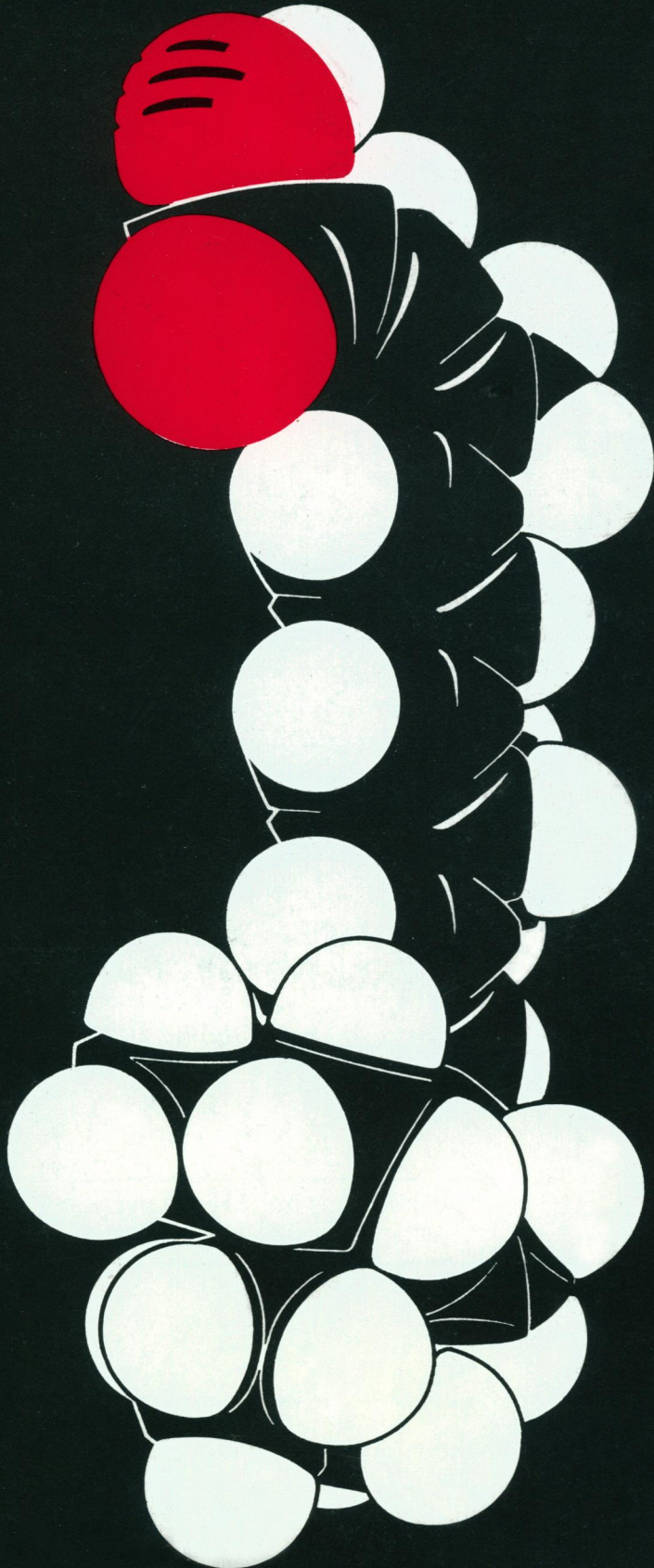


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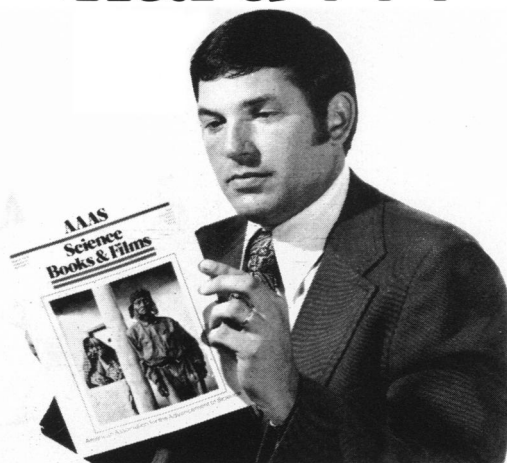
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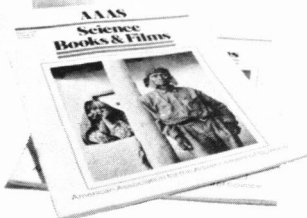


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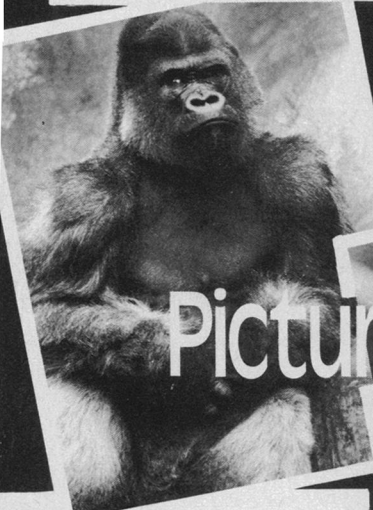
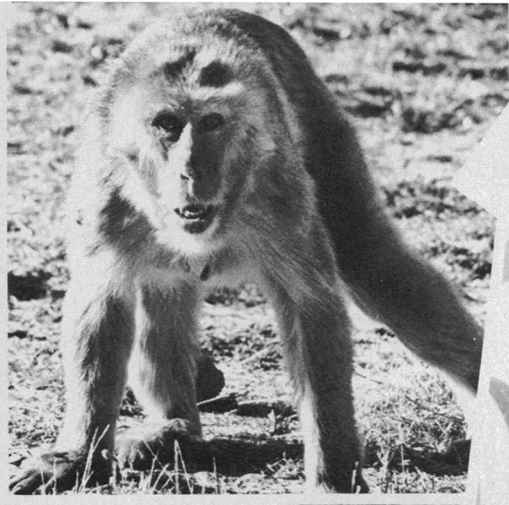
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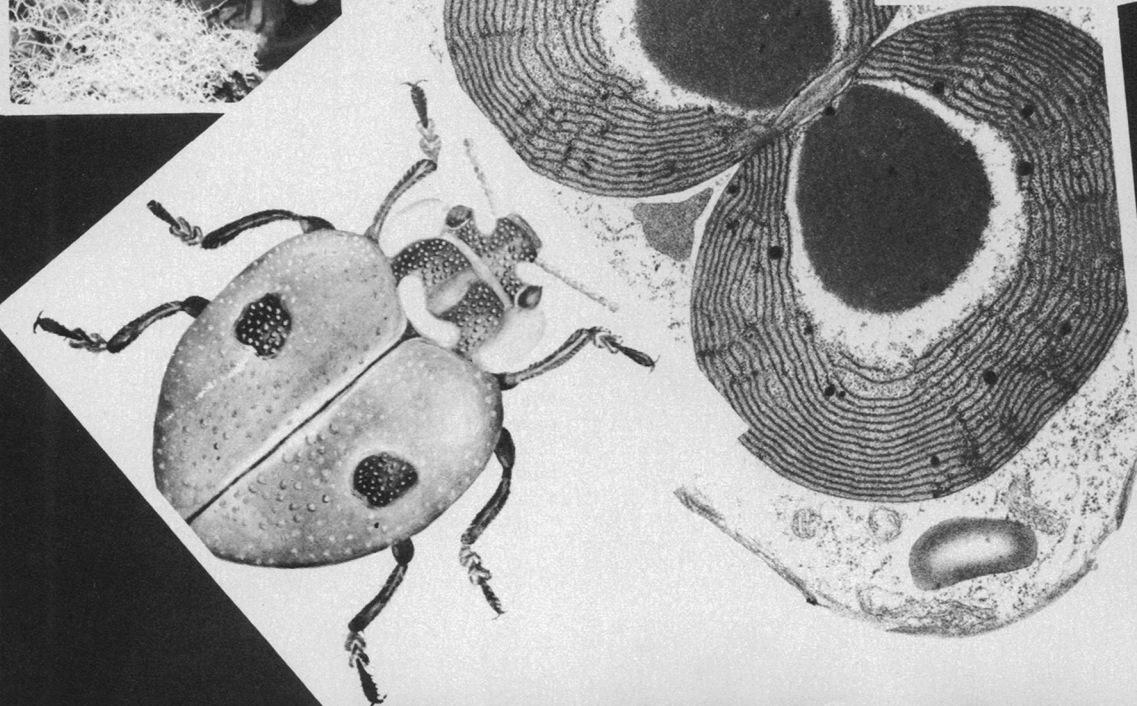
Corey-Pauling-Koltun molecular model of 13-*cis*-retinoic acid. Carbon atoms are shown in black, hydrogen atoms in white, and oxygen atoms in red. See page 487. [Trudy Nicholson, National Institutes of Health, Bethesda, Maryland]



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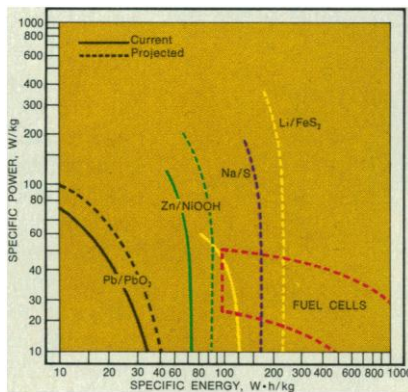
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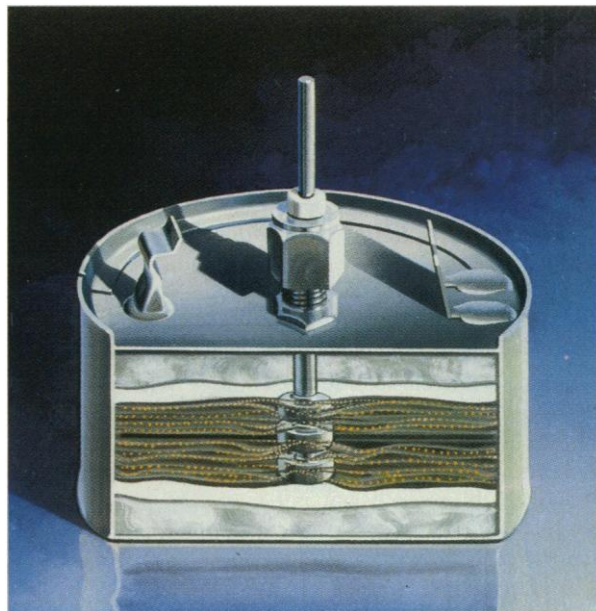
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## Environmental Cancer

Last year the National Cancer Institute published an atlas of cancer mortality in the United States based on an analysis of death certificates for the period 1950 to 1969.\* The atlas contains maps of the United States with each county color-coded to show the mortality rate for different types of cancer. From these maps it is quickly apparent that there are large variations in cancer death rates. Although part of the variation may be genetic, much of it is thought to be due to variations in exposure to environmental carcinogens—some natural, such as sunlight or molds; some due to personal habits, such as cigarette smoking; and some due to carcinogens in air, water, and diet. Recently, for example, increased bladder cancer rates were found in certain counties where chemical industries were concentrated. If estimates are correct that 60 percent or more of all human cancers are due to environmental agents, then about 500,000 cases per year may be involved. The benefit to human health that would accrue from controlling the carcinogens responsible for even a fraction of those cases is obvious.

To determine whether known or possible carcinogens are in the environment of populations with high cancer mortality, the resources of governments, industry, and academia should be applied through a variety of approaches. The U.S. Environmental Protection Agency (EPA) is committed to undertake an integrated assessment of population exposure to environmental carcinogens. The objective of the program is to detect the carcinogens that EPA is responsible for assessing and controlling. A new part of EPA's program will first focus on carefully selected types of cancer and certain well-characterized counties where the mortality rate for those cancers is either significantly higher or lower than the U.S. average rate. Samples of air, water, and food will be analyzed for specific chemicals that are hypothesized to account for local differences in cancer rates. Differences in the results of these analyses between the high-rate and low-rate counties plus leads developed from case-control studies in the high-rate areas may also suggest new candidates for animal carcinogenicity tests. If the approach is successful, it will be used in additional areas and with other types of cancer.

It is hoped that these studies will yield insights into the problem of low-level, chronic exposure to carcinogens. In addition, they may provide an approach for systematic studies of the role of environmental chemicals in causing illnesses other than cancer. Chemicals in the environment have been implicated as causes of diseases other than cancer which, like cancer, may be irreversible, delayed in onset for many years after exposure, and caused by low levels of chemicals that produce no acute distress. Such chemicals include mutagens, teratogens, and some agents that damage the central nervous system.

To provide a scientific basis for the regulation of hazardous environmental chemicals, EPA needs the assistance of a larger segment of the scientific community. Skills of many types of specialists and the close cooperation of all engaged in related endeavors are required. Expertise and data bases in other institutions, combined with EPA's environmental monitoring capability, will constitute potent tools for seeking agents whose control would prevent the development of cancer and other diseases in many persons.—RUSSELL E. TRAIN, Administrator, U.S. Environmental Protection Agency, Washington, D.C. 20460

\*T. J. Mason, F. W. McKay, R. Hoover, W. J. Bolt, T. F. Fraumeni, *Atlas of Cancer Mortality for U.S. Counties: 1950-1969* [Publ. (NIH) 75-780, Department of Health, Education and Welfare, Washington, D.C., 1976].

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## Announcing the 2nd AAAS

Colloquium on

# R&D

## Research & Development in the Federal Budget

June 15-16, 1977

The second annual AAAS report on research and development in the federal budget, to be completed in May 1977, will be the subject of an

AAAS  
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The R&D budget analysis project, sponsored by the AAAS Committee on Science & Public Policy and initiated on a trial basis in 1976, resulted in Willis H. Shapley's well-received book *Research and Development in the Federal Budget: FY 1977*, and a lively colloquium attended by nearly 200 AAAS members and government officials.\* The June 15-16, 1977, colloquium will again offer a forum for constructive discussion with officials of the Executive and Legislative branches and an opportunity to examine the complex relationship of R&D to the federal budgeting process. Willis H. Shapley will again be responsible for preparing the R&D report, which will be available in book form at the June 1977 colloquium.

Specific topics this year will include the impact of the "transition" on R&D decisions, future trends in R&D budgeting, and problems of criteria for federal budget decisions. For information and reservations, please write to

Ms. Catherine Lighthizer  
AAAS Division of Public  
Sector Programs  
1776 Massachusetts Ave., N.W.  
Washington, D.C. 20036

\**Research and Development in the Federal Budget: FY 1977* (\$5.50) and the *1976 Colloquium Proceedings* (\$10.00) may be purchased from AAAS.

## AAAS NEWS

(Continued from page 476)

### AA-AAAS Seeks to Consolidate Atlanta Area AAAS Members

In an effort to consolidate the Atlanta Area AAAS (AA-AAAS) members, the group's Ad Hoc Steering Committee has sent an announcement of current and future activities to all members of AAAS in the Atlanta/Macon/Athens area. The letter detailed upcoming elections, the continuation of the Friday evening AAAS/Fernbank Lecture Series, the organization of the speakers bureau for providing scientific information to area citizens, the preparation of a list of scientists who will provide information to the media, and arrangements for a seminar on recombinant DNA to be held in Athens in the spring.

AAAS members in the Atlanta metropolitan area who have not yet heard from the AA-AAAS are encouraged to contact one of the following members of the Ad Hoc Steering Committee: Kay Davis, Fernbank Science Center (378-4311); John Richards, University of Georgia (542-2823); or Sue Hadden, Clark College (523-5872).

### U.S. Conference on Science, Technology, and Development Planned

*In April, Secretary of State Henry Kissinger proposed a national meeting to encourage U.S. participation in the United Nations Conference on Science and Technology scheduled for 1979. A preliminary national meeting on science, technology, and development was held by the State Department in mid-November to plan the U.S. conference. Following are the commentary and report of Irene Tinker, head of the AAAS Office of International Science, on the intent and proceedings of the November forum.*

Science, but more often technology, is increasingly seen as the critical element for successful development. The demands for technological transfer and industrialization contained in the New International Economic Order reflect this realization. Secretary of State Kissinger responded to these demands at the

United Nations Conference on Technology and Development in Nairobi, April 1976 (see *Science*, 28 May 1976, page 869). By projecting the establishment of a series of national and international institutions to aid in technological transfer, he further underscored his support of the United Nations Conference on Science and Technology scheduled for 1979. Kissinger also proposed a U.S. national conference in 1978 to encourage participation in the U.N. forum the following year. To plan the 1978 conference, the State Department held a preliminary national meeting on science, technology, and development in mid-November.

The business representatives at the meeting seemed interested in investments abroad, as long as there were protective measures against expropriation, but a trade union representative was wary of the possibility that technological transfer would mean transfer of jobs. The public sector speaker emphasized the importance of management know-how to utilize technology, and Roger Revelle, of the Center for Population Studies, Harvard University, remarked that little technology can be transferred. What is necessary, he said, is to adapt techniques through innovation to local situations.

James Grant of the Overseas Development Council suggested that the primary application of science and technology should involve solving the problem of absolute poverty and meeting basic human needs. It was his feeling that people too often have been left out of the process of development, and that when they do become involved, it is the man who usually is the focus of concern. Since there are more women than men among the world's poor, and since the great need is for technology at the level of poverty, concern must be given toward innovation that reaches the women as well as the men.

The AAAS Office of International Science is monitoring developments in connection with the U.N. conference and welcomes comments from the membership. It suggests the following background reading for those interested in science for development: *Science, Technology, and Diplomacy in the Age of Interdependence*, Congressional Research Service; *Women and World Development* and *Culture and Population Change*, publications prepared by the AAAS Office of International Science; and *Environmental Issues*, a report of the Scientific Committee on Problems of Environmental Scope, National Academy of Sciences.