

1:1) when averaged over at least a year and averaged spatially over a large half-continent sized area." He also commented that "this is a valid hypothesis based on current information which will be tested as new research yields better information. However, both parties [NAS and NLC] agreed that for smaller spatial scales and shorter time scales, the relationship may not be directly proportional. . . . In other words, linearity may apply to average deposition and yet not hold true for each receptor site of concern."

The sites of concern are largely forested mountain areas, specifically the trees, lakes, and streams in forested watersheds. The evidence increasingly points to the decaying organic layer of forest litter as the primary source of acidity (6).

Concern about the acidification phenomenon is appropriate, but if benefits for sensitive ecosystems are to be achieved, the mechanisms that operate must be clarified and quantified. The hard data now available do not support the hypothesis that major reductions of emissions will benefit the ecosystems of major concern. As successive research findings emerge, Abelson's position becomes ever more convincing and appropriate.

ALAN W. KATZENSTEIN

Katzenstein Associates,
51 Rockwood Drive,
Larchmont, New York 10538

References

1. National Research Council, *Acid Deposition: Atmospheric Processes in Eastern North America* (National Academy Press, Washington, D.C., 1983).
2. N. E. Peters, R. A. Schroeder, D. E. Troutman, *Temporal Trends in the Acidity of Precipitation and Surface Waters of New York* (U.S. Geological Survey Water-Supply Paper 2188, Government Printing Office, Washington, D.C., 1982).
3. *The Acidic Deposition Phenomenon and its Effects: Critical Assessment Review Papers*, vol. 1, Atmospheric Sciences (Environmental Protection Agency, Washington, D.C., 1984); G. J. Stensland and R. G. Semonin, *Bull. Am. Meteorol. Soc.* 63, 1277 (1982).
4. *Acid Rain: Sources and Effects in Connecticut. Report of the Acid Rain Task Force* (Bulletin 809, Connecticut Agricultural Experiment Station, New Haven, 1983).
5. C. Bernabo, letter to the Committee on Energy and Commerce, U.S. House of Representatives, 22 February 1984.
6. *Acid Rain and Transported Air Pollutants—Implications for Public Policy* (Office of Technology Assessment, Washington, D.C., 1984); *The Integrated Lake-Watershed Acidification Study*, vol. 4, *Summary of Major Results* (Electric Power Research Institute, Palo Alto, Calif., 1984).

High-Technology Agriculture

I liked Jean Mayer's editorial "Preventing famine" (15 Feb., p. 708). He makes everything sound so simple. American and Canadian experts, like the White Knight in Alice in Wonderland,

26 APRIL 1985

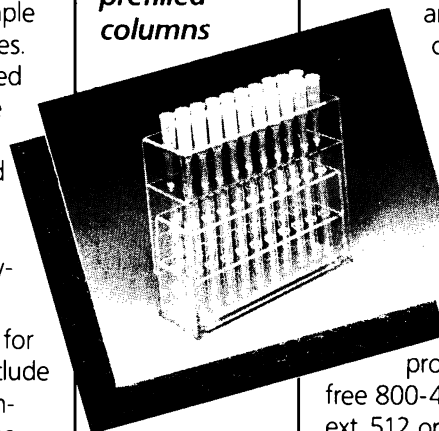
SAMPLE CLEANUP MADE SIMPLE

Don't slow down your analysis with tedious, time-consuming sample preparation techniques. Use Bio-Rad's pre-filled Poly-Prep™ disposable columns instead. They're fast, easy, and inexpensive for preparing samples for HPLC, IC, or any analytical method.

Major applications for Poly-Prep columns include desalting, pre-fractionation of carbohydrates and organic acids, metal concentration, and anion and cation removal or concentration.

As the leader in ion exchange technology,

With Bio-Rad
prefilled
columns



Bio-Rad offers you a growing selection of anion and cation columns, as well as complete methods for many applications. Call our technical experts with your applications problems, toll free 800-4-BIORAD ext. 512 or 317.

BIO-RAD

Bio-Rad Laboratories
2200 Wright Avenue
Richmond, CA 94804

Circle No. 45 on Readers' Service Card

TechWriter™ scientific WP lets your secretary



Actual unretouched photo of TechWriter screen presentation

Available for: • *DEC Rainbow
• *IBM PC and XT • *Apple II plus
• *Apple IIe • Some IBM compatibles
• North Star Advantage • Visual 1050
• Seesqua Chameleon *Registered trademarks

CMI
Software

1395 Main St., Waltham, MA 02154
617-899-7244

Please send information on TechWriter to:

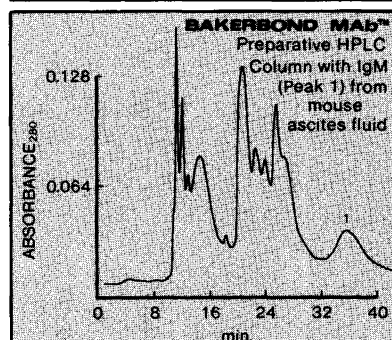
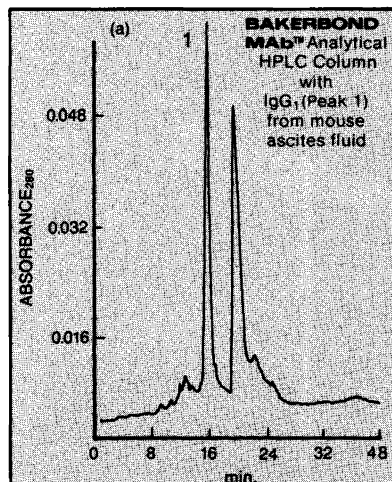
Name _____
Company _____
Street _____
City _____
State _____ Zip _____
Phone _____

Circle No. 201 on Readers' Service Card

391



Purify
Monoclonal Antibodies
with
**BAKERBOND
Mab™**
HPLC Columns



BAKERBOND Mab™ HPLC Columns give a fast, one-step purification of monoclonal antibodies.

- ... Check their advantages
- Speed
 - Versatility
 - High Capacity
 - High Sample Recovery and Purity
 - Analytical, Preparative and Production-scale columns offered

and then call or write J.T. Baker Research Products, for more information.

J.T. BAKER RESEARCH PRODUCTS

222 Red School Lane
Phillipsburg, NJ 08865 USA
(201) 859-2151

Outside New Jersey (800) 526-0239

Gross Gerau, W. Germany • Deventer, Holland
Mexico City, Mexico • Singapore • Sydney, Australia

©J.T. Baker Chemical Co. 1984

will now gallop off in all directions and plow up the continent of Africa with huge American tractors, scattering artificial fertilizers and pesticides as they go along. But what happens in those areas where it simply does not rain? And will African rulers allow all this intervention? People with substantial experience in high-technology agriculture are to be found in large numbers in Africa and they should be consulted. There is also a great deal of knowledge about possible increased food production in Africa. I have no doubt that American agriculture is efficient in the short run. But how good is it on a sustained-yield basis? What about the decline of irrigation farming based on the Ogallala aquifer in the United States and the increasing soil erosion all over the world, especially in Africa? How much will American-style agriculture cost in Africa, and who will pay for it? Already many Canadian and American farmers are going bankrupt because of low food prices. African rulers, with some noteworthy exceptions, have appeared to be more interested in cash crops than in food production.

Many years ago Kwame Nkrumah tried collective farming in Ghana, complete with large tractors. The effort was a disaster. There have also been attempts at collective farming in Ethiopia and Mozambique. These countries are now asking for food aid. The Soviet Union, the mother and father of collective farming, last year imported 50 million metric tons of grain. So we must conclude that there are different varieties of "high-technology" agriculture. Some work, while others are a flop.

The population of Africa was about 140 million in 1930 and is about 540 million now. Population growth is resolutely outstripping food supplies. Can we change total cultures in Africa? How will we (the West) be given this power?

W. HARDING LE RICHE

Department of Preventive Medicine
and Biostatistics, University of Toronto,
Toronto, Ontario M5S 1A8, Canada

Infrastructure

In his editorial of 1 March (p. 991), Erich Bloch reports guidelines for fiscal year 1986 budget development at the National Science Foundation. Specific reference is made to science and engineering infrastructure as one of the three major priorities. Renewed concern at the NSF for the people who will advance science and engineering is laudable and already visible. Recent review of the

NSF's support for undergraduate institutions during fiscal year 1984 by a review group representing a broad spectrum of institutions and associations found that the first year of the NSF's effort to encourage and support research at these colleges and universities had proceeded quite well. Working with funding targets and through the dedicated efforts of its staff, the NSF awarded 141 grants in its Research in Undergraduate Institutions Program, 75 of which were to first-time awardees. Although the success ratio for funded proposals was less than the NSF average, review priorities were at least comparable. As a consequence of NSF encouragement a new, previously neglected, group of qualified research scientists has been brought into the mainstream. Their efforts, and the undergraduate students whom they inspire, offer renewed optimism for this nation's ability to retain research preeminence in science and engineering.

MICHAEL P. DOYLE

Department of Chemistry, Trinity
University, San Antonio, Texas 78284

Nitropyrenes

A minor error mars the otherwise very informative account by Eliot Marshall of the Asilomar Conference convened by the Health Effects Institute (News and Comment, 15 Feb., p. 729). In that article, 2-nitropyrene is identified as a "highly potent" carcinogen that is present in diesel exhaust and was "recently" removed from xerographic toners. Actually, 2-nitropyrene is probably not an anthropogenic chemical and thus was not present in toners. Reference should have been made to 1,6- and 1,8-dinitropyrene, which are indeed carcinogens and were removed from xerographic toners 5 years ago (H. S. Rosenkranz *et al.*, Reports, 29 Aug. 1980, p. 1039). Subsequently these dinitropyrenes, as well as 1-nitropyrene and other nitrated polycyclic aromatic hydrocarbons, have been found to be ubiquitous products of incomplete combustion processes and have been detected not only in diesel exhaust but also, for example, in fly ash, the emissions of kerosene home heaters, and grilled chicken yakitori.

ROBERT MERMELSTEIN

Joseph C. Wilson Center for
Technology, Xerox Corporation,
Webster, New York 14580

HERBERT S. ROSENKRANZ

Department of Environmental Health
Sciences, Case Western Reserve
University, Cleveland, Ohio 44106