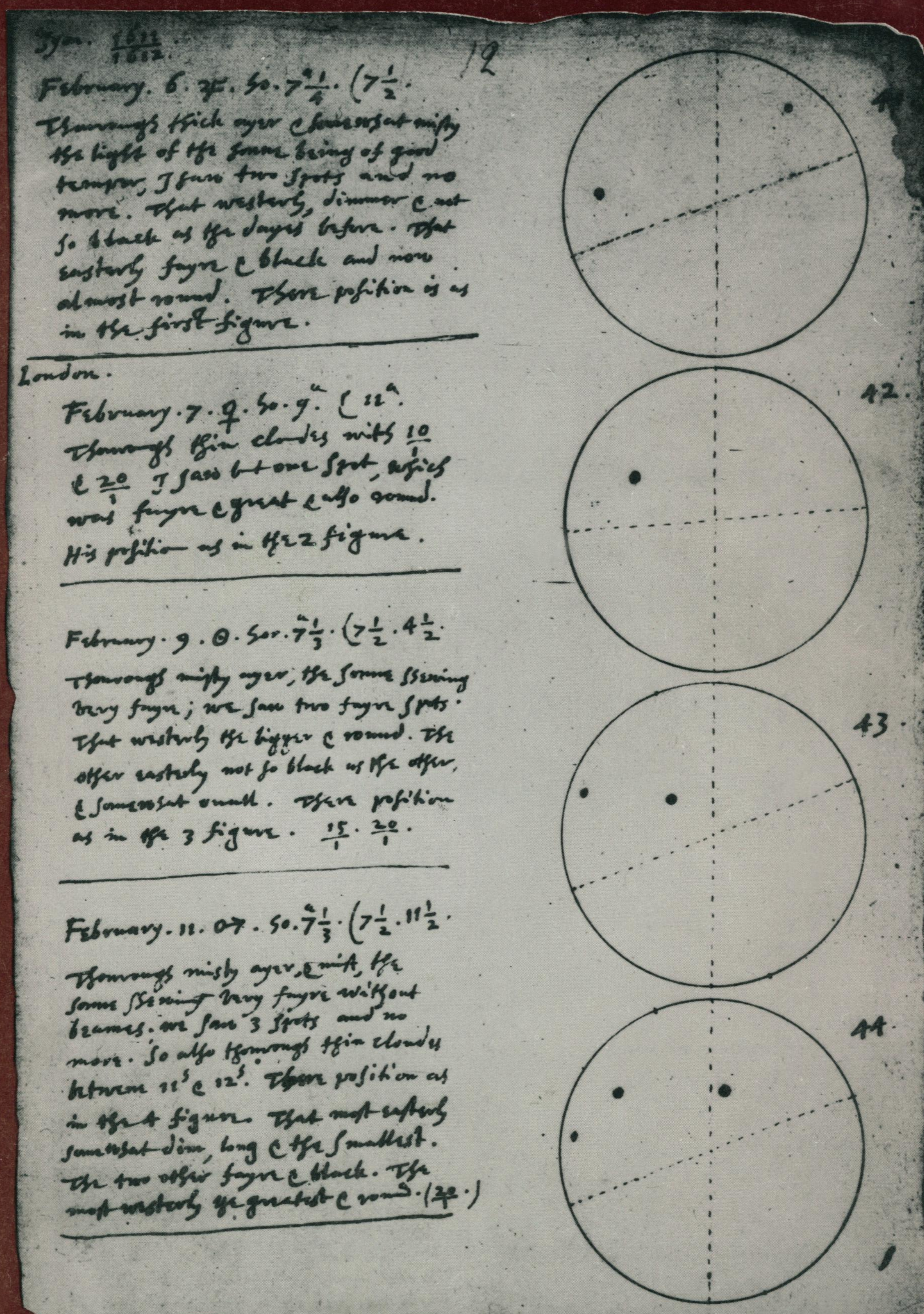
8 December 1978 • Vol. 202 • No. 4372 $1.50

SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE


Syon. 1611/1612. 12

February. 6. ♃. So. 7 1/4. (7 1/2.
Through thick ayer somewhat misty the light of the sunne being of good temper, I saw two spots and no more. That westerly, dimmer & not so black as the dayes before. That easterly fayre & black and now almost round. There position is as in the first figure.

London.
February. 7. ♀. So. 9a. & 11a.
Through thin cloudes with 10/1 & 20/1 I saw but one spot, which was fayre & great & also round. His position as in the 2 figure.

February. 9. ☉. Sor. 7 1/3. (7 1/2. 4 1/2.
Through misty ayer, the sunne seeming very fayre; we saw two fayre spots. That westerly the bigger & round. The other easterly not so black as the other, & somewhat small. There position as in the 3 figure. 15/1. 20/1.

February. 11. ♂. So. 7 1/3. (7 1/2. 11 1/2.
Through misty ayer & mist, the sunne seeming very fayre without beames. we saw 3 spots and no more. So also through thin cloudes between 11s & 12s. There position as in the 4 figure. That most easterly somewhat dim, long & the smallest. The two other fayre & black. The most westerly the greatest & round. (20.)

41. 42. 43. 44. 1

Announcing the Beckman J2-21... a centrifuge you'll love.

The J2-21 is an exciting new high-speed centrifuge. It keeps the components that made the 21,000-rpm J-21C so reliable—and adds proven features from other Beckman centrifuges. The result: by far the finest high-speed centrifuge ever built.

The J2-21 features: a fast-accelerating, high-torque drive; variable power-braking system; superior sound suppression; easy temperature setting; new, automatic vacuum system; rotor imbalance detector; easy-opening counterbalanced door; compact cabinet; built-in speed calibration; 2° to 40°C operation; electronic door interlock; and it is UL listed and CSA approved.

There are eleven J2-21 rotors to choose from, including the new JA-17 which spins fourteen 50-ml tubes, and the new JA-20.1 which spins thirty-two 15-ml tubes.

The J2-21: it gives you reliability, quiet efficiency unmatched by any other centrifuge, and it's backed by Beckman sales and service—worldwide.

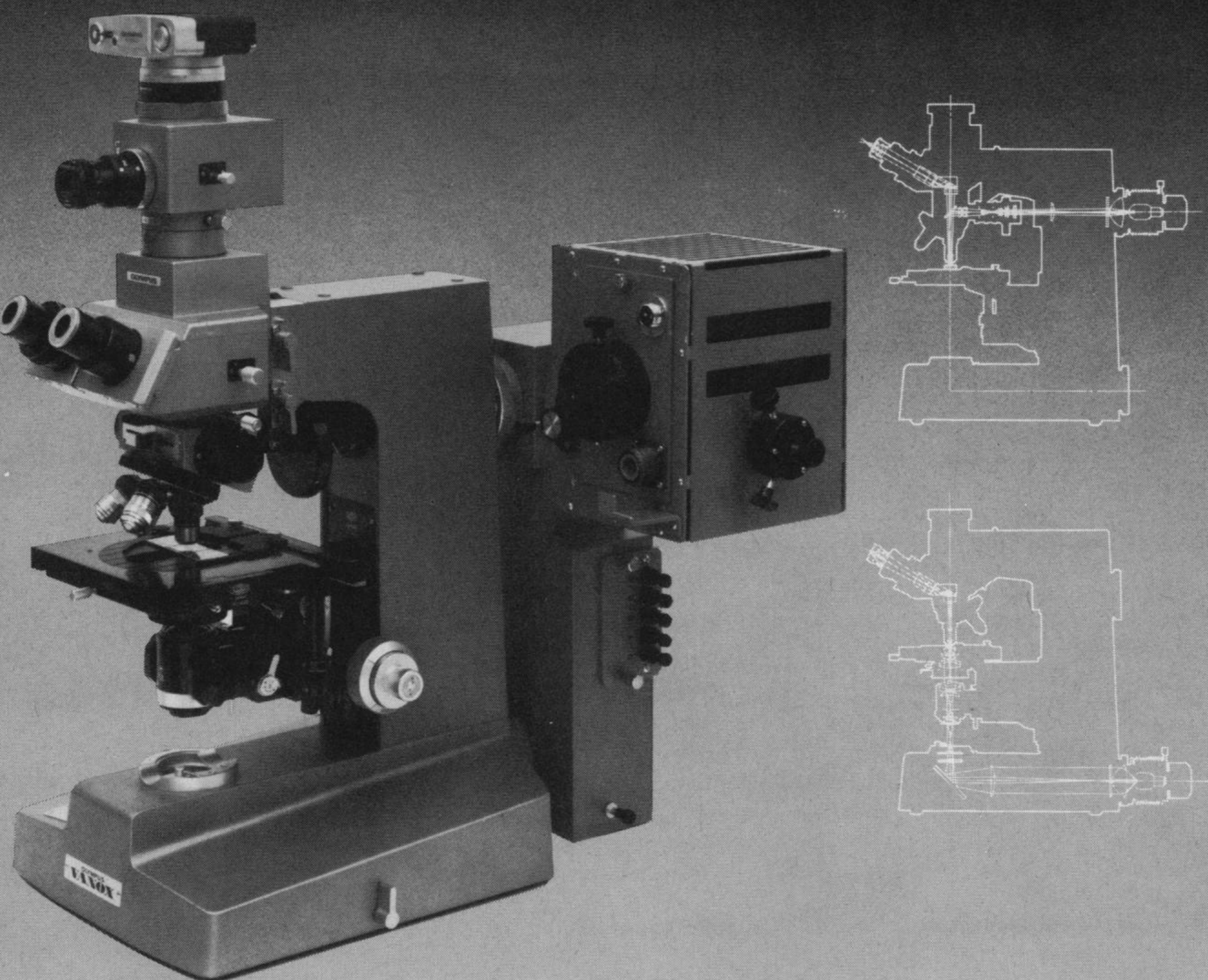
Send for brochure SB-366 to Beckman Instruments, Inc., Spinco Division, 1117 California Ave., Palo Alto, CA 94304.

BECKMAN®

Circle No. 147 on Readers' Service Card

OLYMPUS VANOX

Modular, universal research microscope system.



This is the most versatile research microscope system ever developed. Naturally, by Olympus. Modern design, rugged squareline stand with the broadest choice of application-oriented options that allow you to customize the microscope to your needs.

Choose transmitted and/or reflected light, fluorescence, phase contrast, differential interference contrast, Hoffman modulation contrast. Select a tungsten, halogen or mercury arc light source, to name a few.

Use any of a wide range of color-corrected, hard coated achromats, plan achromats, fluorites, apochromats or plan apochromats. Combine with our automatic camera system, the PM-10, to obtain flawlessly sharp photomicrographs, 35mm or large format.

It's a virtually unlimited system designed with you and your applications in mind. And all this at unprecedented economy. For details, write Olympus Corporation of America, 4 Nevada Dr., New Hyde Park, NY 11040.

OLYMPUS
SEEING BEYOND MAN'S VISION

In Canada: W. Carsen Co., Ltd., Ontario.

ISSN 0036-8075

8 December 1978

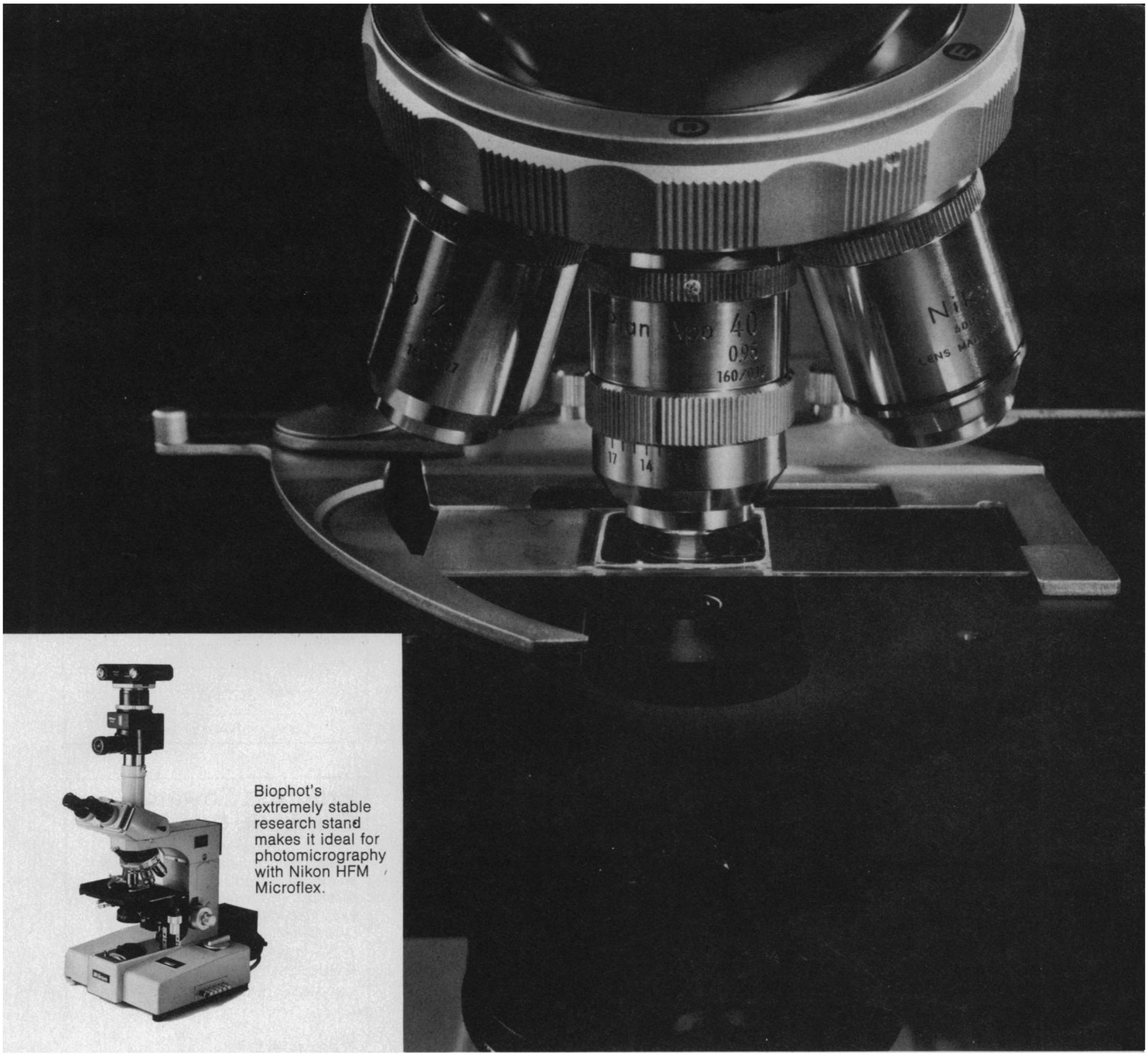
Volume 202, No. 4372

SCIENCE

SCIENCE is published weekly, except the last week in December, but with an extra issue on the third Tuesday in September, by the American Association for the Advancement of Science, 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Now combined with **The Scientific Monthly®**. Second-class postage paid at Washington, D.C., and additional entry. Member rates on request. Annual subscriptions $65; foreign postage: Canada $10; other surface $13; air-surface via Amsterdam $30. Single copies $1.50; $2 by mail (back issues $3) except **Guide to Scientific Instruments** $6. School year subscriptions: 9 months $50; 10 months $55. Provide 6 weeks' notice for change of address, giving new and old addresses and postal codes. Send a recent address label, including your 7-digit account number. **Postmaster: Send Form 3579 to *Science*, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005.** ***Science*** is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

COVER

Page from Harriot's manuscript showing drawings of the sun numbered 41 through 44. The first observation is from his residence at Syon House, 6 February 1612 (Julian calendar, year beginning 1 January). The symbol following the date identifies the weekday as Thursday; the hour is $7^1/_4$. The subsequent three observations are from the London house of his close friend Sir Walter Raleigh. Harriot, elsewhere, has noted this to be 8 miles north and $4^1/_4$ miles west of Syon. See page 1079. [By permission of Lord Egremont and Leconfield, Petworth House, Sussex]



Biophot's extremely stable research stand makes it ideal for photomicrography with Nikon HFM Microflex.

The Nikon Biophot gives you everything you could ask for in a research microscope.

Plus some of what you've hoped for.

To create a medical and biological research microscope as advanced as the Nikon Biophot, Nikon started right from the basics. The Biophot's CF optical system incorporates Nikon's new Extra-low-Dispersion (ED) glass, integrated multilayer coatings, and a revolutionary new lens design which completely corrects for chromatic aberration within the objective itself. Old-style compensating eyepieces are no longer needed to achieve total chromatic correction.

The result: you get the sharpest, clearest images you have ever seen, plus enhanced image resolution, contrast, and field flatness from edge to edge, even with an ultra-wide field.

The Nikon CF optical system has been applied to the Biophot's new CF achromat, plan achromat, fluorite, plan fluorite, and plan apochromat objectives with magnifications available from 1x to 100x.

With all of its technological advancement, the Biophot is a human-engineered instrument of remarkable versatility with a complete range of accessories to extend its applications, and complete photomicrographic capability.

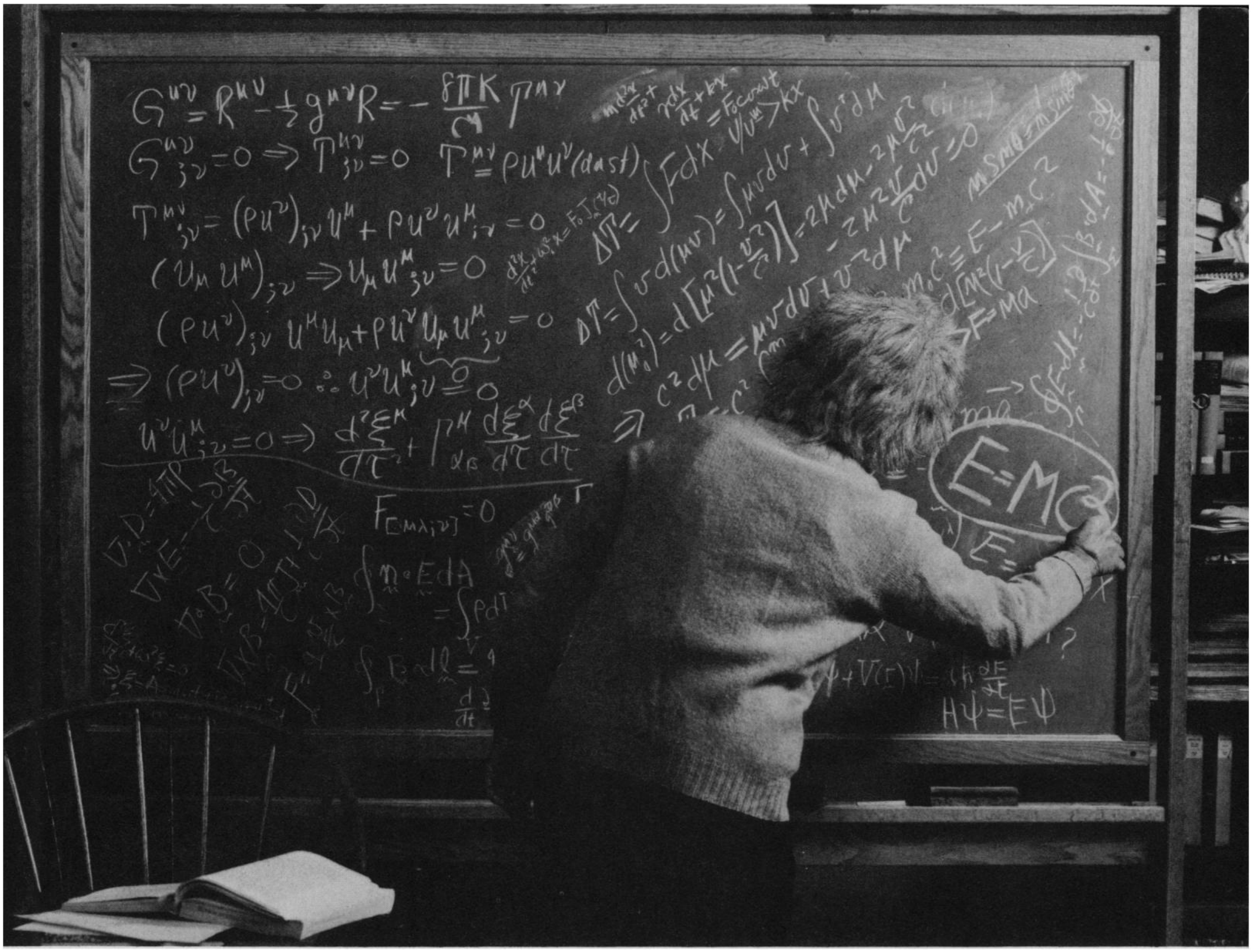
For more information, contact Nikon Incorporated, Instrument Division, Ehrenreich Photo-Optical Industries, Inc., 623 Stewart Ave., Garden City, N.Y. 11530; (516) 222-0200.

Look to *Nikon*

ニコンとご用命下さい

Blicken Sie auf Nikon

Circle No. 151 on Readers' Service Card



WITH OUR ARRAY PROCESSING MINIS, ALBERT WOULD HAVE DISCOVERED RELATIVITY AND STILL HAD TIME TO EXPLAIN IT.

Extra time is what our two integrated array processing minicomputers, AP/130 and ECLIPSE S/250, give you. They're a lot faster than plain minicomputers. Either Data General system can perform 1024 point complex floating point FFTs in less than 10 milliseconds. The ECLIPSE S/250 computer goes even further. It's capable of performing double precision adds in 600 nanoseconds and double precision SINE in 25.3 microseconds. Which makes it the world's fastest FORTRAN minicomputer.

Data General integrated array processing minis save money as well as time. The AP/130 actually costs less than some separate AP units. Less, in fact, than many comparable general purpose minicomputers without array processing. And either system saves you the expense and trouble of designing and programming a special interface.

System integration has other advantages. For example, our CPU can address AP memory directly. Software development is also completely integrated, with the array processing capability fully supported under RDOS and FORTRAN 5. And of course you get Data General design, engineering, testing and support for the whole system. When you need the speed of an array processor built together with the flexibility of a mini for a wide range of scientific and research applications, such as digital signal processing, structural design and simulation, and image processing, we can make you look like a genius. Return the coupon below for AP/130, S/128 details, or call (617) 366-8911, Ext. 4735.

Send information on ☐ Array Processors ☐ S/128
☐ Scientific Computers ☐ Have someone contact me.

Name

Title

Company

Tel. No.

Address

City State Zip

Data General Corporation, Westboro, MA 01581, (617) 366-8911 Data General (Canada) Ltd., Ontario. Data General Europe, 61 rue de Courcelles, Paris, France, 766.51.78. Data General Australia (03) 89-0633. Data General Ltda. Sao Paulo, Brazil 543-0138. Data General Middle East, Athens, Greece, 952-0557.

Data General

We make computers that make sense.

Circle No. 187 on Readers' Service Card

The convenient, superstable Photo-Invertoscope: IM-35

A new generation of inverted microscopes.

The IM-35 does for inverted photomicrography what the Zeiss Photomicroscope does for upright. It takes the trouble out of highest quality photomicrography.

For stability and easy access to stage and specimen, the integrated automatic 35mm camera is at the base of the instrument, not added on the top.

Notice how the lamp swings away to clear the entire stage area. This simplifies exchange of specimens and makes it easy to lift off the rigidly supported stage for ready access to the objectives. And the image is upright and side-correct to make manipulation easier.

Ideal for fluorescence

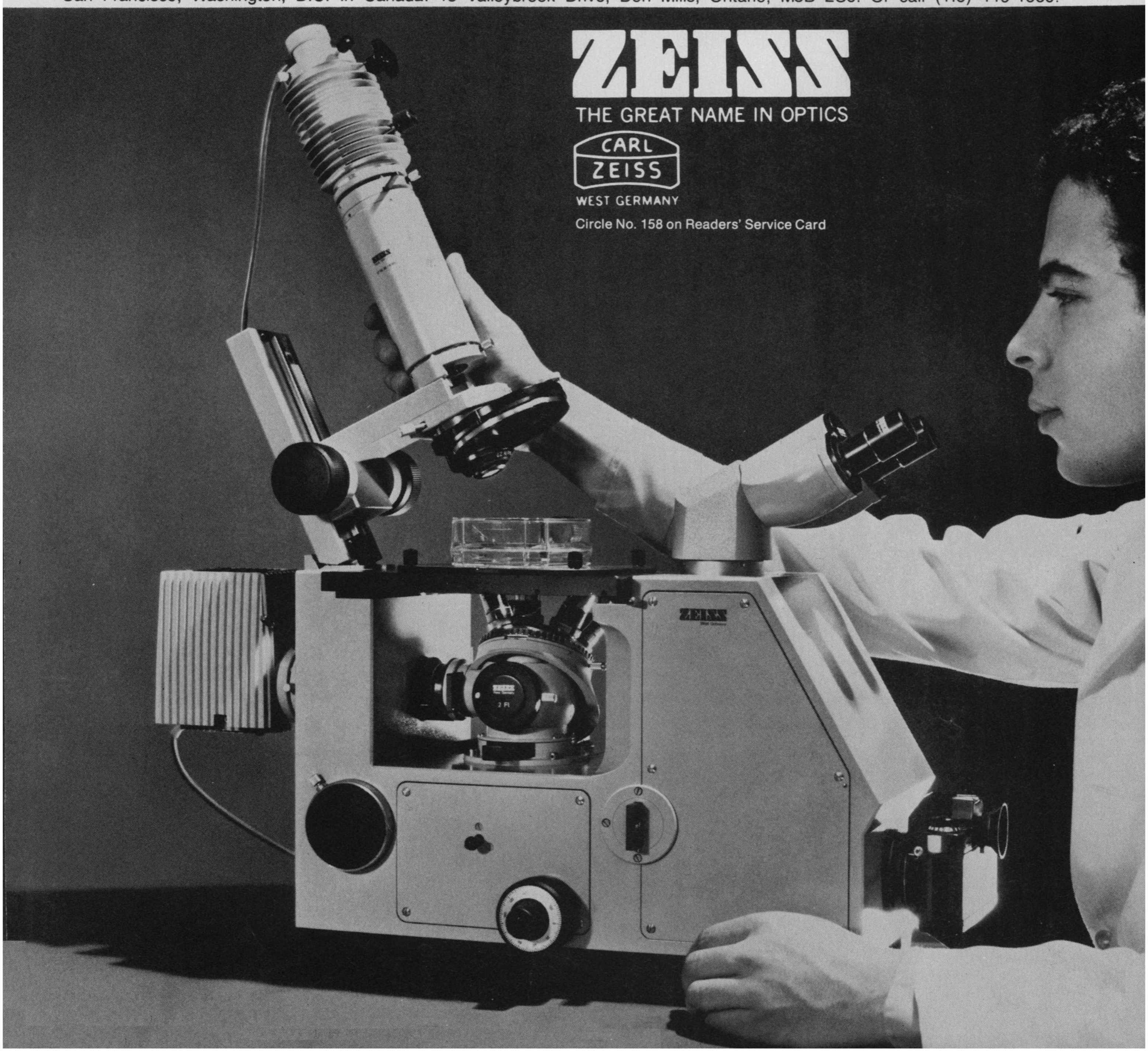
The Photo-Invertoscope IM-35 is designed to perform a maximum of tasks at minimum cost. For example, no expensive accessories are needed to do fluorescence microscopy - just a lamp, lamp mount, and reflector.

With the full line of interchangeable Zeiss optics and accessories available, the IM-35 is the ideal combination of quality, convenience, and economy in an inverted microscope.

Write or call for complete details today.

Nationwide service

Carl Zeiss, Inc., 444 5th Avenue, New York, N.Y. 10018 (212) 730-4400. Branches: Atlanta, Boston, Chicago, Houston, Los Angeles, San Francisco, Washington, D.C. In Canada: 45 Valleybrook Drive, Don Mills, Ontario, M3B 2S6. Or call (416) 449-4660.



Congressional Science Fellowships

Applications Invited

The Congressional Science and Engineering Fellow Program, coordinated by the American Association for the Advancement of Science, provides an opportunity for accomplished and societally aware postdoctoral to mid-career scientists and engineers to participate in and contribute to the public policy-making processes within the Congress for approximately 1 year. The Fellows function as special legislative assistants within the congressional staff and also participate in a seminar program coordinated by AAAS. Awards range from $18,000 to $20,000 per annum and include nominal moving and travel expenses. Fellowships begin 1 September 1979.

Cooperating sponsoring societies now are beginning the selection process for Fellows for the 1979–1980 year. Applicants should contact the sponsors listed below directly—some deadlines fall as early as mid-January 1979.

American Association for the Advancement of Science
Director, Congressional Science and Engineering, Fellow Program, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036

American Association for Clinical Chemistry
Ms. Ellen Fabricant, Suite 1042, 1725 K Street, NW, Washington, D.C. 20006

American Chemical Society
Dr. Annette Rosenblum, 1155 16th Street, NW, Washington, D.C. 20036

American Geophysical Union
Dr. Fred Spilhaus, 1909 K Street, NW, Washington, D.C. 20006

American Institute of Aeronautics and Astronautics
Mr. Johan Benson, Suite 606, 1625 Eye Street, NW, Washington, D.C. 20006

American Physical Society
Dr. Mary Shoaf, 333 East 45 Street, New York, N.Y. 10017

American Psychological Association
Dr. Joann Horai, 1200 17th Street, NW, Washington, D.C. 20036

American Society for Microbiology
Dr. Robert F. Acker, 1913 Eye Street, NW, Washington, D.C. 20006

American Society of Mechanical Engineers
Mr. William P. Miller, Jr., Washington Representative, Suite 603, 2029 K Street, NW, Washington, D.C. 20006

Acoustical Society of America
Ms. Betty Goodfriend, 335 East 45 Street, New York, N.Y. 10017

Biophysical Society (in liaison with the **American Society for Photobiology**)
Dr. E. L. Hess, 9650 Rockville Pike, Bethesda, Md. 20014

Conference Board of the Mathematical Sciences
(coordinator for Fellowship sponsored jointly by the American Mathematical Society, Mathematical Association of America, and Society of Industrial and Applied Mathematics) Dr. Truman Botts, Suite 457-8, 1500 Massachusetts Avenue, NW, Washington, D.C. 20005

Duke University Round Table on Science and Public Affairs
Dr. William Bevan, Duke University, Durham, N.C. 27706

Federation of American Societies for Experimental Biology
Mr. Walter Ellis, 9650 Rockville Pike, Bethesda, Md. 20014

Institute of Electrical and Electronic Engineers
Mr. Ralph Clark, IEEE Washington Office, 2029 K Street, NW, Washington, D.C. 20006

Optical Society of America
Dr. Jarus Quinn, Suite 620, 2000 L Street, NW, Washington, D.C. 20036

Society for Research in Child Development
Dr. Eileen Blumenthal, 815 15th Street NW, Washington, D.C. 20005

For additional background information, write: **Director, Office of Special Programs, AAAS, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036.**

ing standing—that NEPA expanded the "zone of interests to be protected"—is arguable. However, because environmental, esthetic, and amenity values were already included in the zone after the *Scenic Hudson I* and Mineral King (Sierra Club *v.* Morton, 405 U.S. 727) decisions, as I argued and Liroff concedes, I am not sure what NEPA added to the zone. Liroff relies on the *SCRAP* case to show that NEPA gave *needed* reinforcement to the expanded standing already achieved. This point is both debatable and marginal.

Culhane concurs with my arguments regarding rational decision-making. Liroff does not, but it is not clear why he finds them "misdirected." I argued that NEPA elaborators erred by assuming that environmental decision-making by federal agencies "is rational, or can be." Liroff suggests that I misrepresented the elaborators' assumptions but then appears to support my analysis. The difference between us is that Liroff appears to believe the EIS can make decision-making less incremental and more rational, while I see the EIS's simply becoming a part of the inherently incremental process.

Liroff and I seem to agree that NEPA has little to do with the Freedom of Information (FOI) Act, but we disagree about whether the FOI right to agency documents is more important than the requirement that agencies publish relevant information in an EIS. This may be best resolved by consideration of appropriate tactics in specific situations, although Liroff's point that proceeding under the FOI Act requires considerable citizen effort is certainly well taken. I would counter, however, that the right to demand is critical both for obtaining information not published in an EIS which might otherwise be unavailable, and for expanding the information which agencies now make available "voluntarily," knowing that they may be forced to release it. If the EIS's do become significantly shorter because of the regulations proposed recently by the Council on Environmental Quality, this distinction may become more important.

Liroff's comments on pure versus applied research do not reflect my major points regarding data. Perhaps I invited trouble by using those terms. My concern was with adversarial research—science used to support a preferred outcome in a short time in an advocacy situation—as much as with basic research. That point was a small part of a larger issue. Moreover, I do not blame NEPA for the inadequacies of the "youthful" field of ecology; but the fact that the tools to do the analysis required by the EIS concept are unavailable raises important questions about the EIS. Liroff seems to concur, at least in part. My main point is that simply amassing and circulating data, inaccurate or otherwise, is not necessarily productive. In the specific area of influencing agency policy-making, the utility of circulating data must be weighed against the decision-maker's ability to absorb it; the need to make value judgments about competing economic, social, and political goals; and the tendency to select and interpret data in terms of existing ideas and biases. Data do not reveal the "correct" decision, and there is a limit to how much data we can use, especially in decisions typically and appropriately based on many nontechnical considerations.

Liroff and Culhane both take exception to my discussion of public involvement. I continue to believe, however, that if we are urged to applaud NEPA because it has improved citizen access to agency deliberations, it is more than a "legalistic" point to ask whether the EIS process is necessary to accomplish the goal or whether other approaches are preferable or adequate; and whether EIS-based discussions are meaningful and an improvement over previous public involvement programs. Both critics concede the obvious, that public involvement was well under way before NEPA was passed (Liroff) and that other statutes and programs provide a more comprehensive base for public involvement (Culhane). If pointing out these facts "seems to debunk NEPA public participation," as Culhane states, then I can only respond that it is about time. Culhane further argues that "wider public access is . . . important as the predecessor of a more balanced set of public constituencies of the natural resources agencies." I agree, and made the same point in the article: "The citizen involvement movement of the 1960's broadened agencies' focuses" because "new groups representing new values" participated in agency deliberations. I was neither questioning the importance of diverse constituencies nor missing the "logic of public participation" but asking whether NEPA supplemented the movement of the 1960's or undercut it. Although Culhane describes my analysis as "belittling" agency efforts, he states that the exercise is often "frustrating" and "mundane." I believe that NEPA replaced the developing opportunity for open, informal dialogue with formal, repetitious, and adversarial proceedings that frequently resemble elections rather than discussions.

Finally, both Liroff and Culhane make the point that the environmental movement did not shut down from 1970 to 1978 and concentrate on EIS processing. Of course not. I never suggested that it did. I simply stated that preoccupation with the EIS wastes effort that could better be spent in more substantive pursuits.

These letters indicate that the time is ripe for fundamental critique and assessment of the EIS process. Liroff and Culhane are among the most familiar and articulate of NEPA advocates. Yet, after sorting through my article, their criticisms, and what each or both of them conceded, I find that much of the ground traditionally claimed for the EIS is surrendered and many of the most fundamental aspects of the process are exposed to serious question. This is more significant, I hope, than counting coups in the Letters section. My hope is encouraged by the fact that no one has taken issue with the two major points in my article, which I identified as "questionable assumptions" underlying all the claims about the virtues of the NEPA process. First, the assumption that environmentally unsound decisions are the result of a bureaucratic system that fails because administrators lack information and do not want to make sound decisions; and second, the assumption that the public and the courts are capable of identifying environmentally correct decisions or forcing the agencies to do so. If these are indeed acceptable as assumptions underlying the EIS process, then the whole enterprise is in doubt. It is clear, in my opinion, that the causes of environmentally unsound decisions are more complex and profound than bureaucratic incompetence. Moreover, I see nothing to suggest that either the public or the courts are relatively more competent—less biased, better informed, or less implicated in the profundity and complexity of our problems—to make environmentally sound decisions.

If this analysis is correct—and I believe it is—then we should reflect more closely than in times past on the utility of the EIS, transcending the issue of how to improve the documents and focusing on such questions as, What are the goals of this process? What problems do we seek to solve? Are they the real problems? And can we solve them in an easier, cheaper, or better way?

SALLY K. FAIRFAX
Department of Conservation and Resource Studies, College of Natural Resources, University of California, Berkeley 94720

We've gotta be crazy.

Crazy like a fox.

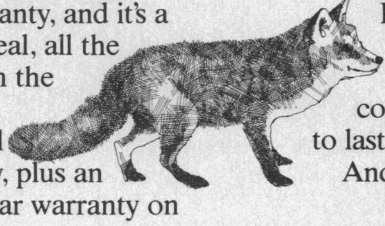
Because at Revco we know that the work you're doing is far too important to be taken lightly.

We also know that if you've got the assurance of dependability in writing, you can get on with your work with greater peace of mind.

So, we've put into writing the industry's first five-year limited no-nonsense warranty, and it's a genuinely good deal, all the way down through the fine print.

You get a full one-year warranty, plus an additional four-year warranty on sealed system parts and labor, from our 200 Revco service centers coast-to-coast.

It's the *number one warranty* in the entire freezer industry, and it's precisely what you'd expect from the *number one company* in the entire scientific freezer industry.



Because if we didn't build our freezers to last longer, we couldn't guarantee them to last longer.

And every Revco freezer is listed by Underwriters Laboratories, Inc. - not just the components but the entire freezer.

We've been doing business that way for 40 years. And we expect to keep on doing it the same way.

For more information and a copy of our new full-color catalog, call or write us at 1100 Memorial Drive, W. Columbia, South Carolina 29169. Area Code 803/796-1700. TWX: 810-666-2103. Cable: Revco.

REVCO

The world's leader in ULTra-Low® temperature equipment.

Revco Regional Offices Northeast: (215) 547-0150 Midwest: (414) 781-3639 Western: (714) 661-6588

Circle No. 180 on Readers' Service Card

8 December 1978, Volume 202, Number 4372

SCIENCE

Margaret Mead

If anything is certain, it is that Margaret Mead did not go gently into the night. At 77, there was too much still to be done, too many budding young scholars needing a push or a grant from her earnings from writing and lecturing, and too much human and political foolishness to be scolded. Life was her great adventure and she went to the ends of the earth to find its meanings. A determined popularizer of the human side of science and a foe of pretentiousness, she waited all too long before the establishment unbent and granted her belated honors.

Margaret Mead, despite her deep religious sense, would not welcome a churchyard eulogy. She would tell us that if we really cared, we would take up where she left off. Continuity of her work and interests would mean something, particularly the encouragement of field research on the life-styles and social systems of remote and depleting communities bending before the rising winds of modernism. She spoke often and with feeling about how little time there was left, not knowing how little remained for herself. In what she wrote, she fused her scholarship with a cross-cultural message that helped her own countrymen to understand themselves.

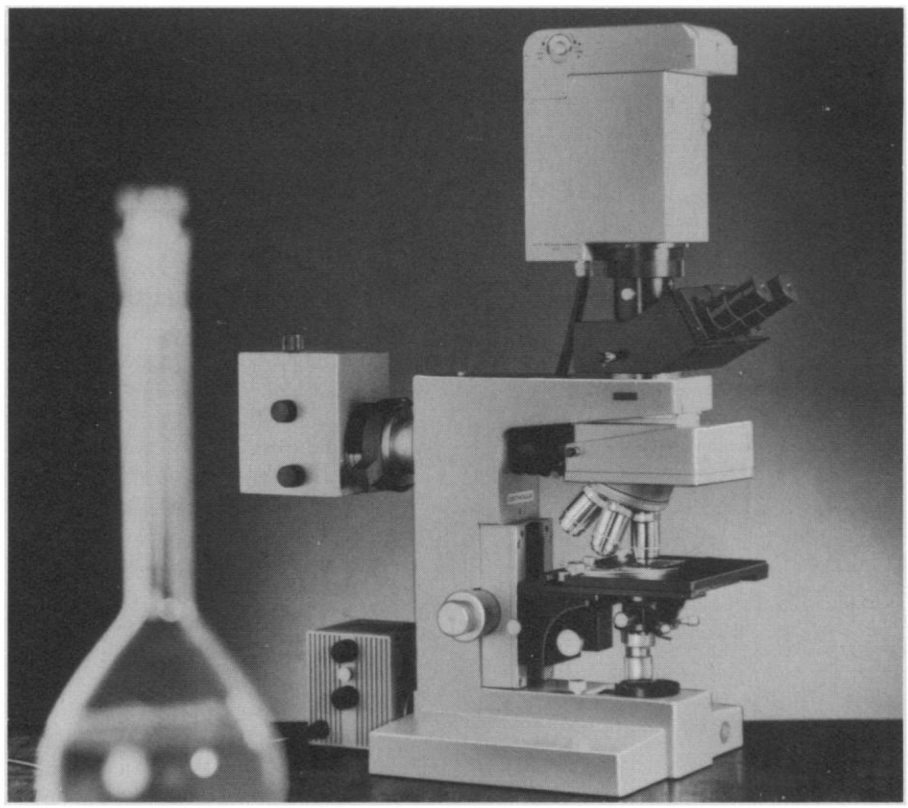
Science and humanities came together at Margaret Mead's hands. Science was a method for seeing, in an ordered pattern, the elements of social behavior in diverse environments—not simply as sterile reporting but as capturing the human experience. She used her discipline to articulate dignity and reverence for life and the universal human struggle. And this led her straight to sensing the interdependence of cultures, to the view that we must hang together through the bridging of philosophies, traditions, arts, literature, and institutions. She did not decry the progress of science and technology but hailed the possibilities of satellites, computers, and aerospace technology as tools of science for sharing education, knowledge, beauty, and communication on the global scale. Margaret Mead could bury herself in a fishing village of 100 souls and still keep her perspective of a swarming and predatory larger world with equal capacities for goodness and mischief, and dream that it might yet save itself.

When Margaret Mead made up her mind that something was worth doing, she gave it all that she had. Such was the case with the AAAS. Through the years of her service on committees and on the Board of Directors, and later as president, board chairman, and retired president, she was at the forefront of efforts to beat off parochialism in science and to get the most out of interdisciplinary thought and communication. The regularity of her attendance at board meetings was phenomenal, and one remembers how she would fly nonstop from the other side of the world, fighting fatigue and sickness, to take her seat at the table on time. She had made a promise, and her promises were her bond.

Margaret Mead's death came as the Board of Directors of the AAAS arrived in Peking for a visit and an experience that would have absorbed her completely. Science, which for years had been underground in China, suddenly was in the foreground. More than once in the first days of the visit, Chinese scholars broke the ice with references to Margaret Mead and her work as a scientist with a knack for getting through to people. And when the telegram came, the sadness was not confined to the visiting Americans. Margaret Mead would have understood, better than most, the traumas through which China has gone in what must seem an endless century. She would have grasped the implications of overlaying instant modernization on a system that in countless ways is still rooted in the ages. What a field laboratory for a cultural anthropologist!

In the attic rooms of the American Museum of Natural History, where for 55 years Margaret Mead dispensed learning, opinion, and an occasional thunderbolt, an ending is fused with a beginning. An extraordinary vitality is stilled and some light has dimmed. The unfinished notes and memorabilia lie all about. The continuity is interrupted. It need not be broken, if we care enough. The idea of moving "Towards a Human Science," the theme of Margaret Mead's presidential address to the AAAS in 1976, is there to be seized.—WILLIAM D. CAREY

Leitz lights the way in fluorescence microscopy. Fifty straight years.



5741

The field of fluorescence microscopy has benefited from intensive development in the past fews years.

And no other company has contributed more innovations to microscopy than Leitz®.

Superior brightness.

Today's fluorescence microscopes have highly fluorochrome specific filter systems and superior optics, resulting in tremendously enhanced performance.

Multi-layer coating methods lead to asymmetric interference filters which permit excitation of fluorescence dyes at their absorption maximum, resulting in superior image brightness.

An example is the KP500 filter, which excites the FITC molecule at 490nm and which has a steep enough cutoff toward the longer wave lengths to permit observation of FITC fluorescence at 526nm.

Narrow band excitation by the use of KP500 together with an edge filter eliminates non-specific fluorescence.

More powerful light sources, such as the HB0100 and XB075, can be utilized for incident light fluorescence increasing image brilliance even further.

Modular filter system.

Entire filter systems consisting of exciter and barrier filters are now contained in one module. One can quickly be switched to three others or interchanged against other application-specific modules, Leitz features eighteen in all.

And the elimination of the darkfield condenser by using incident light fluorescence adds convenience and improves the brightness of the fluorescence image.

The full aperture of the objective can be utilized and the specimen must be immersed only at the top.

Special fluorescence objectives.

Microscope objectives are now available which have been specially computed to allow for fluorescence microscopy without any compromise. Oil immersion. objectives from 10 to 100x and water immersion objectives from 25 to 100x. Most are available as phase contrast objectives.

Leitz has been a world leader in the total development of the fluorescence microscope.

We'd like to demonstrate a Leitz to you.

Contact E. Leitz, Inc. Dept SC 128 Rockleigh, New Jersey, 07647.

Leitz **Microscope design at its best.**

Circle No. 173 on Readers' Service Card

PRODUCTS and MATERIALS

Atomic Absorption Spectroscopy Lamps

The Visimax series of hollow-cathode lamps for atomic absorption spectrophotometers are labeled so that the name of the element is visible from any direction. They have a 38-millimeter diameter and an octal plug. Standard lamp adaptors permit the use of Visimax tubes in instruments that are designed for larger lamps as well. Instrumentation Laboratory. Circle 708.

Digital Thermometer

Model 264 rapidly measures temperature from −330° to 1470°F and is accurate to within 0.2°F. The same temperature range may be read in degrees Celsius at the flip of a selector. The large, bright display is easily read even in direct sunlight. There are six probes available for immersion, injection, surface, airflow, and other applications. A 9-volt battery operates the device for up to 200 hours. Newport Laboratories. Circle 695.

Modular Laboratory Computer

MINC is mounted in a cart for portability in the laboratory. It comprises seven modules for data acquisition: analog-digital converter, digital-analog converter, digital input, digital output, multiplexer, preamplifier, and a programmable clock. Data may be collected from several laboratory instruments rapidly and conveniently for analysis. Other parts of the system are a dual diskette drive for program and data storage and an alphanumeric video graphic terminal. A PDP-11/03 processor with 30K-word memory, extended and floating point instruction sets, three serial-line channels, and IEEE-488 interface are standard features. The system will support up to 14 instruments and test devices. Digital Equipment. Circle 696.

Modular Dry Bath

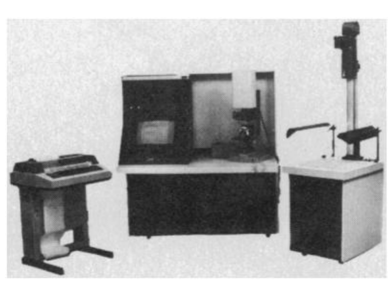
Model DB-28100 has two thermostats; one for high-range and one for low-range operation. Modular design allows the user to select from ten different blocks that accommodate a variety of tubes from 6 to 25 millimeters in diameter. Aluminum alloy construction assures rapid, uniform transfer of heat through the range of temperature from 30° to 150°C. Thermolyne. Circle 697.

Sodium Electrode

MI-425 is a microelectrode with a selectivity for sodium over potassium of 300:1 at *p*H 7. It is sensitive through the range of 1 to 10^{-6} Na^+ and is ideal for volumes less than 1 milliliter. The diameter of the sensing bulb is 1.5 millimeters and it only requires immersion to a depth of 1.5 millimeters. It is also suitable for use with large volumes. Microelectrodes. Circle 698.

Image Analyzer

Magiscan digitizes the image of the specimen under study. Features that may be defined by mathematic or logical algorithms are readily distinguished. Cell sorting, analysis of cinecardiograms, x-ray and nuclear medical data, and chromosome karyotyping are some of the applications of the system. The basis of the system is software that utilizes a simplified, efficient programming language to control the hardware including the scanner-connected microscope, printer, and plotter-enlarger. Joyce, Loebl. Circle 699.



Gel Permeation Chromatograph

The GPC 1002 is an automated device for preparative operations. It automatically processes 23 crude extracts to provide a clean fraction containing pesticide residues, drug residues, or environmental pollutants for analysis. Features include automatic restart in event of power failure, solvent exhaust blower, and an adjustable pressure-limit switch. The sample flow system is made of Teflon, glass, and stainless steel. Analytical Bio Chemistry Laboratories. Circle 700.

Literature

Infrared Spectroscopy Supplies includes hardware, recording materials, transmission windows, cells, accessories, mills, presses, and many other items. Wilmad Glass. Circle 701.

Chemicals for Research are listed in an extensive catalog that includes product specifications, structural formulas, and several orders of listing for rapid reference. PCR Research Chemicals. Circle 702.

Thermal Shock and Temperature Cycling features test equipment in five basic configurations. Ransco Industries. Circle 703.

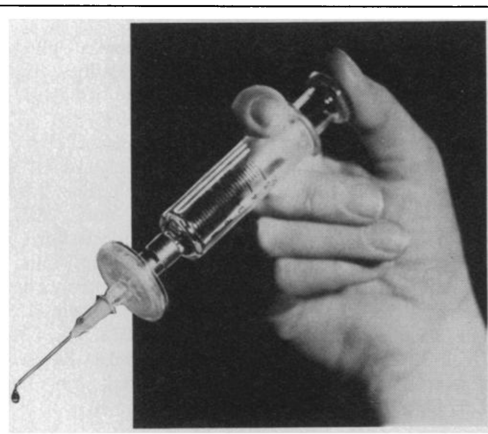
Reagents and Products for Biological Science includes materials for liquid scintillation counting, peptide synthesis, spectrophotometry, chromatography, electrophoresis, densi y gradient centrifugation, and other analytic techniques. J. T. Baker Chemical. Circle 704.

Thin Layer Chromatography products are described in a brochure that features coated sheets, plates, sorbents for analysis or preparation, developing tanks, sprays, racks, ovens, viewers, and much more. Brinkmann Instruments. Circle 705.

Tissue Culture Apparatus lists suspension culture flasks, roller culture apparatus, shake and trypsinizing flasks, containers for freezing, stirring equipment, and others. Wheaton Scientific. Circle 706.

Liquid Scintillation Chemicals describes a line of chemicals ready to use. Radiomatic Instruments & Chemicals. Circle 707.

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Readers' Service Card (on pages 1036A and 1108A) and placing it in the mailbox. Postage is free.
—RICHARD G. SOMMER



BOOKS RECEIVED

(Continued from page 1078)

Nutrition and Drug Interrelations. Papers from a symposium, Ames, Iowa, Aug. 1976. John N. Hathcock and Julius Coon, Eds. Academic Press, New York, 1978. xxii, 928 pp. $55. Nutrition Foundation Monograph Series.

On Aesthetics in Science. Judith Wechsler, Ed. MIT Press, Cambridge, Mass., 1978. xii, 180 pp., illus. $12.50.

On Human Communication. A Review, a Survey, and a Criticism. Colin Cherry. MIT Press, Cambridge, Mass., ed. 3, 1978. xviii, 374 pp., illus. $17.50. Studies in Communication.

Optical Shop Testing. Daniel Malacara, Ed. Wiley, New York, 1978. xx, 524 pp., illus. $29.95. Wiley Series in Pure and Applied Optics.

Optimal Control and Differential Equations. Proceedings of a conference, Norman, Okla., Mar. 1977. A. B. Schwarzkopf, Walter G. Kelley, and Stanley B. Eliason, Eds. Academic Press, New York, 1978. xii, 336 pp. $17.

Orbital Motion. A. E. Roy. Halsted (Wiley), New York, 1978. xiv, 490 pp., illus. $29.95.

Ordre et Dynamique du Vivant. Chemins due la Biologie Moléculaire. Antoine Danchin. Editions du Seuil, Paris, 1978. 382 pp., illus. Paper, 95 F.

Orientation Effects in Solid Polymers. Proceedings of a conference, Budapest, Apr. 1976. G. Bodor, Ed. Interscience (Wiley), New York, 1978. vi, 426 pp., illus. Paper, $19. *Journal of Polymer Science*: Polymer Symposium, No. 58.

Our Southern Highlanders. A Narrative of Adventure in the Southern Appalachians and a Study of Life among the Mountaineers. Horace Kephart. University of Tennessee Press, Knoxville, 1976. xlviii, 470 pp. + plates. $12.95. Reprint of 1922 edition with a new introduction.

Patty's Industrial Hygiene and Toxicology. Vol. 1, General Principles. George D. Clayton and Florence E. Clayton, Eds. Wiley-Interscience, New York, ed. 3, 1978. xx, 1466 pp., illus. $75.

Phospholipases and Prostaglandins. Claudio Galli, Giovanni Galli, and Giuseppe Porcellati, Eds. Raven, New York, 1978. xii, 206 pp., illus. $22. Advances in Prostaglandin and Thromboxane Research, vol. 3.

Photoemission and the Electronic Properties of Surfaces. B. Feuerbacher, B. Fitton, and R. F. Willis, Eds. Wiley, New York, 1978. xviii, 540 pp., illus. $48.

Physics for Engineers and Scientists. D. Elwell and A. J. Pointon. Horwood, Chichester, England, and Halsted (Wiley), New York, ed. 2, 1978. xiv, 356 pp., illus. $35.

Plant Proteins. Papers from a school, Nottingham, 1976. G. Norton. Butterworths, Boston, 1978. xii, 352 pp., illus. $32.95.

Populations of Small Mammals under Natural Conditions. Papers from a symposium, Pittsburgh, May 1976. Dana P. Snyder, Ed. University of Pittsburgh, Pymatuning; Laboratory of Ecology, Linesville, Pa., 1978. xiv, 238 pp., illus. $8.50. The Pymatuning Symposia in Ecology. Special Publication Series, vol. 5.

The Porphyrins. Vol. 2, Structure and Synthesis, Part B. David Dolphin, Ed. Academic Press, New York, 1978. xx, 438 pp., illus. $46.50.

Potentiometric Water Analysis. Derek Midgley and Kenneth Torrance. Wiley-Interscience, New York, 1978. xii, 410 pp. $42.

Power and Authority in Adolescence. The Origins and Resolutions of Intergenerational Conflict. Formulated by the Committee on Adolescence. Group for the Advancement of Psychiatry, New York, 1978. pp. 49–276. Paper, $6.50. GAP Publication No. 101.

Power System Control and Protection. B. Don Russell and Marion E. Council, Eds. Academic Press, New York, 1978. x, 290 pp., illus. $15.

Prehistoric Patterns of Human Behavior. A Case Study in the Mississippi Valley. Bruce D. Smith with a contribution by Wilma Wetterstrom. Academic Press, New York, 1978. xxii, 266 pp., illus. $19. Studies in Archeology.

Proceedings of the 1978 Heat Transfer and Fluid Mechanics Institute. Pullman, Wash., June 1978. Clayton T. Crowe and William L. Grosshandler, Eds. Published for the Heat Transfer and Fluid Mechanics Institute by Stanford University Press, Stanford, Calif., 1978. xiv, 330 pp., illus. $28.50.

The Processing of Memories. Forgetting and Retention. Norman E. Spear. Erlbaum, Hillsdale, N.J., 1978 (distributor, Halsted [Wiley], New York). xiv, 554 pp., illus. $29.95. The Experimental Psychology Series.

Prostaglandins and Perinatal Medicine. Papers from a symposium, Toronto, Mar. 1977. Flavio Coceani and Peter M. Olley, Eds. Raven, New York, 1978. xvi, 412 pp., illus. $35. Advances in Prostaglandin and Thromboxane Research, vol. 4.

Psychology of Learning and Behavior. Barry Schwartz. Norton, New York, 1978. xx, 412 pp., illus. $13.95.

Purpose in a World of Chance. A Biologist's View. W. H. Thorpe. Oxford University Press, New York, 1978. xii, 124 pp., illus. $9.95.

Quantification in Cultural Anthropology. An Introduction to Research Design. Allen W. Johnson. Stanford University Press, Stanford, Calif., 1978. xvi, 232 pp., illus. $12.50.

Renal Function. Papers from a conference, Feb. 1977. Gerhard H. Giebisch and Elizabeth F. Purcell, Eds. Josiah Macy, Jr. Foundation, New York, 1977 (distributor, Independent Publishers Group, Port Washington, N.Y.). viii, 322 pp., illus. $10.

Reviews of Neuroscience. Vol. 3. Seymour Ehrenpreis and Irwin J. Kopin, Eds. Raven, New York, 1978. viii, 230 pp., illus. $19.75.

The Revisionists Revised. A Critique of the Radical Attack on the Schools. Diane Ravitch. Basic Books, New York, 1978. xii, 194 pp. $8.95.

Second-Language Acquisition in Childhood. Barry McLaughlin. Erlbaum, Hillsdale, N.J., 1976 (distributor, Halsted [Wiley], New York). xiv, 240 pp. $14.95.

Semiconductor Circuit Design for A.F. and D.C. Amplification and Switching. J. Watson. Halsted (Wiley), New York, ed. 3, 1977. xii, 536 pp., illus. $17.95.

The Sensitive Scientist. Report of a British Association Study Group. David Morley. SCM Press, London, 1978. xii, 132 pp. Paper, £1.95.

Sex, Evolution, and Behavior. Adaptations for Reproduction. Martin Daly and Margo Wilson. Duxbury Press (Wadsworth), North Scituate, Mass., 1978. xii, 388 pp., illus. Paper, $8.95.

Shelter Provision in Developing Countries. The Influence of Standards and Criteria. A. L. Mabogunje, J. E. Hardoy, and R. P. Misra. C. Ian Jackson, Ed. Published for the Scientific

Committee on Problems of the Environment of the ICSU by Wiley, New York, 1978. xii, 94 pp. Paper, $10.50. SCOPE 11.

SI Calculations in Engineering Science. A. C. Walshaw. Newnes-Butterworths, Boston, 1977. viii, 88 pp., illus. Paper, $3.95.

A Sierra Club Naturalist's Guide to Southern New England. Neil Jorgensen. Drawings by Katharine Brewer and Priscilla Kunhardt. Sierra Club Books, San Francisco, 1978. xxii, 418 pp. + plates. Cloth, $15; paper, $9.95.

Sky and Sextant. Practical Celestial Navigation. John P. Budlong. Van Nostrand Reinhold, New York, ed. 2, 1978. viii, 224 pp., illus. $11.95.

Small Cities in Transition. The Dynamics of Growth and Decline. Papers from a conference, Dec. 1976. Herrington J. Bryce, Ed. Ballinger (Lippincott), Cambridge, Mass., 1977. xxvi, 418 pp. $22.50. A Joint Center for Political Studies Book.

Small Systems Computer Sourcebook. J. C. Boonham, Ed. Rococo Press, St. Osyth, Essex, England, 1978 (U.S. distributor, Halsted [Wiley], New York). vi, 148 pp., illus. Paper, $14.95.

Sources of Color Science. David L. MacAdam, Ed. MIT Press, Cambridge, Mass., 1978. xii, 282 pp., illus. Paper, $4.95. Reprint of the 1970 edition.

Speleology. The Study of Caves. George W. Moore and G. Nicholas Sullivan. Illustrated by John C. Schoenherr. Zephyrus Press, Teaneck, N.J., ed. 2, 1978. xiv, 150 pp. $8.50.

State Policies and Federal Programs. Priorities and Constraints. Peter Passell and Leonard Ross. Praeger, New York, 1978. xx, 172 pp. $16.95. A Twentieth Century Fund Report.

Structure and Function in Man. Stanley W. Jacob, Clarice Ashworth Francone, and Walter J. Lossow. Saunders, Philadelphia, ed. 4, 1978. xvi, 678 pp., illus. $13.95.

Studies in Inductive Probability and Rational Expectation. Theo A. F. Kuipers. Reidel, Boston, 1978. xii, 154 pp. $22.50. Synthese Library, vol. 123.

Studies in Perception. Interrelations in the History of Philosophy and Science. Peter K. Machamer and Robert G. Turnbull, Eds. Ohio State University Press, Columbus, 1978. x, 568 pp., illus. $30.

Studies on the Collapse of Fire Service in New York City 1972–1976. The Impact of Pseudoscience in Public Policy. Rodrick Wallace and Deborah Wallace. University Press of America, Washington, D.C., 1977. iv, 122 pp., illus. Paper, $6.85.

A Synonymic Checklist of the Hexapoda of the New Zealand Sub-Region. The Smaller Orders. K. A. J. Wise. Auckland Institute and Museum, Auckland, New Zealand, 1977. iv, 176 pp., illus. Paper, NZ$11. Bulletin of the Auckland Institute and Museum, No. 11.

Synthetic Detergents. A. Davidsohn and B. M. Milwidsky. Godwin, London, and Halsted (Wiley), New York, ed. 6, 1978. x, 266 pp., illus. $25.

Systematic Materials Analysis. Vol. 4. J. H. Richardson and R. V. Peterson, Eds. Academic Press, New York, 1978. xviii, 494 pp., illus. $49.50. Materials Science and Technology.

Taurine and Neurological Disorders. André Barbeau and Ryan J. Huxtable, Eds. Raven, New York, 1978. xiv, 468 pp., illus. $36.

Teaching Conservation in Developing Nations. Judith Brace, Ralph R. White, and Stephen C. Bass. Illustrated by Anne Brace. National Audubon Society, New York, 1977. xii, 252 pp. Paper, $1.50.

Tensor Geometry. The Geometric Viewpoint and Its Uses. C. T. J. Dodson and T. Poston. Fearon-Pitman, Belmont, Calif., 1978. xiv, 598 pp., illus. $38.50. Surveys and Reference Works in Mathematics, 1.

The Theoretical Foundations of Chinese Medicine. Systems of Correspondence. Manfred Porkert. MIT Press, Cambridge, Mass., 1978. xvi. 368 pp., illus. Paper, $9.95. M.I.T. East Asian Science Series, vol. 3.

The Therapeutic Interaction: A Synthesis. Robert Langs. Aronson, New York, 1977. xiv, 206 pp. $10.

Thermal Effluent Disposal from Power Generation. Papers from a course, Dubrovnik, Yugoslavia, Aug. 1976. Zoran P. Zarić, Ed. Hemisphere, Washington, D.C., 1978. viii, 376 pp., illus. $40. Series in Thermal and Fluids Engineering.

Thin Films. Interdiffusion and Reactions. J. M. Poate, K. N. Tu, and J. W. Mayer, Eds. Wiley-Interscience, New York, 1978. xii, 578 pp., illus. $35. Electrochemical Society Series.

Topics in Bioelectrochemistry and Bioenergetics. Vol. 2. G. Milazzo, Ed. Wiley-Interscience, New York, 1978. xiv, 204 pp., illus. $29.

Topics in Hormone Chemistry. Vol. 1. W. R. Butt, Ed. Horwood, Chichester, England, and Halsted (Wiley), New York, 1978. 292 pp., illus. $52.50.

Toward a Theory of Psychosomatic Disorders. Alexithymia, Pensée Opératoire, Psychosomatisches Phänomen. Proceedings of a conference, Heidelberg, Germany, Sept. 1976. W. Bräutigam and M. von Rad, Eds. Karger, Basel, 1977. xiv, 390 pp. $53.50. Reprinted from *Psychotherapy and Psychosomatics*, vol. 28, No. 1-4.

Toxic Substances Control Sourcebook. Alexander McRae, Leslie Whelchel, and Howard Rowland, Eds. Center for Compliance Information, Aspen Corporation, Germantown, Md., 1978. xiv, 610 pp. $59.50.

Transmission of Information in the Optical Waveband. L. G. Kazovsky. Halsted (Wiley), New York, and Israel University Press, Jerusalem, 1978. xvi, 122 pp., illus. $18.50.

University Astronomy. Jay M. Pasachoff and Marc L. Kutner. Saunders, Philadelphia, 1978. xviii, 764 pp., illus. + appendices + plates. $18.95. Saunders Golden Sunburst Series.

Vector and Tensor Analysis. Eutiquio C. Young. Dekker, New York, 1978. xii, 526 pp., illus. $37.50. Pure and Applied Mathematics, 48.

The Vertebrate Body. Shorter Version. Alfred Sherwood Romer and Rhomas S. Parsons. Saunders, Philadelphia, ed. 5, 1978. vi, 476 pp., illus. $12.95.

Visions of Utopia. Nashoba, Rugby, Ruskin, and "New Communities" in Tennessee's Past. John Egerton. University of Tennessee Press, Knoxville, 1977. viii, 96 pp., illus. Paper, $3.50. Tennessee Three Star Books.

Water Deficits and Plant Growth. Vol. 5, Water and Plant Disease. T. T. Kozlowski, Ed. Academic Press, New York, 1978. xviii, 324 pp., illus. $31.50.

Wave Propagation and Scattering in Random Media. Vol. 2, Multiple Scattering, Turbulence, Rough Surfaces, and Remote Sensing. Akira Ishimaru. Academic Press, New York, 1978. xx + pp. 251-572, illus. $26.50.

Your Encounter with Life, Death and Immortality. Ruth E. Norman. Unarius Educational Foundation, El Cajon, Calif., 1978. vi, 84 pp., illus. Paper, $1.95.