

SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication
Volume 137, No. 8, February 24, 1990

E. G. Sherburne Jr.	Publisher
Patrick Young	Editor
Laurie Jackson	Managing Editor
Janice Rickerich	Production/Design Director
Bruce Bower	Behavioral Sciences
Ivan Amato	Chemistry/ Materials Science
Richard Monastersky	Earth Sciences
Janet Raloff	Environment/Policy
Ron Cowen	General Science
Kathy A. Fackelmann, Rick Weiss	Life Sciences/ Biomedicine
Ivars Peterson	Mathematics/Physics
Jonathan Eberhart	Space Sciences
Jennifer L. Miller	Editorial Assistant
Caroline C. Decker	Science Writer Intern
Wendy Smith	Books/Resource Manager
Donald R. Harless	Advertising/Business Manager

Copyright © 1990 by Science Service, Inc.
Editorial and Business Offices:
1719 N St., NW, Washington, D.C. 20036.
Republication of any portion of SCIENCE NEWS
without written permission of the publisher is
prohibited.

Subscription Department:
231 West Center St., Marion, OH 43305

Subscription rate: 1 yr., \$34.50; 2 yrs., \$58.00.
(Foreign postage \$6.00 additional per year.) Change of
address: Four to six weeks' notice is required. Please
state exactly how magazine is to be addressed.
Include zip code. For new subscriptions only call
(1) 800-247-2160. Printed in U.S.A. POSTMASTER:
Send address changes to SCIENCE NEWS, 231 West
Center St., Marion, OH 43305. Second class postage
paid at Washington, D.C., and additional mailing
offices. Title registered as trademark U.S. and
Canadian Patent Offices. Published every Saturday
by Science Service, Inc., 1719 N St., NW,
Washington, D.C. 20036. (202-785-2255)
ISSN 0036-8423

Letters

LIGO detectors: Sites unknown

"R&D budget: Civilian gains outpace defense" (SN: 2/3/90, p.7) is in error in asserting that the proposed Laser Interferometer Gravitational-Wave Observatory (LIGO) detectors would be located at the California Institute of Technology in Pasadena and the Massachusetts Institute of Technology in Cambridge. While LIGO is a scientific collaboration between Caltech and MIT, the sites for the detectors have not yet been chosen. Indeed, they cannot be located in Pasadena or Cambridge because one of the main criteria for site selection calls for relatively remote areas to eliminate seismic and acoustic noise. About the most we can say at this stage is that one detector will be located somewhere in the western U.S. and the other somewhere in the east.

You correctly state that the detectors will sense changes "down to a fraction of an atomic nucleus" along their 4-kilometer

This Week

- 116 Vanishing Amphibians: Why They're Croaking
- 116 Painting a color portrait of stable orbits
- 117 Human AIDS vaccines: Mice offer shortcut
- 117 Plants under pressure: The touch that stunts
- 118 Cosmic radiation creates unfriendly skies
- 118 Making flea-sized mechanical computers
- 119 Pulsar mystery ends: The TV camera did it
- 119 Venus gives Galileo a boost in space
- 119 Acid assessment: The state of the science

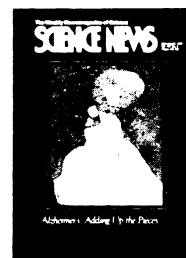
Research Notes

- 125 Behavior
- 125 Biomedicine
- 127 Environment
- 127 Physics

Articles

- 120 Toward a Future With Memory

Cover: Physicians first recognized Alzheimer's as a particular kind of senile dementia more than 80 years ago, but they have yet to uncover its basis, delay its onset or provide a cure. In the United States, the pressure to understand Alzheimer's builds every year as the population ages. Using newly developed tools of molecular biology, neuroscientists and others are accelerating their efforts to grasp the essence of this devastating disease.
(Illustration: Randy Fletcher)



Departments

- 114 Science on the Air
- 114 Books
- 115 Letters

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

Board of Trustees — *Chairman*, Glenn T. Seaborg; *Vice Chairman*, Gerald F. Tape; *Treasurer*, Willis Harlow Shapley; Joseph W. Berg Jr.; Edward Bliss Jr.; Robert W. Fri; David A. Goslin; J. David Hann; Milton Harris; Leon M. Lederman; Elena O. Nightingale; Ben Patrusky; H. Guyford Stever; Deborah P. Wolfe.
Honorary Trustees — Bowen C. Dees; O.W. Riegel; John Troan.

President: E. G. Sherburne Jr.; **Business Manager:** Donald R. Harless.

length. Your readers might be interested to learn that that fraction is one one-hundred-millionth the diameter of a hydrogen atom, or 10^{-16} centimeter.

Robert Finn
Science Writer, Public Information Officer
California Institute of Technology
Pasadena, Calif.

Addiction theory 'ludicrous'

Ronald K. Siegel's suggestion that the use of addictive drugs represents a "fourth drive, on a par with sex, thirst and hunger" ("Drugs of Choice," SN: 12/16/89, p.392) has to be one of the most irresponsible contentions I've ever read in a scientific publication. I suppose you must present a variety of viewpoints on a given subject, but this one seems to be well out of the mainstream.

To the millions of us who are recovering from alcoholism and drug addiction, the concept is potentially life-threatening. To suggest that our disease is little more than an

inability to control a natural human "drive" sends a strong message that the miserable lifestyle to which we finally progressed was due simply to this "natural drive" gone out of control, and that all we need is a little education and a good "utopian." This, of course, is hogwash.

The progression to addiction is a complex and variable process. Each alcoholic or addict will tell a different story of how he or she got to the same place. If one wants to understand the disease, one needs to *listen* to the individual stories. If one wants to understand the cure — at least the most effective to date — one need only read the book *Alcoholics Anonymous*.

In my opinion, questions about the etiology of alcoholism and addiction will never lend themselves to global or absolute scientific answers. This doesn't mean we shouldn't try to understand the disease through scientific inquiry. I would hope, however, that respecta-

Letters continued on p. 123

FEBRUARY 24, 1990

115

University of British Columbia in Vancouver. Toward that end, he proposes a simple addition to the Alzheimer's armamentarium: aspirin.

McGeer cites his own anecdotal evidence that Alzheimer's rarely strikes rheumatoid arthritis patients, who typically take aspirin on a regular basis. "An aspirin a day keeps the gerontologist away," he suggests. Other researchers have reported observations that contradict McGeer's, and they note that even if aspirin had potential in Alzheimer's, it might not enter the brain in sufficient concentrations before reaching toxic levels in the blood.

Other theories on Alzheimer's genesis abound. Researchers still wonder, for example, whether aluminum — found in high concentrations in amyloid plaques — helps cause the syndrome or simply becomes concentrated in these protein deposits later in the disease.

And scientists have yet to understand the differences between familial Alzheimer's — the clearly inherited form accounting for an apparent minority of cases — and noninherited Alzheimer's, which appears unpredictably in the elderly and somewhat more frequently in women than in men.

Meanwhile, efforts to evaluate new therapies remain hampered by the lack of

a clear biological marker allowing physicians to diagnose the disease before the patient's death, by the uncertain value of various cognitive tests used to measure improvements in patients' behavior and memory, and by the difficulty of finding enough study participants with Alzheimer's who are not already taking many other drugs (see box).

And, as with all diseases of the central nervous system, drug developers must wrestle with the problem of getting their product into the brain, past the membranous border patrol known as the blood-brain barrier. All told, says James Simpkins of the University of Florida in Gainesville, "Alzheimer's disease is probably more difficult to treat pharmaceutically than any other disease."

Nonetheless, asserts Williams of the National Institute on Aging, "the scientific base is there" to devise an effective treatment. With more than a dozen drugs already in clinical trials and with drug companies using automated methods capable of screening hundreds of compounds per week for potential nervous-system activity, "we can do it within the next five or 10 years if we want to," he declares.

Even a drug capable of delaying the onset of Alzheimer's by a decade or two would be a worthy goal, says Thal, who adds wryly: "That would allow us to die quietly and nicely from some other disease." □

Letters continued from p.115

ble scientific publications reaching a general audience would avoid simplifying the human complexities of the disease by presenting as science such ludicrous, off-the-wall theories.

*Member, Alcoholics Anonymous
Athens, Ga.*

Ancestral anatomy

Although I am sure that within the anthropological community there are specific meanings associated with "modern" and "Asian," I was surprised to learn in reading "Migration evolves Down Under" (SN: 12/2/89, p.365) that there was a notable anatomical difference between "modern man" and "Asian man." As a person proud of my Japanese ancestry, I immediately checked under my bed for a stone hand-axe or flint-chipping implement, but was unable to locate any.

Seriously, I would like to know what the technical meanings are.

*Kay Otani
Los Angeles, Calif.*

No contrast was intended between "modern man" and "Asian man." The article reports on the argument that modern humans display significant anatomical differences from human ancestors whose remains have been found in Asia, the Near East and elsewhere, dating to more than 200,000 years ago and possessing some racially distinct features. According to the argument, environmental forces produced the changes in cranial shape and other skeletal features typical of modern humans, whether they live in Tokyo or Tulsa. — B. Bower

The Nutrition and Health Encyclopedia

2nd Edition. By David F. Tver and Percy Russell

With 86 new definitions and more than 150 revised and expanded definitions since the 1981 edition, this popular encyclopedia now includes a storehouse of new and up-to-date information on human nutrition, foods and calories — including nutrients and their sources, nutritional diseases, dieting and weight loss control, obesity, eating patterns, cholesterol and drug-nutrient interactions. Supported by 180 food and nutritional charts and illustrations, the alphabetically arranged entries in *The Nutrition and Health Encyclopedia* cover:

- body chemistry and composition
 - major foods
 - food additives and food toxins
 - nutrition-related diseases
 - metabolic functions
 - food and drug interactions
- from the publisher

Van Nostrand Reinhold, 1989, 639 pages, 6" x 9 1/4", hardcover, \$39.95

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

Please send me _____ copy(ies) of *The Nutrition and Health Encyclopedia*. I include a check payable to Science News Books for \$39.95 plus \$2.00 postage and handling (total \$41.95) for each copy. Domestic orders only.

Name _____

Address _____

City _____

State _____ Zip _____

Daytime Phone # (_____) _____
(used only for problems with order) RB1195