

OF THE WEEK

Polar dunes of Mars	276
Swine flu vaccine scare	277
Brain asymmetry at birth	277
Sound-centered bat brains	278
NSF projects R&D funds	278
Swiss SIN accelerator	279
Measuring cosmic distances	279
Surveying binaries	279

ARTICLES

Inorganic polymers	281
Antipain hypnosis	283

RESEARCH NOTES

Technology	280
Physical Sciences	280
Behavior	282
Biomedicine	282

DEPARTMENTS

Letters	275
Off the Beat: Papagos of Kitt Peak	284

COVER: The use of hypnosis in pain control is not new, but it is now being used as a major part of the treatment at several pain control facilities throughout the country and is gaining an increasing degree of acceptance by the medical profession. See p. 283.

Publisher	E. G. Sherburne Jr.
Editor	Kendrick Frazier
Senior Editor and Physical Sciences	Dietrick E. Thomsen
Senior Editor and Behavioral Sciences	Robert J. Trotter
Biomedical Sciences	Joan Arehart-Treichel
Life Sciences	Julie Ann Miller
Science and Society	John H. Douglas
Space Sciences	Jonathan Eberhart
Contributing Editors:	
Biology	Janet L. Hopson
Mathematics	Lynn Arthur Steen
Copy Editor	Michelle Galler Riegel
Art Director	Dale Appleman
Assistant to the Editor	Evelyn Harris
Books	Margit Friedrich
Business Manager	Donald Harless
Advertising	Scherago Associates, Inc. 11 W. 42nd St. New York, N.Y. 10036 Fred W. Dieffenbach Sales Director

Copyright © 1976 by Science Service, Inc., 1719 N St., N.W., Washington, D.C. 20036. Republication of any portion of SCIENCE NEWS is prohibited.

Editorial and Business Offices
1719 N Street, N.W.
Washington, D.C. 20036

Subscription Department
231 West Center Street
Marion, Ohio 43302

Subscription rate: 1 yr., \$10; 2 yrs., \$18; 3 yrs., \$25. (Add \$2 a year for Canada and Mexico, \$3 for all other countries.) Change of address: Four to six weeks' notice is required. Please state exactly how magazine is to be addressed. Include zip code.

Printed in U.S.A. Second class postage paid at Washington, D.C. Title registered as trademark U.S. and Canadian Patent Offices.

Published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington, D.C. 20036. (202-785-2255) TWX 710-822-9433 SCIEN NEWS.

LETTERS

Evolution vs. teleology

The recent letters on use of teleological language in science (SN: 9/18, 10/9) brings to mind an experiment I made ten years ago with a group of zoology grad students. I asked them to consider seriously the question of *why* Darwin's finches had evolved in the particular pattern he found on Galapagos Island. Though I spent nearly an hour trying, in various ways, to get them to consider the content of the question, they refused unanimously to answer it, saying that the word *why* brought in teleology.

Then I pointed out that much more was known objectively about *why* the finches had evolved as they did (since each species had developed some anatomical specialization that enabled it to get food available in some particular ecological niche) than was known about *how* the evolution occurred (we still don't know enough concretely about how genetic processes produce such marvelously adaptive evolutionary changes in organisms). I explained further that a retrospective examination in such terms had nothing in common with the prior element of purposiveness implied by teleology. Then, of course, the students asked why I had not explained before what I was talking about.

I had failed utterly in my plan to stimulate their thinking on basic questions of evolutionary theory. Instead of stimulation, the word *why* had simply evoked the concept of teleology in a manner which prevented further thinking about the matter. I question the value of scientific schooling that produces such rigid associations between terms and concepts. Is it really necessary? May it not do more harm than good by curbing creative thought on scientific problems?

Lester Talkington
Tappan, N.Y.

The mammography debate

Dr. Bross and others of his calibre are performing a severe injustice to the women of America (Letters, SN: 9/11/76, p. 163). The statistics for morbidity from breast cancer have remained unchanged for the past 30 years and this disease continues to be one of the leading killers of women in the world. The *only* light on the horizon that has recently been shown to affect survival statistics is *early detection* of the disease and *appropriate therapy*. The early signatures of this disease detected via the X-ray examination of the breast (mammography) have only

recently been established and disseminated but, unfortunately, may be lost if individuals such as Dr. Bross continue to apply unscientifically produced, *generalized* statistics to the *individual* woman concerned for her health.

This is not to say that I reject the risk associated with mammography, or for any other radiologic examination. The risk exists and steps should be and *are* taken to reduce radiation exposure consistent with obtaining necessary diagnostic information. However, the data upon which much of the furor over mammography is based is extrapolated from studies that utilized much higher radiation doses at radically different X-ray photon energies than that sustained in mammography. Study results are presented, however, as if they were directly applicable to present low dose mammographic methods. If there is anyone doing the ramming, it is the evangelists who are ramming this gospel down the throats of the American women who look to these individuals for rational interpretation of academic investigation. The NCI-ACS mass screening program from the outset was designed as a voluntary participation program (and remains so to my knowledge). Unfortunately, the full benefit of the program cannot be assessed for some time but initial results point in the direction of lowering the morbidity from this disease for the first time in history.

However, the damage to the program has been done and whether Dr. Bross and his colleagues appreciate the impact of their actions fully or not, they have embarked on a tacit experiment of their own on American women which asks the question: What happens when we do nothing?

James M. Hevezi, Ph.D.
Certified Radiological Physicist
The University of Texas Medical
School at Houston

A quick recovery

The week of Oct. 9 in SCIENCE NEWS the editors must have felt very bad, sending us a whole issue of negative news. We read about *absent* molecules, *delay* to evolution, element 107: U.S. *skeptical*, air bill *dies*, literacy *gap*, Foxbat *no* superplane, earthquakes and so on.

Was the weather bad in D.C. that week? Or did most of the staff have headaches? My wife and I will take an aspirin and wait for next week.

Francis and Eleanor Mulford
Kenmore, N.Y.

(Notice how we bounced back last week with the three Nobel Prizes, action to protect porpoises, and progress against Huntington's disease.—Ed.)

SCIENCE SERVICE

Institution for the Popularization of Science founded 1921; a nonprofit corporation

Board of Trustees—Nominated by the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE: **Deborah P. Wolfe**, Queens College of City University of New York; **Bowen C. Dees**, The Franklin Institute; **Athelstan Spilhaus**, National Oceanic and Atmospheric Administration. Nominated by the NATIONAL ACADEMY OF SCIENCES: **Gerald F. Tape**, Associated Universities; **Allen V. Astin**, Bethesda, Md.; **Glenn T. Seaborg** (President), University of California, Berkeley. Nominated by the NATIONAL RESEARCH COUNCIL: **Gerald Holton**, Harvard University; **Joseph W. Berg Jr.**, National Research Council; **Aaron Rosenthal**, National Academy of Sciences. Nominated by the JOURNALISTIC PROFESSION: **Edward Bliss Jr.**, American University; **Julius Duscha**, Washington Journalism Center; **O. W. Riegel** (Secretary), Washington and Lee University. Nominated by E. W. Scripps Trust: **Milton Harris** (Treasurer), Washington, D.C.; **Edward W. Scripps II** (Vice President and Chairman of the Executive Committee), Edward W. Scripps Trust; **John Troan**, Pittsburgh Press.

Director: E. G. Sherburne Jr.; Assistant Director: Dorothy Schriver; Business Manager: Donald R. Harless; Things of Science: Ruby Yoshioka.