

The Weekly Newsmagazine of Science

# SCIENCE NEWS

August 26, 1989  
Vol. 136, No. 9  
Pages 129-144



## *Brains in Pain*



# science and mathematics teachers



encourage your students to enter the  
49th (1989-90)



## WESTINGHOUSE SCIENCE TALENT SEARCH

PHYSICS  
CHEMISTRY  
BIOLOGY  
MATHEMATICS  
ASTRONOMY  
GEOLOGY  
HUMAN ENGINEERING  
PSYCHOLOGY  
ANTHROPOLOGY  
METEOROLOGY  
ZOOLOGY  
SOCIOLOGY  
ARCHITECTURE  
BIOCHEMISTRY  
GEOMETRY  
SOCIAL PSYCHOLOGY  
ELECTRICAL ENGINEERING  
MOLECULAR BIOLOGY  
ECOLOGY  
PERCEPTION  
CALCULUS  
ARCHAEOLOGY  
CIVIL ENGINEERING  
SOCIAL ANTHROPOLOGY  
MOLECULAR GENETICS  
GEOCHEMISTRY  
SOLID STATE PHYSICS  
OPTICS  
TRANSPORTATION  
LIMNOLOGY  
EDUCATIONAL PSYCHOLOGY  
ABSTRACT ALGEBRA  
CELLULAR BIOLOGY  
BOTANY  
THERMODYNAMICS  
AERONAUTICAL ENGINEERING  
BACTERIOLOGY  
ECONOMICS  
OCEANOGRAPHY  
ENVIRONMENTAL SCIENCE  
PLANT PHYSIOLOGY

- **40 Winners will share \$140,000 in Westinghouse Science Scholarships.**
- **300 Honorable Mentions will be brought to the attention of all colleges, universities and technical schools in the U.S.A.**
- **Hundreds of students automatically will receive recommendations and other assistance toward a college education in schools within states holding State Science Talent Searches.**
- **For all students, a sense of accomplishment and a measure of self-evaluation that comes from finishing a hard assignment.**

### ABOUT THE SCIENCE TALENT SEARCH

More than 14,000 students have been members of the Winners and Honors Groups in the past 48 years. Because of their standing in this oldest and most prestigious competition of its kind, they have been offered scholarships from institutions seeking quality students with proven ability in science and engineering. Many winners in the Science Talent Search are offered summer employment in scientific laboratories and other tokens of early acceptance into the world of science and engineering. Such benefits also come frequently to members of the Honors Group and to those who place in State Science Talent Searches.

### ANSWERING YOUR QUESTIONS

**Who May Compete?** Any boy or girl who is in the last year of secondary school (public, private, parochial) who is expected by the certifying school official to complete college entrance qualifications before October 1, 1990 and who has not competed in any previous Science Talent Search is eligible to enter this competition.

**How Can Students Compete?** Teachers or other school officials must request entry materials for the outstanding science and mathematics students of the school.

**What Is A Completed Entry?** A project report of about 1,000 words which presents evidence of research ability in science, mathematics or engineering; a Personal Data Blank filled in by student, teachers and principal; standardized test scores and high school transcript.

**How Are Entries Judged?** Judging is based primarily on the student's report on an independent research project in the physical sciences, behavioral and social sciences, engineering, mathematics, or biological sciences (excluding live vertebrate experimentation).

**What Is The Deadline?** Entries must be received at Science Service no later than **Midnight, December 15, 1989**

**Get your students to start working on projects NOW**

RURAL SOCIOLOGY  
PARISITOLOGY  
PALEONTOLOGY  
MINERALOGY  
COMPUTERS  
SOIL MECHANICS  
POLITICAL SCIENCE  
CULTURAL ANTHROPOLOGY  
MATHEMATICAL BIOLOGY  
ASTROPHYSICS  
GENETICS  
GEOPHYSICS  
NUMBER THEORY  
MECHANICAL ENGINEERING  
BIOMEDICAL ELECTRONICS  
AERODYNAMICS  
URBAN SOCIOLOGY  
PROTOZOOLOGY  
ETHOLOGY  
TOPOLOGY  
QUANTUM MECHANICS  
METALLURGY  
INDUSTRIAL PSYCHOLOGY  
STATISTICS  
MICROBIOLOGY  
LOGIC  
BIOMETRY  
CELLULAR CHEMISTRY  
CELL PHYSIOLOGY  
BIOPHYSICAL CHEMISTRY  
BIOENERGETICS  
INVERTEBRATE NEUROPHYSIOLOGY  
CHEMICAL ENGINEERING  
SYSTEMATIC BIOLOGY  
COMPLEX ANALYSIS  
PETROLOGY  
BIOCHEMICAL ENGINEERING  
FLUID MECHANICS  
ELECTRONICS  
PROBABILITY  
NUCLEAR ENERGY

send for information from **SCIENCE SERVICE**  
1719 N Street, N.W., Washington, DC 20036

**NEW ADDRESS?**



Please mail a SCIENCE NEWS address label to ensure prompt service whenever you write us about your subscription.

To: SCIENCE NEWS Subscription Office, 231 W. Center St. Marion, Ohio 43305

**Change of address:** If you're moving please let us know four to six weeks before changing your address.

**To subscribe,** mail this form to the address shown above.

**Subscription rates:**

- 1 year \$34.50
- 2 years \$58.00
- Payment Enclosed
- Bill me later

**NEW ADDRESS:**

name (please print) \_\_\_\_\_

address \_\_\_\_\_

city state zip code \_\_\_\_\_  
(foreign postage \$6.00 additional per year.)

Attach OLD label or print OLD address

name (please print) \_\_\_\_\_

address \_\_\_\_\_

city state zip code \_\_\_\_\_  
D349-4

**CAN YOUR GRAPHICS SOFTWARE DO ALL THIS?**

Shadow Contour of a Random 3-D Surface

Linear, Logarithmic, and Probabilistic Axes

Three Dimensional Surface

Geometric Data Included For 2-D and 3-D Maps

"Graftool has the potential to be the ultimate graphics package, fulfilling everybody's needs."  
- Ehud Kaplan PC Magazine

GRAFTOOL's unique 3-D graphics makes it easy to plot complex data such as this spherical harmonic visualization

**GRAFTOOL \$495 • Demo Kit Available**  
**Academic Discounts • Call (800) SAY-GRAF • FAX (213) 540-3492**

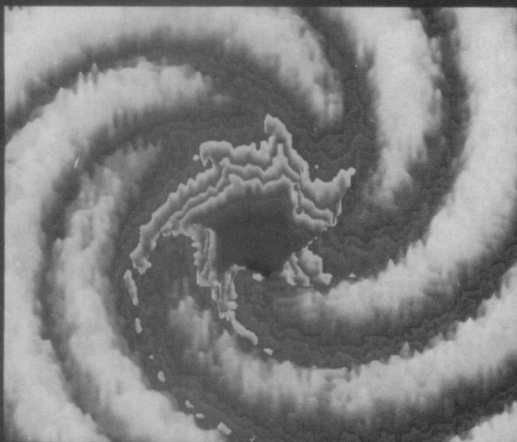
**3-D VISIONS**

412 S. Pacific Coast Highway, Suite 201, Redondo Beach, CA 90277

\* Reprinted with permission from PC Magazine, March 14th, Copyright ©1989 Ziff Communications Co.

**SCIENCE<sup>AND</sup> CREATION**

THE SEARCH FOR UNDERSTANDING



**JOHN POLKINGHORNE**

*Science and Creation* addresses some fundamental questions about how the scientific and theological worldviews relate to each other. Are we witnessing today a revival by scientists of a "natural theology" — the search for God through the exercise of reason and the study of nature? How do the insights of modern physics into the interlacing of order and disorder relate to the Christian doctrine of Creation? How are the realms of "being" (the world as physics describes it) and "becoming" (the world as we experience it) related in the physical universe and to God's involvement with it? What is the relationship between mind and matter? An absorbing example of a scientifically trained mind grappling with the problems of theology, *Science and Creation* provides a fresh perspective on the perennial question of how God interacts with His world. Polkinghorne, Dean and Chaplain of Trinity Hall, Cambridge, is a Fellow of the Royal Society and former Professor of Mathematical Physics at Cambridge University. —from the publisher

Science News Books, 1719 N Street, NW  
Washington, DC 20036

New Science Library, 1989, 113 pages, 9" x 6", paperback, \$8.95, ISBN 0-87773-492-5

Please send me \_\_\_\_\_ copy(ies) of *Science and Creation*. I include a check payable to Science News Books for \$8.95 plus \$2.00 postage and handling (total \$10.95) for each copy. Domestic orders only.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime Phone # (\_\_\_\_\_) \_\_\_\_\_  
(used only for problems with order) RB1121