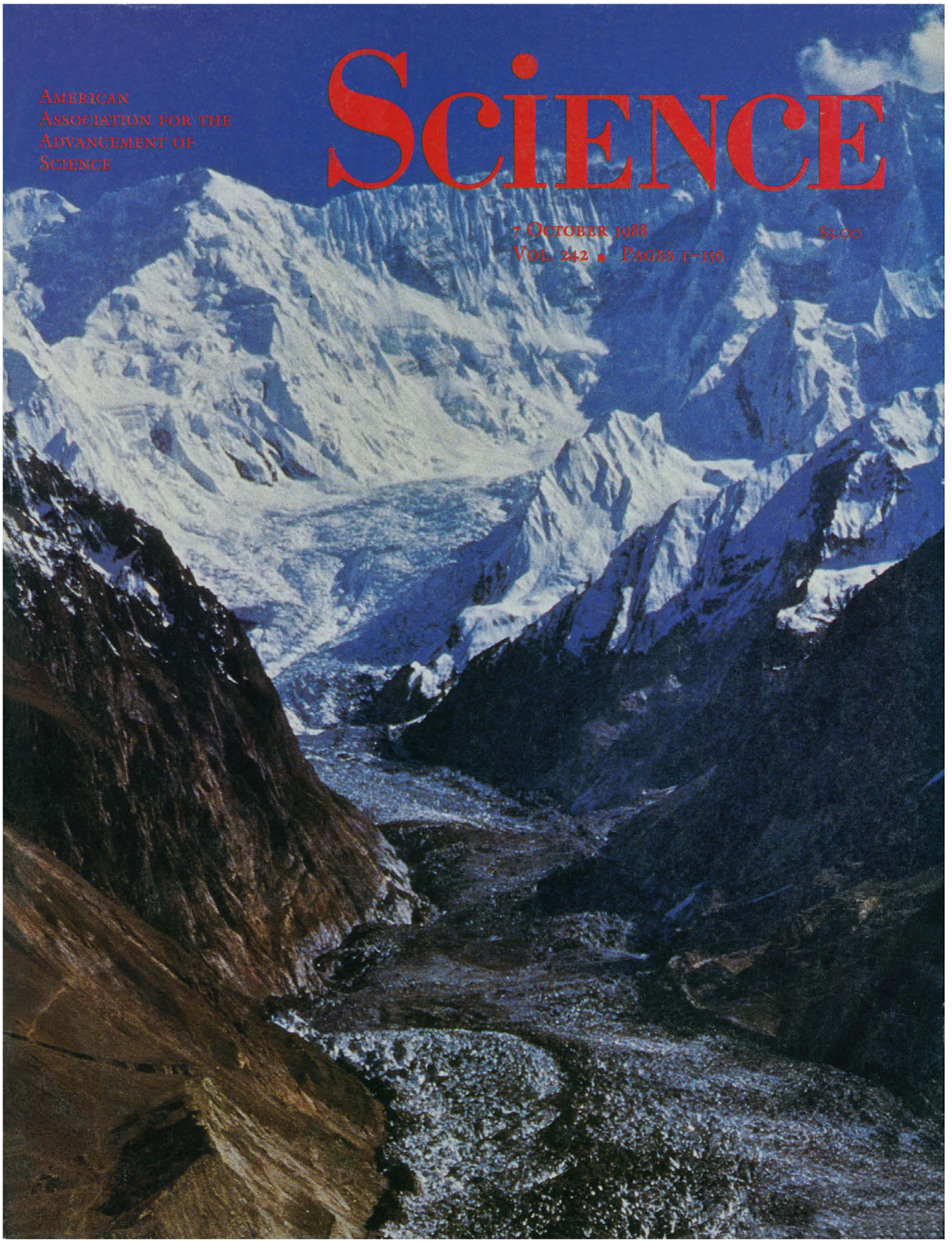
American Association for the Advancement of Science

SCIENCE

7 October 1988 $3.00
Vol. 242 ■ Pages 1–156



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SCIENCE

ISSN 0036-8075
7 OCTOBER 1988
VOLUME 242
NUMBER 4875

■ **SCIENCE is published weekly on Friday, except the last week in December, and with an extra issue in February 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**® Domestic individual membership and subscription (51 issues): $70. Domestic institutional subscription (51 issues): $110. Foreign postage extra: Canada $32, other (surface mail) $32, air-surface via Amsterdam $85. First class, airmail, school-year, and student rates on request. Single copies $3.00; back issues $5.00; 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. **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.

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COVER The upper part of the Bualtar Glacier, Karakoram Himalaya, descends 4,519 meters (14,800 feet) from Minapin Peak (7,250 meters above sea level). In the foreground, rockslide debris covers 4.1 square kilometers of the glacier. The glacier accelerated in and below this area several months after the rockslide occurred. Visible effects of this acceleration include heavy crevassing, over-steepened ice margins, and ponded meltwater drainage. See page 64. [Kenneth Hewitt, Snow and Ice Hydrology Project, Wilfred Laurier University, Waterloo, Ontario, Canada N2L 3C5]

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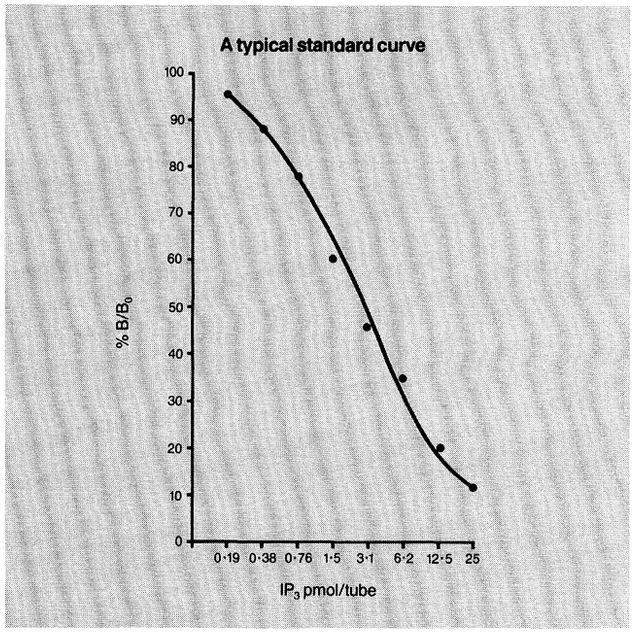

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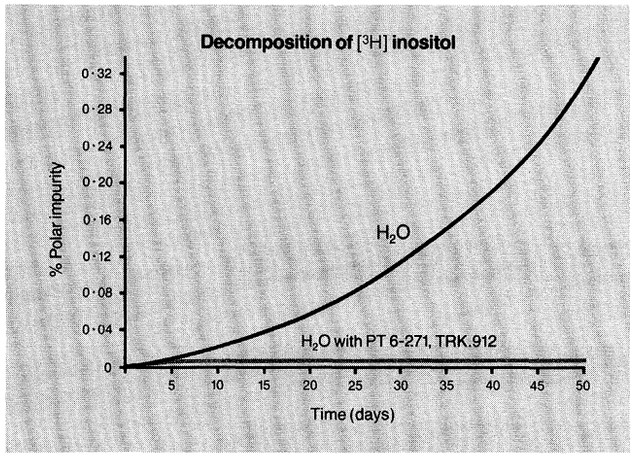

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Whooping cough vaccine

THE toxin that is produced by *Bordetella pertussis*, the organism that causes whooping cough, has both positive and negative effects: it elicits protective and neutralizing antibodies in host animals, but, through a biochemical cascade initiated by enzyme activity in its S1 subunit (it has five subunits), pertussis toxin produces in the infected host the pathobiologic effects that are hallmarks of the disease. Because currently available whooping cough vaccines may at times induce dangerous side effects including permanent neurologic damage and death, attention has been directed toward uncoupling antigenicity and toxicity through the use of recombinant DNA techniques (page 72). Burnette *et al.* prepared a series of analogs of the S1 subunit by site-specific mutagenesis; alterations appeared in residues in a stretch of eight amino acids that, if completely deleted, leaves the molecule devoid of enzyme activity and with reduced antigenicity. The most promising analog was one in which just a single amino acid was changed—a lysine was substituted for an arginine. The molecule had substantially reduced enzyme activity but continued to react with toxin-neutralizing antibodies. The attributes of this altered molecule are suitable for a vaccine that might have few or no negative sequelae.

Melatonin: acting like clockwork

MELATONIN affects the ticking of the human biological clock (page 78). This hormone is rhythmically produced—in higher amounts at night than during the day—by the pineal gland of the brain. Reppert *et al.* found that in human brains, both those of adults and those of fetuses, binding sites for melatonin are concentrated in and restricted to the suprachiasmatic nucleus of the hypothalamus. This brain area appears to be the site of the human biological clock where each day, as the light-dark cycle proceeds, the body's circadian rhythm is synchronized to a 24-hour period. The suprachiasmatic nucleus has direct connections to the eyes and has, in a number of other mammals, also been shown to be the site of a biological clock. Clinical uses of melatonin have included the alleviation of symptoms of jet lag and the successful reentrainment of the disturbed biological rhythm of a blind person; with improved understanding of its mode and site of action, the use of melatonin for adjusting biological rhythms in the blind, in shift workers, and in travelers is likely to escalate.

Action potentials in neuronal development

SPONTANEOUS impulse activities of neurons—such as the activity of action potentials, the electric potentials that occur at surfaces of nerve cells when they are excited—apparently contribute to the establishment of neurologic connections between the eye and the brain even before photoreceptors form and actual vision is possible. In a study in fetal cats, Shatz and Stryker assessed how the action potential inhibitor tetrodotoxin affected the positioning in the brain's visual centers of projections from retinal ganglion cells (page 87). During fetal development, axonal projections from both eyes are at first intermixed, but, by birth, they are cleanly segregated in discrete layers in the brain. However, in the presence of tetrodotoxin, proper segregation does not occur, the branching patterns of individual axons are abnormal, and positioning is highly irregular. These results imply that action potentials contribute to neuronal connections and even to the structuring of the target tissue. Galli and Maffei have actually been able to implant microelectrodes in the eyes of fetal rats. They found that there were action potentials in individual retinal ganglion cells, thus demonstrating that even in the dark neurons are firing (page 90). Spontaneous electric activities of cells may participate in the establishment and refinement of neuronal patterns not just in the eye but throughout the nervous system.

Olmec settlement

THE Olmecs lived along the Gulf Coast of Mexico long before the rise of Mayan society. In recent excavations at La Venta, a major Olmec center, and at nearby Río Barí lowlands, house floors, pottery, organic remains, figurines, food residues, tools, and other artifacts from the Olmec occupation were recovered (page 102). The earliest local Olmec settlements were in the Río Barí lowlands between 1750 and 1400 B.C. The population subsequently expanded into La Venta which became a temple town; at its peak, between 800 and 500 B.C., La Venta had a ceremonial and civic center and surrounding dwellings. (La Venta had not earlier been identified as a dwelling place; according to a traditional model, it was a ceremonial center to which outlying upland peoples would have come only for ceremonies, commerce, and work.) Rust and Sharer discuss the growth and expansion of the local Olmec people into a complex social, ceremonial, and political organization, evolving in an environment that underwent significant change during the occupation of the site.

Wetland agriculture

MANY lowland wetlands of Central Veracruz, Mexico, and of the Yucatan Peninsula have orderly rectilinear surface patterns; these are thought to demarcate the remnants of agricultural platforms that once were irrigated and drained by canals. Siemens *et al.* provide evidence that in fact the platforms of Gulf coastal Veracruz were cultivated around A.D. 500 (page 105). At that time the culture of Central Veracruz was thought to be that of the Totonacs, a people whose occupation of the region considerably postdated the Olmecs' settlement. Excavations produced abundant ceramics and codeposited cross-shaped phytoliths that are diagnostic of maize. The associated artifacts and plant remains establish that *Zea mays* was, in fact, a significant local cultivar some thousand years before the Spaniards arrived.

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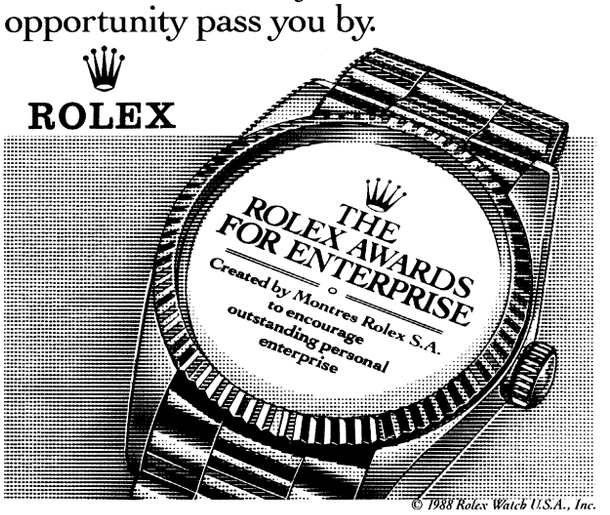

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SCIENCE

7 OCTOBER 1988
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NUMBER 4875

Presidential Elections and the NSF Directorship

The separation of science from politics is a principle whose importance to the nation is worthy of frequent affirmation. However, the scientific community must also recognize that science exists in a political environment. The scientific leadership in the 1940s understood the distinction between engaging in partisan politics and understanding the political process. Otherwise it could not have succeeded in the political negotiations that led to the creation of the National Science Foundation (NSF) in 1950. One purpose of those negotiations was to use the political process itself to shield NSF from party politics by giving it characteristics novel for a government agency. Designation of the agency as a "foundation" was one such characteristic. Equally important was the establishment of a 6-year term for the NSF director, a very unusual arrangement in a federal agency.

Prior to World War II, most support for basic research came either from a university's own funds or from one of the private philanthropic foundations. In 1945, when Vannevar Bush and his colleagues sought to legitimize federal support for scientific research in nongovernment institutions, they conceived the idea of a publicly supported foundation governed by a distinguished, part-time, presidentially appointed board of directors; namely, the National Science Board.* By designating the proposed agency as a foundation, they meant to convey a clear signal that government support for science had to be free from partisan politics.

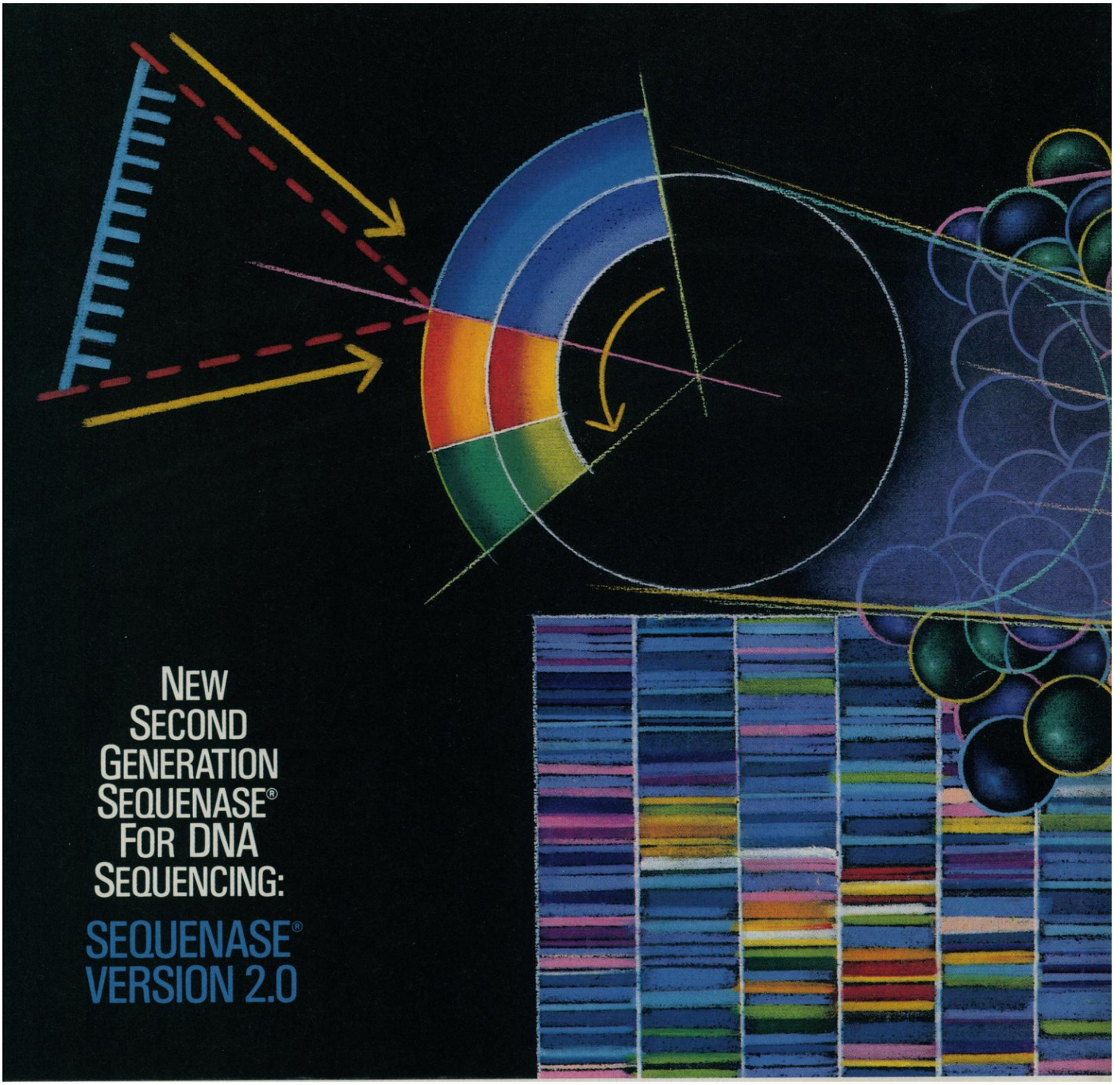
President Truman demonstrated his understanding and respect for the intent inherent in the word "foundation" by establishing an important precedent: the NSF director should be selected on the basis of scientific credentials and administrative ability rather than on grounds of ideological purity or for payment of a political debt. That precedent was consistent with the intent of a Congress in mandating a 6-year term for the NSF director to decouple that appointment from the 4-year presidential election cycle.

Truman's precedent turned out to be good politics as well as wise policy. In 1969 President Nixon reversed his announced intention to nominate Franklin Long as the third NSF director because of Long's opposition to the deployment of an antiballistic missile system. Both the scientific community and Congress vigorously protested what they regarded as a blatant attempt to politicize the NSF. With that single exception, all of Truman's successors in the Oval Office have followed his precedent with respect to the appointment of the NSF director. Nor has any newly inaugurated president ever asked the NSF director to resign.

But NSF is a government agency, despite its uniqueness. And the presidentially appointed head of any government agency has to understand and work within a political environment if that agency is to succeed in the battle for scarce resources. In that respect, the task of the NSF director is particularly sensitive. The scientific community quite properly regards him as a principal spokesman within government for the national research system. Therefore, he is often obliged to walk a tightrope between effective science advocacy and partisan politics. Erich Bloch, the present NSF director, has displayed his understanding of the changing political environment in which NSF functions, as well as a considerable talent for walking that tightrope. He has been willing to take controversial positions and make provocative statements in emphasizing the importance of a vigorous scientific system. Some of his decisions have distressed and even angered members of the scientific community, but those are the occupational hazards of operating in a political environment.

The nonpartisan character of NSF deserves the continued support of both political parties. As the external environment for science becomes increasingly complex, Truman's wise precedent with respect to the NSF directorship should be taken to heart by the new administration. After the election, the president-elect should quickly establish the fact that he expects Director Bloch to complete the remaining 2 years of his 6-year term. This action by the president-elect would send a strong signal to the scientific community that he understands the historical reasons for a 6-year term and the need to maintain a separation between science and politics.—RICHARD C. ATKINSON, *Chancellor, University of California, San Diego, La Jolla, CA 92093*

*V. Bush, *Science: The Endless Frontier* (National Science Foundation, Washington, DC, 1980), pp. 31–40.



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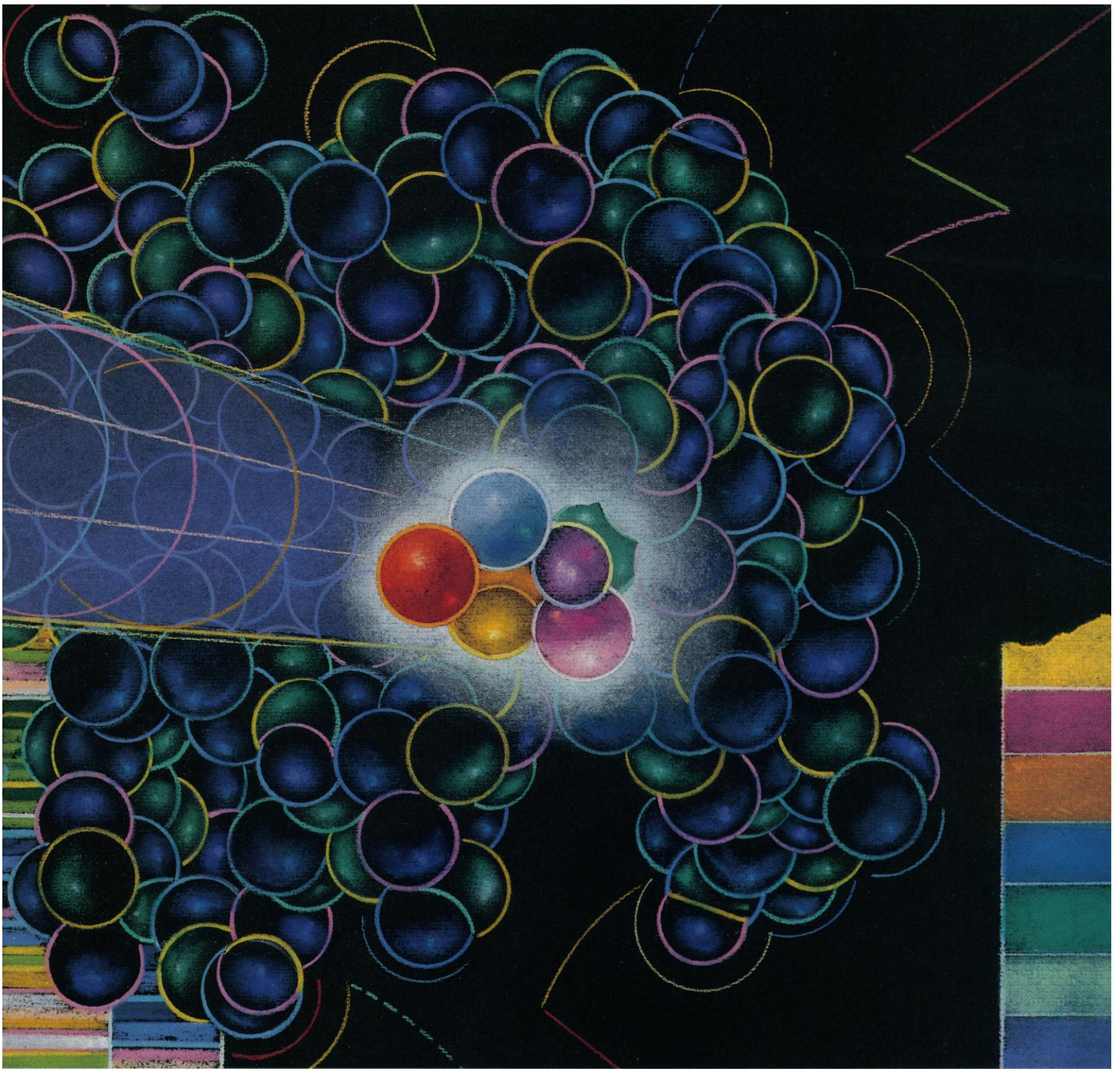

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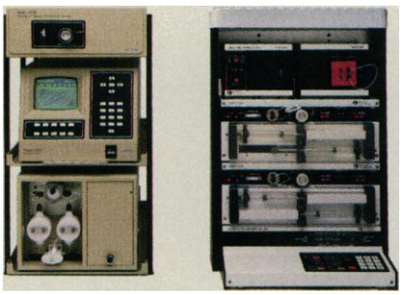

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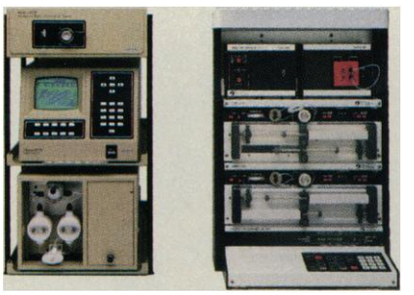

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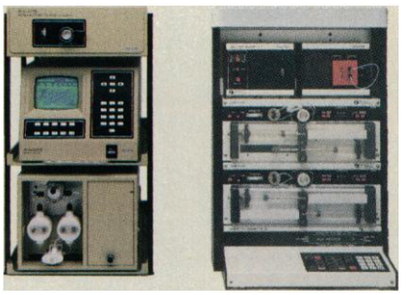

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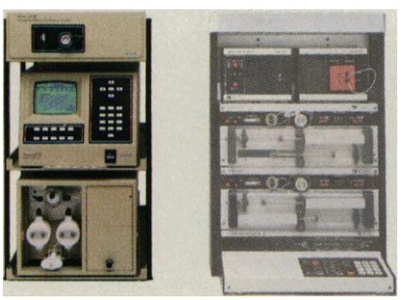

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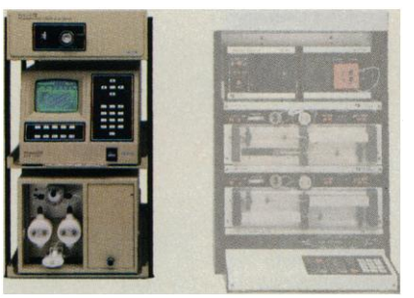

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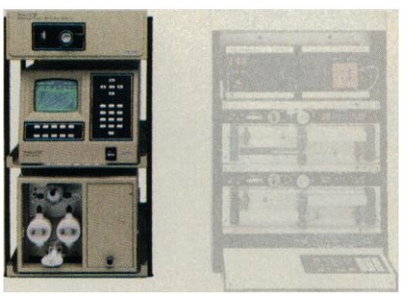

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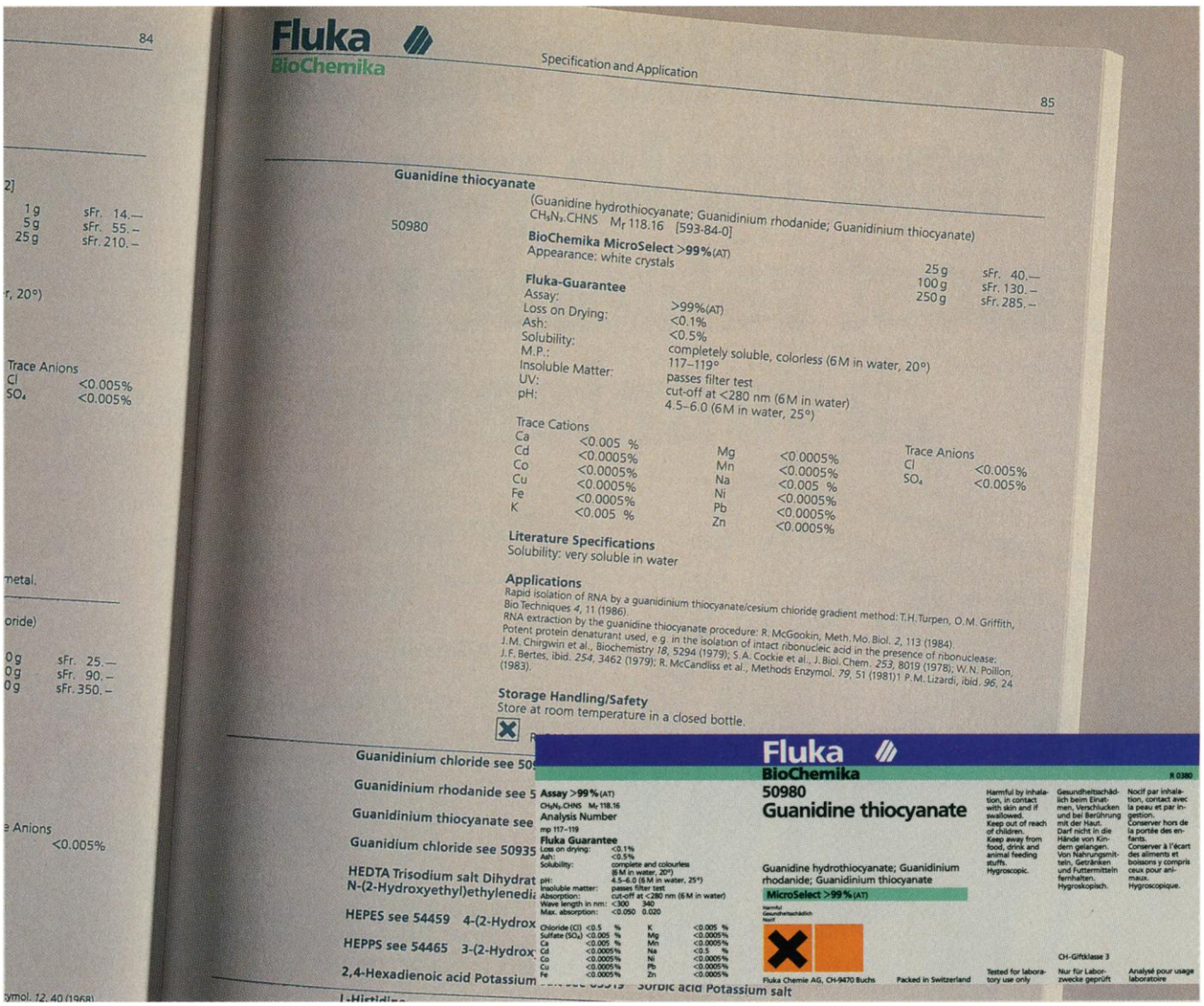

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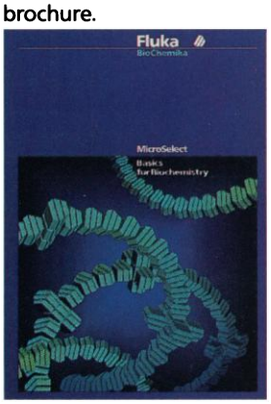

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Great Britain: Fluka Chemicals Ltd, Peakdale Road, Glossop, Derbyshire SK13 9XE, Telephone 04574–62518, Linkline 0800–26 23 00, Telex 669960 fluka g, Telefax 04574–4307
USA: Fluka Chemical Corp., 980 South Second Street, Ronkonkoma, New York 11779, Phone 516–467–0980, Telex 96–7807, Fax 516–467–0663

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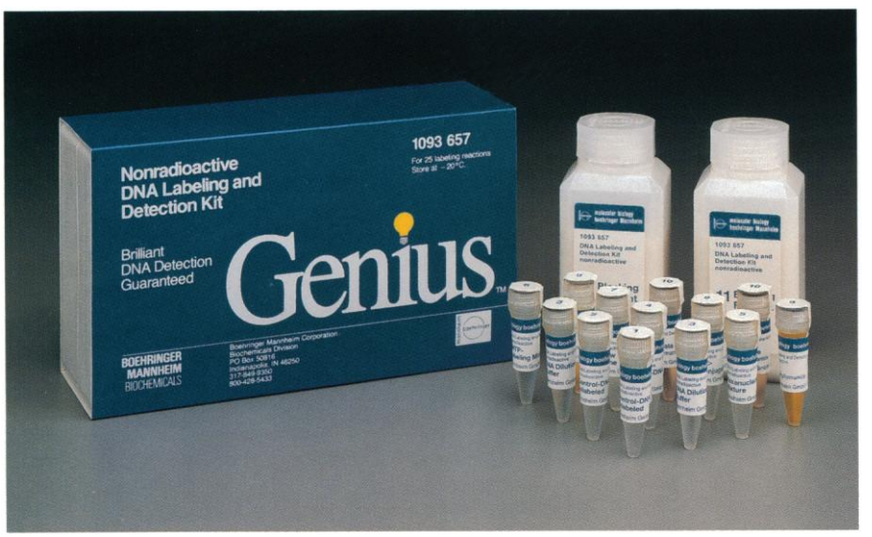

Boehringer Mannheim Biochemicals introduces a brilliant solution to DNA labeling and detection headaches...Genius Nonradioactive DNA Labeling and Detection Kit. Genius is truly a revolutionary development in labeling and detection: a safe, effective, *guaranteed* alternative to radioactive techniques with none of the problems associated with previous nonradioactive systems.

Digoxigenin technology provides a clear advantage.

The Genius Nonradioactive DNA Labeling and Detection Kit labels DNA using the random primed labeling method and digoxigenin-11-dUTP (commonly referred to as dig-dUTP). The Genius kit can be used in a variety of techniques including Northern and Southern blots, colony and plaque screening and *in-situ* hybridizations. Boehringer Mannheim Biochemicals' patented technology is extremely sensitive — allowing us to guarantee detection of 0.1pg of homologous DNA. And that's not all. Our unique blocking reagent and innovative labeling system combine to eliminate the background problems associated with other nonradioactive techniques.

An intelligent technique eliminates lab problems.

Genius is a smart alternative to radioactive techniques. As a nonradioactive system, Genius eliminates danger to your lab from radiation exposure and erases problems with containment, disposal and unstable reagents.

It's smart to make things as simple as possible.

An intelligent labeling and detection kit should make your research easier, in addition to providing accurate results. Genius comes complete in an easy-to-use kit, containing all of the essential reagents for 25 random primed labeling reactions and fifty 10 cm x 10 cm hybridization/detection experiments. The kit includes: Klenow enzyme, nucleotide labeling mixture including the dig-dUTP, random primers, anti-digoxigenin alkaline phosphatase-conjugated antibodies, nitroblue tetrazolium (NBT), X-phosphate and blocking reagent, plus a complete set of controls.

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Genius is indeed a breakthrough in DNA labeling and detection. It provides fast, accurate results without the headaches associated with radioactive techniques. And Boehringer Mannheim Biochemicals stands behind Genius, ready to provide technical assistance whenever you should need it.

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1988 AAAS-WESTINGHOUSE SCIENCE JOURNALISM AWARDS

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The 1988 contest year is November 1, 1987 through September 30, 1988.

All entries must be postmarked before midnight, October 14, 1988.

For 37 years the AAAS-Westinghouse Science Journalism Awards have recognized outstanding reporting on the sciences and their engineering and technological applications, excluding health and clinical medicine. Awards honor science reporting in newspapers and general circulation magazines and on radio and television.

Entries are judged on the basis of their initiative, originality, scientific accuracy, clarity of interpretation, and value in promoting a better understanding of science by the public.

Five awards of $1,000 each are made in the categories of: newspapers with daily circulation of over 100,000, newspapers with circulation of under 100,000, general circulation magazines, radio, and television.

The 1988 Awards will be presented at the National Association of Science Writers' banquet during the Annual Meeting of the American Association for the Advancement of Science in San Francisco, January 14–19, 1989.

The Awards are administered by the American Association for the Advancement of Science under a grant from the Westinghouse Educational Foundation.

For further information and entry forms, contact the AAAS Office of Communications, 1333 H Street, N.W., Washington, D.C. 20005, or call (202) 326–6440.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

RESEARCH AWARDS
INVESTIGATIONS SUPPORTING MALARIA VACCINE DEVELOPMENT

The United States Agency for International Development (A.I.D.) Malaria Immunity and Vaccination Research (MIVR) Program, administered by the American Institute of Biological Sciences (AIBS), has available a limited amount of funds for support of basic, applied, or field studies directed to the development of effective malaria vaccines against all life cycle stages of the four species of malaria that infect man.

Areas of special interest include:

- adjuvants for malaria vaccines
- *in vitro* cultivation of malaria
- cell-mediated immunity in malaria
- correlation of immune response and protection
- production/expression/purification of malaria antigens
- development of immunologic reagents for malaria research
- critical host factors in malaria immunity (e.g. pregnancy)
- epidemiological background to support vaccine field trials

Interested investigators, currently engaged in relevant areas of malaria research should respond by <October 21, 1988>, to the address below, for a copy of the instructions for submitting proposals. No telephone requests will be honored. The instructions provide background information and outline the conditions, procedures and format for proposals. Based on peer reviews, highly-ranked proposals may be selected for cost-reimbursement subcontracts with AIBS. Each award will be for one year. The funding level of each award will be negotiated but cannot exceed the A.I.D.-established ceiling specified in the instructions. Principal and associate investigators currently receiving A.I.D. MIVR Network funds are ineligible for consideration.

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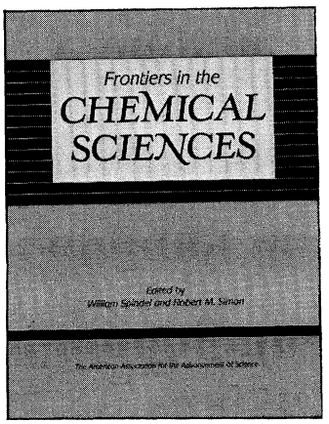

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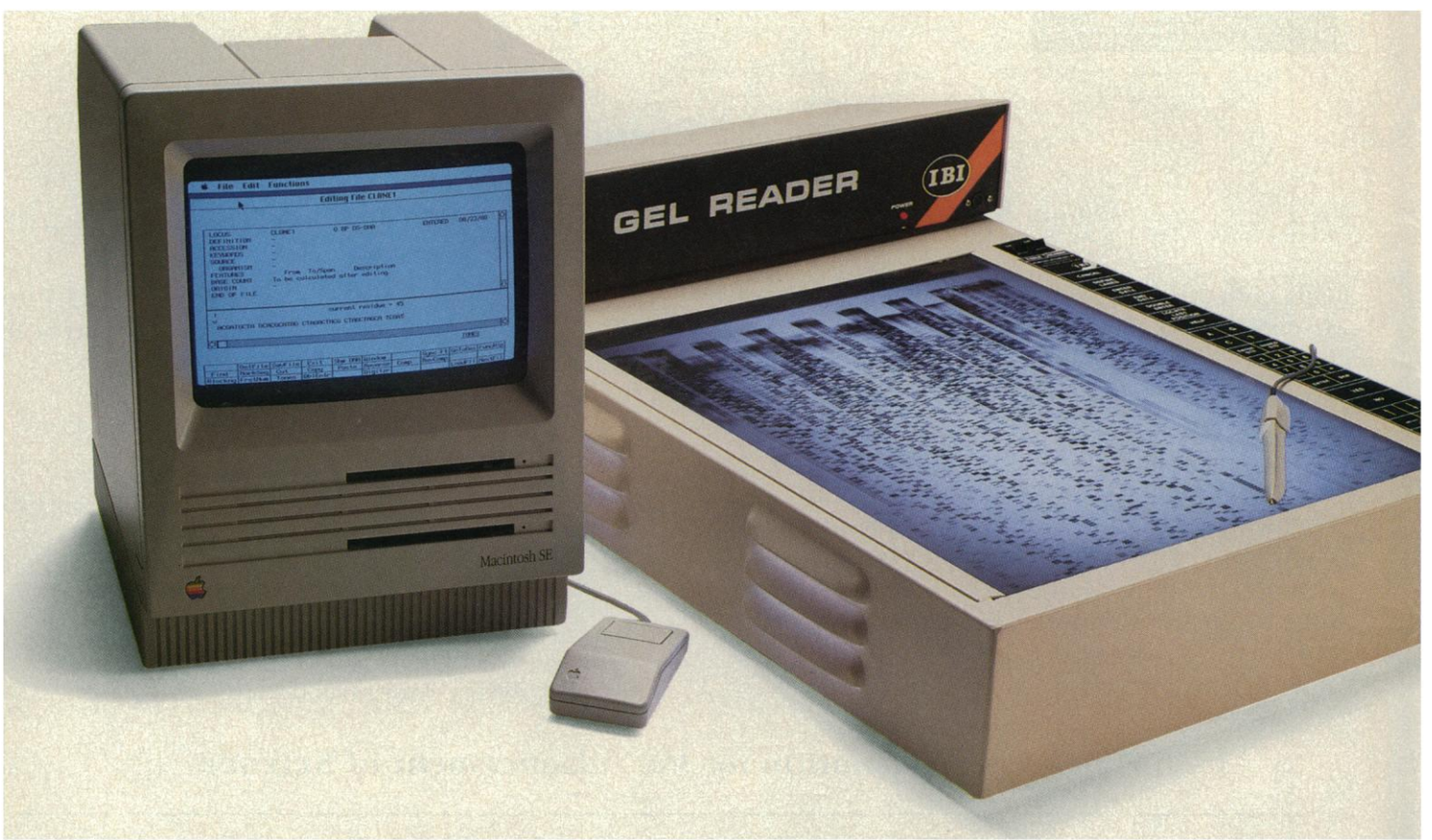

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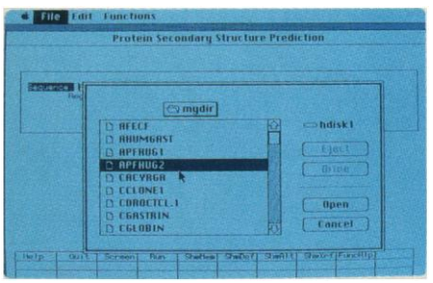
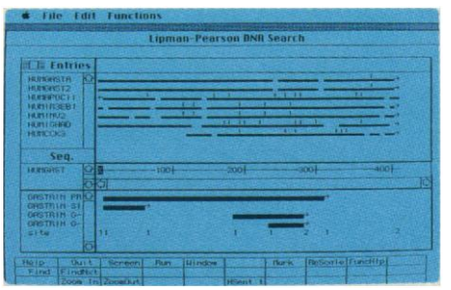
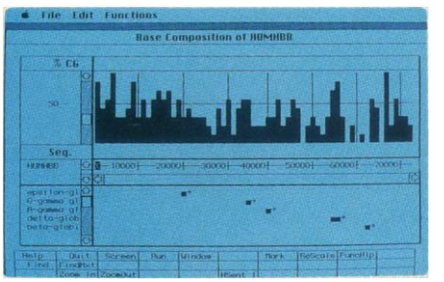


Macintosh interface used for loading sequence in Secondary Structure Prediction program.

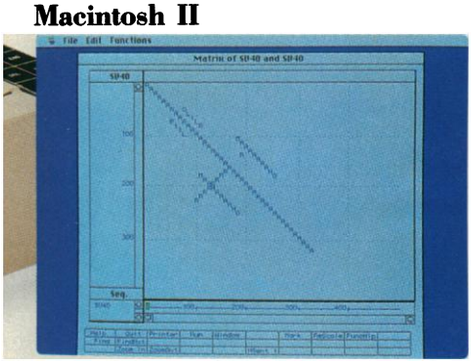


Global search: top seven matches of a DNA global search displayed graphically showing regions of similarity, insertions, deletions and strand.

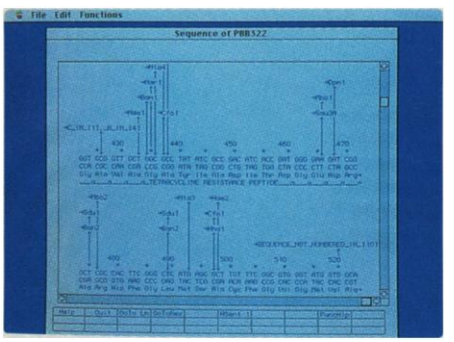


Base composition of the entire sequence (greater than 70 Kb) of the human Beta-globin locus.

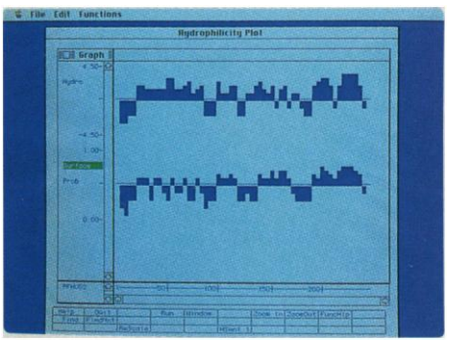
Macintosh II



Homology matrix of a subregion of SV40 against itself showing similarity in both orientations.



Restriction enzyme analysis: sequence of pBR322 translated and fully annotated with all restriction cut sites.



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Avian Myeloblastosis Virus Reverse Transcriptase—2,000 Unit Minimum Order.

Contact: Dr. G.E. Houts
Molecular Genetic Resources
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Citing Contract #N01—CP—51007

Cost: $0.05/Unit
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Goat Antisera Against: Avian, Bovine, Feline, Murine, and Primate Intact Viruses and Viral Proteins; Antibodies to Immunoglobulins for a number of species. Preimmune Sera available for some Virus Antisera.

Contact: Ms. Elizabeth Donley
BCB Repository
Microbiological Associates, Inc.
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(301) 657-8169

Citing Contract #N01—CP—61020

Cost: $75.00/5 ml. (Antisera)
25.00/5 ml. (Preimmune Sera)
100.00/50 ml. (Immunoglobulins)
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(Frozen Material)

Human sera from donors with: Carcinomas, Sarcomas, Melanomas, Lymphomas, Leukemias, Benign Tumors, Normal Individuals, Family Members of Leukemics, Hematological Diseases, and other Non-Malignant Disorders.

Contact: Coordinator for Research Resources
Biological Carcinogenesis Branch, DCE, NCI, NIH
Executive Plaza North, Room 540
Bethesda, MD 20892
(301) 496-1951

Cost: Shipping and handling charges only.

Cell Culture Identification Service. Using Isozyme Analysis, Immunofluorescence and Karyotypic Analysis (Chromosome Banding).

Contact: Dr. Ward Peterson
Children's Hospital of Michigan
3901 Beaubien Boulevard
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(313) 745-5570

Citing Contract #N01—CP—85645

Cost: $375/Analysis

Monoclonal Antibodies are available with specificities for synthetic peptides representing the amino acid sequences of the left end, right end and active site of the oncogene products of avian and mammalian retroviruses. Blocking peptides are also available, as are a limited number of cell lines producing the monoclonal antibodies.

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Cost: Inquire

Cotton—Top Marmosets (S. oedipus) for Use as Models for Carcinogenesis: Holding, Inoculation, Observation, and Pathology Services are Available.

Contact: Dr. Neal Clapp
Marmoset Research Program
Oak Ridge Associated Universities
P.O. Box 117
Oak Ridge, TN 37831
(615) 576-4103

Citing Contract #N01—CP—51006

Cost: $10.00 per diem (or higher for procedures involving additional care, etc.) $10.00 per blood sample.

Chemical Resources

Analytical resources for the collection, separation, and elucidation of the components of cigarette smoke and cigarette smoke condensates: A contractor with experience in the development of analytical methods for the determination of constituents of cigarette smoke and of specialty instrumentation for inhalation toxicology is available to assist qualified investigators with particular interest in studies on human and animal model exposure to environmental and sidestream smoke. A large inventory of reference experimental cigarettes, Standard Low Yield Reference Cigarettes, and an extensive chemical data base on smoke and smoke condensate components is available.

Contact: Thomas B. Owen, Ph.D.
Chemical and Physical Carcinogenesis Branch
DCE, NCI
Executive Plaza North, Room 700
Bethesda, MD 20892
(301) 496-5471

Cost: Inquire

Chemical Carcinogen Reference Standard Repository: Reference quantities of over 750 compounds are available. The newest additions are dilute aqueous standards of PAH deoxyguanosine-3'-monophosphates for Randerath ^{32}p post labelling assays. Other classes of available compounds are: fecapentaenes, food mutagens, polynuclear aromatic hydrocarbons (PAH), PAH metabolites, radiolabeled PAH metabolites, nitrogen heterocycles, nitrosamines/nitrosamides, aromatic amines, aromatic amine metabolites, azo/azoxy aromatics, inorganics, nitroaromatics, pesticides, pharmaceuticals, natural products, dyes, dioxins and chlorinated aliphatics. Data sheets provided with the compounds include chemical and physical properties, analytical data, hazards, storage, and handling information. Catalog available upon request.

Contact: Coordinator for Chemical Research Resources
Chemical and Physical Carcinogenesis Branch
DCE, NCI
Executive Plaza North, Room 700
Bethesda, MD 20892

Cost: Subject to chemical class code and quantity (see catalog) plus handling and shipping charges.

Environmental Cancer

NCI's Chemical Carcinogenesis Research Information System (CCRIS) database is available online through the National Library of Medicine's new Toxicology Data Network (TOXNET) system. Through an interagency agreement between NCI and NLM, the CCRIS database has been built and will be maintained and updated as one of TOXNET's sponsored databases in the broad areas of chemistry, toxicology, and hazardous waste information. The CCRIS database contains evaluated data and information on carcinogens, mutagens, tumor promoters, cocarcinogens, metabolites of carcinogens and carcinogen inhibitors derived from published review articles, on-going current awareness survey of primary literature, NCI/NTP's short- and long-term bioassay studies, the IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man, and special studies and reports.

Contact: Dr. Thomas P. Cameron
Office of the Director
Division of Cancer Etiology
National Cancer Institute
Executive Plaza North, Room 712
Bethesda, MD 20892
(301) 496-1625

Cost: Inquire

The Special Assistant for Environmental Cancer, Office of the Director, announces the availability of a limited number of copies of the following reports, which have been prepared under contract to NCI:

Survey of Compounds Which Have Been Tested for Carcinogenic Activity, PHS-149, 1976-1977, 1979-1980, 1985-1986, and new Cumulative Indices through 1986.

Proceedings of the Fourth NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, April 22-23, 1986.

Contact: Ms. I.C. Blackwood
Office of the Director
Division of Cancer Etiology
National Cancer Institute
Executive Plaza North, Room 712
Bethesda, MD 20892
(301) 496-1625

Cost: Free to investigators interested in environmental cancer.

Epidemiology Resources

The Tumor Virus Epidemiology Respository (TVER) contains sera and other biological samples from more than 13,000 patients and controls obtained in 12 different countries. The TVER was established primarily to support collaborative research on the role of Epstein-Barr virus (EBV) in Burkitt's lymphoma, nasopharyngeal carcinoma, and related diseases. Part of the collection includes sera that were obtained from nonhuman primates inoculated with EBV.

The TVER is able to adjust its collection to facilitate the development of new collaborative studies. In addition, some samples are available for reagents and independent research. The most extensive collections are serum samples from patients with Burkitt's lymphoma (sera from more than 1,000 patients).

Contact: Dr. Paul H. Levine
Environmental Epidemiology Branch, DCE, NCI, NIH
Executive Plaza North, Room 436
Bethesda, MD 20892
(301) 496-8115

Cost: Free to Collaborating Investigators; Others, Shipping charges only.

The National Institute of Allergy and Infectious diseases and the National Cancer Institute have developed a respository of biological specimens from homosexual men. The specimens were collected through contracts with five major U.S. universities for studies of the natural history of acquired immune deficiency syndrome (AIDS).

Information about applying for collaborative use of these specimens and pertinent epidemiological data is now available from the NIAID Project Officer or the NCI Co-Project Officer.

Contact: Chief, Epidemiology Branch, AIDS Program
National Institute of Allergy and Infectious Diseases
CDC Bldg., Room 240
National Institutes of Health
Bethesda, MD 20892

or to Dr. G. Iris Obrams
Extramural Programs Branch, EBP, Division of Cancer Etiology, NCI
Executive Plaza North, Room 535
Bethesda, MD 20892.

Human fibroblast cultures from individuals at high risk of cancer, members of cancer-prone families, and normal family members.

Contact: Dr. Margaret Tucker
Family Studies Section, EEB, DCE, NCI, NIH
Executive Plaza North, Room 439
Bethesda, MD 20892
(301) 496-4375

Cost: Free to collaborating investigators
Others: $60/cell line.

The National Cancer Institute has available the Animal Morbidity/Mortality Survey of Colleges of Veterinary Medicine in North America (also known as the Veterinary Medical Data Program). This unique registry of veterinary medical information represents patient data on animals seen at collaborating veterinary teaching facilities; 3 million hospital episodes have been abstracted and computerized in a standardized record format. Disease information is coded using the scheme of the Standard Nomenclature of Veterinary Disease and Operations. The computer tapes will be made available upon request.

Contact: Dr. Howard M. Hayes
Environmental Epidemiology Branch
Epidemiology and Biostatistics Program
Division of Cancer Etiology
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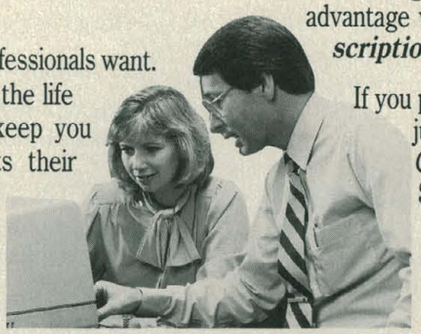

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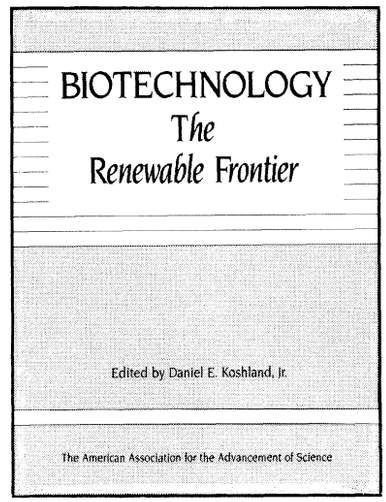

Edited by Daniel E. Koshland, Jr. Editor, *Science*

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Contents

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Hardcover $29.95; AAAS members $23.95 ISBN 0-87168-314-7
Softcover $17.95; AAAS members $14.35 ISBN 0-07168-283-4

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din's and François Péron's encounters with the Tasmanian Aborigines.

After European settlement local scientific cultures gradually emerged. Crude models of colonial science depicting forelock-tugging fact-gatherers at the periphery providing grist for the mills of grand European systematizers receive short shrift here. Barry Butcher examines the careers and contributions of three Australian Darwinists in an institutional environment engendered by a creationist old guard in Britain. He argues that these Australian Darwinists were able to operate both as collectors and as theorists on a more or less equal footing with European "masters." We are reminded that the institutional development of science in a colonial setting can create an impression of uniform dependency and deference that deeper sociocultural inquiry dispels. MacLeod makes a related point about the Funafuti expeditions of 1896–1904, which were designed to test, by deep bore sampling, rival theories of the origin of Pacific atolls. Of these expeditions, the one launched from Australia was the most successful. To the Australians this was a victory for Australian geology and colonial nationalism. To the British, and the Royal Society, of course, it represented a triumph for British imperial science.

In New Guinea until the 1870s, escaping safely with new birds of paradise to provide plumage for gentlewomen's hats appeared more attractive than settlement or development. However, from the 1880s, Dutch, British, and German territorial claims spurred geographical and scientific exploration. David G. Frodin uses New Guinea as a laboratory to compare imperial scientific styles and demonstrates subtly their interplay with basic economic and practical constraints and individual initiative in determining the rate and direction of inquiry into the natural history of New Guinea.

In this century a major integrating role has been played by the Pacific Science Association. Rehbock finds its origins in the internationalism of the years after World War I, in the Pan-Pacific Union of Alexander Ford, and in the enthusiastic advocacy of the American geologist Herbert E. Gregory. Though a great measure of international scientific cooperation and multicultural harmony was achieved, the PSA was also undoubtedly used for national purposes. An aspect of the super powers' agenda is emphasized in the concluding essays. As Harry N. Scheiber informs us, Wilbert Chapman argued in a decidedly chauvinistic vein that the Pacific Ocean was "the Great Plains of the twentieth-century." After World War II, Chapman tirelessly promoted the new unified oceanography. Government support and industry participation were based largely upon interest in Pacific fisheries. Basic oceanographic research was applied as a crucial tool in U.S. negotiations of fishing treaties with Costa Rica, Canada, and Japan. Marine biology and fisheries development are also the focus of the paper by Robert H. Randolph and John E. Bardach on Soviet science in the Pacific. They recount institutional developments in the far east of the Soviet Union, the impetus given to marine research in the early Stalinist era, its virtual collapse in the late 1930s (in murky circumstances perhaps related to the rise of Lysenkoism), and more recent Soviet attention to marine biological resource protection and management. This account is fascinating and no doubt hard-won. But the claim that Soviet science continues to be affected by political factors and that Soviet activities in the PSA "do not confine themselves to . . . strictly scientific considerations" sits oddly with the rest of the volume, which demonstrates that the pursuit of economic and political objectives through science has been the norm and not the particular failing of the Soviet Union in the modern era.

This is a stimulating book. However, the