Science® News

A Science Service Publication
Vol. 106/October 12, 1974/No. 15
Incorporating Science News Letter

Of the Week

High-field superconductivity	228
AEC and superconductive magnets	228
Reactor-powered lasers	229
Protein deficiency and newborns	229
Site of afterimages located	230
Bone foreshafts as early weapons	230
When Norway and Greenland split	231
EPA bans Dieldrin and Aldrin	231

Research Notes

Biology	232
Medicine	232
Earth Sciences	233

Articles

New da Vinci manuscripts	234

Departments

Letters	227
Books	238

COVER: Long-lost manuscripts of Leonardo da Vinci have just been published, yielding a wealth of new information on the technological inventiveness and scientific intuition of the Renaissance genius. See p. 234. (Self portrait: Leonardo da Vinci)

Publisher	E. G. Sherburne Jr.
Editor	Kendrick Frazier
Senior Editor and Physical Sciences	Dietrick E. Thomsen
Senior Editor and Behavioral Sciences	Robert J. Trotter
Biological Sciences	Joan Arehart-Treichel
Science and Society	John H. Douglas
Space Sciences	Jonathan Eberhart
Staff Reporter	Janet H. Weinberg
Writer/Copy Editor	Lisa J. Shawver
Art Director	Dale Appleman
Assistant to the Editor	Esther Gilgoff
Books	Margit Friedrich
Advertising	Scherago Associates, Inc. 11 W. 42nd St. New York, N.Y. 10036 Fred W. Dieffenbach Sales Director

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. Established as Science News Letter ® in mimeograph form March 13, 1922. 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). Cable SCIENSERV.

To the Editor

Interior of Jupiter

The article on Jupiter (SN: 9/21/74, p. 186) by Jonathan Eberhart is interesting and timely, but I think some points deserve comment. The central temperature is put at 54,000 degrees F., probably a conservative figure, for it means an average temperature gradient of only 1.2 degrees per mile. Where on earth could we find insulation that good? The size of the "rocky core" is not stated, but in the two diagrams the diameter comes to about 5,300 and 4,700 miles respectively, which is quite conservative; it is probably at least 10,000 miles. "Rocky" is hardly a good word for it, for no compounds can exist at such a temperature, and the elemental silicon and iron (mostly) are far above their critical temperatures and so are truly gaseous, as are the hydrogen and helium. Mention should be made of the uranium and other radioactive constituents which furnish the heat.

Mention is made of the "liquid hydrogen" below 600 miles down, and incidently that "the definition of a liquid may be largely academic." The density of a gas at ordinary temperatures becomes as great as its liquid at about 800 atmospheres; and only in that sense can Jupiter's gases be called liquid. Moreover, in Jupiter sufficient pressure is attained at only one-fourth or one-fifth of the depth quoted (600 miles), a tiny fraction of the radius of the planet. The density of ordinary liquid hydrogen is about 0.1, so from that its density must increase gradually as the pressure rises to millions of atmospheres; and whether it becomes metallic or not is a rather academic question.

Baxter M. Mow
Roanoke, Va.

Room for expansion

Is the world really getting overcrowded? Do we really have to prepare an artificial habitation in space (SN: 9/21/74, p. 183) that would require building up a food supply from scratch?

A glance at a human density of population chart would reveal that much of the earth is uninhabited. If the populations were moved to one area with a density of New York City, less than 10 percent of the earth would be inhabited. Additional room could be made by dredging up land from the oceans. Scientists have already made it possible to level mountains, irrigate the deserts. We have already experimented with living in polar regions and in living at the bottom of the oceans, including farming them.

If the population grew so large that all of this area was not enough to sustain man and his food supply, he could farm hydroponically in buildings hundreds of stories above and below ground and hundreds of miles long and many miles wide. This would release much agricultural land for human habitation.

When the need does arise, and the foregoing know-how is available, it will take people to do these things, not money, and they will get done. At present the most relevant problem is for social scientists to find a means of enabling populations to move to areas where they can sustain themselves.

Harry George Feinstein
Brooklyn, N.Y.

New elements as toys

"The Newest Element: 106" (SN: 9/14/74, p. 164) was very enlightening. Now I know what scientists (?) do with their time and (our) money. What good is creating an element that has a half-life of only 0.9 seconds? Does this have any practical application to solving the world food problems, health problems, social problems, etc.? None, that I can perceive.

Instead of playing with scientific apparatus as if it were meant for children, scientists ought to do something practical with the intellect God gave them rather than adding another notch to their list of credentials.

Daniel Byrne
Plymouth, Mich.

Keeping informed

It amused me to read the article on superfluidity (SN: 8/3/74, p. 68) in which you stated that getting used to quantum mechanics "requires a certain wrenching of the mind. . . ." Since I have never had a course in (nor do I understand) physics, I found the story entirely believable.

I commend you on your ability to continually keep an English major informed about complex matters in a comprehensible way. I cannot help but believe that science students must be able to acquire much practical information through reading your publication.

Wayne M. Harris
Assistant Principal
Weslaco High School
Weslaco, Texas

Address communications to Editor, Science News, 1719 N Street, N.W Washington, D.C. 20036