a high-pressure mineral abundant in the transition zone of Earth's mantle, confined in a diamond-anvil cell (mount diameter, 0.45 millimeter). High-presure x-ray studies of these crystals reveal that the Mg_2SiO_4 end member is 13% more compressible than the Fe_2SiO_4 end member even though its molar volume is 6% less. Such anomalous compressibility suggests that the behavior of Mg^{2+} and Fe^{2+} at mantle pressures is divergent. See page 206. [Photo: R. M. Hazen]



222
220- to 230-million-year-old microorganisms from amber



199 An earthquake record for the southern San Andreas fault

◩ Indicates accompanying feature

■ **SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005.** Second-class postage (publication No. 484460) paid at Washington, DC, and additional mailing offices.

Domestic individual membership and subscription (51 issues): $87 ($47 allocated to subscription). Domestic institutional subscription (51 issues): $205. Foreign postage extra: Mexico, Caribbean (surface mail) $50; other countries (air assist delivery) $95. First class, airmail, student and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 88122. **Change of address:** allow 6 weeks, giving old and new addresses and 11-digit account number. **Postmaster:** Send change of address to *Science*, P.O. Box 2033, Marion, OH 43305-2033. **Single copy sales:** $6.00 per issue prepaid includes surface postage; Guide to Biotechnology Products and Instruments, $20. Bulk rates on request. **Authorization to photocopy** material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of $1 per copy plus $0.10 per page is paid directly to CCC, 27 Congress Street, Salem, MA 01970. The identification code for *Science* is 0036-8075/83 $1 + .10. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

■ The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objectives are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, to advance education in science, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.