educational and scientific institutions. In particular, it was suggested that scientific societies take it upon themselves to monitor, to suggest policy, and if possible to participate in the process by which decisions are made for such loans.

In conclusion, the participants affirmed that the advancement of science is fundamentally linked to the advancement of human rights. Scientists therefore have a responsibility not only to promote scientific freedom but also to promote the basic rights guaranteed to all people under international law. Furthermore, scientists have a duty to refuse to participate in actions which violate the human rights of others.

In a related action, on 7 January, the AAAS Council by unanimous vote adopted a resolution condemning attacks on scientific freedom and human rights and encouraging other scientific societies and individual scientists to do likewise.

A report of the Workshop on Scientific Cooperation and Human Rights in the Americas is being produced and will be available through the CSFR later this year. For further information on the workshop, contact Eric Stover, human rights coordinator, CSFR, at the AAAS address.

ERIC STOVER

*Committee on Scientific Freedom and Responsibility*

## *Science* Ethics Reprint Series Available

A new *Science* reprint collection of 20 articles on scientific freedom and responsibility has been prepared by AAAS. The reprints include articles by C. P. Snow, Bertrand Russell, Bentley Glass, and John T. Edsall, as well as AAAS committee reports and selected editorials from the 1960's and the 1970's.

The new series provides an introduction to the ethical and moral role of the scientist in today's world. Thus, it describes key areas of concern among scientists, philosophers, and the public, as well as providing a record of the development of these concerns.

This is the first time that AAAS and *Science* have made such a collection available. It is designed particularly for use in university courses on science and society, professional ethics, and philosophy and history of science.

Copies are available at $10 for a complete set of 20 individual reprints. Orders for the set should be sent (prepaid) to SFR Reprints, AAAS Product Sales, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Further information about these articles is available from the office of the AAAS Committee on Scientific Freedom and Responsibility.

## David Joins Board

Edward E. David, Jr., president of Exxon Research and Engineering Company, Inc., and a former AAAS Board chairman, has accepted the invitation of the Board of Directors to fill the remainder of John C. Sawhill's term. Sawhill, former chairman of the U.S. Synfuels Commission, resigned from the AAAS Board of Directors in December.

## Rutherford Named AAAS Adviser

F. James Rutherford, former assistant secretary of the U.S. Department of Education, has joined the AAAS as adviser on science education to the Board of Directors.

In making the announcement at the Annual Meeting in Toronto, AAAS president Frederick Mosteller noted that Rutherford would be "charting a strong course" for AAAS "to begin to make a difference" in the area of science education. Rutherford was previously assistant director for science education at the National Science Foundation.

The appointment is part of the AAAS effort to make science and engineering education, and general scientific literacy, central concerns of the Association in the 1980's. To formalize this decision, both the AAAS Board of Directors and the AAAS Council have passed a resolution that pledges the Association, in partnership with its affiliated science and engineering societies, to a "full measure of effort to reverse the damaging decline of science and engineering education in the United States."

The resolution directs the president of the Association "to convene a consultative conference of heads of affiliated societies to appraise the health and priority needs of science and engineering education in the United States in the 1980s." It further mandates that a major theme of the 1982 meeting of the AAAS be "Toward a National Commitment to Education Excellence in Science and Engineering for All Americans."

AAAS also plans to use *Science 81* to create lively teaching materials to help science teachers in the secondary schools, and especially to benefit minority students and girls, according to Mosteller. "We will work with our affiliated scientific societies to develop action programs, and we will have joint projects with science and technology centers and museums," he said.

The AAAS action follows a report by the U.S. Secretary of Education and the director of the National Science Foundation last fall that pointed out that there had been a 15-year decline in the U.S. commitment to excellence in science, math, and engineering.

## R&D Project Analyzes FY 1982 Budgets

Seventeen scientific, engineering, and higher education organizations joined AAAS last month in the preparation of a fourth annual intersociety report on R&D in the federal budget. The document, *Intersociety Preliminary Analyses of R&D in the FY 1982 Budget*, is designed to provide early independent examinations of the Administration's proposals for support of R&D. It serves as a resource for members of the participating organizations and other persons in government, industry, and academia who are involved in the congressional budget process. The report provides information on R&D in the Carter Administration's FY 1982 budget and on President Reagan's budget proposals for R&D-related activities, as available at press time.

The intersociety project began in 1978 when seven groups cooperated in the preparation of a report on support for R&D in the President's FY 1979 budget and of a follow-up report in the fall summarizing congressional actions on the President's recommendations. Now in its fourth year, the project has expanded to include 17 participating organizations, permitting comprehensive coverage of most of the major R&D agencies. In addition, the report includes disciplinary summaries of R&D in the social and behavioral sciences, physics and astronomy, chemistry, chemical engineering, biology, the mathematical and computer sciences, electrotechnology, and the atmospheric and oceanographic sciences, and an analysis of federal R&D support to colleges and universities.

## Special Notice for Advance Registrants at the Toronto Meeting

Due to limited supplies, many advance registrants did not receive a free copy of the 1981 *Science* cover calendar with their registration materials at the AAAS Annual Meeting in Toronto. If you are one of these people, please send your name and address to Sue Stinchcomb, AAAS Sales Department, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Calendars will be mailed as soon as possible.

We sincerely apologize for the inconvenience.

Earlier this winter, the AAAS R&D Budget and Policy Project sponsored preparation of a report, *Congressional Action on R&D in the FY 1981 Budget*, which summarizes congressional action, up to adjournment of the 96th Congress in mid-December, on President Carter's recommendations for R&D in the FY 1981 budget. A limited number of single copies of both the *FY 1981 Congressional Action Report* and the *FY 1982 Preliminary Analyses* are available from the Office of Public Sector Programs at the AAAS address.

For the sixth year the AAAS R&D Budget and Policy Project will convene a colloquium in Washington, D.C., at which leaders from government, industry, and the scientific and technical communities will discuss issues of current concern relating to research and development and public policy.

The R&D and Public Policy Colloquium will be held 25–26 June 1981 at the Shoreham Hotel in Washington, D.C. In keeping with AAAS policy, the meeting will be accessible to handicapped participants.

The colloquium will address federal R&D, the FY 1982 budgets of Presidents Carter and Reagan, emerging policies on R&D of the new Administration and the 97th Congress, R&D and industry, and defense R&D. *Research and Development:* AAAS *Report VI* will be available in book form in time for the June colloquium.

## Research into Effects of a $CO_2$–Climate Change Suggested

The kinds of research most needed to help nations and institutions cope with a carbon dioxide ($CO_2$)–induced climate change are the focus of a new report issued by AAAS and the U.S. Department of Energy (DOE).

*Environmental and Societal Consequences of a $CO_2$–Induced Climate Change: A Research Agenda* is the product of a 2-year collaboration between the Carbon Dioxide Effects Research and Assessment Program of DOE and the AAAS Climate Project.

The study assumes a continuation of increasing $CO_2$ levels in the atmosphere and concentrates on the impacts this will have on societies.

Roger Revelle, chairman of the project's steering group and professor of science and public policy, University of California, San Diego, has noted the following eight elements which describe the $CO_2$ problem:

1) The problem is global. All countries have added carbon dioxide to the atmosphere and all will be affected by its consequences.
2) The probable outcome is beyond human experience. Temperature averages will be warmer than those within the past 100,000 years.
3) The problem is long-range. As the use of fossil fuels increases, the gradual buildup of carbon dioxide in the atmosphere will continue, with effects which may not be felt for many years.
4) The buildup of carbon dioxide in the atmosphere is only one aspect of the global energy situation. The buildup of atmospheric $CO_2$ will be affected by the mix of energy sources as well as by the rates of energy use.
5) The role of the less-developed countries will be more important in the future. The percentage of fuels used by these countries will increase, and a large portion of the energy they use is likely to come from fossil fuel.
6) International agreements concerning the $CO_2$ problem will be very difficult to arrange. Each nation and society can be expected to act in its own interest, often at the expense of other societies.
7) Quantitative estimates of costs and benefits are not now possible. Many factors, including the rate at which fossil fuels are used in the future and how well institutions respond to climate change, make it impossible to assess long-range costs and benefits.
8) The range of probable outcomes can be estimated. Increased understanding of the problem will make it possible to begin to put together policies which will increase the benefits and decrease the costs of a $CO_2$ climate change.

The report suggests three major areas for future research. These are

- Assessments of potential risks and benefits. This includes situations where human intervention is unlikely to be effective, that is, a major change in the west Antarctic ice sheet, or the effects on marine and freshwater ecosystems.
- Enhancing beneficial effects and lessening harmful ones. Research is called for in agriculture, forestry, and animal husbandry. The report recommends developing crop strains which will take full advantage of higher temperatures and $CO_2$ levels.
- Societal and institutional responses. A range of possible scenarios should be compiled by scientists in different disciplines. How people in different cultures respond to perceived risk and how decisions are made need to be analyzed.

The AAAS/DOE report urges that scientists from the broadest possible range of disciplines be involved in planning a research program on the questions raised by the $CO_2$ situation. Participation by the governments as well as by the scientists from less-developed countries is deemed critical in establishing long-range research projects.

Copies of the report, *Environmental and Societal Consequences of a Possible $CO_2$-Induced Climate Change: A Research Agenda*, are available from the National Technical Information Service, U.S. Department of Commerce; $12.50, printed copy; $3.50, microfiche.

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**For more information about the activitie and publications described in AAAS News, write to the appropriate office, AAAS, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036, unless otherwise indicated.**