

AMERICAN ASSOCIATION
FOR THE
ADVANCEMENT OF SCIENCE

Board of Directors

THOMAS PARK, *Retiring President, Chairman*
PAUL M. GROSS, *President*
ALAN T. WATERMAN, *President Elect*
HARRISON BROWN DON K. PRICE
HENRY EYRING MINA REES
H. BENTLEY GLASS ALFRED S. ROMER
MARGARET MEAD WILLIAM W. RUBEY
PAUL A. SCHERER, *Treasurer*
DAEL WOLFE, *Executive Officer*

Editorial Board

KONRAD B. KRAUSKOPF H. BURR STEINBACH
EDWIN M. LERNER WILLIAM L. STRAUS, JR.
PHILIP M. MORSE EDWARD L. TATUM

Editorial Staff

DAEL WOLFE HANS NUSSBAUM
Publisher Business Manager

GRAHAM DUSHANE
Editor

JOSEPH TURNER ROBERT V. ORMES
Associate Editor Managing Editor

ELLEN E. MURPHY, *Assistant Editor*

NANCY TEIMOURIAN, *Assistant to the Editor*

News: HOWARD MARGOLIS, DANIEL S. GREENBERG, PATRICIA D. PADDOCK

Book Reviews: SARAH S. DEES

Editorial Assistants: SUE E. BERKE, NANCY S. HAMILTON, OLIVER W. HEATWOLE, EDGAR C. RICH, JOHN E. RINGLE, CONRAD YUNG-KWAI

Staff Assistants: LILLIAN HSU, MARION Y. KLINE, KAY E. KROZELY

Advertising Staff

EARL J. SCHERAGO, *Director*

BERNICE SCHWARTZ, *Production Manager*

Sales: RICHARD L. CHARLES (New York, N.Y., PE 6-1858); C. RICHARD CALLIS (Old Bridge, N.J., CL 4-3680); HERBERT BURKLUND (Chicago, Ill., DE 7-4973); DILLENBECK-GALAVAN (Los Angeles, Calif., DU 5-3991)

SCIENCE, now combined with THE SCIENTIFIC MONTHLY, is published each Friday by the American Association for the Advancement of Science at National Publishing Company, Washington, D.C. SCIENCE is indexed in the *Reader's Guide to Periodical Literature*.

Editorial correspondence should be addressed to SCIENCE, 1515 Massachusetts Ave., NW, Washington 5, D.C. Manuscripts should be typed with double spacing and submitted in duplicate. The AAAS assumes no responsibility for the safety of manuscripts. Opinions expressed by authors are their own and do not necessarily reflect the opinions of the AAAS or the institutions with which the authors are affiliated. For detailed suggestions on the preparation of manuscripts, see *Science* 125, 16 (4 Jan. 1957).

Advertising correspondence should be addressed to SCIENCE, Room 1740, 11 West 42 St., New York 36, N.Y.

Change of address notification should be sent to 1515 Massachusetts Ave., NW, Washington 5, D.C., 4 weeks in advance. Furnish an address label from a recent issue. Give both old and new addresses, including zone numbers.

Annual subscriptions: \$8.50; foreign postage, \$1.50; Canadian postage, 75¢. Single copies, 35¢. School year subscriptions: 9 months, \$7.00; 10 months, \$7.50. Cable address: Advancesci, Washington.

Copyright © 1962 by the American Association for the Advancement of Science.

Tough Argument on a Tender Question

The case against our matching the Soviet atmospheric tests of nuclear weapons with a series of our own includes a respect for the good opinion of other nations, a concern for the hazards created by the resulting radiation, and the conviction that the way to stop the arms race is to stop. To these arguments, paradoxically, may be added an argument from immediate military considerations. In a recent talk at Cornell University, Hans A. Bethe, who for some years has been advising the government on the scientific aspects of the development and control of nuclear weapons, reminds us that in certain cases a Soviet advance in weaponry, although working to Soviet advantage, might also work to our advantage. He then suggests that the Soviet tests might be just such a case.

As is well known, American strategy aims, by developing a comparatively invulnerable retaliatory force, to reduce the premium that the Soviets might place on a surprise attack. Minuteman missiles launched from hardened bases and Polaris missiles launched from submarines are part of this effort. There is a premium on surprise attack when the attacker can hope to destroy the nuclear forces of his opponent before those forces can be used. Our possession of an invulnerable retaliatory force reduces this premium. Such possession also reduces the likelihood of war in another, less obvious way. It makes us, the possessors, less nervous. We need not launch an attack in response, as Bethe says, "to mere indications on a radar screen," for fear that our retaliatory forces will be destroyed if the attack proves real.

The contention, as explained by Bethe, that at least part of the Soviet tests might also operate to American advantage is based on an analysis of the atmospheric debris and other effects of the tests. The analysis shows that some of the series was devoted to testing weapons that, among other possible uses, could be used in building an invulnerable retaliatory force. Soviet possession of such a force could reduce further the likelihood of war by subjecting Soviet actions to the same stabilizing influence that such possession subjects our actions.

There is a caveat in Bethe's account of this argument in that he notes that it applies only to some of the Soviet gains. Other gains, he implies, might have to be matched by a restricted series of tests on our part. But if the main argument does play a role in a decision by President Kennedy not to resume atmospheric testing, it will be an important application of that new thinking about armaments which finds that security does not always require us to stay ahead of a potential enemy. As explained by Thomas C. Schelling in his article in *Arms Control, Disarmament, and National Security* (Braziller), an important aspect of security is stability; stability, in turn, may be promoted at times by an increase rather than a decrease in arms; and there may be a tacit agreement on both sides to work for such stability.

Both Bethe in his discussion of the immediate problem and Schelling in his general discussion are quick to point out that we do not know whether the Soviets are interested in promoting stability in this area. In world affairs in general, to add the obvious, it is instability that works to Soviet advantage, and the Soviets may not be so impressed by the dangers of nuclear war that they will purposely give up even a portion of that advantage. Nevertheless, if they develop an invulnerable retaliatory force, stability may be promoted, whatever the motivation behind the development.—J.T.