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**COVER:** Durga, mother goddess of the Hindu religion, is part of a tradition that goes back thousands of years. An anthropological study done in eastern India shows how such an ancient symbol can still function as an important factor in a modernizing society. See p. 106. (Photo: James J. Preston)

<b>Publisher</b>	E. G. Sherburne Jr.
<b>Editor</b>	Kendrick Frazier
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<b>Advertising</b>	Scherago Associates, Inc. 11 W. 42nd St. New York, N.Y. 10036 Fred W. Dieffenbach Sales Director

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**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). Cable SCIENSERV. Telex 64227.

FEBRUARY 14, 1976

# LETTERS

## The nuclear debate

I have been an avid reader of SCIENCE NEWS for over four years and I find it a very enjoyable way of rapidly keeping current with events in far-flung fields of science. At the risk of branding myself an antinuclear firebrand, I now feel constrained to take issue with the recent editorial by John H. Douglas. While the unscientific politicizing of emotional issues has been ably decried by author Douglas and others, I think all of us in the scientific community have been remiss in not recognizing that the strict criteria of polite, deliberate, and necessarily slow debate are not always consistent with the best interest of all concerned. Indeed, this attitude on the part of scientists has helped to foster the now prevalent, though absurd, notion that a product on the marketplace (except those included under the Delaney Amendment) has the same rights as a citizen under our constitution, to wit, innocent until proven guilty. Currently we are all paying a high price for that notion in the pollution of our waterways, our air, destruction of wildlife, increased incidence of cancer, etc. In fact, until the public wrenched the debate on environment out of the hands of the polite, restrained, meticulous documenters, this group of problems simply grew.

Mr. Douglas concludes by stating that the political process can wisely resolve social issues only when they are honestly defined and clearly presented. This is a noble thought, but naive. Experience in this country has shown government at all levels to be effective only when decisively swamped into a direction of action by some usually emotional outcry. This will certainly be the best we can hope for in the technical morass of the energy debate.

John M. Riley  
Louisville, Ky.

I have never written to you before, though I should have—to commend you for the years of fairness and intelligence with which you have treated your subjects. But now I am writing to tell you that I am very disturbed by the tone of your article "The Great Nuclear Power Debate," by John Douglas.

I think this is insulting: "Outside the United States, environmental decisions are usually handled like other technical matters—by experts." It is rather like former President Nixon deciding that the public was

like a child and need not participate actively in government.

The "energy crisis" will have little meaning if we damage our children genetically or spoil the earth. Just because science can devise something, like the SST (pushed so heartily by business interests) or Red Dye No. 2 (clung to so long by business interests) does not mean it is good, clearly.

To the statement, "Technical matters can only be decided on the basis of accurately derived, fairly reported data," I reply, "Data will not make the crucial decisions; humans will."

So let's have SCIENCE NEWS return to its "humanistic scientist" stance, please.

Mrs. Monroe Cohen  
Washington, D.C.

(The section noting the differences between the United States and other countries in how environmental decisions are made was a statement of fact not an expression of opinion.—Ed.)

## Computer checkers

Lynn Arthur Steen's interesting article on computer chess programs (SN: 11/29/75, p. 345) implies that computers can "crunch" checkers by looking all the way to the end of the game. Not true. Dr. Arthur L. Samuel, retired Director of Research of IBM, has conducted computer research using the game of checkers for over 15 years; since retiring, he has continued this research at Stanford University. His heuristic programs of both Type A and Type B have yet to reach a state of playing a respectable game against good players. Dr. Samuel's research has been published in the IBM JOURNAL.

Compared to  $10^{120}$  possible move sequences for a chess game, there are only  $10^{50}$  sequences for an average checker game of 30 moves to a side. Using Mr. Steen's value of computer speed for the fastest present computer ( $3 \times 10^{22}$  moves per second!), it would take "only"  $10^{20}$  years to examine the complete tree of a checker game. And using his speed for the fastest theoretically possible computer ( $3 \times 10^{33}$  moves examined per second), it would take only 10 billion years to examine all the possibilities.

I would like to challenge any computer group to match their program in a 20-game match against the World Checker Champion, Dr. Marion F. Tinsley, Department of Mathematics, Florida A&M. A suitable stake for the match could be arranged.

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