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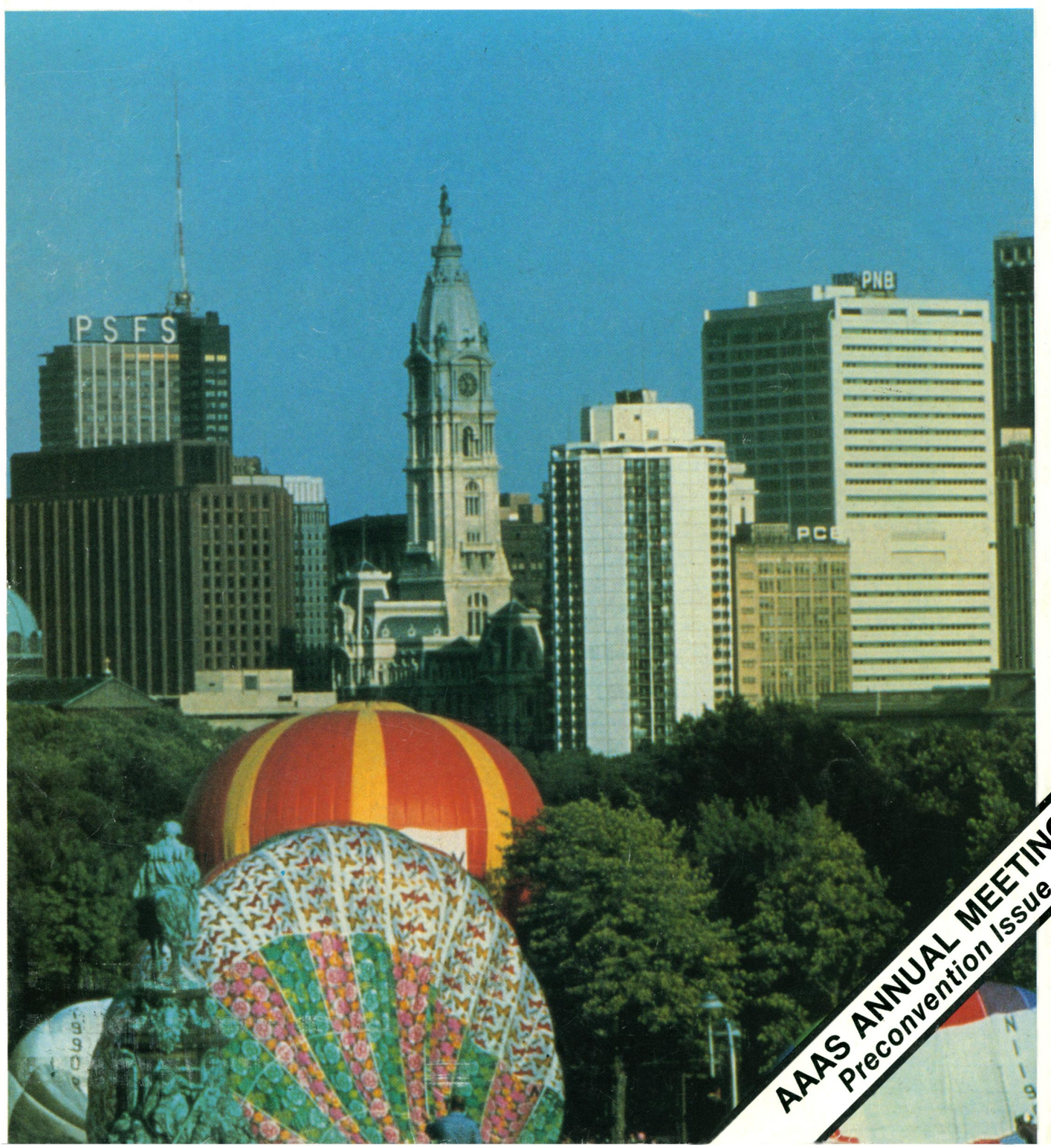

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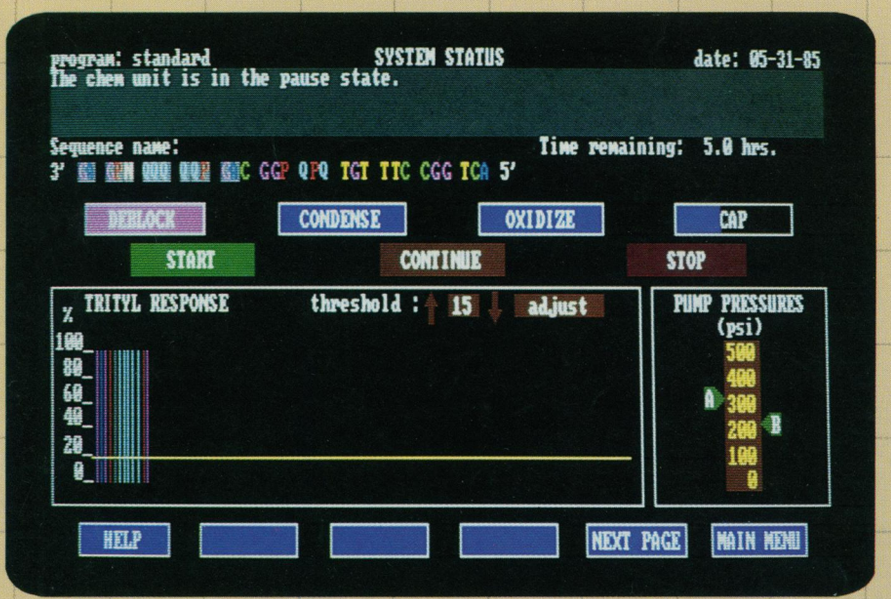

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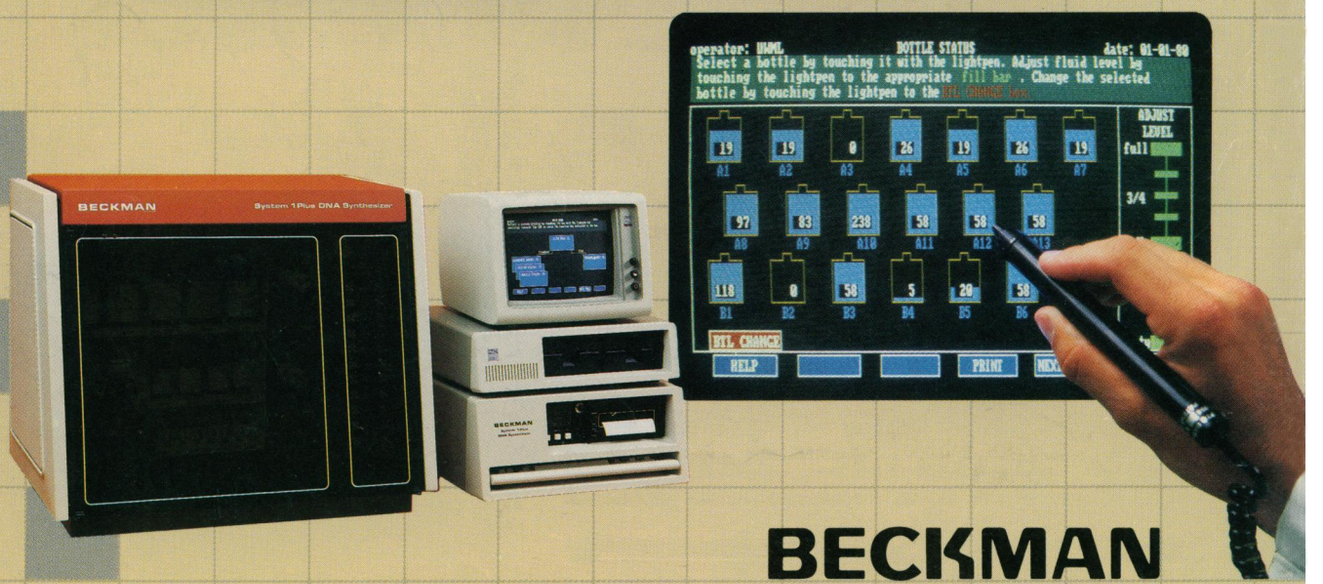

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COVER Philadelphia, Pennsylvania, site of the 1986 AAAS Annual Meeting, 25–30 May 1986. See page 1586 for details. [Photo courtesy of Philadelphia Convention & Visitors Bureau]

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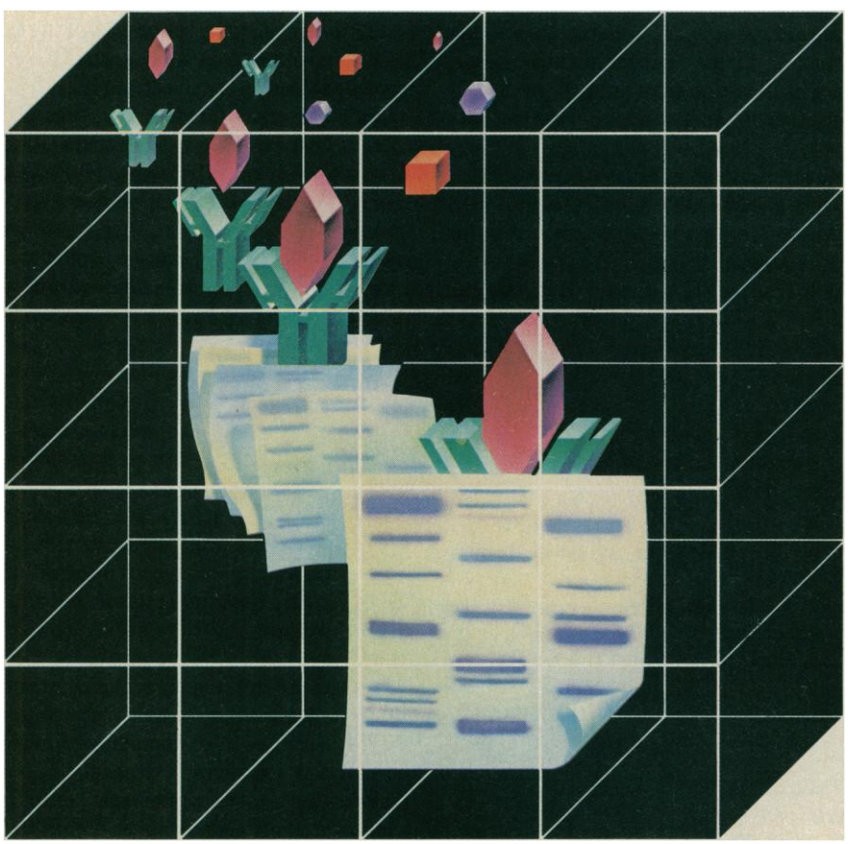

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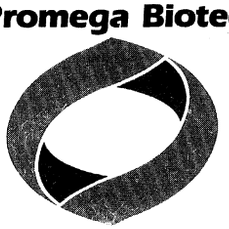

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This Week in SCIENCE

Biologic extinctions

BILLIONS of species of plants and animals have lived on the earth, but only a few million species are alive today; extinction thus looms as an inevitable feature of "life" (page 1528). Extinctions take place all the time, but there also have been numerous episodes of extinctions that have defined the boundaries of geologic time periods: mass extinctions that wiped out a significant percentage of extant species and smaller clusters of extinctions that were not as catastrophic. Extinctions tend to be selective either in the positive Darwinian sense or not. Yet, for any one species, survival or extinction depends on a balance among such variables as biologic status (for example, predation), fragility in the face of environmental stresses (such as global cooling or warming or changes in sea level), and response to terrestrial consequences (fires, fallout) of extraterrestrial bodies (bolides). Raup discusses extinction theories, how examination of the outcome of an extinction event may help in deducing its cause, how paleontologic data both record and misrepresent extinction events (species could migrate away or not be preserved), and how extinctions have helped shape the earth's biologic profile.

Slices of cometary debris

SOME of the particles collected in the stratosphere by U-2 aircraft may be the debris of comets (page 1542). Sizable cometary particles cannot be collected on the earth. In the breakup of a comet, volatile ices would be lost and the fragments would become highly porous; large pieces would not survive entry into the atmosphere. Bradley and Brownlee prepared thin sections of particles (as many as 200 slices can be made from a 10-micrometer particle) collected in the stratosphere and examined the samples with a scanning transmission electron microscope. Some of the micrometeorites fulfilled expectations for cometary debris: they were highly porous, fragile aggregates. They contained solar-flare nuclear tracks, showing that they had existed in space as small independent bodies. Porous particles such as these are probably similar physically to those encountered during the Comet Halley fly bys and may be carrying with them a record of the primordial processes that occurred during formation of the solar system.

Carbonates in the cosmos

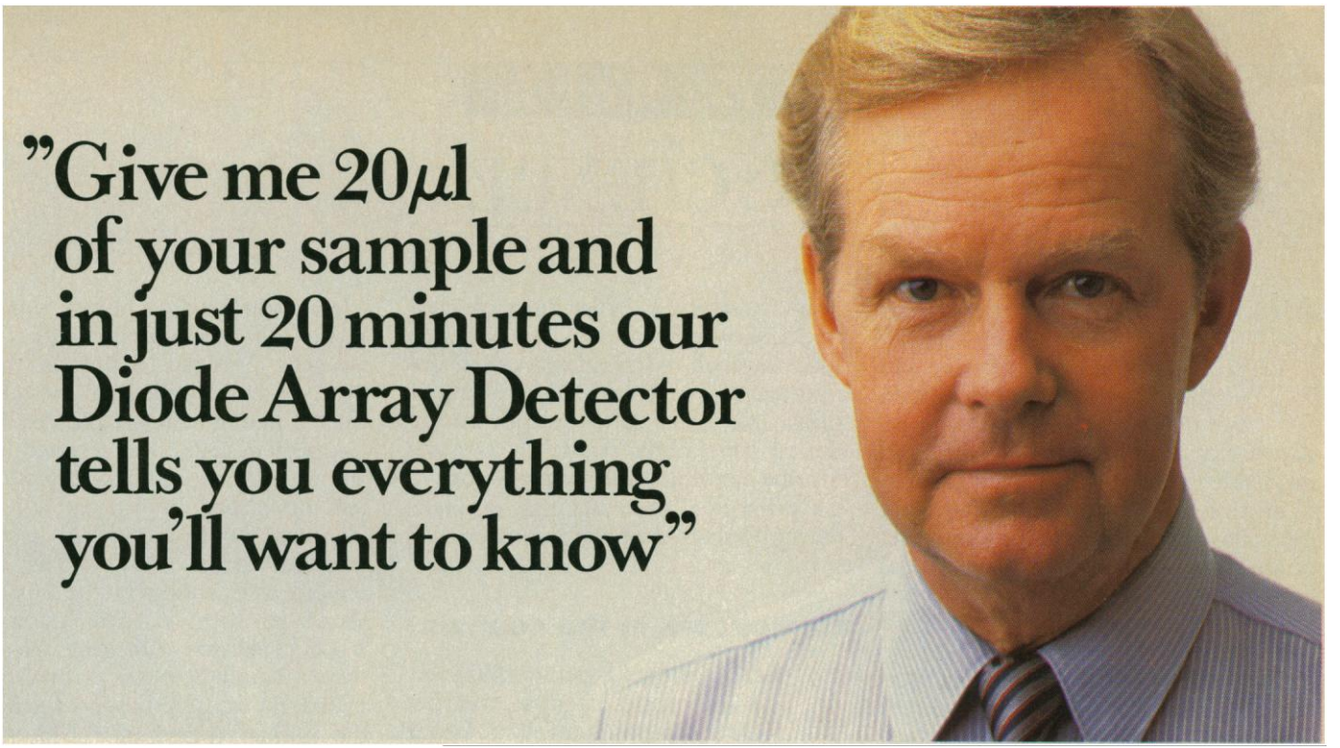
SIMILAR infrared spectra characterize interplanetary dust particles (IDP) composed of layer-lattice silicates and a protostellar object (W33 A) that is thought to be a solar system in the process of formation (pages 1540 and 1544). Both have a major infrared band at 6.8 micrometers that may represent carbonates and an accompanying band at 11.4 μm, also part of the carbonate signature. Sandford subjected an IDP, Calrissian Two (a particle 20 μm in diameter with a mass of about 10 nanograms), to acid treatment; most of its 6.8-μm band disappeared as predicted for (acid-soluble) carbonates. The small bands in this spectral region that remained after acid treatment may represent hydrocarbons that are acid-insoluble in meteorites. Using transmission electron microscopy electron diffraction, Tomeoka and Buseck confirmed the presence of abundant magnesium-iron carbonates in a related IDP, Calrissian. The presence of carbonates in IDP's and, by extension, in interstellar dust opens a window onto processes that took place in the past (IDP's) and that are taking place now (W33 A) in solar system formation.

Another AIDS protein identified

IN the continuing search for clues as to how the AIDS virus produces disease, attention has focused on the activities of viral genes and their products (pages 1546, 1549, and 1553). Besides the characteristic retroviral genes *gag*, *pol*, and *env*, the AIDS virus contains an unusual gene, *sor* (short open reading frame), positioned in the DNA between *pol* and *env*. The *sor* gene produces a protein that has now been identified and studied in three different systems: the 23,000-dalton protein (p23) was secreted in large amounts by a bacterial expression system developed by Kan *et al.*; it was identified by Lee *et al.* in a cell line infected with the AIDS virus; and its obligate association with the *sor* gene was shown by Sodroski *et al.*, using cloned AIDS proviruses with gene deletions in the *sor* region. Serologic analyses indicated that the *sor* gene produces p23 during the normal course of AIDS infection since antibodies to the protein were present in AIDS patients. (Antibodies were also present in some controls, suggesting that the viral protein may cross-react with proteins unrelated to AIDS.) A role for *sor* has yet to be found: it proved unnecessary for either the replication of the AIDS virus in a cell line or for the cytopathologic effects of the virus on the cells in which it was growing.

Calcium channel dynamics

ARTIFICIAL membranes containing calcium channels—the ion conduits through membranes that are crucial for muscular contraction, neurotransmission, and secretion—are being used to study channel dynamics (page 1564). Rosenberg *et al.* found that when heart calcium channels were incorporated into planar lipid bilayers, they functioned just as they did in intact heart muscle cells: gating (opening and closing) and ion flux showed characteristic dependencies on voltage. Calcium channels from heart muscle cells had different gating and conductance properties from those of skeletal muscle cells despite shared drug sensitivities. The system will be useful for studying channels that cannot be evaluated in intact cells, for measuring channel responses to ionic conditions that are too extreme to be applied to intact cells, and for determining how and which cellular and membrane molecules affect electrical conductance.



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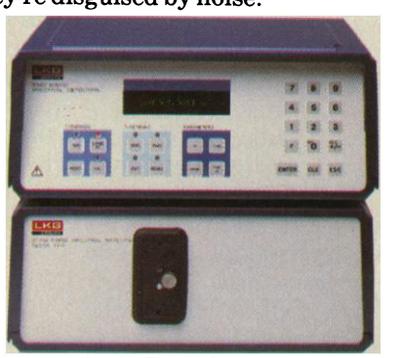

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Global Economic Competition

Most of us have been steeped in widespread faith in U.S. technological superiority. But we face disturbing evidence that we are doing poorly in global economic competition. Last year, our annual merchandise trade deficit was $148 billion. The figures were proportionately worse for January 1986, when the deficit was $16.5 billion. The United States is comparatively rich in natural resources of land and energy. Yet it competes poorly with countries less well endowed. For example, in 1985 we exported to Japan goods worth $22.6 billion and imported $72.4 billion. The corresponding figures for West Germany were $9.0 billion and $21.2 billion.

No single product line accounts for our worsening position. We have lost ground in competition in automobiles, steel, machine tools, pharmaceuticals, chemicals, consumer electronics, memory chips, nuclear energy, and satellite launching.

The decay in the U.S. position has been proceeding for more than a decade. Because of its important deleterious effects, including lost jobs, the situation has been examined by the National Academy of Engineering (NAE). In a series of studies beginning in 1982, the NAE has conducted investigations of the global competitive status of U.S. industry.* As might be expected, the problems of no two industries were found to be exactly alike. However, some common features emerged. One is that despite the disparate nature of the various industries, all are of world scale. At one time, the United States was the major market, but today the total elsewhere is large and growing fast. If a company can compete in the larger global market, it can attain economies of scale in manufacturing and can spread research and development costs over a larger number of items. However, many U.S. companies, especially the smaller ones, have failed to tap the global market.

Another common theme arising from the NAE studies is the lack of coherence and mutual reinforcement among policies and institutions in the United States in contrast to the situation in Japan and to some extent in West Germany. In those countries, the report notes:

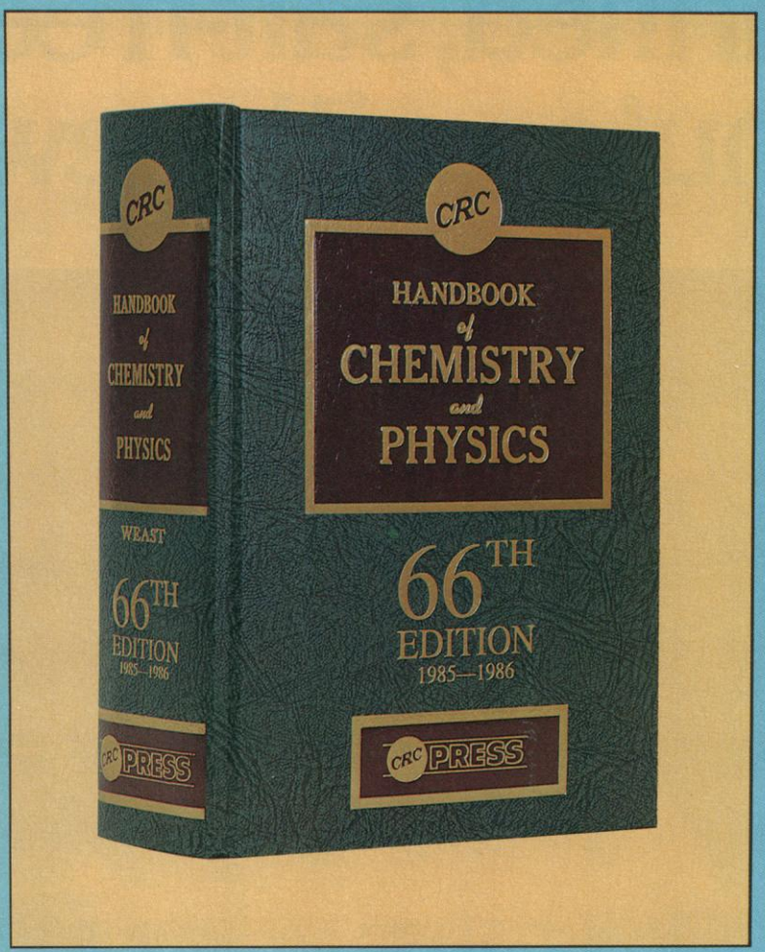
- Tax policy favors exports
- The educational system produces a large number of technical graduates—many trained for careers in manufacturing
- Capital markets foster a longer term viewpoint for evaluating investments and provide funds for exports
- Government officials at all levels recognize the vital role of exports and provide direct, visible (sometimes financial) support for them in negotiating sales and in aggressive negotiation of supportive international trade policies
- Industrial management develops product lines and formulates business strategies with world markets as the target

Some of these deficiencies could in principle be eliminated rather quickly. However, our failures in education cannot be remedied quickly and will handicap us for years to come. We have not educated as many engineers per capita as have Japan and Germany. Our vocational training effort is small in comparison with that of West Germany. There, 58 percent of the labor force has had 4 years of vocational training. The people thus trained are flexible in meeting new technological problems.

One handicap not mentioned in the report is the current public demand for a risk-free society. Such attitudes have increased costs of production in many industries, rendering them less competitive, and are likely to lead to our loss of leadership in biotechnology.

In view of the many factors contributing to our poor competitiveness, it should be clear that no single "quick fix" will suffice. Excellence in R&D, while necessary, is not sufficient. There are many weaknesses that must be addressed. In spite of these deficiencies, the members of the studies groups conclude on an optimistic note. They state that the problems identified are amenable to solution. We are not suffering some inexorable decline. We do not lack critical natural, human, or technological resources. However, a broad awareness of changing international circumstances will be required, as well as an informed understanding of the ingredients necessary for competition in international markets.—PHILIP H. ABELSON

*L. W. Steele and N. B. Hannay, *The Competitive Status of U.S. Industry—An Overview* (National Academy Press, Washington, DC, 1985).



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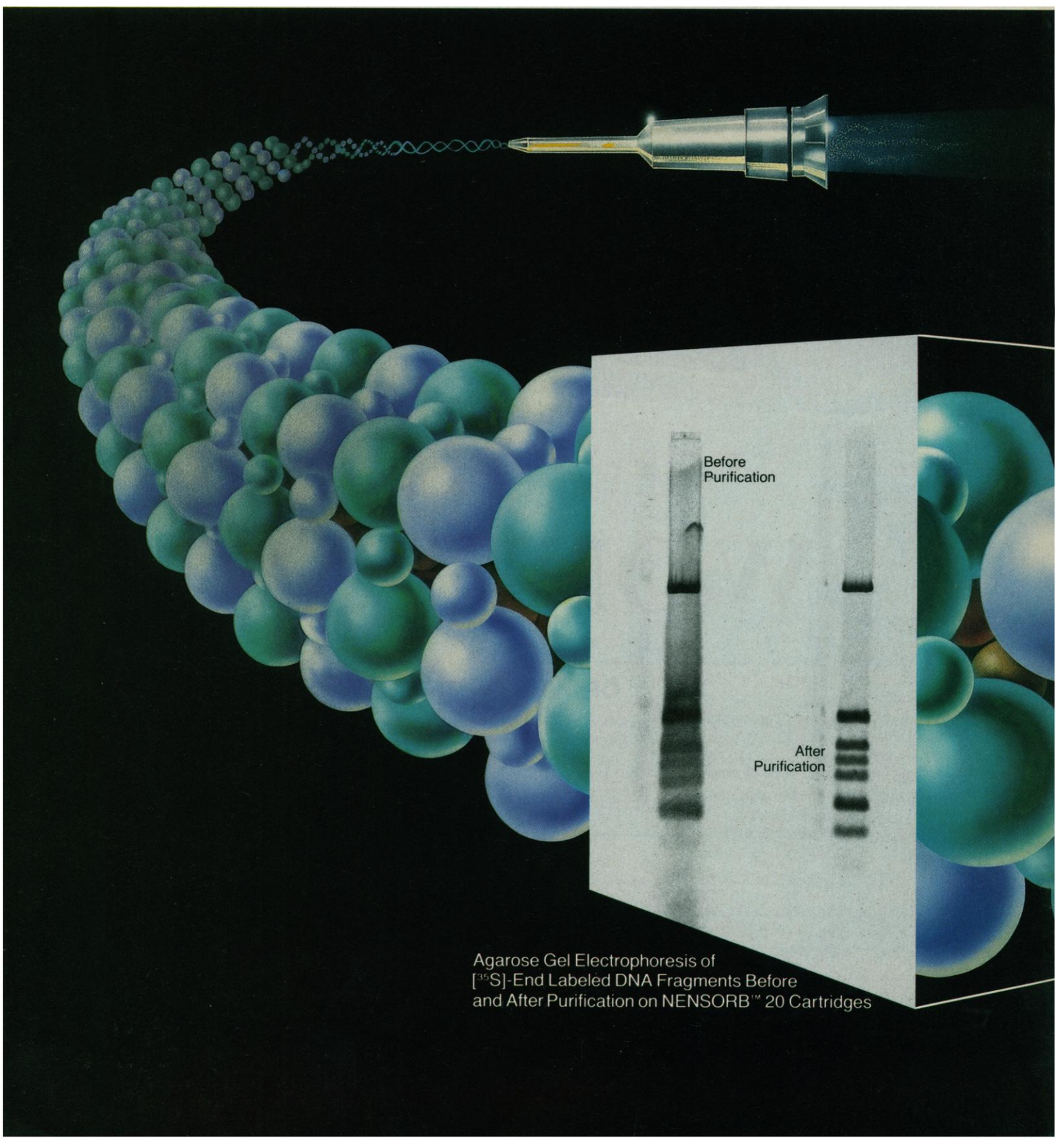

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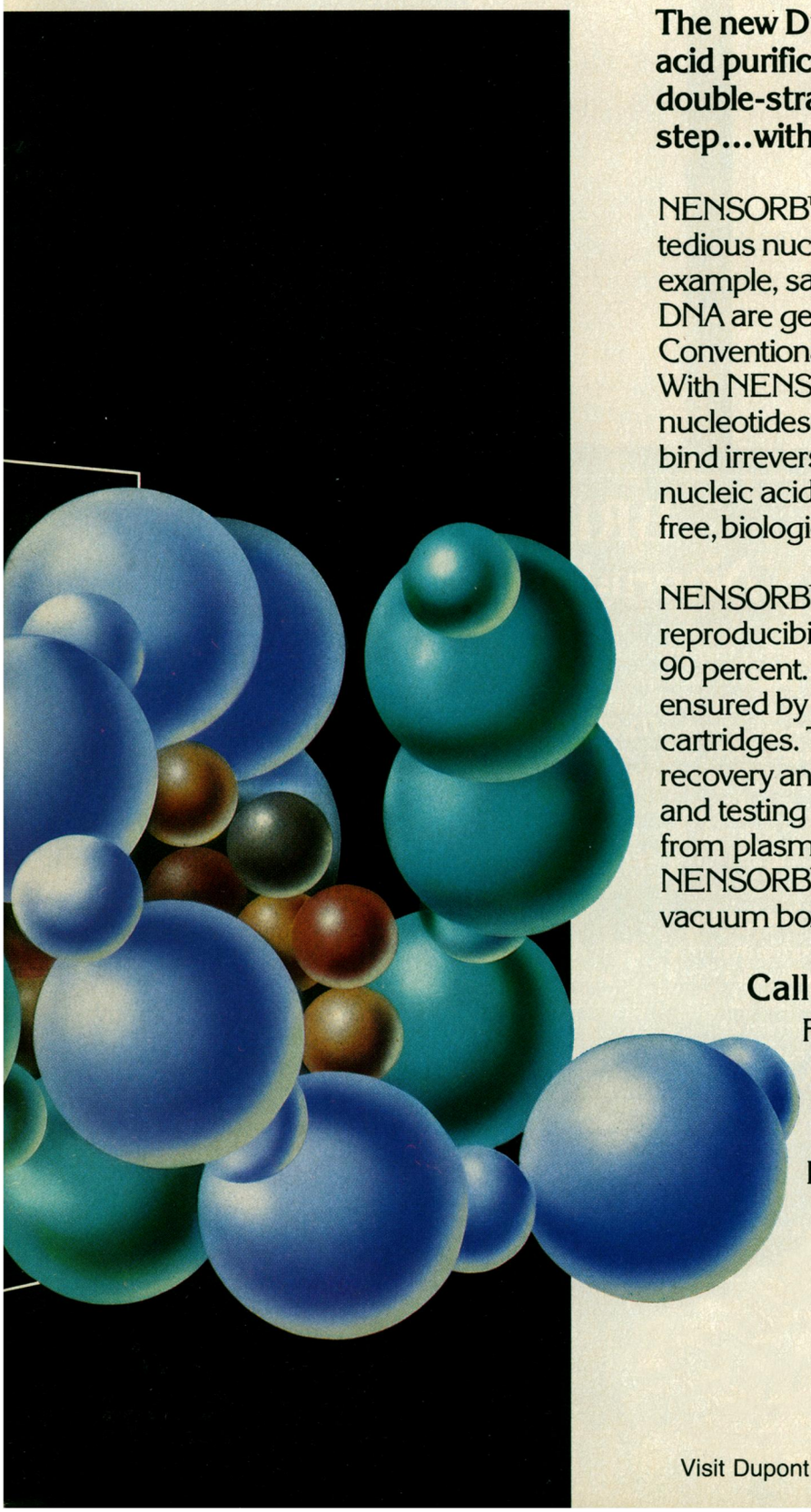

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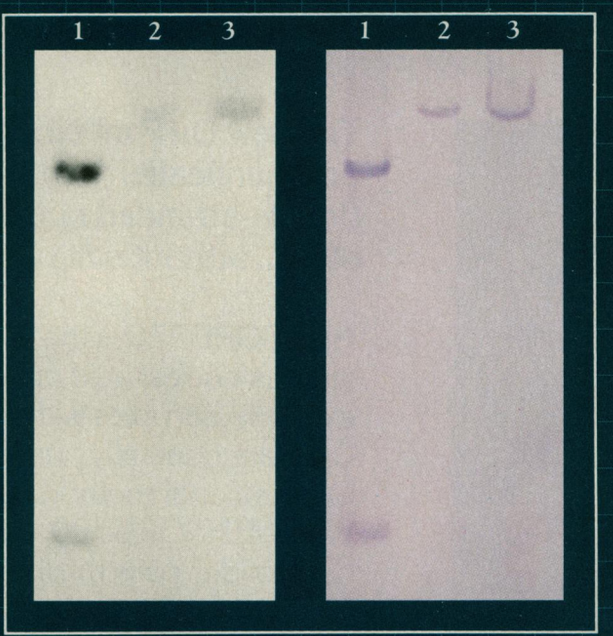

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7) a statement that the material has not been published and is not under consideration for publication elsewhere.

In addition, include with your manuscript (i) any paper of yours that is in press or under consideration elsewhere and includes information that would be helpful in evaluating the work submitted to *Science*; (ii) written permission from any author whose work is cited as a personal communication, unpublished work, or work in press but is not an author of your manuscript; and (iii) for review of manuscripts based on crystallographic data, two copies of the coordinates. (It is expected that, if the manuscript is accepted, coordinates will be offered for deposit to the appropriate crystallographic data bank.)

Before being reviewed in depth, most papers are rated for their interest and overall suitability by a member of the Board of Reviewing Editors. When papers are submitted in disciplines for which there is no appropriate member of the Board of Reviewing Editors, the initial screening is done by editorial staff members in consultation with outside experts in those areas. Papers that are not in the highest rating category are returned to the authors within about 2 weeks; the title page and abstract from one copy are retained for our files. The others are reviewed in depth by two or more outside referees. Authors are then notified of acceptance, rejection, or need for revision within 6 to 10 weeks from the date of receipt. As stated in the editorial of 18 January 1985 (*Science*, volume 227, page 249), there can be no resubmissions, either of papers returned after initial screening or of papers returned after in-depth review.

Conditions of Acceptance

When a paper is accepted for publication in *Science*, it is understood by the editors (i) that any materials necessary to verify the conclusions of the experiments reported will be made available to other investigators under appropriate conditions; (ii) that all authors have seen and approved the final version of the manuscript; and (iii) that a paper accepted by *Science* will not be released to the press or the public before its publication. If there is a need in exceptional cases to publicize research findings in advance of publication, the AAAS Office of Communications (202-326-6440) must be consulted.

Selection of Manuscripts

In selecting papers for publication, the editors give preference to those of general significance that are well written, well organized, and intelligible to scientists in different disciplines. An attempt is made to balance the subject matter in all sections of *Science*. Membership in the AAAS is not a factor in selection.

Papers accepted for publication are edited to improve the accuracy and effectiveness of communication and to bring them within the specified length limits. When the author's meaning is not clear, the editor may consult the author by telephone; when editing is extensive, the manuscript may be returned to the author for approval and retyping before the type is set.

Six categories of signed papers are published: general articles, research articles, reports, letters, technical comments, and book reviews.

General Articles. General articles (up to 5000 words) are expected to (i) review new developments in one field that will be of interest to readers in other fields; (ii) describe a current research problem or a technique of interdisciplinary significance; or (iii) discuss some aspect of the history, logic, philosophy, or administration of science and public affairs. Readers should be able to learn from a general article what has been firmly established and what are unresolved questions; speculation should be kept to a minimum.

Many of the general articles are solicited by the editor. Both solicited and unsolicited articles undergo review.

General articles should include a note giving the authors' names, titles, and addresses; a summary (50 to 100 words); an introduction that outlines for the general reader the main point of the article; and brief subheadings to indicate the main ideas. The reference list should not be exhaustive; a maximum of 40 references is suggested. Figures and tables should occupy no more than one printed page.

Research Articles. A research article (up to 4000 words) is expected to contain new data representing a major breakthrough in its field. The article should include an author note, abstract, introduction, and sections with brief sideheads. There should be a short introduction outlining for the general reader the main point of the paper, a description of the experiments and the results, and then a discussion or conclusion. A maximum of 30 references is suggested. Figures and tables together should occupy no more than one printed page.

Reports. Reports are expected to contain important research results or reliable theoretical calculations whose essence can be expressed briefly. Preference is given to reports of discoveries that will be of broad interdisciplinary interest or of unusual interest to the individual discipline. Reports should include an abstract (no more than 100 words) and an introductory paragraph. The total number of words, including the references and notes and figure and table legends, should not exceed 2000. A maximum of 20 references is suggested. Figures and tables together should occupy no more than half a printed page.

Letters. Letters are selected for their pertinence to material published in *Science* or because they discuss problems of general interest to scientists. Letters pertaining to material published in *Science* may correct errors; provide support or agreement; or offer different points of view, clarifications, or additional information. Personal remarks about another author are inappropriate. Letters may be reviewed by outside consul-

tants. Letters selected for publication are intended to reflect the range of opinions received. The author of the *Science* paper in question is usually given an opportunity to reply.

All letters are acknowledged by postcard; authors are duly notified as to whether their letters are to be published. Preference is given to letters that do not exceed 250 words. Letters accepted for publication are frequently edited and shortened in consultation with the author.

Technical Comments. Technical comments (up to 500 words) may criticize articles or reports published in *Science* within the previous 6 months or may offer useful additional information. Discussions of minor issues or priority claims are not appropriate, nor are questions that can be resolved by private correspondence. The authors of the original paper are usually asked for an opinion of the comments and are given an opportunity to reply in the same issue if the comments are accepted. The comments, and sometimes the reply, are subject to the usual review procedures.

Book Reviews. The selection of books to be reviewed and of reviewers is made by the editors. Instructions and length specifications accompany the books when they are sent to reviewers.

Manuscript Preparation

Typing. Use double-spacing throughout the text, tables, figure legends, and references and notes and leave margins of at least 2.5 centimeters. Put your name on each page and number the pages starting with the title page.

Titles. Titles should be short, specific, and amenable to indexing. For general articles the maximum length is 52 characters and spaces; for research articles and reports the maximum is 108 characters.

Summaries or abstracts. These should include a sentence or two explaining to the general reader why the research was undertaken and why the results should be viewed as important. The abstract should convey the main point of the paper and outline the results or conclusions. Use of the first person, singular or plural, should be avoided.

Text. A brief introduction should portray the broad significance of the paper. The whole text should be intelligible to readers in different disciplines. Technical terms should be defined. All tables and figures should be cited in the text in numerical order.

Units of measure. Use metric units. If measurements were made in English units, give metric equivalents.

Symbols and abbreviations. Define all symbols, abbreviations, and acronyms.

References and notes. Number references and notes in the order in which they are cited, first through the text and then through the table and figure legends. Use conventional abbreviations for well-known journals; provide complete titles for other journals. For references with up to five authors provide all the names; for more than five, provide the name of the first author only. Some examples follow:

1. A. B. Brown, C. K. Black, M. Matthews, R. Strong, I. Ebbit, *Proc. Natl. Acad. Sci. U.S.A.* **72**, 512 (1970).
2. P. Curtis *et al.*, in *Clinical Neurology of Development*, B. Walters, Ed. (Oxford Univ. Press, New York, 1983), pp. 60–73.
3. S. E. Wisdom, *Multicomponent Models of Ancient Skies* (NIE 79-1 Technical Report, University of Kansas, Lawrence, 1979).
4. B. Quick, *Man's Environment* (Macmillan, New York, 1932).
5. A. Able and P. Stark, *Geol. Soc. Am. Abstr. Programs* (1981), p. 215.
6. J. English, thesis, State University of New York, Stony Brook (1980).

Acknowledgments. Gather all acknowledgments into a brief statement at the end of the references and notes.

Informed consent. Investigations on human subjects must include a statement indicating that informed consent was obtained after the nature and possible consequences of the studies had been fully explained.

Figures. For each figure submit three high-quality glossy prints or original drawings of sufficient size to permit relettering but not larger than 22 by 28 centimeters (8½ by 11 inches). On the back of every figure write the first author's name and the figure number and indicate the correct orientation. *Manuscripts with oversized figures will be returned to the author without review.* Photocopies of figures are not acceptable; transparencies, slides, or negatives cannot be used since they cannot be sent to reviewers.

On acceptance of a paper, authors requesting the use of color will be asked to supply slides or negatives of the color artwork and to pay $600 for the first color figure and $300 for each additional figure as a contribution toward printing costs.

Illustrations reprinted from other publications must be credited. It is the author's responsibility to obtain permission to reprint such illustrations in *Science*.

Tables. Tables should supplement, not duplicate, the text. They should be numbered consecutively with respect to their citation in the text. Each table should be typed, with its legend (double-spaced), on a separate sheet. Give each column a heading with units of measure indicated in parentheses. Do not change the unit of measure within a column.

Equations and formulas. Use quadruple-spacing around equations and formulas that are to be set off from the text. Define all symbols.

Statistical presentations. Report the uncertainty associated with results, including the specific measure of uncertainty used and the sources of error in it. Probabilities from statistical tests of significance should be subordinated to the reporting of results and associated uncertainties. Limitations to the generalizability of the results should be explicitly stated.

Printing and Publication

Proofs and reprints. One set of galley proofs is sent to the authors. An order blank for reprints accompanies the proofs.

Scheduling. Papers are scheduled for publication after *Science* has received corrected galley proofs from the authors. There may be delays for papers with tables or figures that present problems in layout, for papers with color figures, for papers accompanied by cover pictures, and for papers that exceed the length limits.

Cover Photographs

Particularly good photographs that pertain to a paper being submitted will be considered for use on the cover. Submit prints (not slides, negatives, or transparencies) with the manuscript and indicate in the letter of transmittal that a possible cover picture is enclosed.

Tours

Sunday, 25 May, through Friday, 30 May

THE PHILADELPHIA ADVISORY COMMITTEE TO THE AAAS Annual Meeting is pleased to offer 15 tours organized especially for registrants. These tours are only a sampling of the many scientific and cultural institutions located in and around the City of Brotherly Love. We at AAAS are delighted to join our Philadelphia hosts in inviting you to visit as many of these exciting sights and places as possible.

1. **Philadelphia Museum of Art**. Sunday, 25 May, 11:45 am–2:15 pm (Limit: 48 persons)

The Philadelphia Museum of Art, America's third largest museum, with 10 acres of gallery space, is itself the finest example of Greco-Roman architecture in the country. The tour will concentrate on "Science and the Arts." The mutual concern of artists and scientists for understanding man and nature has often led them in similar directions in efforts to unravel the mysteries of life. This tour of the museum's collections will draw upon images created by artists over several centuries, ranging from Peter Paul Rubens to Thomas Eakins and Constantin Brancusi. After the guided tour, you will have one hour to explore the rest of the museum before returning to the hotel.

2. **Fairmount Park Mansions**. Sunday, 25 May, 1:00 pm–4:00 pm (Limit: 48 persons)

Bus tour down the Benjamin Franklin Parkway—the Champs Elysees of Philadelphia—passing Logan Circle, the Franklin Institute, and the Academy of Natural Sciences. Then on to Fairmount Park, the world's largest municipal park, which contains many sculptures including Remington's "The Cowboy." You will then take a private tour of two of the restored Fairmount Park Mansions, returning via Kelly Drive, home of historic Boathouse Row.

3. **Morris Arboretum of the University of Pennsylvania**. Monday, 26 May, 1:00 pm–4:00 pm (Limit: 40 persons)

Located on the northwestern edge of Philadelphia, the Morris Arboretum comprises 175 acres of landscaped grounds, botanical laboratories, and a one-of-a-kind Victorian fernery. The visit, hosted by Arboretum director Dr. William M. Klein, will include highlights of a collection noted for its many mature specimens of Asian trees in a Victorian garden setting. Rhododendron bloom should be at its peak, together with native magnolias, American yellowwood, white fringe tree, and Chinese dogwood. Research programs, including ongoing work on the flora of Pennsylvania, will be described by staff members of the Willaman Botanical Laboratories.

4. **Walking Tour of Historic Philadelphia**. Monday, 26 May, 1:00 pm–4:00 pm (Limit: 96 persons)

Step back 200 years with knowledgeable guides for a delightful look at our past: Touch the Liberty Bell, see Independence Hall, Congress Hall, and State House Yard. Go past the Second Bank along cobblestoned Library Walk to Dolley Todd's House, an 18th-century garden, Carpenters' Hall, a "barrow" street, Franklin's Court, and picturesque Society Hill with its restored homes, "busybodies," 18th-century carriage steps, gardens, hidden walkways, and more.

5. **University of Delaware** (Newark). Tuesday, 27 May, 8:00 am–4:30 pm (Limit: 40 persons)

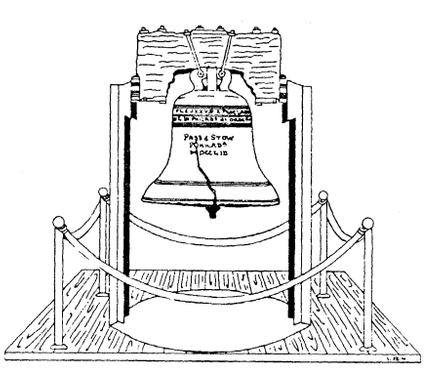
After a coffee reception, the tour starts with the Center of Catalytic Science and Technology, a research center specializing in single crystal surfaces, well-defined supported metals, supported metal and metal-oxide clusters, catalytic hydroprocessing, and spectroscopic methods for catalyst characterization. Next is the Center for Composite Materials, a national engineering research center for composite manufacturing science and engineering. After a complimentary lunch, the tour continues at the Institute of Energy Conversion, one of the world's largest thin-film solar-cell R&D laboratories.

6. **The Franklin Institute Science Museum**. Tuesday, 27 May, 1:00 pm–5:00 pm (Limit: 100 persons)

The Franklin Institute Science Museum explores a variety of topics including mechanics, aviation, shipbuilding, astronomy, earth sciences, optics, and mathematics. It includes the Fels Planetarium, a computerized state-of-the-art facility. This tour, conducted by Daniel L. Goldwater, Director of Exhibits and Chief Scientist, will focus on the museum's newest permanent exhibit: "Electricity and Electronics," which integrates historic artifacts and reconstructions with new technologies, such as a music synthesizer and a robot-controlled videocamera. Meet your tour guides at the 17th Street entrance of the Franklin Plaza Hotel for the walk around Logan Circle to the Franklin Institute.

7. **University of Pennsylvania**. Tuesday, 27 May, 2:00 pm–5:00 pm (Limit: 20 persons)

The University of Pennsylvania's data network and information services provide residence halls and campus, Philadelphia homes, and local area networks with services ranging from library catalog and literature search through departmental microcomputer labs to national networks and scientific computing facilities. The presentation will cover the architecture costs, progress, and the considerations that went into decisions in these areas.



8. **E. I. du Pont de Nemours & Co.** (Wilmington, Delaware). Wednesday, 28 May, 9:00 am–2:30 pm (Limit: 48 persons)

The tour of the du Pont Company's Experimental Station will include demonstrations and exhibits selected from current work in polymers, molecular biology, medical diagnostics, chemical synthesis, electronic materials, computer science, and engineering. This site is the company's main research location; cameras are not permitted. Complimentary lunch provided by du Pont.

9. **Rohm & Haas Company** (Spring House, Pennsylvania). Wednesday, 28 May, 9:30 am–2:30 pm (Limit: 36 persons)

The Rohm & Haas complex encompasses 10 modern buildings on a 140-acre site 20 miles north of Philadelphia. Demonstrations include the modern engine test facility, sophisticated capabilities for detecting and analyzing trace quantities of chemicals in terms of parts per trillion, and research in agricultural and coatings resins. Complimentary lunch provided by Rohm & Haas. **Note**: For this tour, registrants must submit in advance the name, address, and citizenship of each person for whom a ticket is purchased. Proof of identity is required on entering the facility; foreign nationals must show passports. Cameras are not permitted.

10. **Fox Chase Cancer Center**. Wednesday, 28 May, 1:00 pm–4:45 pm (Limit: 20 persons)

The Fox Chase Cancer Center, located on a 47-acre campus in Northeast Philadelphia, was formed in 1974 from the union of the American Oncologic Hospital and The Institute for Cancer Research. You will visit the research, administrative, and patient care facilities, including the Center's new nuclear magnetic resonance facility which houses the most powerful magnet commercially available.

11. **Smith Kline & French Laboratories** (Upper Merion, Pennsylvania). Thursday, 29 May, 8:30 am–12:30 pm (Limit: 96 persons)

Smith Kline & French Laboratories, the pharmaceutical division of SmithKline Beckman Corporation, will conduct tours of its new R&D facilities. Come meet outstanding men and women in science and learn about SK&F's programs, which are targeted at major therapeutic areas in gastroenterology, immunology, and cardiovascular, respiratory, anti-infectives, and anticancer research. A complimentary lunch will be provided. Cameras are not permitted.

12. **The Wistar Institute**. Thursday, 29 May, 2:00 pm–4:00 pm (Limit: 48 persons)

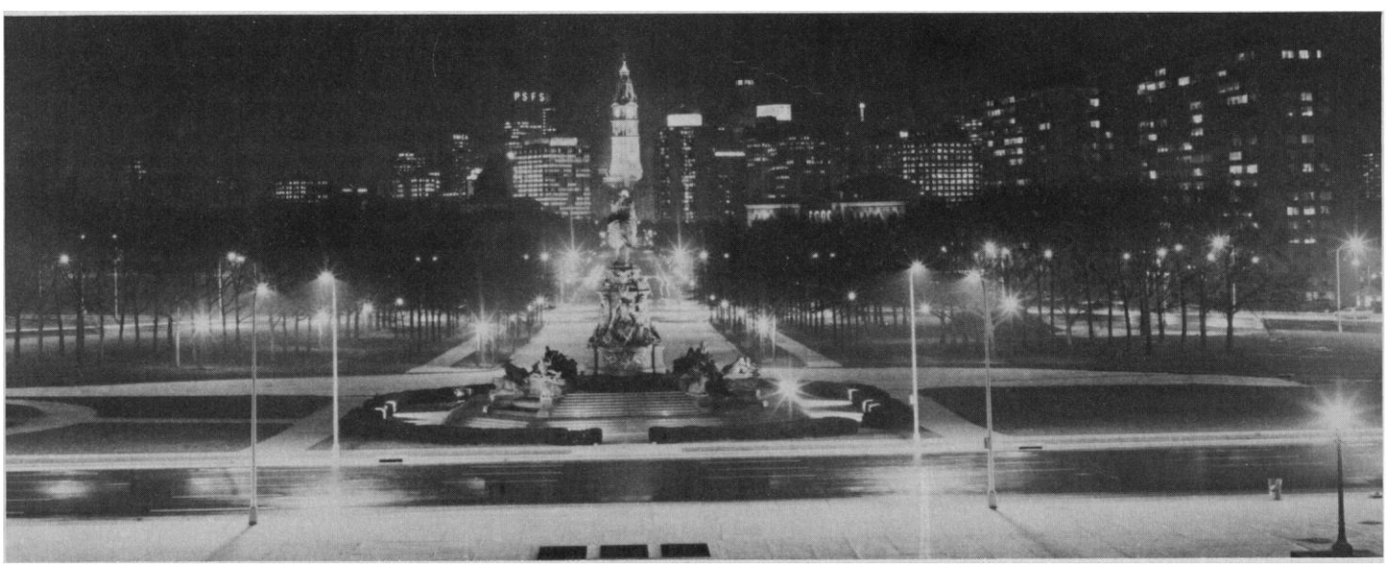
The oldest independent biomedical research organization in the nation, the Institute is famous for its contributions in aging, cancer, rabies, multiple sclerosis, and the relationship between diet and degenerative diseases. The theme of the program is "Fundamental Research in Cell and Molecular Biology." After welcoming remarks, the visitors will tour laboratories staffed by Institute scientists. Complimentary refreshments will be served.

13. **Candlelight Stroll**. Thursday, 29 May, 7:30 pm–9:00 pm (Limit: 48 persons)

Relive Colonial days in picturesque Society Hill in the historic area of Philadelphia. Costumed guides recreate the customs and lifestyles of this old neighborhood of restored townhouses, 18th-century carriage steps, hidden walkways and courtyards, private gardens, historic churches, and more. You may return to the hotel in your bus at 9:00 pm or stay to enjoy the Headhouse Square activities and return on your own.

14. **DNA Plant Technology Corporation** (Cinnaminson, New Jersey). Friday, 30 May, 8:30 am–11:30 am (Limit: 30 persons)

A slide presentation describing biotechnology research will be followed by a tour of the research facility. The tour, featuring numerous laboratories and an extensive greenhouse complex including a state-of-the-art tropical greenhouse, will be of special significance to those interested in plant genetics and tissue culture. Cameras are not permitted.



City center skyline as seen from the Benjamin Franklin Parkway, which extends from the banks of the Schuylkill River to City Hall.

15. Philadelphia Electric Company. Friday, 30 May, 1:45 pm–4:15 pm (Limit: 48 persons)

The Philadelphia Electric System Control Center is the operating center for PECO's high-voltage transmission and generation network. A computer system known as SAMAC (system automatic monitor and control) provides information display and analysis needed by the system operators. Two large Burroughs computers scan 42 remote terminals located throughout the P.E. system to obtain real-time system data. Live data is displayed on 37 color CRT monitors and is available to system analysis programs, the results of which are used to make the minute-to-minute operating decisions required for a large metropolitan utility. The SAMAC system is one of the outstanding engineering achievements of its time.

Tour Tickets Order Form

AAAS Annual Meeting ◆ Philadelphia ◆ 25–30 May 1986

Mail to: AAAS Meetings Office, Dept. R, 1333 H Street, NW, Washington, DC 20005

Name _____ Tel. No.: ( ) _____

Institution or Company _____
(If part of mailing address)

Street Address _____

City _____ State _____ Zip Code _____

For Tour 9 indicate citizenship: _____

Indicate any special requirements due to a handicap: _____

_____

Tour No.		Ticket Price	No. of Tickets
1.	Philadelphia Museum of Art (5/25) . . .	$ 6.00	____
*2.	Fairmount Park Mansions (5/25) . . .	15.00	____
*3.	Morris Arboretum (5/26)	7.00	____
*4.	Walking Tour (5/26)	12.00	____
5.	Univ. of Delaware (5/27)	9.00	____
6.	Franklin Inst. Museum (5/27)	Free	____
7.	Univ. of Pennsylvania (5/27)	7.00	____
8.	E. I. du Pont de Nemours & Co. (5/28)	7.00	____
9.	Rohm & Haas Co. (5/28)	7.00	____
10.	Fox Chase Cancer Center (5/28) . . .	7.00	____
11.	Smith Kline & French Labs. (5/29) .	6.00	____
12.	The Wistar Institute (5/29)	6.00	____
*13.	Candlelight Stroll (5/29)	10.00	____
14.	DNA Plant Technol. Corp. (5/30) . . .	9.00	____
15.	Philadelphia Electric Co. (5/30)	6.00	____

Total amount enclosed or charged $ _____

Total number of tickets ordered _____

Tours are limited to Annual Meeting registrants only. All tours depart from and return to the 17th Street entrance of the Franklin Plaza Hotel at the times indicated. Comfortable walking attire is recommended.

Tour prices include transportation costs and any admission fees. Tickets will be mailed to you in early May. Orders received **after 9 May** will be held at the AAAS Ticket Desk at the Franklin Plaza Hotel. *Please order tickets for Sunday tours early enough so that they can be mailed to you.* Refund requests must be made by letter or telegram to the AAAS Meetings Office **before 16 May** and will be honored after the Meeting. No refunds will be made on cancellations received after this date.

Handicapped registrants who need advance tour information or assistance should so indicate on the order form, or contact *Virginia Stern, AAAS Project on the Handicapped in Science, 1333 H Street, NW, Washington, DC 20005 (telephone: 202-326-6667).*

*Please note that Tours 2, 3, 4, and 13 are not fully accessible to mobility-impaired persons.

My check is enclosed. ☐

Charge to my ☐ VISA or ☐ MASTERCARD. Account No. _____ Expiration Date _____

Cardholder's Name _____ Signature _____

Advance Registration Form

AAAS Annual Meeting ✦ Philadelphia ✦ 25–30 May 1986

Mail to: AAAS Meetings Office, Dept. R, 1333 H Street, NW, Washington, DC 20005

Please type or print clearly

Name of registrant _____ (Last) (First & initial)

Name of spouse registrant _____ (Last) (First & initial)

Institution/Company _____ (To be printed on badge) (Registrant)

_____ (Spouse registrant)

Mailing address _____ (Street)

_____ (City/State) (Zip code) (Telephone number)

Convention address _____ (Where you can be reached) (Hotel and/or telephone number)

Check days on which you will attend meeting: Sun ☐ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☐

☐ Check here if you need special services due to a handicap; we will contact you before the meeting.

Name(s) of new member(s): _____

■ Your registration badge, receipt, and voucher for full Program and Abstracts will be mailed to you in mid-April. ■ Registrations received after 9 May will be held at the Advance Registrants' Desk at the Franklin Plaza Hotel. ■ Refund requests must be made by letter or telegram to the above address before 16 May 1986 and will be honored after the Meeting. No refunds are made on cancellations received after this date. ■ Student registration fees apply to full-time undergraduate or graduate students only.

Advance Registration Fees:

Member ($50) . . . . . $ ____
Nonmember ($65) . . . . . $ ____
Student or retired ($25) . . . . . $ ____
High school teacher ($25) . . . . . $ ____
Spouse ($25) . . . . . $ ____

Join AAAS—register as a member:

(Add dues to member registration fee above)

*Single membership dues ($65) . . $ ____
*Double [member & spouse] ($82) . . $ ____
*Single student or retired ($40) . . . $ ____
*Double student or retired ($57) . . $ ____
Retired or spouse membership without *Science* ($17) . . . . . $ ____
TOTAL AMOUNT **$** ____

☐ Check enclosed

Charge my ☐ VISA ☐ MASTERCARD

_____ Card number Expires

_____ Signature

*Membership includes 51 issues of *Science*. Inquire for Canadian and other foreign rates.

Hotel Reservation Form

AAAS Annual Meeting ✦ Philadelphia ✦ 25–30 May 1986

Mail to: Philadelphia Convention Bureau, AAAS Housing Dept., 3 Penn Ctr. Plaza, Suite 2020, Philadelphia, PA 19102

Send confirmation to:

Name _____ (Last) (First & initial)

Mailing Address _____ (Street)

_____ (City/State) (Zip code) (Telephone number)

Other occupant(s) of room: _____ (Name) (Name)

Indicate special housing needs due to a handicap: ☐ wheelchair accessible room; other _____

Charge my major credit card (card type): _____

Card No. _____ Expires ____

Signature _____

Hotel Rates (Add 9%: 6% sales and 3% occupancy tax). Indicate 1st, 2nd, and 3rd choice of hotel; check appropriate box for type of room desired.

Choice	Hotel	Single	Double or Twin	Parlor + 1 Bedrm.	Parlor + 2 Bedrms.
____	Franklin Plaza	☐ $69	☐ $79	☐ $140 & up	☐ $365 & up
____	Hershey Philadelphia	☐ $69	☐ $79	☐ $150 & up	☐ $219 & up
____	Holiday Inn - Center City	☐ $67	☐ $77	☐ $147 & up	—

Arrival date _____

Time _____ ☐ a.m. ☐ p.m.

Departure date _____

Time _____ ☐ a.m. ☐ p.m.

Be sure to list definite arrival and departure dates and times. Reservations will be held only until 6 p.m. unless accompanied by 1 night's deposit or major credit card guarantee.

■ Reservations must be submitted to the Housing Department (address above) on this official form by **2 May 1986.** Reservations received after this cut-off date are conditional on space availability. ■ Confirmations will come directly from the hotels. Cancellations must be sent to the Housing Department until cut-off date. Make name and date changes (and cancellations after 2 May) directly with the hotel.

■ Rollaway beds or extra person in room: Franklin Plaza, $10; Hershey, $10; Holiday Inn, $7.

■ Children accommodated free of charge in same room with parents: Franklin Plaza, to age 14; Hershey and Holiday Inn, to age 18.