

SCIENCE

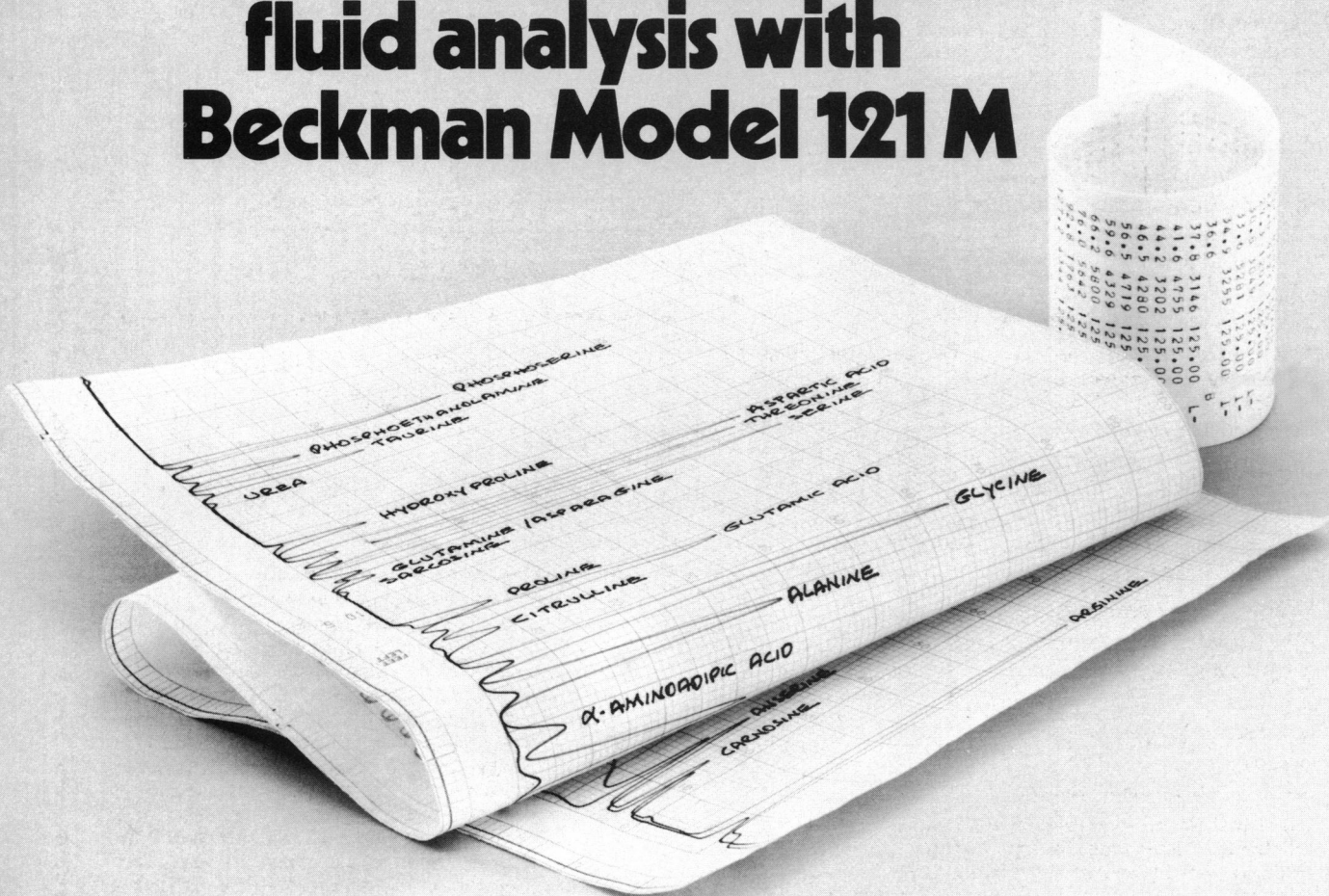
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Volume 190, No. 4215

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COVER

Terminal phase male of the bluehead wrasse (*Thalassoma bifasciatum*): Males of this coloration are often the result of sex changes in previously female fish. See page 633. [D. R. Robertson, Smithsonian Tropical Research Institute]

The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress. Postmaster: Send Form 3579 to SCIENCE, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005.

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1977	Ammonium Sulfate (Reagent ACS)			14392	Perfluorooctanoic Acid
2079	Phosphomolybdic Acid (Reagent ACS)	11611	2-Naphthol-8-sulfonic acid Potassium Salt (Dye intermediate)	14414	3,3'-Diethyloxycarbocyanine Iodide (Fluorescent probe)
4792	2-Amino-2-methyl-1,3-propanediol (Biochemical buffer)	11633	Thiofluorescein	14432	Chlorodifluoroacetic Acid
5776	3,4-Dihydro-2H-pyran (Functional group protecting agent)	14327	1,3,6,8-Pyrenetetrasulfonic Acid Tetrasodium Salt (Intermediate for fluorescent probes)	14476	1-Octadecyl Isocyanate
7281	8-Hydroxy-1,3,6-pyrenetrisulfonic Acid Trisodium Salt (Fluorescent probe)	14335	Sodium Cyanoborohydride (Selective reducing agent)	14480	Ethyl Chrysanthemate
9001	Betaine Ethyl Ester Chloride (Methyl donor for transferase)	14349	Chlorosulfonyl Isocyanate	14553	β -Cyclodextrin
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				14634	Flavine Adenine Dinucleotide
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10834	Cholesteryl 2-Ethylhexyl Carbonate	11874	p-Cyanophenyl p-Pentyloxybenzoate	14047	p-Cyanophenyl p-Heptylbenzoate
11096	p-Propylbenzaldehyde	14044	p-Cyanophenyl p-Butylbenzoate	14049	(+)-(2-Methylbutyl) Benzene
11097	p-Butylbenzaldehyde			14334	p-Octylbenzaldehyde
11185	p-Pentylbenzaldehyde			14337	p-Hexylbenzaldehyde
11648	2-Chloro-4-Hydroxybenzoic Acid			14483	p-Heptyloxyphenol

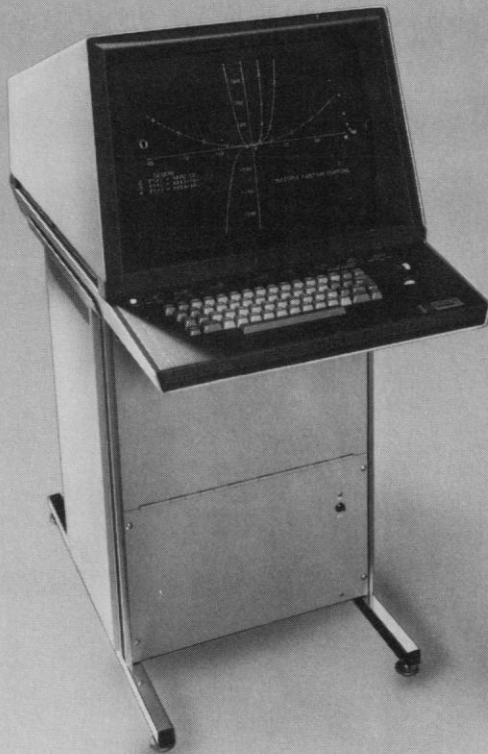
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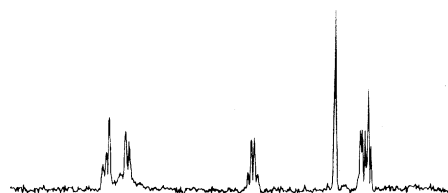
Sample: 10 μg/20 μl solution

Time: 5 minutes

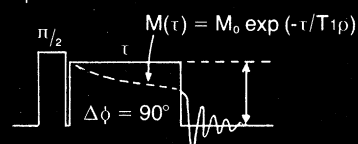
Nucleus: Proton (¹H)

Sample shown is phenacetin.

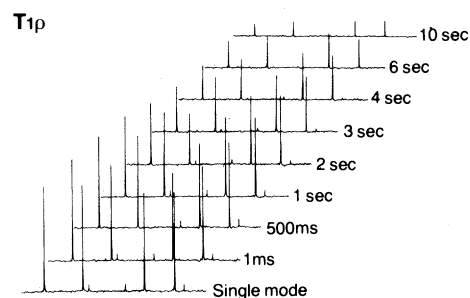
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$T_{1\rho}$ is the transverse relaxation time in the rotating frame and is useful for studies of chemical dynamics in liquids.



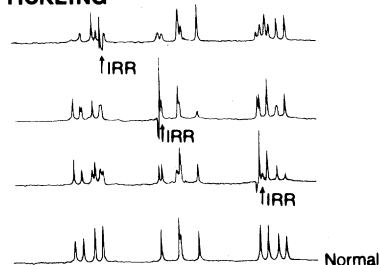
Sample shown is chlorobutane.



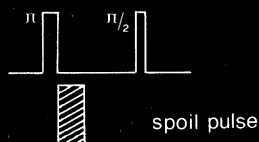
Spin tickling is a double resonance technique used in both homo and hetero nuclear experiments for the selective identification of spin-spin interactions.

Sample shown is dibromopropionic acid.

SPIN TICKLING

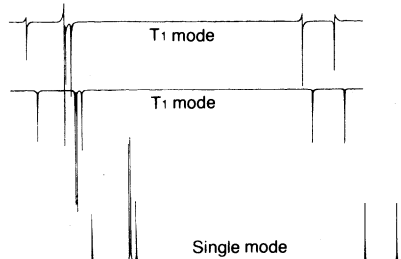


Homospoil is a technique for eliminating phase and intensity errors which can occur during T_1 measurements.



Sample shown is ethylbenzene (distortions are magnified to illustrate the technique).

HOMOSPOIL



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* Patent Pending

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TIAA Announces the Lowest Cost Life Insurance for Your Age...

... compared with what you'd pay for the same individual policies from insurance companies selling to the general public. That's not exactly a revelation for most educators, of course. They already know that TIAA is traditionally their best buy in life insurance. What's news is that...

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In addition, with "quantity savings" dividends.

Net costs are less than ever before for the larger size policies educators are purchasing these days.

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Age at Issue	MALE FEMALE	25 30	30 35	35 40	40 45	45 50
Annual Premium (Payable only 18 years)		\$187	\$235	\$328	\$487	\$747
Cash Dividend End of First Year*		97	113	142	188	265
First Year Net Payment		\$ 90	\$122	\$186	\$299	\$482

*Subsequent yearly dividends will be in the same amount, according to TIAA's current dividend scale which is not guaranteed.

Decreasing Term policies provide their largest amount of protection initially, reducing by schedule over the years to recognize diminishing insurance needs and increasing savings, retirement benefits, etc. TIAA issues such policies for 15, 20, 25 and 30 year periods, depending upon age. Decreasing Term insurance is available in amounts of \$20,000 or more to persons under age 56.

To use a different illustration.

\$100,000 of 5-Year Renewable Term coverage costs only \$180 for a 30 year old man or for a 35 year old woman.

Here are the cost figures for this policy issued at various ages.

Age at Issue	MALE FEMALE	25 30	30 35	35 40	40 45	45 50
Annual Premium		\$258	\$288	\$373	\$530	\$774
Cash Dividend End of First Year*		101	108	140	185	254
First Year Net Payment		\$157	\$180	\$233	\$345	\$520

*Dividends at end of years two through five will be in the same amount, according to TIAA's current dividend scale which is not guaranteed.

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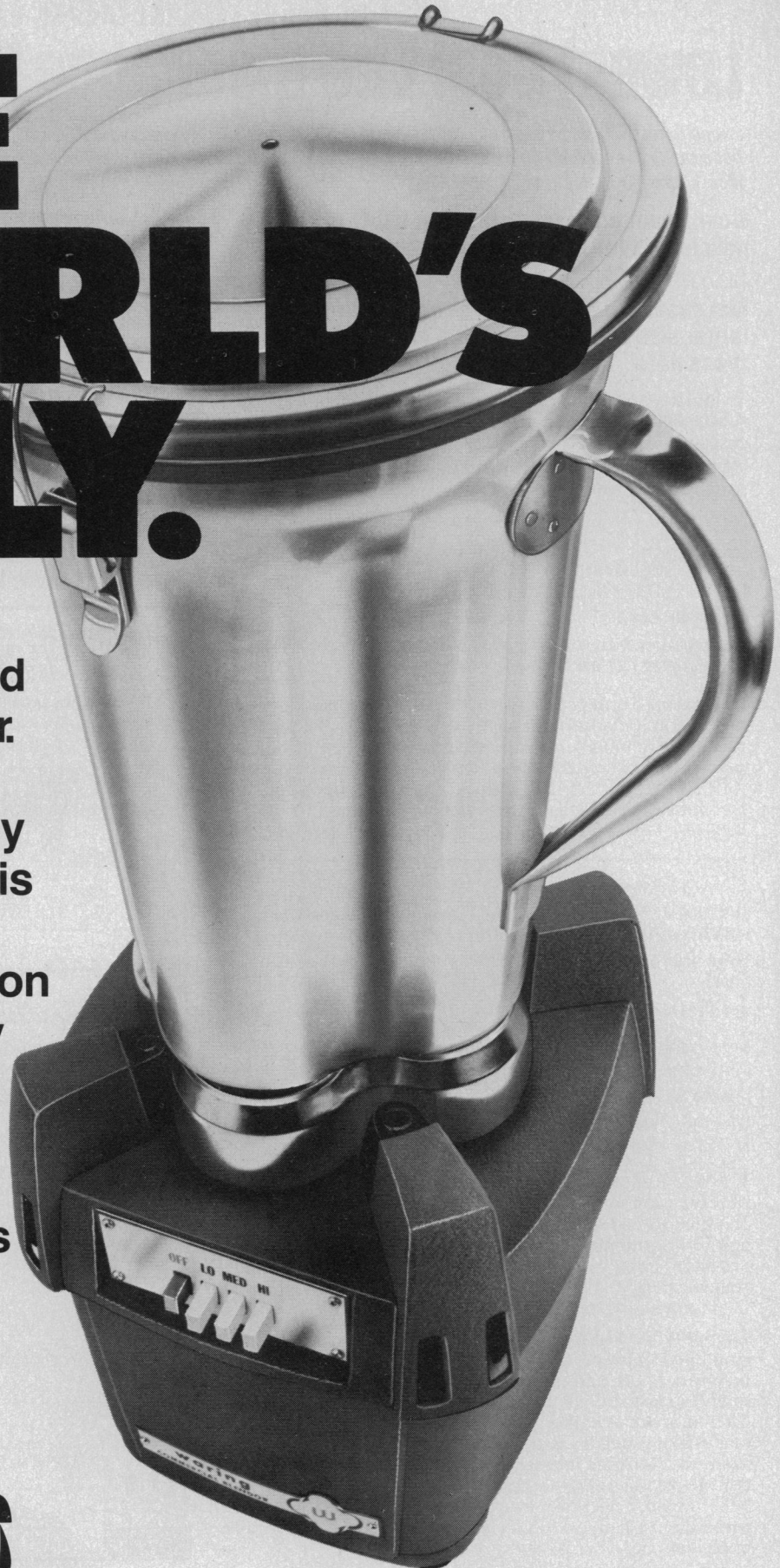
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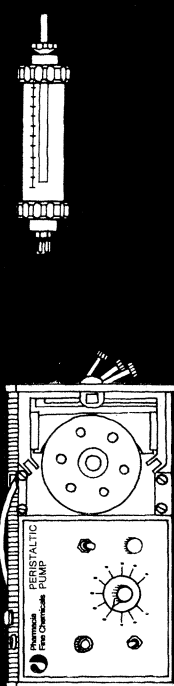
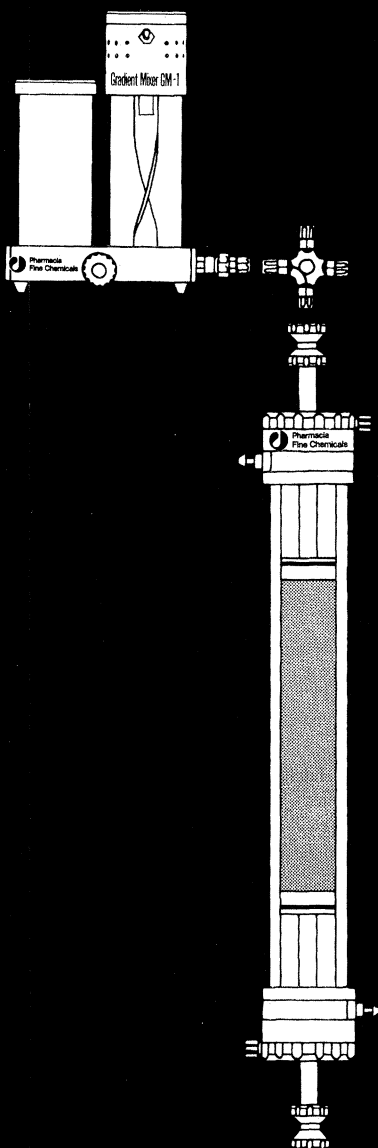
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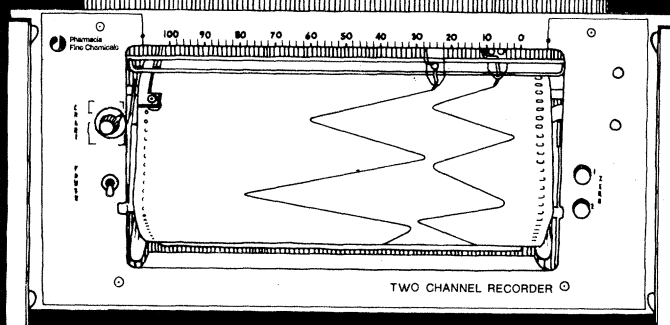
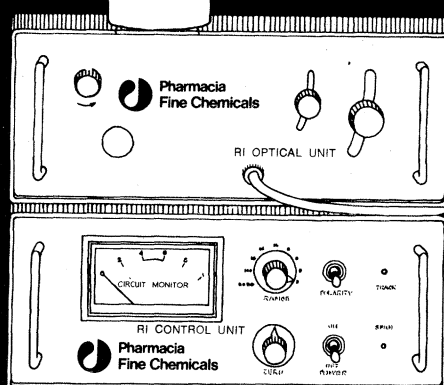
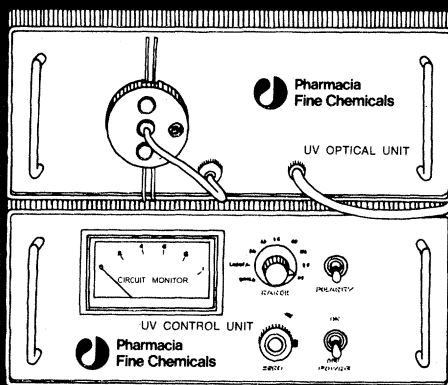
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LETTERS

Nomina Generica

In a report by S. Remillard *et al.* (19 Sept., p. 1002), we read that a potent tumor inhibitor, maytansine, inhibits mitosis. From where does this remarkable substance come? We learn only that it was isolated from "various *Maytenus* species." Is it a mold, beast, or tree? I finally learned (1) that the substance can be extracted from the fruit, stem, and wood of *Maytenus*. Aha! Evidently it must be a plant. Aware of my botanical ignorance, I inquired of four botanists the nature of *Maytenus*; none could tell me anything. I eventually learned that it is a member of a group of flowering shrubs or shrub-trees.

No doubt it is essential to have a specific Latin name for each organism, but since more than 1.5×10^6 species of organisms have been identified, a generic designation is often not sufficient, particularly when these names have frequently undergone substantial change. The importance of retaining common names was made clear by George Wald (2) when he commented on a table of data on the precipitin test prepared by Nuttall in 1904, which showed that rabbit antiserum against human serum, when mixed with nonhuman serums, caused less and less precipitate the more distantly related was the species of animal providing the serum. Wald wrote:

In the original version of this table, Nuttall mentions *Cynocephalus mormon* and *sphinx*, omitting their common names. I have learned since that one is the mandrill, the other the guinea baboon. Since Nuttall wrote in 1904, these names have undergone the following vagaries. *Cynocephalus mormon* became *Papio mormon*, otherwise *Papio maimon*, which turned to *Papio sphinx*. This might well have been confused with *Cynocephalus*, now become *Papio*, *sphinx*, had not the latter meanwhile been turned into *Papio papio*. This danger averted, *Papio sphinx* now became *Mandrillus sphinx*, while *Papio papio* became *Papio comatus*. All I can say to this is, thank heavens one is called the mandrill, the other the guinea baboon.

AUSTEN RIGGS

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References

1. S. M. Kupchan, Y. Komoda, W. A. Court, G. J. Thomas, R. M. Smith, A. Karim, C. J. Gilmore, R. C. Haltiwanger, R. F. Bryan, *J. Am. Chem. Soc.* **94**, 1354 (1972). (This reference is incorrectly cited in Remillard *et al.*)
2. G. Wald, in *Modern Trends in Physiology and Biochemistry*, E. S. G. Barron, Ed. (Academic Press, New York, 1952), p. 339.

We have been informed by R. E. Perdue, Jr., the botanist primarily responsible for the *Maytenus* collections in Africa, that the only common name he has found used for any species of *Maytenus* is "ack-ack," reflecting the sound made when the plant is burned as firewood. We appreciate Riggs

calling our attention to a typographical error in the citation of a most important article.

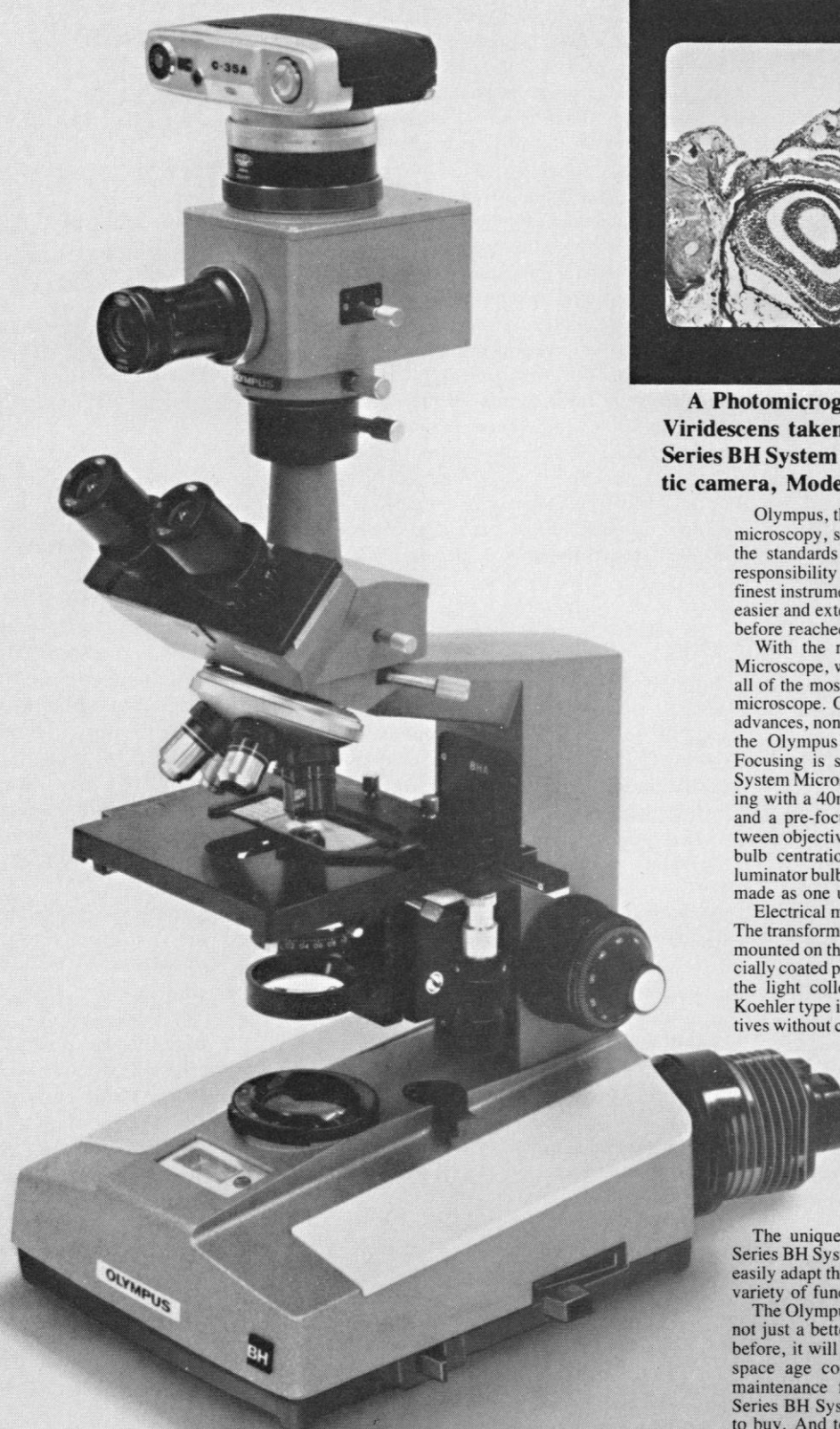
S. MORRIS KUPCHAN

Department of Chemistry, University of
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A New Characteristic of Life?

One of the major problems with the insight that Darwin and Wallace brought to our knowledge of the origin and diversity of life is its simplicity (1). The essence of natural selection lies in the notion that adaptiveness is a result of the differential reproduction of individuals of different genotypes. However, many people find the concept of natural selection too straightforward to explain the past and present array of living forms and their manifold means of adaptation. The article by J. M. Burgers (18 July, p. 194) is an example. He, with others, feels that the principle of causal relationship which forms the basis of scientific inquiry is not enough to account for the living world. Or, more simply put, surely life cannot be reduced to a set of interactions among atoms and molecules. It is indeed a distasteful realization, but likely true. Burgers argues that the human "notion of being alive" cannot as yet be explained by modern physical principles. From this he jumps to the statement that "we must give attention to the idea of freedom, as being an essential aspect of life. . . ." Life he defines as a game in which the players maneuver to maintain the ability to choose, to retain "some measure of freedom." Surely we are dealing here with as yet poorly understood psychological aspects of the human mind. Burgers is correct—neither physics nor biology can explain the "notion of being alive," but just because it happens to be a part of human psychic makeup does not render it a basic aspect of all life. There is always the hope that science will eventually lead us to an understanding of even such sacred complexities as our own minds.

In an attempt to bolster his argument for a new conceptual approach to the living world, Burgers appears to have reached some misunderstandings. He feels that, while molecular biology has revealed the structures and operation of living systems, it has added nothing to our understanding of the origin and evolution of these structures. Nothing could be further from reality. Much of what we know of the evolutionary history of many groups of organisms has been gained from a comparative analysis of structures across systematic boundaries. The results of molecular biology research have allowed similar comparisons at a finer resolution. Consider, for



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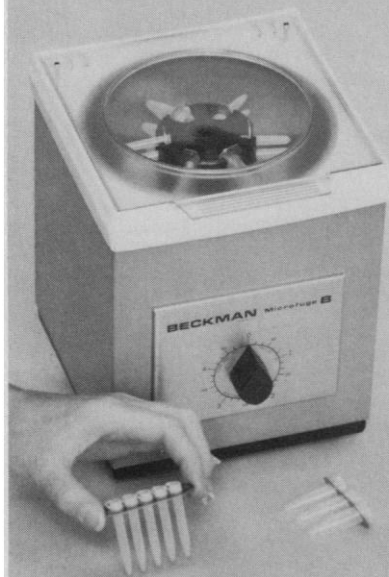
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example, the origin and evolution of cytoplasmic organelles in plants and animals. The current theories (2) are based largely on the findings of molecular biology and biochemistry. What about the analyses of the evolution of enzymes and other proteins? A newly emerging field of molecular evolution is based almost entirely on the techniques and data of molecular biology.

Burgers also seems to misunderstand the concept of natural selection. While he is correct in stating that reproduction generates more possibilities for life through the process of genetic recombination and selection, it cannot be considered "a secondary feature in the evolution of life." As I have noted above, differential reproduction is the essence of natural selection and it need not, as Burgers envisions, involve death. Moreover, contrary to Burgers' assertion, the idea of natural selection can be invoked to explain some molecular reactions, such as those involved in the replication of nucleic acids (3).

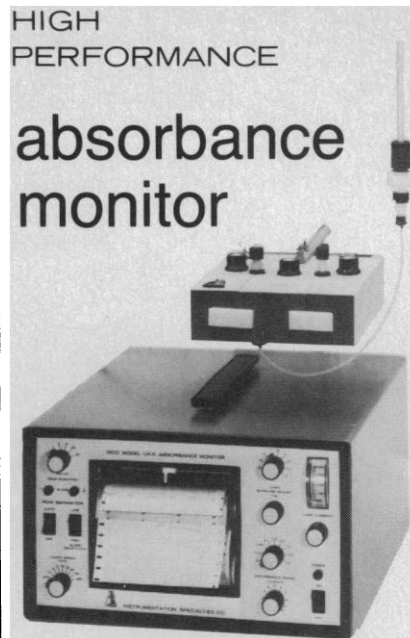
Burgers is insistent that life must possess something more fundamental than the ability to reproduce. He sees a "purposiveness" to the adaptations of organisms that suggests to him that the "evolution of forms of life is dependent on an interplay of traditions and initiatives as is the evolution of human societies." This belief is a more radical statement of the notion of orthogenesis first postulated by Eimer in 1897. Orthogenesis stipulates the gradual unfolding of preformed or rudimentary structures through evolutionary time.

Burgers' basic dislike of the notion of reproduction as an essential characteristic of life is seen in his concluding paragraph. He finds it impossible to imagine that what we call mentality could ever arise from a "chemical structure." The beauty of the process of natural selection is that it is creative; it proceeds in much the same way a work of art is generated—by trial and error and constant remodeling. The marvels of the living world are indeed a compelling fascination, and man's infatuation with his own mind has become almost hypnotic. Yet natural selection as a process can still account for all these wonders if we will just give it the opportunity.

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References

1. C. Darwin, *On the Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life* (John Murray, London, 1859); A. R. Wallace, *Darwinism: An Exposition of the Theory of Natural Selection* (Macmillan, London, 1889).
2. R. A. Raff and H. R. Mahler, *Science* 177, 575 (1972); L. Bogorad, *ibid.* 188, 891 (1975).
3. S. Spiegelman, N. R. Pace, D. R. Mills, R. Levi-Sohn, T. S. Eikhom, M. M. Taylor, R. L. Peterson, D. H. L. Bishop, *Proc. Int. Congr. Genet.* 12th 3, 127 (1969).



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It appears that Richmond and I interpret the concept of natural selection differently. Like others, Richmond seems to attach to it an exaggerated reverence, as if it were a hallowed creed. In the last paragraph of his letter he writes: "The beauty of the process of natural selection is that it is creative; it proceeds in much the same way a work of art is generated—by trial and error and constant remolding." In my opinion the words "it is creative" are misplaced here, and the comparison is inappropriate. The trial and remolding which characterize the work of an artist are instances of what I call conceptual activity: the artist tests and remolds his creation so that it is adequate to express a concept formed in his mind. Natural selection, on the other hand, is an effect of the differential permissivity of the environment; no new forms are created, but some are eliminated, in passive secondary reactions to mutations. The creative effect is in the generation of the mutations. Much controversy can be resolved if the term "differential permissivity of the natural environment" is substituted for "natural selection"; this takes away the impression that natural selection can be regarded as an active creative factor.

Natural selection does not in itself produce new chemical compounds; it can only admit them or lead to their rejection. It can do this because of differences in the viability of the living organisms carrying them. I believe that natural selection can operate only in chemical systems where living beings already exist.

In my article I attempted to sort out processes in which conceptual activity and creativity are involved from those depending on causal relations (among which we may reckon death from predators). Perhaps Richmond and I are using different languages. I hope that my remarks may bring some clarification. I add that I do not dislike the notion of reproduction; I only suggest that it has evolved at a later stage in the history of life.

Albert Claude says in his Nobel lecture "The coming of age of the cell" published in *Science* (8 Aug., p. 433): "Life, this anti-entropy, ceaselessly reloaded with energy, is a climbing force, toward order amidst chaos, toward light among the darkness of the indefinite, toward the mystic dream of love, between the fire which devours itself and the silence of the cold." In a poetical form, this expresses some of the ideas that I tried to discuss in my article.

J. M. BURGERS

*Institute for Fluid Dynamics and
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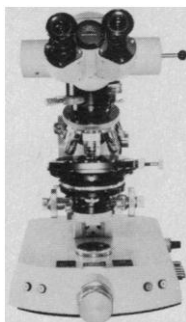
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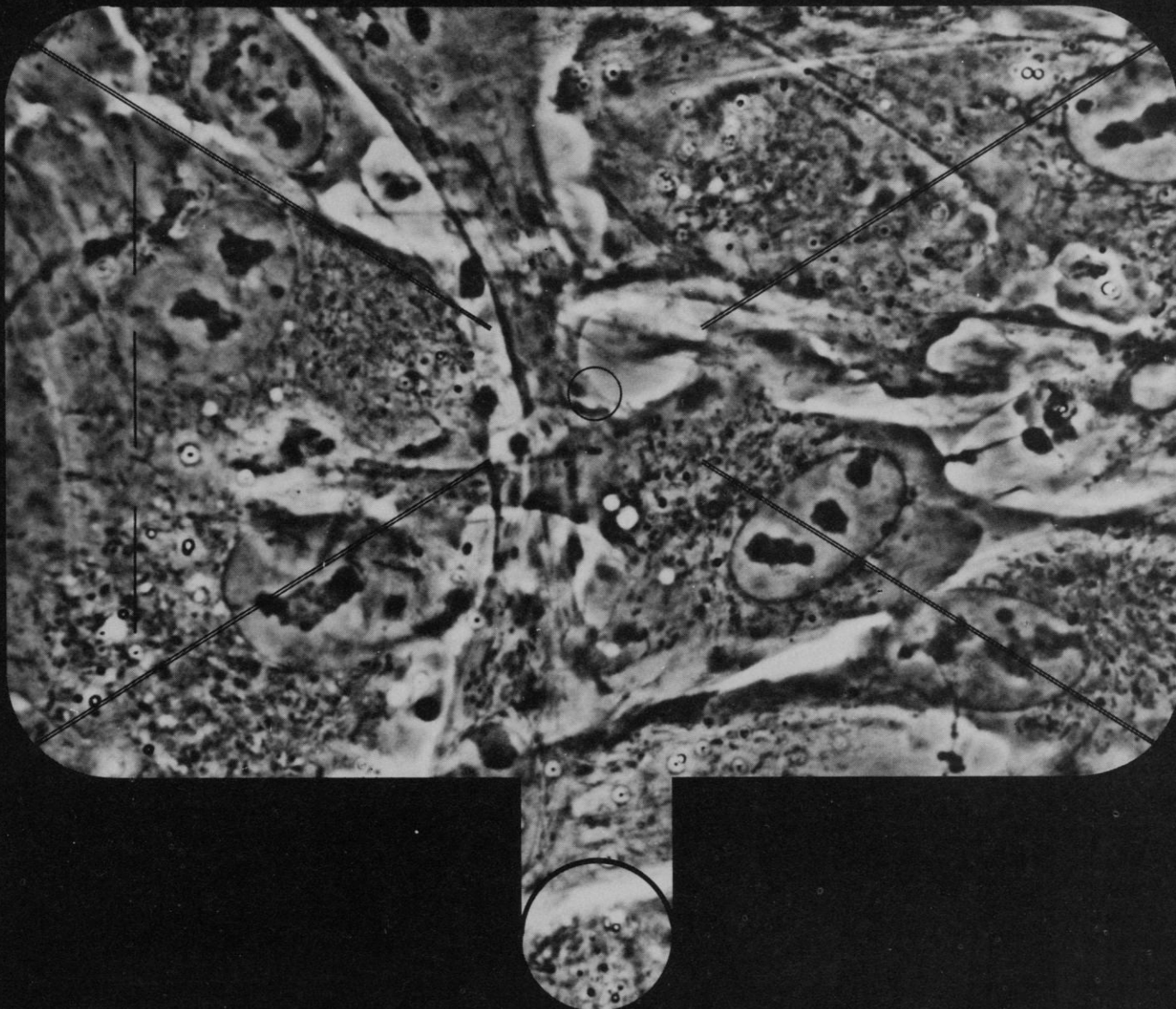
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Peer Review and the Structure of Science

In recent months, the process of peer review of scientific projects has been much in the public eye. All sorts of questions have come up: Is peer review fair? Does it provide for the support of the best science? Can it recognize potential breakthroughs? Are the reviewers chosen well? Do they respond objectively? Such questions as these do not have one simple answer because they really refer not just to the immediate issue of how peer review works, but to the structure and nature of science in general and in particular. On closer examination, there are many different versions of peer review, each adjusted to apply to the science at issue. All of these versions have one purpose: To help decide how the limited funds available for the support of science can best be spent to advance both science itself and the national purposes to which it contributes. Science is a complex and multifaceted attack on the unknown. Guesses as to how it will work can most accurately be made by people who have themselves succeeded in such attacks on the unknown. These people are the peers.

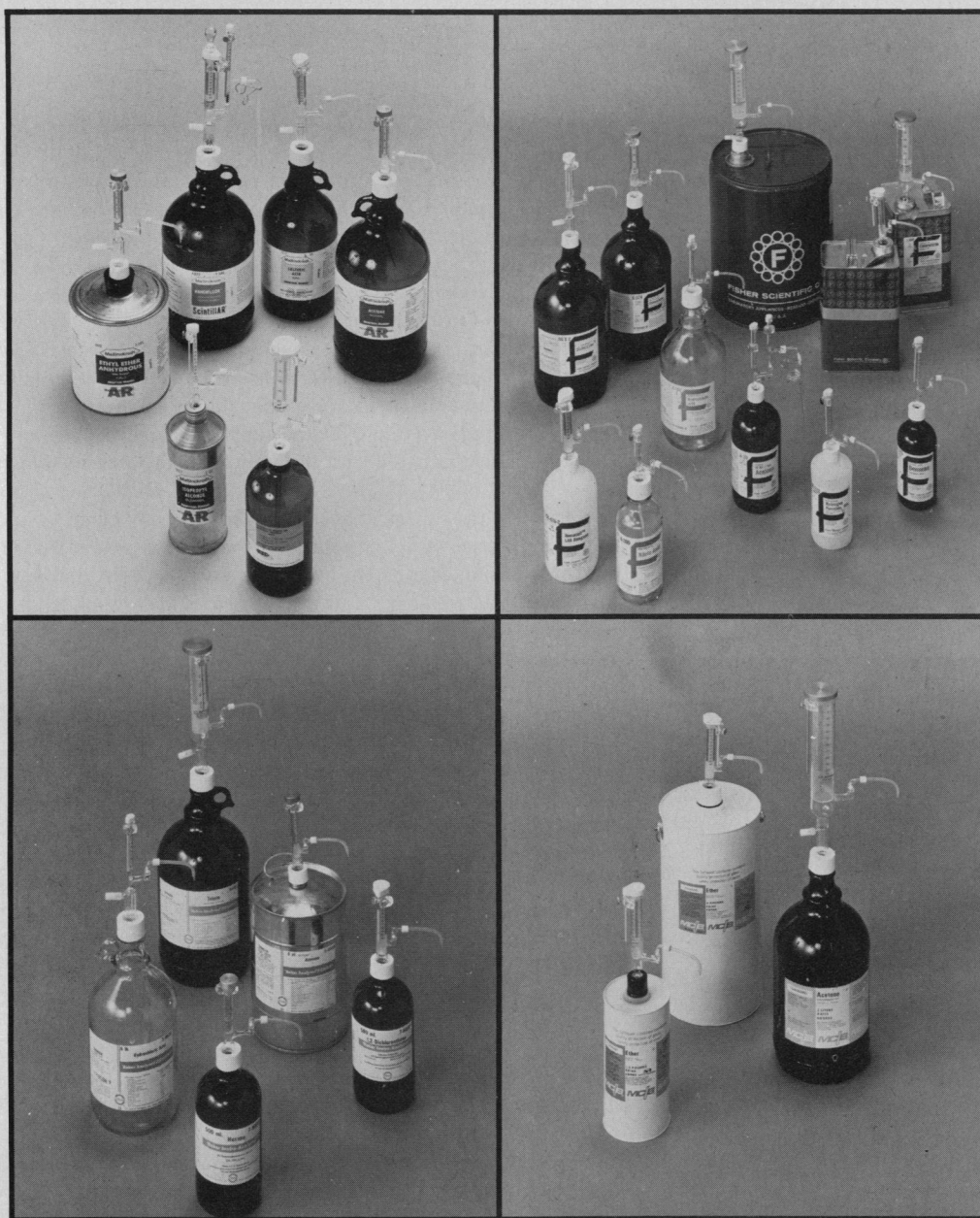
Which peers? In a recent hearing it was proposed that some peer reviewers be picked "at random" from some list. This would tend to produce some reviewers who are not knowledgeable about the proposed projects. For many scientific problems there are only a few peers—perhaps only one or two—who really understand the technicalities at issue and the possible outcomes. Thus, reviewers must be chosen by knowledgeable people. Because of the wide variety of expertise needed—often much more than can be found on any one panel of reviewers—many branches of science require written reviews. This way is more likely to obtain a perceptive, well-informed review for each project.

What breakthroughs? At recent congressional hearings a number of witnesses expressed concern that the present peer review system might be biased against really innovative proposals, those which go against the general opinion in the field and which could lead to major conceptual changes. Now, it is clear that scientists, and in particular peer reviewers, should be alert to recognize potential breakthroughs. This is by no means easy. It is also clear that some ideas claimed to be potential breakthroughs are nothing of the sort. The hearings brought out no hard evidence that any really decisive breakthrough ideas had been ignored. They did bring out various complaints. This is hardly surprising at a time of shrinking budgets, when it is certain that some solid proposals will be passed over.

Which panels? Some commentators have urged that most peer review be done by reviewing panels in regular meetings. The panel device is one that works well in certain fields, such as in some of the biological sciences, where it has long been the practice for the National Institutes of Health to make extensive use of study groups. In big science, where the choice is between several large projects, panels may be necessary because of the size and complexity of the financial decision to be made. However in other fields panels just do not work well, in part because many different and intricate specialties are involved. With many small proposals, each of which requires particular expertise, there is really no way to assemble a panel of reasonable size with the requisite experts to cover everything. For that matter, it is by no means clear that the most incisive judges of the merits of a particular new idea are identical with those who are willing to come to Washington for a panel meeting.

Ultimately, peer review has the task of picking which scientific projects to support. Getting the right projects is not (as sometimes claimed) a question of openness, nor should it be one of responsiveness to political issues. It is fundamentally a choice between projects on the basis of promised quality. Comparable choices arise for scientific journals. There the knowledgeable editors pick the appropriate expert (and usually anonymous) referees to judge the merits of manuscripts. That method of choosing referees has played an essential and effective role in the development of science. For referees, as for peer reviewers, the system depends on individual judgments of quality. —SAUNDERS MACLANE, *Department of Mathematics, University of Chicago, Chicago, Illinois 60637*

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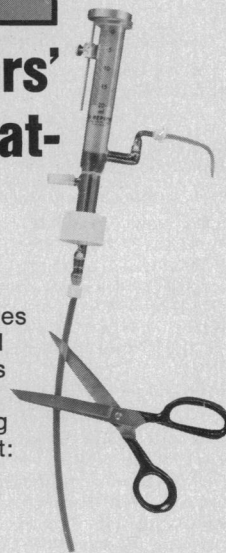


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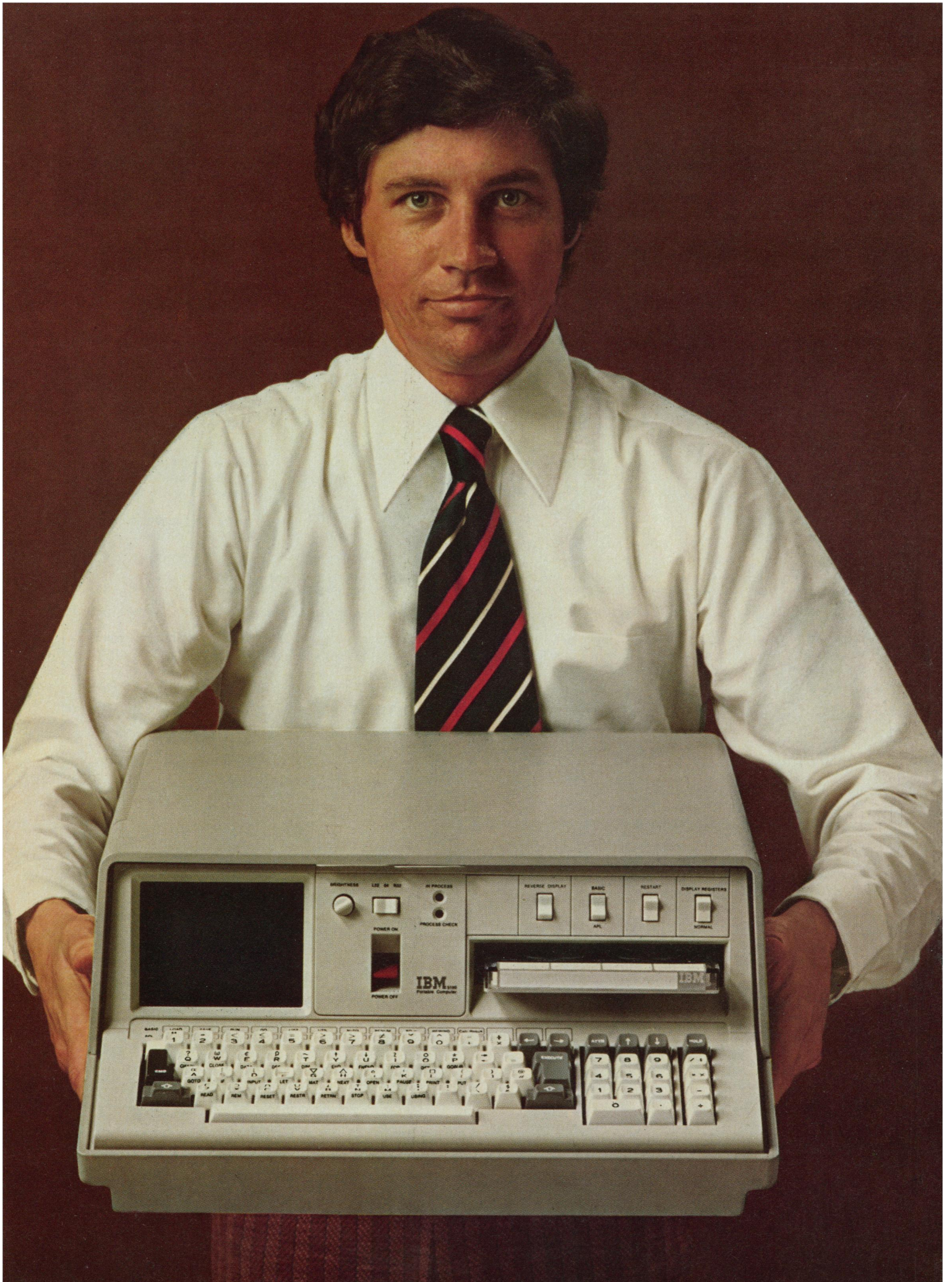
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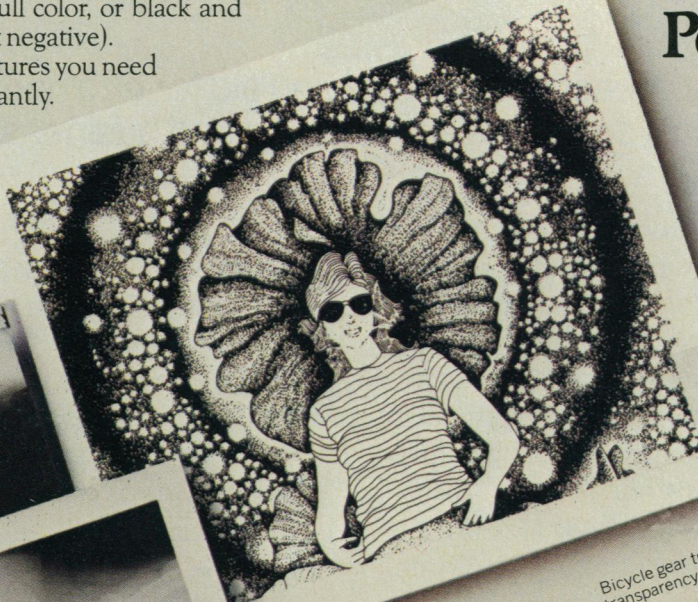
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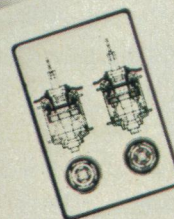
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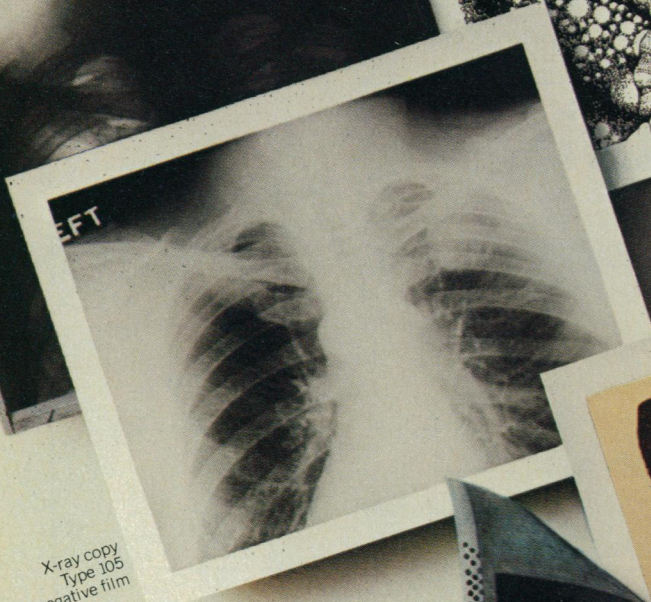
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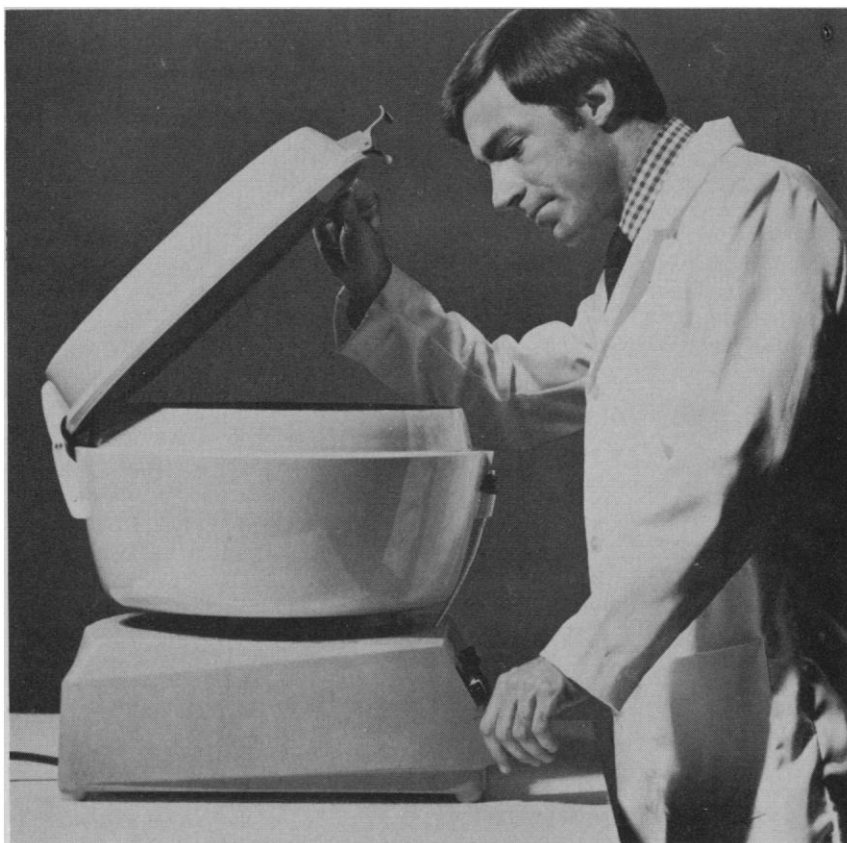
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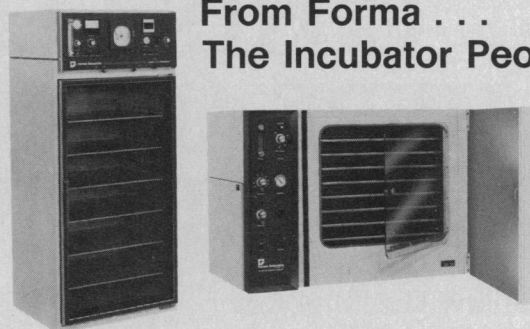
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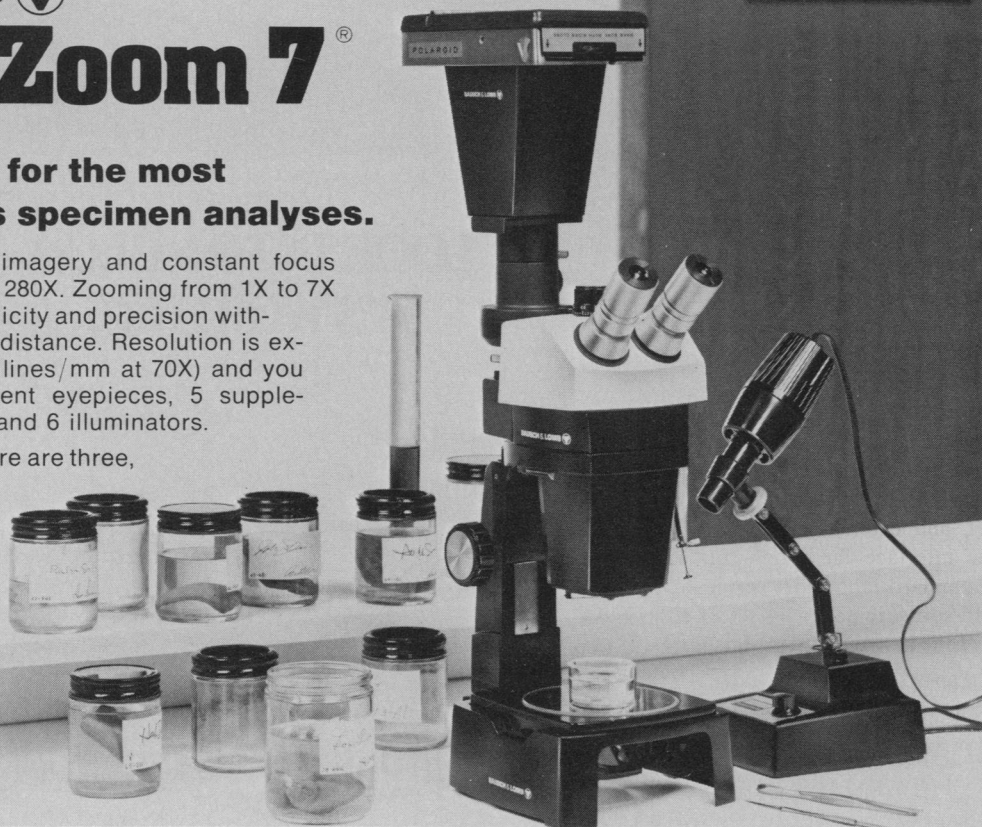
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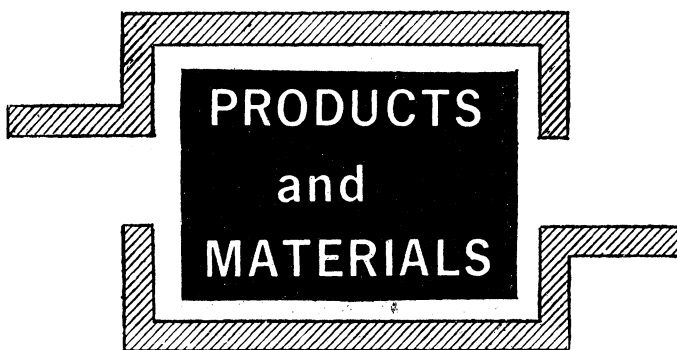
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The H-500 guarantees resolutions of 1.4 angstroms (crystal lattice) and 3 angstroms (point-to-point). Accelerating voltages range from 10 to 125 kilovolts in six steps. Magnification ranges from 100 to 800,000 power and focus is maintained through magnification changes by a zoom lens. A common yoke supports top- or side-entry specimen loading. The instrument reaches maximum stability in about 20 minutes. Other features include a beam-directing exposure meter, an automatic camera system, a pneumatically driven specimen holder, and an automated evacuation system. Perkin-Elmer. Circle 778.

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The IG-124 uses ion-selective or gas-sensing electrodes and yields a digital display of concentration in parts per million, moles per liter, or other common units. Electrode-calibration curves are not required. Front panel controls include precise digital set-points for temperature and electrode slope. A separate adjustment is provided for mean ion activity coefficient with a 10-turn potentiometer. The analyzer also uses Clark-type electrodes to read oxygen demand or hydrogen ion electrodes to measure pH. Lazaar Research Laboratories. Circle 776.

Computerized Whole Body X-ray

The ACTA-Scanner constructs a detailed black-and-white or full-color image of a cross section of the body. The image is stored on a computer tape and recorded as a photographic print. The device features 24-centimeter short-scan capability, which displays two adjacent cross sections each with a 160 by 160 matrix and a 1.5-millimeter resolution; and a 48-centimeter long-scan capability in which the two adjacent images have a 3-millimeter resolution. Radiation exposure is 4.5 minutes in the 1-degree rotation and half of that with a 2-degree rotation. Display of data includes patient identification information as well as level and angle of scan. The unit is available with software diagnostic aids. Pfizer. Circle 771.

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A digital link compatible with transistor-transistor logic is available for optical waveguide systems. Error-free transmission of 10^{11} bits at clock rates of 25 megabits is possible. The link consists of a 19-fiber bundle with an electrical-to-optical signal converter at one end and a reconverter at the other. Links are available in lengths up to 500 meters. Corning Glass Works. Circle 772.

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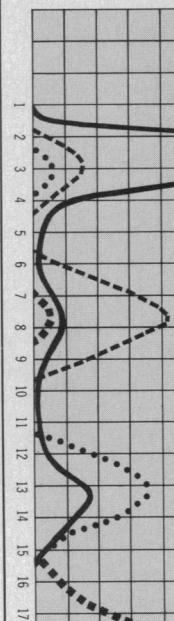
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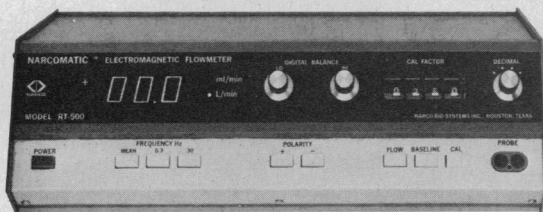
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Literature

Galax, Lanthanum Beryllate, A New Laser describes precedent host studies, crystal and optical properties, and performance criteria of a neodymium-doped crystal material. Allied Chemical. Circle 782.

Voltensors, Instrumentation Amplifiers, Function Modules, and Power Supplies contains many electronic devices for instrument assembly and research. Calex Manufacturing. Circle 783.

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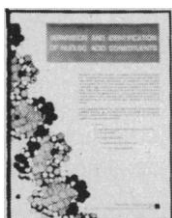


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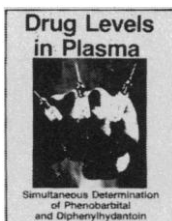
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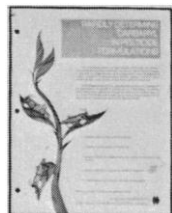
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Behavior Change, 1974. An Aldine Annual on Psychotherapy, Counseling and Behavior Modification. Gerald R. Patterson and five others, Eds. Aldine, Chicago, 1975. xvi, 500 pp., illus. \$18.50; to institutions, \$27.50.

Biofeedback and Self-Control, 1974. An Aldine Annual on the Regulation of Bodily Processes and Consciousness. Leo V. DiCara and five others, Eds. Aldine, Chicago, 1975. xviii, 534 pp., illus. \$18.50; to institutions, \$27.50.

Biology of Man in History. Selections from the *Annales: Economies, Sociétés, Civilisations*. Robert Forster and Orest Ranum, Eds. Translated from the French by Elborg Forster and Patricia M. Ranum. Johns Hopkins University Press, Baltimore, 1975. xii, 206 pp., illus. Cloth, \$12; paper, \$2.95.

By Popular Choice. Why Not Vocalize the Silent Majority? Theodore W. Cooper. Technicon Publishers, Fresno, Calif., ed. 2, 1975. xviii, 130 pp. Cloth, \$8.50; paper, \$3.95.

Carbohydrate Moieties of Immunoglobulin. Papers by Harold C. Sox, Jr., Isaac Schenkein, Jonathan W. Uhr and others. MSS Information Corp., New York, 1974. 188 pp., illus. \$17.

Community Services for Retarded Children. The Consumer-Provider Relationship. John J. Dempsey, Ed. University Park Press, Baltimore, 1975. xxiv, 312 pp. \$18.50.

Comprehensive Biochemistry. Vol. 29, Part B, Comparative Biochemistry, Molecular Evolution (Continued). Marcel Florin and Elmer H. Stotz, Eds. Elsevier, New York, 1975. xvi, 284 pp., illus. \$31.25.

Computer Recognition of English Word Senses. Edward F. Kelly and Philip J. Stone. North-Holland, Amsterdam, 1975 (U.S. distributor, Elsevier, New York). x, 270 pp. \$17.50. North-Holland Linguistic Series, 13.

Continuous Pseudometrics. W. W. Comfort and S. Negreponis. Dekker, New York, 1975. viii, 126 pp. Paper, \$12.75. Lecture Notes in Pure and Applied Mathematics, vol. 14.

Current Reviews of Higher Nervous System Dysfunction. Walter J. Friedlander, Ed. Raven Press, New York, 1975. x, 196 pp. \$16. Advances in Neurology, vol. 7.

The Determination of Organic Compounds with N-Bromosuccinimide and Allied Reagents. N. K. Mathur and C. K. Narang. Academic Press, New York, 1975. x, 166 pp., illus. \$13.75. The Analysis of Organic Materials, No. 8.

The Developmental Biology of Reproduction. Papers from a symposium, Athens, Ga., June 1974. Clement L. Markert and John Papaconstantinou, Eds. Academic Press, New York, 1975. xiv, 352 pp., illus. \$14.50.

Distinctive Feature Analysis of Misarticulations. Leija V. McReynolds and Deedra L. Engmann. University Park Press, Baltimore, 1975. xii, 130 pp. Spiral bound, \$9.50.

The Earth Manual. Malcolm Margolin. Drawings by Michael Harney. Houghton Mifflin, Boston, 1975. x, 190 pp. Cloth, \$10; paper, \$5.95. A San Francisco Book Company/Houghton Mifflin Book.

Electric Circuit Problems with Solutions. F. A. Benson. Chapman and Hall, London, ed. 2, 1975 (U.S. distributor, Halsted [Wiley], New York). x, 258 pp., illus. Paper, \$9.50.

Electrode Kinetics. John Albery. Clarendon (Oxford University Press), New York, 1975. xii, 184 pp., illus. \$16. Oxford Chemistry Series, 22.

Elements of Electrical and Electronic Instrumentation. An Introductory Textbook. Kurt S. Lion. McGraw-Hill, New York, 1975. xii, 400 pp., illus. \$22.50.



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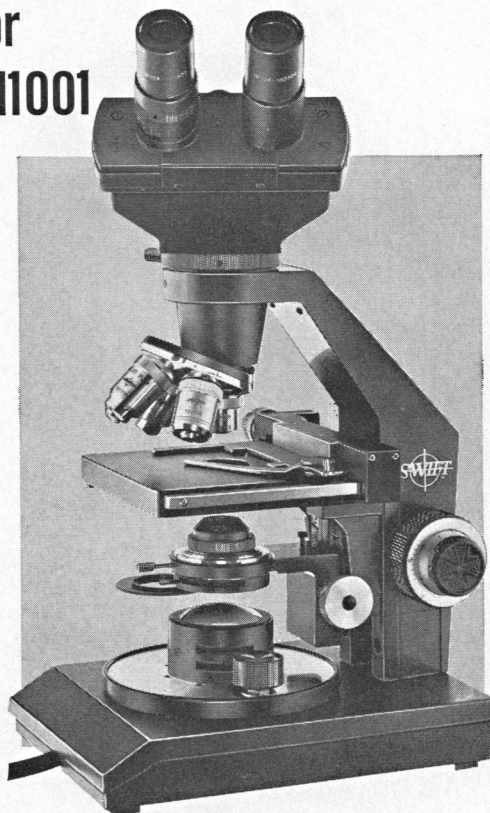
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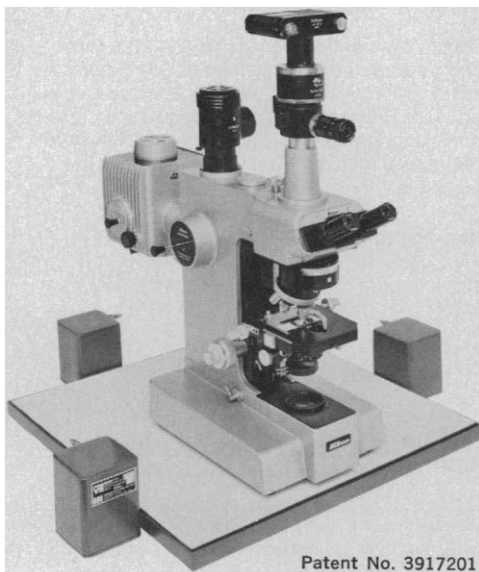
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Functional Group Determination of Olefinic and Acetylenic Unsaturation. K. Müller. Translated from the German by M. R. F. Ashworth. Academic Press, New York, 1975. xii, 334 pp., illus. \$24.25. The Analysis of Organic Materials, No. 6.

Functions of the Stomach and Intestine. Papers from a symposium, Philadelphia, Nov. 1973. M. H. F. Friedman, Ed. University Park Press, Baltimore, 1975. xviii, 470 pp., illus. \$19.50.

A Guide to the Literature on the Dental Anthropology of Post Pleistocene Man. James F. Metress and Thor Conway. Toledo Area Aboriginal Research Club, Toledo, Ohio, 1975 (available from Anthropology Department, University of Toledo). vi, 142 pp. Paper, \$3.25. Supplementary Monograph No. 1.

Immobilized Enzymes, Antigens, Antibodies, and Peptides. Preparation and Characterization. Howard H. Weetall, Ed. Dekker, New York, 1975. viii, 662 pp., illus. \$38.50. Enzymology, vol. 1.

The Immunological Basis of Connective Tissue Disorders. Proceedings of a colloquium, Madrid, Nov. 1974. Luigi G. Silvestri, Ed. North-Holland, Amsterdam, 1975 (U.S. distributor, Elsevier, New York). viii, 260 pp., illus. Paper, \$19.75.

Industrial Research Laboratories of the United States. Edited by Jaques Cattell Press. Bowker, New York, ed. 14, 1975. x, 580 pp. \$49.75.

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Krankheiten und Schädlinge an Getreide-, Ölfrucht- und Futterpflanzen. Papers from an institute, Kiel-Kitzeberg, Germany, Apr. 1975. Published for the Biologische Bundesanstalt für Land- und Forstwirtschaft by Parey, Berlin, 1975. 134 pp. Paper, DM 14. Mitteilungen aus der Biologischen Bundesanstalt für Land- und Forstwirtschaft, Heft 163.

Let's Explore Outer Space. Elementary Research Problems in Space Science. Sune Engelbrektson and Peter Greenleaf. Arco, New York, 1975. 128 pp., illus. Paper, \$2.25. A Sentinel Book.

Mammalian Cells. Probes and Problems. Proceedings of a symposium, Los Alamos, N.M.,

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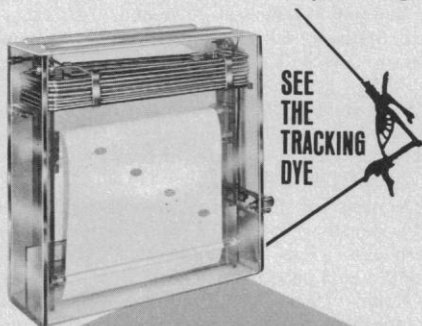
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Modification of the Information Content of Plant Cells. Proceedings of a symposium, Norwich, England, July 1974. Roy Markham, D. R. Davies, D. A. Hopwood, and R. W. Horne, Eds. North-Holland, Amsterdam, and Elsevier, New York, 1975. x, 350 pp., illus. \$24.50.

Molecular Approaches to Immunology. Proceedings of a symposium, Miami, Jan. 1975. E. E. Smith and D. W. Ribbons, Eds. Academic Press, New York, 1975. xii, 354 pp., illus. \$15. Miami Winter Symposia, vol. 9.

The Mountain World. David F. Costello. Illustrated by the author. Crowell, New York, 1975. xii, 306 pp. \$7.95.

The Mouth of Heaven. An Introduction to Kwakiutl Religious Thought. Irving Goldman. Wiley-Interscience, New York, 1975. xviii, 266 pp. \$13.50.

Natural Man. The Life of William Beebe. Robert Henry Welker. Indiana University Press, Bloomington, 1975. xiv, 224 pp. + plates. \$11.50.

The Nature of Scientific Discovery. A Symposium Commemorating the 500th Anniversary of the Birth of Nicolaus Copernicus. Washington, D.C., Apr. 1973. Owen Gingerich, Ed. Smithsonian Institution Press, Washington, D.C., 1975 (distributor, Braziller, New York). 616 pp., illus. \$15. Smithsonian International Symposia Series, 5.

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Neurosurgical Management of the Epilepsies. Dominick P. Purpura, J. Kiffin Penry, and Richard D. Walter, Eds. Raven Press, New York, 1975. xii, 356 pp., illus. \$19.75. Advances in Neurology, vol. 8.

Nonreciprocal Microwave Junctions and Circulators. J. Helszajn. Wiley-Interscience, New York, 1975. x, 350 pp., illus. \$20.95.

Operations Research in Health Care. A Critical Analysis. Larry J. Shuman, R. Dixon Speas, Jr., and John P. Young, Eds. Papers from a symposium, Atlantic City, N.J., Nov. 1972. Johns Hopkins University Press, Baltimore, 1975. xxviii, 434 pp. \$16.

Optimization Methods. Henning Tolle. Translated from the German edition. Springer-Verlag, New York, 1975. xiv, 226 pp., illus. Paper, \$19.80. Universitext.

Organochlorine Insecticides. Persistent Organic Pollutants. F. Moriarty, Ed. Academic Press, New York, 1975. xii, 302 pp., illus. \$21.

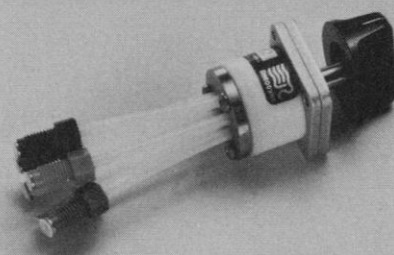
Ornithology. From Aristotle to the Present. Erwin Stresemann. Translated from the German edition (Berlin, 1951) by Hans J. and Cathleen Epstein. G. William Cottrell, Transl. Ed. With a Foreword and an Epilogue on American Ornithology by Ernst Mayr. Harvard University Press, Cambridge, Mass., 1975. xii, 432 pp. \$20.

Overload. The New Human Condition. Leopold Bellak. Human Sciences Press, New York, 1975. 224 pp. \$9.95.

Parapsychology in South Africa. Proceedings of a conference, Johannesburg, Oct. 1973. J. C. Poynton, Ed. South African Society for Psychological Research, Johannesburg, 1975 (distributor, Shuter and Shooter, Pietermaritzburg, South Africa). viii, 164 pp. Paper, R 5.95.

Peptides 1974. Proceedings of a symposium, Kiryat Anavim, Israel, Apr. 1974. Yechezkel

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Physiological Aspects of Dryland Farming. U. S. Gupta, Ed. Oxford and IBH Publishing Co., New Delhi, 1975. xvi, 392 pp., illus. Rs. 80.

The Politics of Extinction. The Shocking Story of the World's Endangered Wildlife. Lewis Regenstein. Macmillan, New York, and Collier Macmillan, London, 1975. xxiv, 280 pp. + plates. \$9.95.

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Principles of Applied Climatology. Keith Smith. Halsted (Wiley), New York, 1975. x, 234 pp., illus. \$17.50.

The Principles of Human Biochemical Genetics. Harry Harris. North-Holland, Amsterdam, and Elsevier, New York, ed. 2, 1975. xiv, 474 pp., illus. Cloth, \$49.95; paper, \$20.50. Frontiers of Biology, vol. 19.

Psychological Economics. George Katona. Elsevier, New York, 1975. x, 438 pp. \$13.

The Psychology of Strength. Jon Alan Kangas and George Freeman Solomon. Prentice-Hall, Englewood Cliffs, N.J., 1975. x, 182 pp. Cloth, \$7.95; paper, \$2.95. A Spectrum Book.

Psychotherapeutic Approaches to the Resistant Child. Richard A. Gardner. Aronson, New York, 1975. xviii, 384 pp. \$15.

Psychotherapy versus Behavior Therapy. R. Bruce Sloane, Fred R. Staples, Allan H. Cristol, Neil J. Yorkston, and Katherine Whipple. Harvard University Press, Cambridge, Mass., 1975. xxii, 264 pp., illus. \$10.50. A Commonwealth Fund Book.

Rangeland Management. Harold F. Heady. McGraw-Hill, New York, 1975. xiv, 460 pp., illus. \$17.95. McGraw-Hill Series in Forest Resources.

Red Cell Metabolism. A Manual of Biochemical Methods. Ernest Beutler, Ed. Grune and Stratton, New York, ed. 2, 1975. xvi, 160 pp. \$14.75.

Reproduction of Marine Invertebrates. Vol. 3, Annelids and Echiurans. Arthur C. Giese and John S. Pearse, Eds. Academic Press, New York, 1975. xiv, 344 pp., illus. \$36.50.

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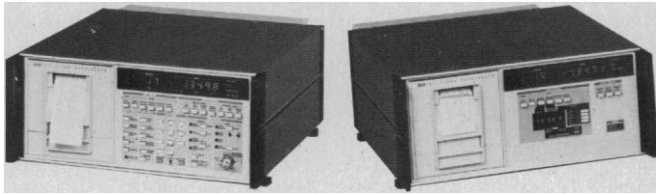
Rodd's Chemistry of Carbon Compounds. Supplement to vol. 1, Aliphatic Compounds, parts A and B. M. F. Ansell, Ed. Elsevier, New York, 1975. xvi, 268 pp., illus. \$45.95.

Rural Recreation in the Industrial World. I. G. Simmons. Halsted (Wiley), New York, 1975. viii, 310 pp. + plates. \$29.50.

Science Development. An Evaluation Study. David E. Drew. National Academy of Sciences, Washington, D.C., 1975. xviii, 184 pp., illus. Paper, \$5.75. A Technical Report Presented to the National Board on Graduate Education, No. 4.

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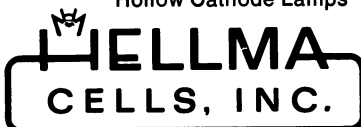
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Sequential Statistical Procedures. Z. Govindarajulu. Academic Press, New York, 1975. xvi, 568 pp. \$39.50. Probability and Mathematical Statistics, vol. 26.

Sexual Behavior. Pharmacology and Biochemistry. Merton Sandler and G. L. Gessa, Eds. Raven Press, New York, 1975. x, 354 pp., illus. \$22.50.

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Anthony Deutsch, Eds. Academic Press, New York, 1975. xvi, 412 pp., illus. \$19.50.

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Statistical Inference and Related Topics. Proceedings of an institute, Bloomington, Ind., July 1974. Vol. 2. Madan Lal Puri, Ed. Academic Press, New York, 1975. xii, 352 pp. \$18.

Stress and Anxiety. Vol. 1. Papers from a NATO Advanced Study Institute, Murnau-am-Staffelsee, Germany, June 1973. Charles D. Spielberger and Irwin G. Sarason, Eds. Hemi-

sphere, Washington, D.C., and Halsted (Wiley), New York, 1975. xii, 336 pp. \$17.95. The Series in Clinical Psychology.

Structural Materials in Animals. C. H. Brown. Halsted (Wiley), New York, 1975. xvi, 448 pp., illus. \$32.50.

Systems Analysis and Simulation in Ecology. Vol. 3. Bernard C. Patten, Ed. Academic Press, New York, 1975. xvi, 602 pp., illus. \$39.50.

Tables of Spectral-Line Intensities. William F. Meggers, Charles H. Corliss, and Bourdon F. Scribner. National Bureau of Standards, Washington, D.C., 1975 (available from the Superintendent of Documents, Washington, D.C.). 2 vols. Part 1, Arranged by Elements. xvi, 390 pp. \$8.55. Part 2, Arranged by Wavelengths. xviii, 216 pp. \$6.80. NBS Monograph 145.

Technology Trends. Communications, Computers, Electric Energy, Electric Components, Instrumentation. Papers from a meeting, Apr. 1975. Technology Forecast and Assessment Project of the Institute of Electrical and Electronics Engineers, Washington, D.C., 1975. Variously paged, illus. Paper, \$8.

The Tell-Tale Eye. How Your Eyes Reveal Hidden Thoughts and Emotions. Eckhard H. Hess. Van Nostrand Reinhold, New York, 1975. xii, 260 pp., illus. \$10.95.

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Urban Planning Theory. Melville C. Branch, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1975 (distributor, Halsted [Wiley], New York). xii, 596 pp., illus. \$35. Community Development Series/15.

U.S. Coal and the Electric Power Industry. Richard L. Gordon. Published for Resources for the Future by Johns Hopkins University Press, Baltimore, 1975. xvi, 214 pp. \$12.50.

U.S. Policy and Strategic Interests in the Western Pacific. Yuan-li Wu. Crane, Russak, New York, and University of Queensland Press, St. Lucia, Australia, 1975. xx, 214 pp. Cloth, \$14.50; paper, \$7.50.

The Use of Fragrance in Consumer Products. J. Stephen Jellinek. Translated from the German edition (Heidelberg, 1974). Wiley-Interscience, New York, 1975. xiv, 220 pp. \$15.95.

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Verhandlungen der Gesellschaft für Ökologie. Erlangen, Germany, Oct. 1974. Paul Müller, Ed. Junk, The Hague, 1975. viii, 300 pp., illus. Paper, Dfl. 40.

Vertebrate Dissection. Warren F. Walker. Saunders, Philadelphia, ed. 5, 1975. xviii, 398 pp., illus. Paper, \$7.25.

Wild Plants in the City. Nancy M. Page and Richard E. Weaver, Jr. Drawings by Robert Opdyke. Photographs by Nancy M. Page. Quadrangle (New York Times), New York, 1975. x, 118 pp. Paper, \$3.95. A Demeter Press Book.

World Steel. An Economic Geography. Kenneth Warren. David and Charles, Newton Abbot, England, and Crane, Russak, New York, 1975. 336 pp., illus. \$15. Problems in Modern Geography.

A Zoo Man's Notebook. Lee S. Crandall in collaboration with William Bridges. University of Chicago Press, Chicago, 1975. viii, 216 pp., illus. Paper, \$2.95. A Phoenix Book. Reprint of the 1966 edition.



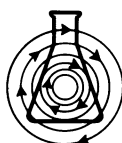
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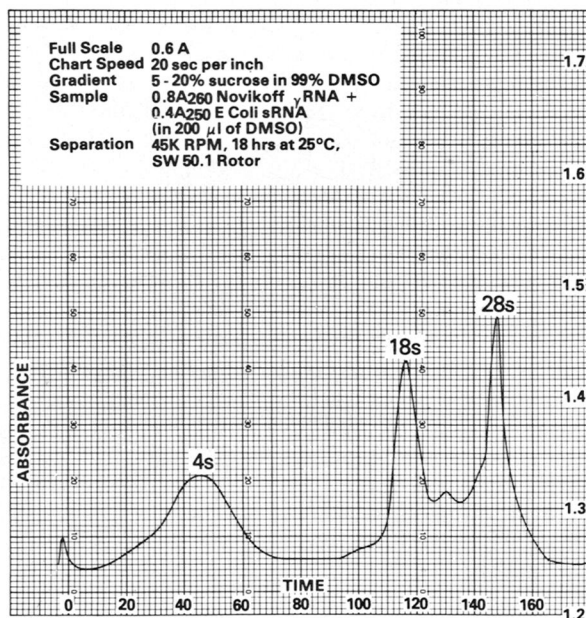
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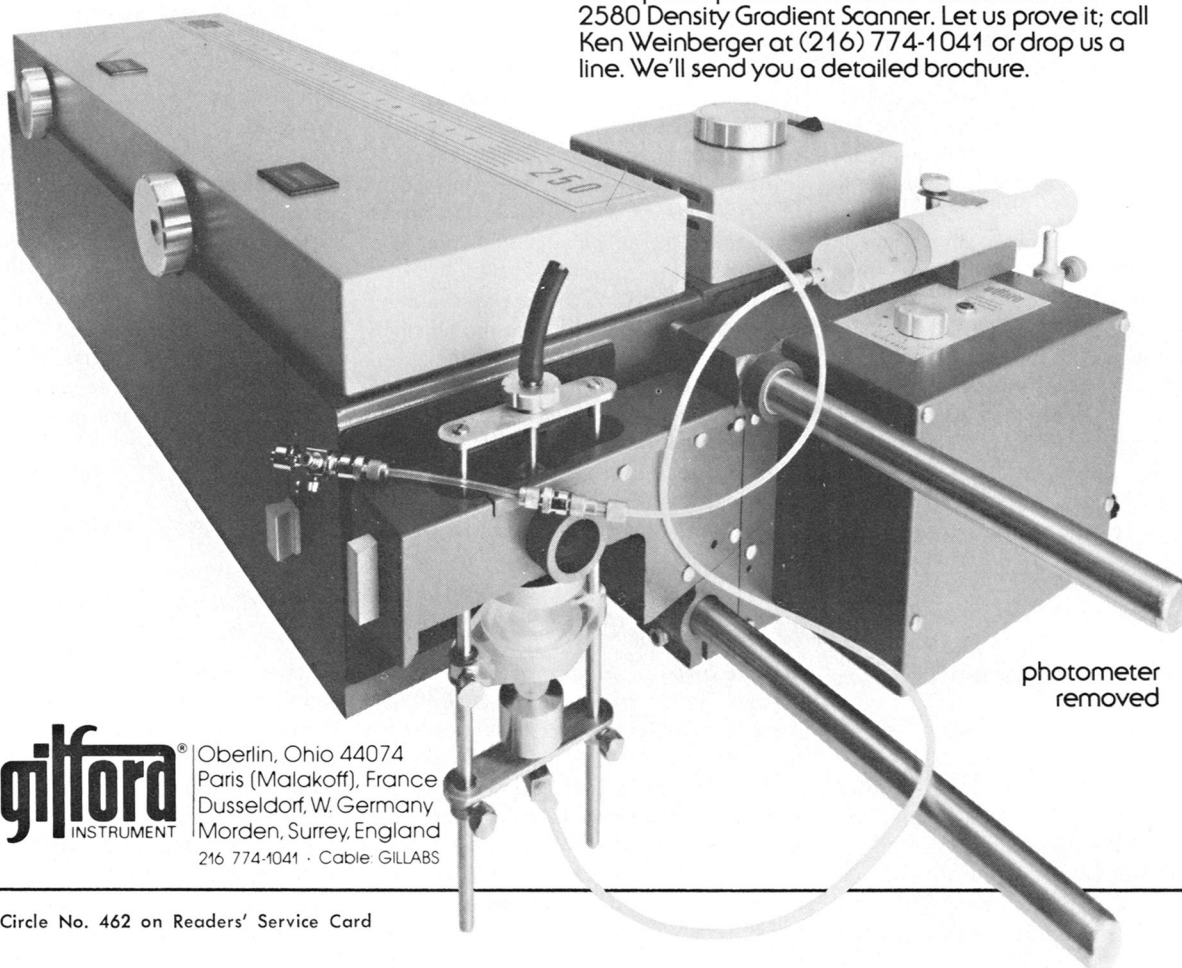
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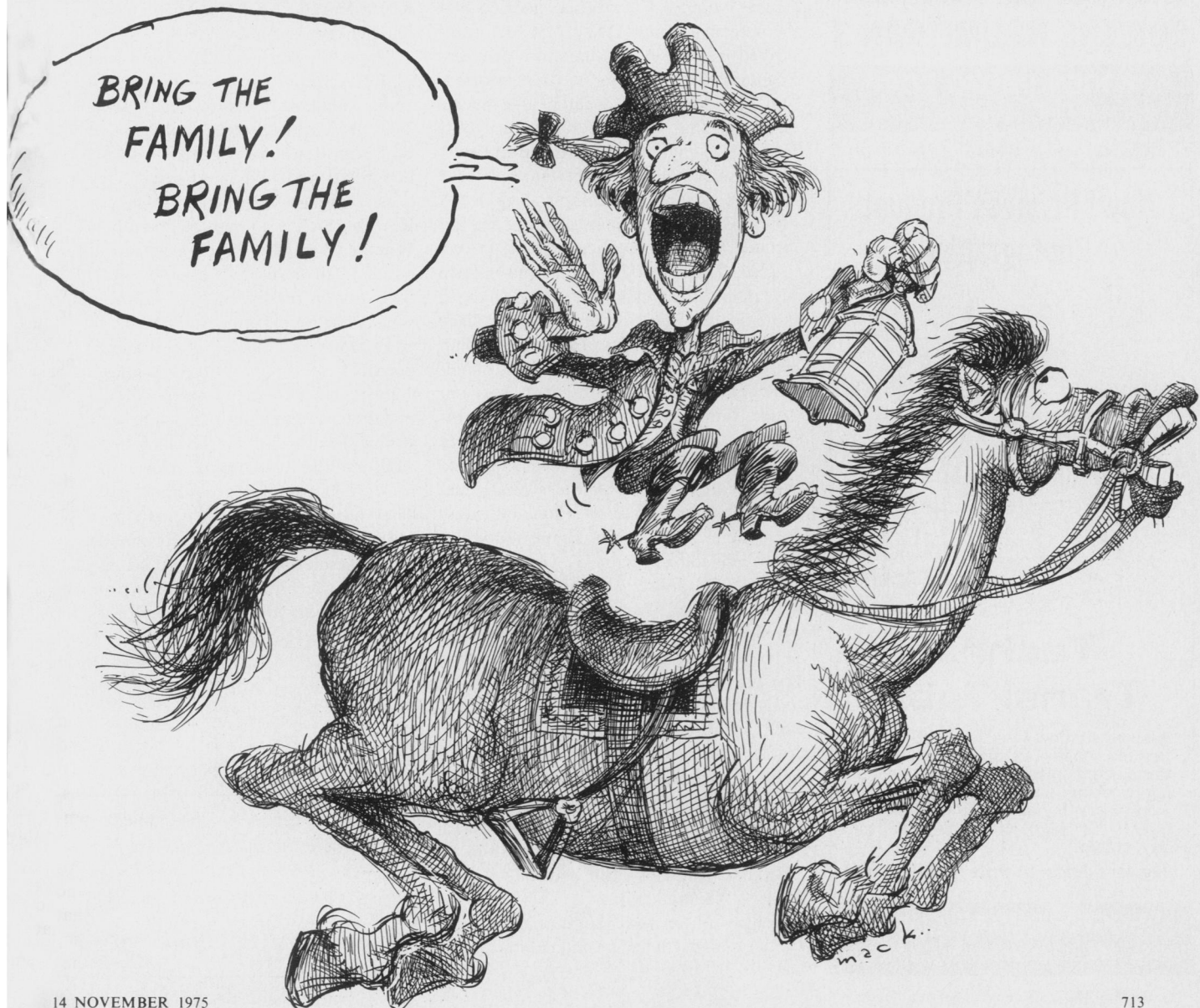
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sis, would block RSV infection, even though the genome of RSV was a single-stranded RNA. To account for these observations, Temin proposed in 1964 that a DNA intermediate is involved in RSV infection. This "provirus hypothesis" envisioned that after infection a DNA provirus was synthesized which contained all of the genetic information of the RNA viral genome. Progeny viral RNA would be synthesized from the provirus, thereby accounting for the sensitivity of infection to inhibitors of both DNA synthesis and DNA-dependent RNA synthesis. If the provirus were integrated into the cellular genome, the stable inheritance of RSV transformation could be explained.

The provirus hypothesis did not achieve instant popularity. The evidence for the idea was indirect, and much of it relied on studies in which inhibitors, which were widely suspected of producing artifacts, were used. Moreover, the hypothesis conflicted with the scheme that had become known as the central dogma of molecular biology. The dogma specified that the information of DNA was first transcribed into RNA and then into proteins. People had come to expect that information flow would not occur in the reverse direction, that is, from RNA to DNA. However, Temin and John Bader independently accumulated additional evidence over the next 5 years implicating DNA synthesis in RSV infection, but made few inroads into the skepticism of their colleagues. Then, in 1970, Temin and Satoshi Mizutani did an experiment that changed the climate of opinion dramatically. They showed that the virions of RSV contain an enzyme that can transcribe the single-stranded virion RNA into DNA. This evidence, obtained simultaneously by Baltimore, using Rauscher murine leukemia virus and RSV, provided a mechanism for the formation of a DNA intermediate during RNA tumor virus infection and transformation, and clothed Temin's original hypothesis in respectability.

David Baltimore was trained as an animal virologist, working with Richard Franklin and James Darnell at the Rockefeller Institute and at the Massachusetts Institute of Technology. In 1965 he moved to La Jolla to join the virology group at the Salk Institute with Dulbecco. There he studied the mechanism of replication of poliovirus, making rapid progress in characterizing the replication of the viral RNA and the synthesis of the viral proteins. In 1967 Alice Huang joined the laboratory as a postdoctoral fellow. She had studied with Robert Wagner, doing much of the pioneering work on vesicular stomatitis virus (VSV) and its defective interfering particles.

In 1968 Baltimore moved to MIT, and Huang went with him to Boston, where they were married. Baltimore continued his work with poliovirus, and Huang resumed her work with VSV. They were led to consider the problems facing an RNA virus whose genome is complementary to its messenger RNA. In order to replicate, such a virus would have to use a cellular RNA-dependent RNA polymerase (for which there was no evidence) or would have to contain a virus-coded polymerase in its virion. Baltimore, Huang, and M. Stampfer showed that VSV particles did indeed contain an RNA-dependent RNA polymerase. Baltimore, with his broad interests in the biology of animal viruses, immediately decided to test for the presence of a polymerase in the virions of RNA tumor viruses. Because his laboratory was not equipped to grow large quantities of RNA tumor viruses, he used a sample of Rauscher murine leukemia virus provided by the National Cancer Institute and demonstrated the presence of an RNA-dependent DNA polymerase in these virions and in RSV.

The RNA-dependent DNA polymerases of RNA tumor viruses have quickly become standard tools for cell biologists. They are used to prepare radioactive DNA probes to detect viral genetic information in normal and malignant cells. They are used to prepare DNA copies of messenger RNA's which can be isolated and purified. Whether they play a role in cellular differentiation or development is not clear, but their role in the life cycle of RNA tumor viruses has been firmly established.

The awarding of the Nobel Prize to Dulbecco, Temin, and Baltimore marks the convergence of lines of research which at one time were thought to be quite separate. It now seems clear that the DNA tumor viruses and the RNA tumor viruses operate, at least in part, by a common pathway. They become part of the genetic material of the cells they transform. To what degree they resemble each other in the mechanisms by which they affect cell growth regulation is a fascinating question for the future.

WALTER ECKHART

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