

THIS WEEK

Time-reverse breakdown 4
Doubling the Hubble constant 4
NASA's 1982 schedule 5
Studying the auroras 6
Exercise and heart disease 6
Penetrating the blood-brain barrier 7
First U.S. test-tube birth 7

RESEARCH NOTES

Earth Sciences 8
Space Sciences 8

ARTICLES

Radwaste storage: Looking below 9
Scopes-2 12

DEPARTMENTS

Letters 3

COVER: The Paradox Basin in Utah is one site being considered for a high-level nuclear waste repository. Deep drilling into the layers of bedded salt helps provide the necessary information for selecting the repository site as part of DOE's accelerated program to have a repository in operation by the year 2000. See page 9. (Photo courtesy of the Department of Energy)

PUBLISHER: **E. G. Sherburne Jr.**

EDITOR: **Joel Greenberg**

SENIOR EDITOR/PHYSICAL SCIENCES:
Dietrick E. Thomsen

BIOMEDICINE: **Joan Arehart-Treichel**

CHEMISTRY: **Linda Garmon**

EARTH SCIENCES: **Cheryl Simon**

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**

SCIENCE WRITER INTERN: **Ivars Peterson**

ASSISTANT EDITOR: **Judy Klein**

ART DIRECTOR: **Elizabeth G. Clark**

ASSISTANT TO THE EDITOR: **Betsy Gordon**

BOOKS: **Jane M. Livermore**

BUSINESS MANAGER: **Donald R. Harless**

ADVERTISING: **Scherago Associates**,
1515 Broadway, New York, N.Y. 10036, **Fred**
Dieffenbach, Sales Director

Copyright ©1981 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., \$22.50; 2 yrs., \$39.00; 3 yrs.,
\$55.00. (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. For
new subscriptions only Call **(1) 800-247-2160**.
Printed in U.S.A. Second class postage paid at Wash-
ington, D. C. Title registered as trademark U.S. and
Canadian Patent Offices. Published every Saturday
by SCIENCE SERVICE, Inc. 1719 N St., N.W., Wash-
ington, D. C. 20036. (202-785-2255)

ISSN 0036-8423

JANUARY 2, 1982

LETTERS

Aging and the immune system

I was fascinated to read of the results of Drs. Rebar, Miyake, Low and Goldstein, in which the hypothalamus has been shown to respond to thymic hormones by increasing its production of hormone releasing factors (SN: 11/14/81, p. 311). This finding bears on one of the central controversies about human aging, namely, whether there is a central "clock" of senescence, and if so, in which organ system does it reside. Two candidate organ systems have been the endocrine system, controlled by the pituitary and ultimately the hypothalamus, and the immune system, including the thymus and hematopoietic bone marrow. The recent results you report tend to support the position that it is the immune system which lies closer to the nub of the problem. This is encouraging, because the immune system is more accessible to clinical intervention than most, and because immunology is one of the more rapidly advancing areas of biology. The Fountain of Youth may yet be found, flowing out of a test tube.

Michael Lenker
Houston, Tex.

Not for animal lovers only

Although on the face of it leading-off an article like "Black-footed ferret found; pupfish extinct" (SN: 11/28/81, p. 340) with a term like "animal lovers" appears quite innocent, unfortunately it is not. Certainly not because it was used in a derogatory sense but rather because it serves to continue an old myth and mislead the "uninformed." "Endangered" species are used as indicators by conservationists, and the myth that the extinction of these species only is important to "animal lovers" is clearly ludicrous unless you can answer "yes" to the following questions:

Can our world survive the loss of "wild" species of plants and animals? Certainly not, when current agricultural practices require new varieties as frequently as every two to three years just to avoid crop destruction from pests.

Can we afford to unknowingly eradicate the species which may provide future cures for disease? Absolutely not, when the rate of death from cancer and other potentially curable diseases has increased more than 12 percent in the past decade. (Over half the pharmaceuticals currently on the market are derived directly from plants and animals, and all are tested on animals.)

Can we tolerate the extinction of more plant and animal species during the next twenty years than the planet suffered over the one million years before this century? Not if we are to maintain the "natural balance" which the earth's ecological system has taken eons to develop.

Gerald A. Lieberman, Ph.D.
New York, N.Y.

A-bomb article answers

Just received your Nov. 7 issue. The face on the cover reminds me of a bad recurrent dream. I flew for SAC in the '50s. We had both A and H bombs during that era. But it was faces like that — late at night — that caused me to quit. She's too sad to even cry, and that is sad indeed!

Dale Edwards
Hemet, Calif.

It is mighty disappointing to see your three-page article "A-Bomb Aftermath" (SN: 10/31/81, p. 284). We hoped that your magazine [would] use the limited space for scientific purposes! Looks [like] you joined the barefooted, hairy and noisy anti-nuclear crowd.

How come you did not write [of] the Dresden bombing where over 260,000 people died during one night in an open city? Or the other millions who survived not one but dozens of bombings, where much more died in one bombing than in Japan. We do not have a war today [for] only one reason, the atom bomb! Political [and] Army leaders know they may die too.

It is easy to find people [to] say what you want if one has the time to keep asking.

Bela Vitez
Derwood, Md.

"A-Bomb: Psychological Trauma" compares the effects of nuclear holocaust and the five bombings of Tokyo and searches for an answer in Freudian doctrine. There is no mention of those chemical by-products of nuclear fission which are harmful psychoactive drugs. Cesium and rubidium are only two of the by-products and it has been proved that they cause affective disorders chemically. Many people lack the metabolic ability to get these chemicals out of their systems. They require massive doses of an element higher on the electromotive force series of elements to replace them. Thousands of people in America are now taking lithium to counteract the increase in cesium in the environment that resulted from nuclear tests. Millions more are suffering their moods without recourse to help. SCIENCE NEWS does a disservice to humanity by printing a Freudian view of psychological trauma with no mention of the scientific evidence that nuclear fission by-products are chemically capable of causing psychological illness.

Thomas J. Burke
Wenham, Mass.

As a veteran of the Pacific section of World War II, I was wondering if one Joanne Silberner, in her sob-sister research, ever examined the after-effects of the more conventional bomb on the 1,500 or so men that went down in the Arizona December 7, 1941.

She did not mention the fact that Japan was never known to declare war before military invasion. How about the estimated 1,000,000 personnel the direct attack on Japan would have cost?

Will C. Hewitt
Des Moines, Iowa

The story on the psychological aftereffects of the A-bomb attack has many similarities to research among victims of the Nazi Holocaust and even to the research we have been doing among Americans who were liberators of the Camps. One notes the special quality of the trauma, over and above the war trauma. And the sense that "it is as if it is happening in my office" is well known to us.

David R. Blumenthal
Atlanta, Ga.

Correction: In the article "Psychological A-Bomb Wounds" the number given as the total of Japanese war deaths at Hiroshima and Nagasaki is an estimate made by the Japanese government and accepted by the United Nations of civilian war dead.