## Editorial
- 923 This Week in *Science*

## Letters
- 925 A Changing China
- 926 Existence of Cannibalism: T. J. Riley; T. Lidz; D. R. Schryer ■ Diet and Cancer: V. Herbert

## News & Comment
- 927 Deficits Haunt Science Budgets
- 928 For-Profit Hospitals Loom Large on Health Care Scene ■ Dissenters See For-Profits As Threat to Public Interest
- 930 France Weighs Benefits, Risks of Nuclear Gamble

## Research News
- 936 Phase Transition Seen at Alloy Grain Boundary
- 937 Tokamak Sets Records in Temperature and Confinement
- 938 Prime Tests and Keeping Proofs Secret ■ The Theory of Computation Comes of Age ■ How to Keep Your Proof a Secret and Yet Convince Your Colleagues That You Have a Proof
- 939 *Briefing:* Mars Is Getting Wetter and Wetter
- 940 *Briefing:* Ancient River System Across Africa Proposed

## Articles
- 941 The Neurobiology of Learning and Memory: R. F. Thompson

## Research Articles

---

**SCIENCE** is published weekly on Friday, except the last week in December, and with a plus issue in May by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005. Second-class postage (publication No. 484460) paid at Washington, DC, and at an additional entry. Now combined with The Scientific Monthly's Copyright © 1986 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): $65. Domestic institutional subscription (51 issues): $95. Foreign postage extra: Canada $24; other (surface mail) $27; air-surface via Amsterdam $45. First class, airmail, school-year, and student rates on request. Single copies $2.50 ($3 by mail); back issues $4 ($4.50 by mail); biotechnology issue, $5.50 ($6 by mail); classroom rates on request; Guide to Biotechnology Products and Instruments $16 ($17 by mail). Change of address: allow 6 weeks, giving old and new addresses and seven-digit account number. Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of $1 per copy plus $0.10 per page is paid directly to CCC, 21 Congress Street, Salem, Massachusetts 01970. The identification code for Science is 0036-8075(83)81.0070. Postmaster: Send Form 3579 to Science, 1333 H Street, NW, Washington, DC 20005. Science is indexed in the Reader's Guide to Periodical Literature and in several specialized indexes.

The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its products are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.
Emerging alfalfa root nodule, resulting from *Rhizobium meliloti* infection. The bacteria stimulate plant cortical mitoses, cause deformation of epidermal root hairs, and invade the root through an infection thread (blue-staining cell, upper right). The *R. meliloti* nodABC genes, required for all these events, are transcriptionally controlled by a plant-synthesized flavonoid, luteolin. See page 977. [Photograph by Mark Dudley and Sharon Long, Department of Biological Sciences, Stanford University, Stanford, CA 94305]

### Reports

961 Eruption of the Nevado del Ruiz Volcano, Colombia, on 13 November 1985: Tephra Fall and Lahars: J. L. Naranjo, H. Sigurdsson, S. N. Carey, W. Fritz

964 Eruption of the Nevado del Ruiz Volcano, Colombia, on 13 November 1985: Gas Flux and Fluid Geochemistry: S. N. Williams, R. E. Stoiber, N. Garcia P., A. Londoño C., J. B. Gemmell, D. R. Lowe, C. B. Connor

967 Insulin-Stimulated Hydrolysis of a Novel Glycolipid Generates Modulators of cAMP Phosphodiesterase: A. R. Saltiel, J. A. Fox, P. Sherline, P. Cuatrecasas


975 A Physiological Role of Epidermal Growth Factor in Male Reproductive Function: Ō. Tsutsumi, H. Kurachi, T. Oka


980 Immortalization of Human T Lymphocytes After Transfection of Epstein-Barr Virus DNA: M. Stevenson, B. Volsky, M. Hedenskog, D. J. Volsky


### Technical Comments

987 Calmodulin, Cyclophilin, and Cyclosporin: A. W. N. Hart, M. W. Harding, R. E. Handschumacher; P. M. Colombani and A. D. Hess

### Book Reviews

990 Controlling Chemicals and Loading the Dice, reviewed by H. Dowlatabadi and R. W. Hahn; The Origins and Relationships of Lower Invertebrates, J. W. Valentine; The Sea Urchin Embryo, E. Spiegel; Biological and Inorganic Copper Chemistry, S. J. Lippard; Some Other Books of Interest; Books Received

---

**Board of Directors**

- Robert McC. Adams
- Robert W. Berliner
- Floyd E. Bloom
- Mary E. Clutter
- Mildred S. Dresselhaus
- Donald H. Langenberg
- Dorothy Nelkin
- Linda S. Wilson
- William T. Golden
- Treasurer
- William D. Carey
- Executive Officer

**Editorial Board**

- David Baltimore
- William F. Brinkman
- Ansley J. Coale
- Joseph L. Goldstein
- James D. idol, Jr.
- Leon Knopfl
- Seymour Lipset
- Walter Massey
- Oliver E. Nelson
- Allan Newell
- Ruth Patrick
- David V. Ragone
- Vera C. Rubin
- Howard E. Simmons
- Solomon H. Snyder
- Robert M. Solow

**Board of Reviewing Editors**

- Qais Al-Awadhi
- James P. Allison
- Luis W. Alvarez
- Don L. Anderson
- C. Paul Bianchi
- Elizabeth H. Blackburn
- Floyd E. Bloom
- Charles R. Cantor
- James H. Clark
- Bruce F. Eldridge
- Stanley Fiske
- Theodore H. Gabbe
- Roger I. M. Glass

**Editors**

- Stephen P. Goff
- Robert B. Goldberg
- Patricia S. Goldman-Rakic
- Corey S. Goodman
- Richard M. Held
- Gloria Heppner
- Eric F. Johnson
- Ronald D. Kendal
- Karl L. Magee
- Joseph B. Martin
- John C. McGill
- Alton Meister
- Moritmer Michlin
- Peter Olson
- Gordon H. Orians
- John S. Pearse
- Yeshayahu Pocker
- Jean Paul Revel

**Frederic M. Richards**

- James E. Rothman
- Thomas C. Schelling
- Ronald H. Schwartz
- Stephen M. Schwartz
- Otto T. Solf
- Robert T. N. Tjian
- Virginia Trimble
- Geerat J. Vermeij
- Martin G. Wegert
- Irving L. Weissman
- George M. Whitesides
- Owen N. Witte
- William B. Wood
- Harriet Zuckerman

---

29 AUGUST 1986
A Changing China

One of the many initiatives fostered by William Carey, Executive Officer of AAAS, has led to friendly interactions with the People’s Republic of China (PRC). There have been visits of delegations from the respective countries and symposia with presentations by Chinese at AAAS annual meetings including the recent one in Philadelphia. These contacts have provided perspectives on enormous changes that have occurred and are in process in the PRC. Were recent progress to continue, the country might emerge as a leading world power early in the next century.

To reach such a status, China has a long way to go. In 1984, its gross national product was about $450 billion, corresponding to an annual income per capita of about $450. In addition, the country must recover from nearly 30 years of mismanagement under the leadership of Chairman Mao. Mao’s lifelong ambition was to serve the people, but his economic and political leadership led to less food in the stomach of the average Chinese; per capita grain consumption in 1976 was less than in 1982. This was occurring at a time when grain yields elsewhere were increasing dramatically. The ruling party’s ideas about the class struggle led it to exalt and to give favored treatment to workers, peasants, and soldiers. Intellectuals and technocrats were called “the stinking ninth class.” During the Intellectual Revolution of 1966–1976, many of the best scientists were sent to do menial labor in the countryside.

When a delegation from AAAS visited China in 1978, the scientists had been brought back to the universities, but they seemed still in a daze and uncertain about what the future might bring. The years 1966–1976 were also times of near total loss for the production of new scientists and engineers.

But after the death of Mao in 1976, rigid egalitarian policies were gradually modified. Reforms were introduced first in the rural areas. The commune system was modified and individual initiative encouraged. From 1979 to 1982, agricultural production increased at an annual rate of 7.5 percent. In 1984, the production value generated by small rural farms exceeded $46.5 billion, an increase of 24 percent over 1983, and accounted for 40 percent of the national agricultural output value. In business egalitarianism is also in the process of abandonment while private initiative is being permitted. Most units are still owned by the state, but managers are rewarded for good performance and workers in efficient plants get higher wages.

The effect of these and related measures has been to improve industrial production. Annual percentage increases were: in 1981, 3.5; in 1982, 7.8; in 1983, 10.5; in 1984, 13.6; and in 1985, 17.7. In the first half of 1985, production was at an even higher rate, and authorities found it necessary to slow the economy somewhat.

In view of the zigzags that have occurred in Chinese political and economic policies, the future is unpredictable. However, leaders of the Chinese Communist party have repeatedly stated that in the future, their country must effectively utilize science and technology. Fundamental basic research is to be supported by a science foundation, but principal emphasis is to be on applied science and technology. To help make up for the shortfall in expertise caused by the Cultural Revolution, China has sent about 30,000 students abroad, as well as more senior scholars.

The Chinese leadership is also completely aware of the relative competence of various nations in science and technology and seems bent on learning from the best. In consequence, the United States and Japan are most closely studied as possible models. The Soviet Union is not. In their drive to improve the status of their country, the Chinese wish to develop a system of their own, but it will resemble more closely the model of the West than that of Chairman Mao.

There is no doubt of the competence and high intellectual capacity of many Chinese. The question that remains is: Will China create and maintain a system that permits the potential of its citizens to be manifest?—PHILIP H. ABELSON