

OF THE WEEK

Inside the living brain	340
Magnetic moments and quarks	340
NASA champions Carter space policy	341
Brain linked to heart attacks	342
Suppressor T cells key in two disease states	342
Pinning down what ESP isn't	343
HEAO-2 aloft	343

RESEARCH NOTES

Biology	344
Earth Sciences	344
Space Sciences	345

ARTICLES

Viewing underground structures	348
--------------------------------	-----

DEPARTMENTS

Letters	339
Off the Beat	347
Books	347

COVER: Most people who contemplate digging would like to know what is underground first. A method that uses the changes in electromagnetic waves that have passed through the ground to gain information about underground structures promises to help. Here it tries to image a tunnel. See p. 348. (Photo: Lawrence Livermore Laboratory)

Publisher	E. G. Sherburne Jr.
Editor	Robert J. Trotter
Senior Editor and Physical Sciences	Dietrick E. Thomsen
Behavioral Sciences	Joel Greenberg
Biomedicine	Joan Arehart-Treichel
Earth Sciences	Susan West
Life Sciences	Julie Ann Miller
Policy/Technology	Janet Raloff
Space Sciences	Jonathan Eberhart
Contributing Editors	Lynn Arthur Steen (mathematics) Kendrick Frazier John H. Douglas Michael A. Guillen
Assistant Editor	Judy Klein
Art Director	Dale Appleman
Assistant to the Editor	Angela Musick
Books	Jane M. Livermore
Business Manager	Donald Harless
Advertising	Scherago Associates 1515 Broadway New York, N.Y. 10036 Fred W. Dieffenbach, Sales Director

Copyright © 1978 by Science Service, Inc., 1719 N St., N.W., Washington, D.C. 20036. Republication of any portion of SCIENCE NEWS without written permission of the publisher 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., \$15.50, 2 yrs., \$27.00, 3 yrs., \$37.50 (Add \$3 a year for Canada and Mexico, \$4 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. ISSN 0036-8423

LETTERS

A dam case of insomnia

In regard to the article on cropland losses (SN: 11/4/78, p. 308), it strikes me that the decline in cropland productivity is roughly proportional to the increase of damming in the world's rivers.

People like to live in floodplains because the land is gentler there, water is generally abundant—but the annual floods are inconvenient, so ways are devised to prevent them. The result is that our topsoil is carried away down concrete sluiceways instead of spreading over the floodplains and settling out. Floods? Yes, there are fewer of them, but when they do occur, they are devastating without the ameliorating effect of a properly functioning floodplain.

We've short-sheeted our own bed, and now we must lie in it. It will be a long, sleepless night unless we remake it.

*James P. Cooper
Mitchellville, Md.*

First in command

It has come to my attention that you have committed a serious error by referring to the Vulcan Spock (serial number S179-276SP) as second officer of the USS Enterprise (SN: 10/14/78, p. 260). Spock is, in fact, the highest ranking officer aboard the Enterprise (aside from the captain, of course), with the rank of Full Commander. Chief Engineer Scott, by comparison, is only a Lieutenant Commander. Spock is the science officer of the ship and also its first officer. Perhaps the confusion arose from the fact that he is second in command.

*Milrkand Tsuiendhi
Chief of Personnel
Star Fleet Command
Star Fleet Armed Forces
Fleet Headquarters*

Unclassified laser fusion

In a recent article entitled "Laser Fusion from Zeta to Omega" (SN: 11/4/78, p. 309), it was implied that the only U.S. laser fusion program based on unclassified principles was at the University of Rochester. This is not the case. The Laser Plasma Branch of the Plasma Physics Division at the Naval Research Laboratory has been doing totally unclassified research into the physics of laser fusion and laser development for over six years. This program has had, in fact, several NRC postdoctoral fellows and graduate students who have done their Ph.D. work in our laboratory.

Significant advances in the understanding of the laser-plasma interactions from NRL (such as the discovery and impact of self-generated magnetic fields, Brillouin backscatter instability, heat transport properties, etc.) have continued to guide directions in fusion research.

In fact, a recent series of experiments encouraging for the future of laser fusion performed at NRL have demonstrated ablative acceleration of targets to high speed (~10⁷ cm/sec) with very good efficiency (~20 percent) using lower irradiance and longer pulses than now in vogue.

*Barrett H. Ripin
Laser Plasma Branch
Plasma Physics Division
Naval Research Laboratory
Washington, D.C.*

Painless conversion

"No country with an economy and population anywhere near the size of the United States' has ever converted to the metric system. GAO [the U.S. General Accounting Office] estimates the cost of total conversion here will run in the billions of dollars" (SN: 10/28/78, p. 295).

Since the U.S. accounts for about 35 percent of the gross world product, it is superfluous to note that no country with an economy as large as ours has ever converted to the metric system. However, the other 65 percent of the GWP, even though it is not confined within the boundaries of any single nation, is largely produced in metric terms. Certainly this is true of the U.S.'s major trading partners: the European Economic Community and Japan.

As to the cost of metrication, most U.S. companies have found that it is much smaller than they expected. The reason is that a planned, systematic approach to metrication will allow old inch-pound-pint equipment to be replaced with metre-kilogram-litre equipment as part of normal replacement. No rational person would contend that old equipment should be scrapped before its useful life is over just for the sake of metrication, but many people include just such foolishness in determining the cost of metrication.

In fact, the major contributing factor to metrication costs is the U.S. government's failure to exert some kind of leadership in this area. Different chunks of the economy are proceeding at different paces toward complete metrication, and the confusion caused by their being out of phase with each other is more expensive than metrication per se. Furthermore, since international standards for manufacturing and commerce are being expressed in round-number metric terms, there is a cost to the U.S. for its failure to metricate. It would be interesting to find out if the GAO applied this cost as an offset to its hypothetical cost of metrication.

Finally, while such decisions are apparently going to be made in terms of dollars and cents (a decimal-based measurement system, incidentally), it is a shame to ignore the intangible but significant values of improved measurement skills in the schools and of a single international language of measurement as an aid toward world understanding. Rather than discouraging metrication, the GAO report should encourage us to get serious about it.

*Richard S. Russell
U.S. Metric Association, Inc.
Madison, Wis.*

SCIENCE SERVICE

Institution for the public understanding of science founded 1921; a nonprofit corporation.

Board of Trustees—President, Glenn T. Seaborg, University of California, Berkeley, CA; Vice President, Gerald F. Tape, Associated Universities, Washington, DC; Treasurer, Milton Harris, Washington, DC; Secretary, Julius Duscha, Washington Journalism Center, Washington, DC; Allen V. Astin, Bethesda, MD; Joseph W. Berg Jr., National Research Council, Washington, DC; Edward Bliss Jr., Newburyport, MA; Bowen C. Dees, The Franklin Institute, Philadelphia, PA; David A. Goslin, National Research Council, Washington, DC; Elizabeth R. Neufeld, National Institutes of Health, Bethesda, MD; O. W. Riegel, Glasgow, VA; Aaron Rosenthal, Washington, DC; Edward W. Scripps II, Edward W. Scripps Trust, Carson City, NV; John Troan, Pittsburgh Press, Pittsburgh, PA; Deborah P. Wolfe, Queens College of City University of New York, Flushing, L.I., NY

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