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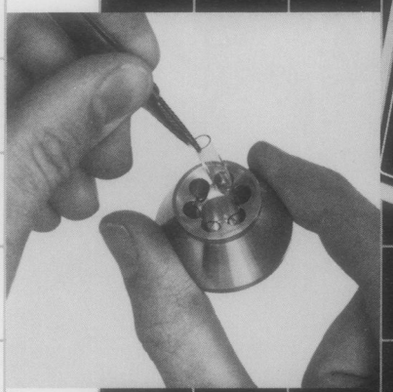

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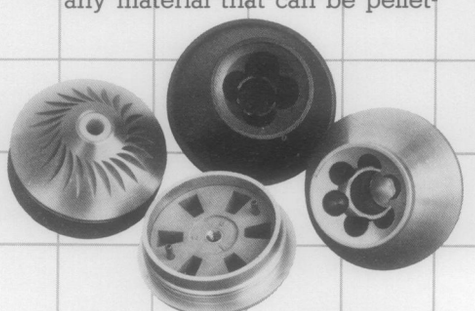

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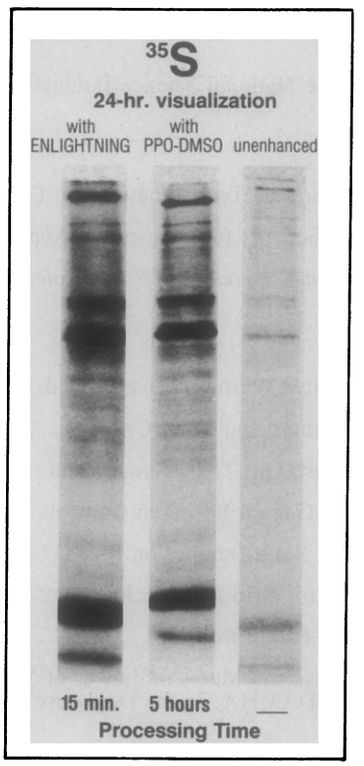

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Individuals from three populations of *Hemispingus superciliaris*, a small tanager of the Andes that illustrates the "leapfrog" pattern of geographic variation. Yellow populations of the northern and southern Andes are geographically separated by very differently colored gray populations in central Peru. This type of pattern is found in about 20 percent of all Andean birds with three or more subspecies. See page 171. [Painting by John P. O'Neill, Museum of Natural Science, Louisiana State University, Baton Rouge 70803]

INVITATION FOR PAPERS

2nd U.S. - Dutch International Symposium: Aerosols

April 28 - May 3, 1985
Raleigh, NC

As a part of cooperative activities in environmental protection under a Memorandum of Understanding between the United States and the Netherlands, an international symposium dealing with particulate matter air pollution is being organized. The first symposium in this series was conducted in Maastricht, The Netherlands in May 1982 addressing problems associated with nitrogen oxides pollution.

This second symposium will focus on issues related to air pollution by aerosols. The subtopic areas to be discussed are:

- Physical and Chemical Characterization
- Sampling, Measurements and Monitoring
- Sources, Emissions and Environmental Levels
- Atmospheric Transport and Transformation
- Biological Disposition of Inhaled Aerosols
- Toxicological Studies
- Controlled Human Exposure Studies
- Epidemiologic Studies
- Identification of Population Groups at Risk
- Ecological Effects of Acidic and Other Deposition
- Welfare Effects Assessment (Vegetation, Soiling, Materials Damage, Visibility, and Climate)
- Control Technology
- Benefit Analysis
- Economic Impact
- Control Policies
- Policy Implementation
- Other Relevant Issues

Abstracts: Persons wishing to make oral or poster presentations should submit a two-hundred word abstract by October 1, 1984, to:

Dr. Si Duk Lee, U.S. Coordinator
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U.S. Environmental Protection Agency
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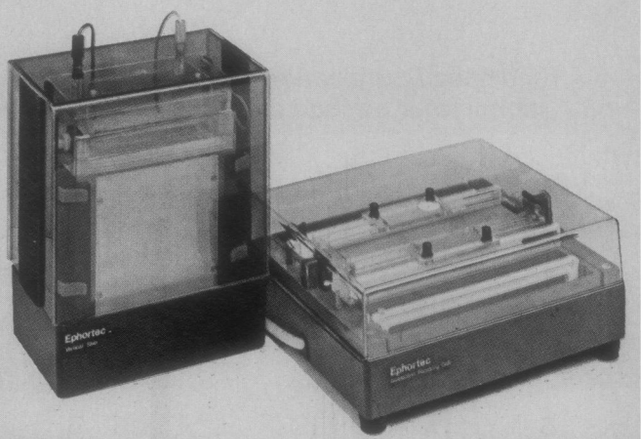

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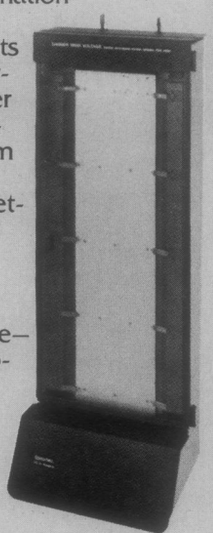

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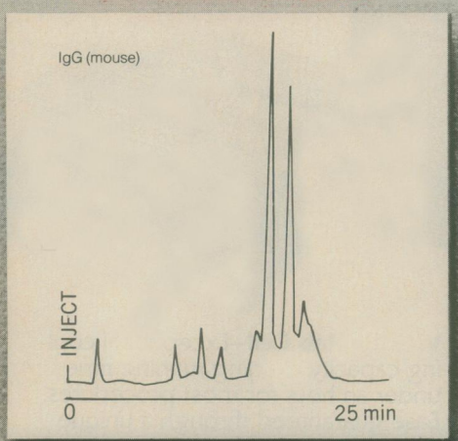

High performance anion exchange chromatography successfully separates and purifies antibodies from cell culture and ascites fluid in less than 30 minutes.

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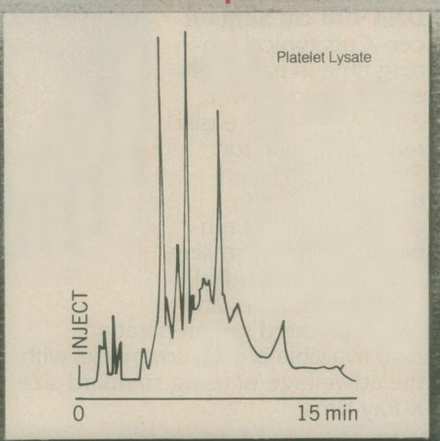

Subtle differences in cell constituents can be detected by using high resolution ion exchange chromatography for the separation of crude cell lysates. (Courtesy of G.H.R. Rao et al.)

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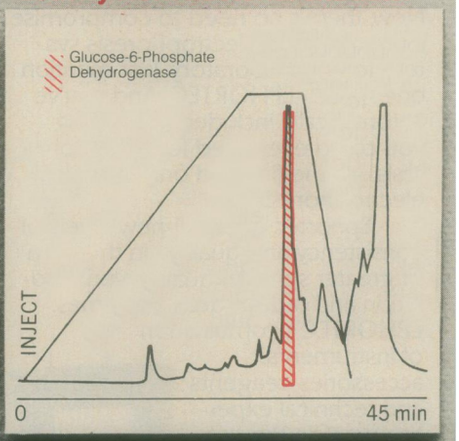

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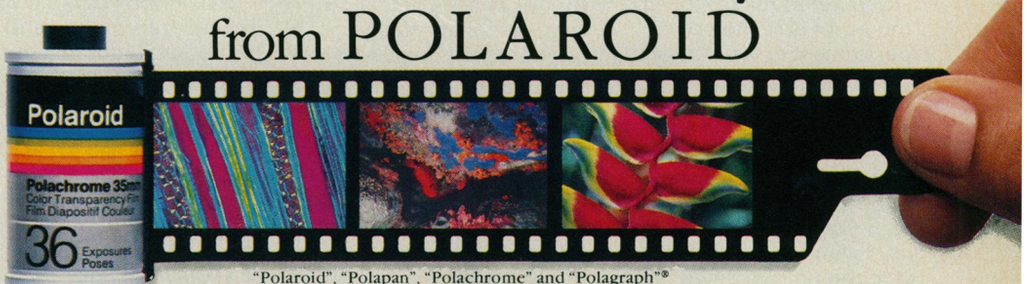

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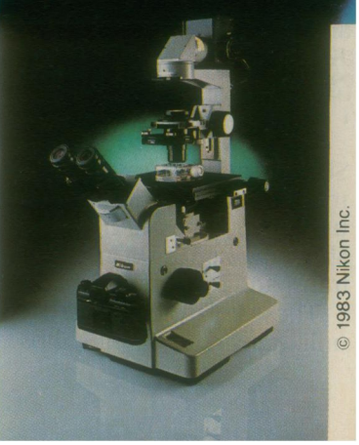

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13 April 1984, Volume 224, Number 4645 **SCIENCE**

Amending the National Science Foundation Act

The intent of a proposal before Congress to amend the National Science Foundation Statutory Act of 1950 is to provide for a stronger emphasis on engineering in NSF programs, principally by inserting the words "engineering" or "engineers" in almost every place that "science" or "scientist" appears in the text. I fully share the concerns that prompted the suggested changes, and I have spoken to the importance of efforts to ensure our continuing technological strength, both nationally and internationally. Among the many problems we face are faculty shortages; inadequate, often outdated instruments and equipment; insufficient funding for engineering research; inefficient transfer of new scientific and engineering knowledge into public and commercial sectors; and inefficient transfer from industry to the universities of industrial knowledge and needs.

We do have to act. That agreed, there are, in terms of the proposed amendment, several questions before us. What can effectively be done within the existing statutory framework? Are new arrangements needed, and what are their likely effects? What processes should be followed for forming new arrangements and for implementing them?

First, what can be effectively done within existing arrangements? The Administration's proposed fiscal year 1985 budget answers the question. For example, there is a substantial increase for engineering research in the NSF budget—the largest proportionate increase for any of the directorates. In addition, support for engineering is embedded in the budgets of the mission agencies, with individual agencies providing much more support than the $147 million proposed in fiscal 1985 for engineering research within NSF. In 1984, an estimated $786 million was provided by the federal government for basic research in engineering, most of that coming from agencies other than NSF.

Let us assume that the new arrangements of the sort suggested in the proposed revisions are adopted. What are the likely outcomes? A major change may be to dilute the fundamental mission for which NSF was created—to support basic research in all the sciences. One needs to remember that, in contrast to engineering, many of the sciences are not related to any agency's mission except NSF. Is there any assurance that, as engineering research grows within NSF, there will be commensurate growth in its overall budget? If not, what impact will competition for funds have on the sciences that depend heavily on NSF support, such as mathematics and chemistry?

Although partitioning NSF between science and engineering is not the intent of the House Committee on Science and Technology, the wording used in the amendment can be given this unfortunate interpretation. Given the very few changes made to date in the 1950 act, can that act not, in its present form, provide for a larger role for engineering within NSF?

The science and engineering communities—academic, industrial, and governmental—should work together in a constructive way to address the problems of engineering. But one must ask whether legislative remedies will be truly effective in promoting this dialogue or may instead lead to corrosive frictions? Amendment of the NSF organic act is a serious undertaking whose consequences are uncertain. Will there be other requests to amend the act? Will we have a "discipline of the month" series of amendments, leading to the ultimate decay of one of the most successful institutions established by the federal government?

It is not clear that the changes are necessary. They may even be counterproductive. What is critical is to continue the dialogue on engineering that has been under way for several years. That dialogue has already produced substantial results. And, if conducted in a collegial manner with all parties involved, then we may fashion more effective remedies that will benefit not only engineering but also science and the federal role in research and development.—FRANK PRESS, *President, National Academy of Sciences, Washington, D.C. 20037*

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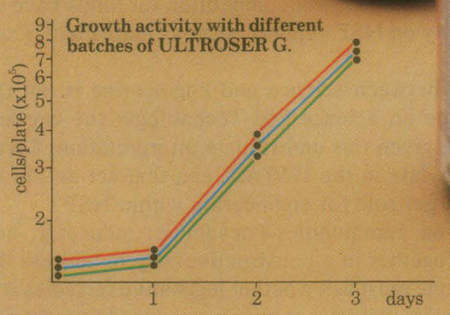

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