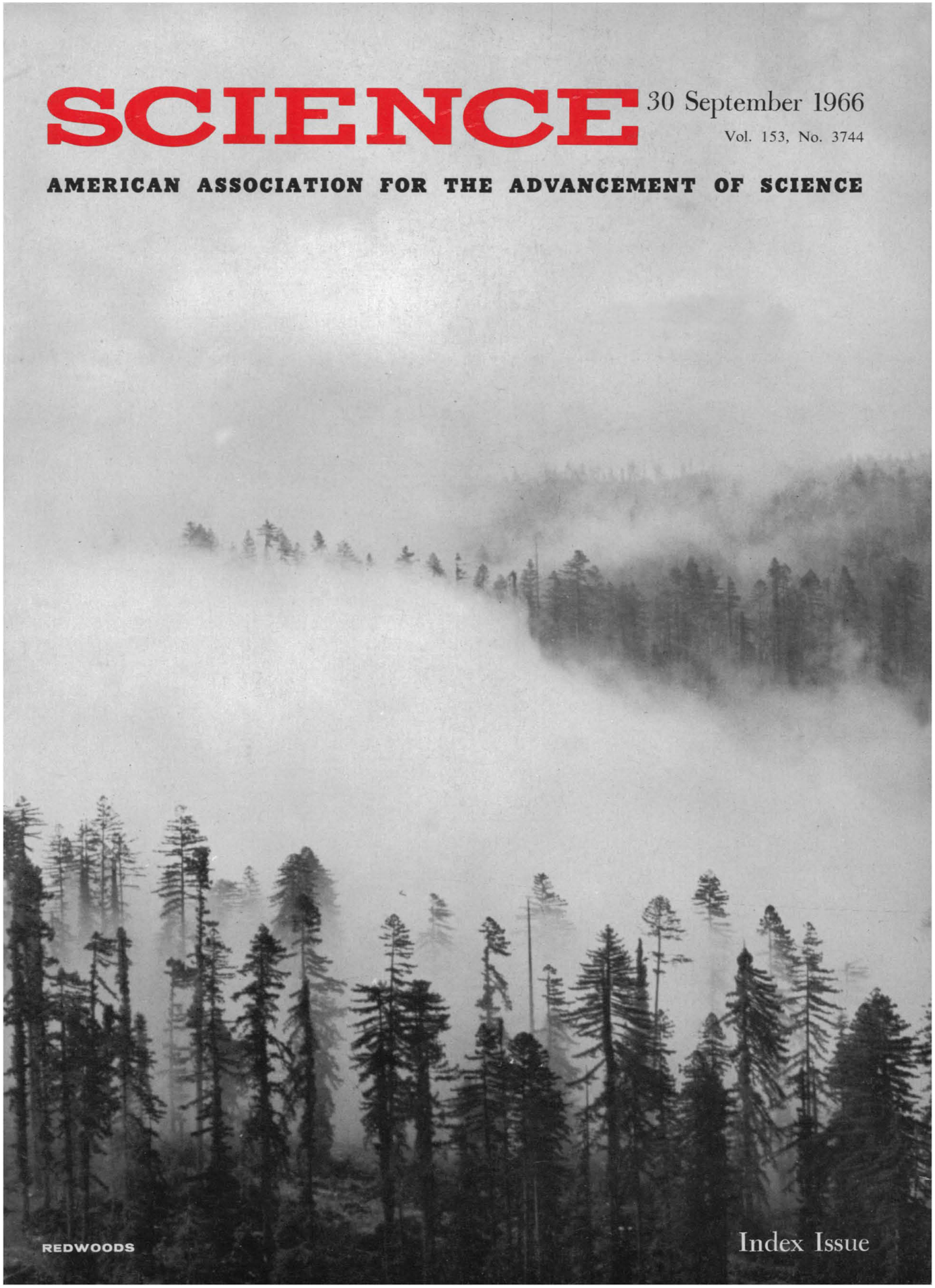
SCIENCE

30 September 1966

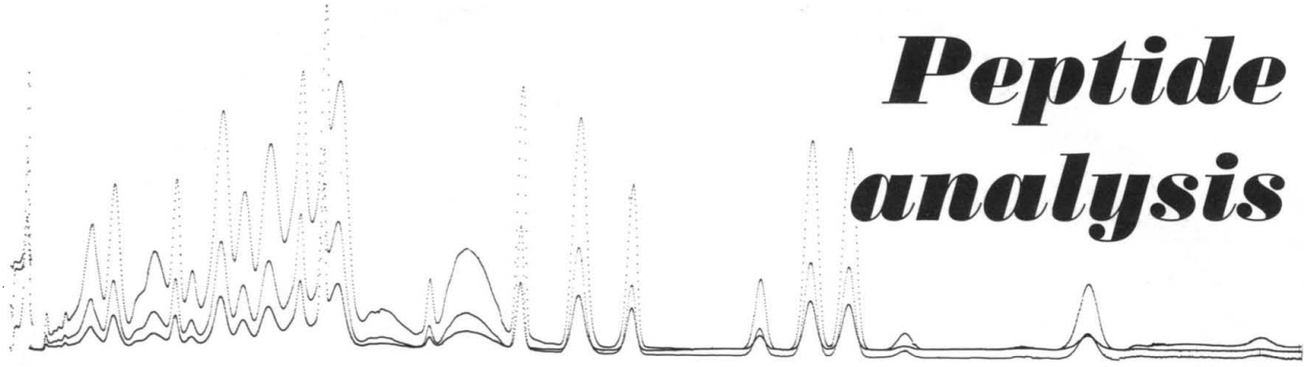
Vol. 153, No. 3744

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



REDWOODS

Index Issue



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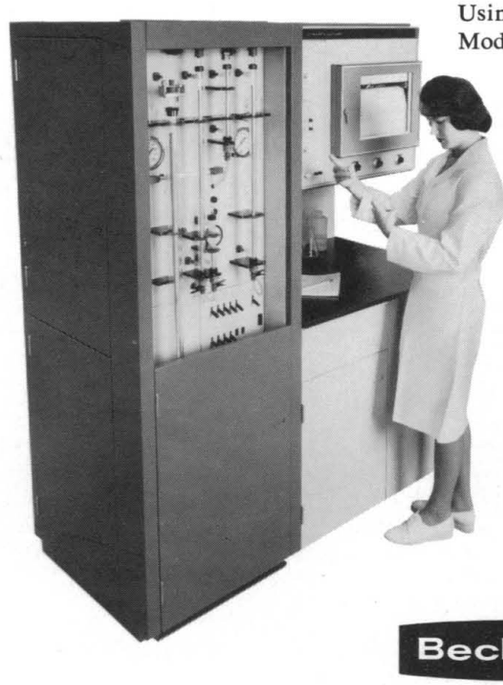

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1. Auler, H., Banzer, G., Krebsfrosch, Z. F., 53, 65 (1942) • 2. Figge, F. H. J., Diehl, W. K., Peck, G. C., Mack, H. P., Cancer Res. 2, 105 (1956) • 3. Lipson, R. L., Baldes, E. J., Olsen, A. M., J. Natl. Cancer Inst. 26, 1 (1961) • The literature references should not be interpreted as either an endorsement or disapproval of the biochemical by the cited investigation.

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30 September 1966
Vol. 153, No. 3744

SCIENCE

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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.

COVER

The Coast Redwoods grow near the often foggy coast of northern California. Proposals to preserve a portion of these tall trees in a Redwood National Park have produced a controversy involving the Administration, the conservationists, and the lumber companies which own most of the trees. See page 1620. [Miller Redwood Company, Crescent City, California]

WASHINGTON, D. C. • 133rd AAAS

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It provides complete, detailed information about all the sessions and symposia scheduled, the Annual Exposition of Science and Industry, and the Science Theatre.

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Washington Academy of Sciences Invited Address: P. M. S. Blackett, Nobel laureate in physics, president of the Royal Society, "The Ever-Widening Gap."

Interdisciplinary Symposia: Science in International Perspective with P. M. S. Blackett, Sir Lawrence Bragg, Victor F. Weisskopf; Political Aspects of the Population Explosion; Scientific Exchange and Use of Information; Systems of Pollution Control.

Special Sessions: AAAS Presidential Address by Henry Eyring, "Untangling Biological Reactions"; the Joint Address of Sigma Xi and Phi Beta Kappa by Walter Orr Roberts, "Science, a Wellspring of Our Discontent"; the Seventh George Sarton Memorial Lecture by George Wald, "Color Vision: Model or Reality"; and the National Geographic Society Illustrated Lecture.

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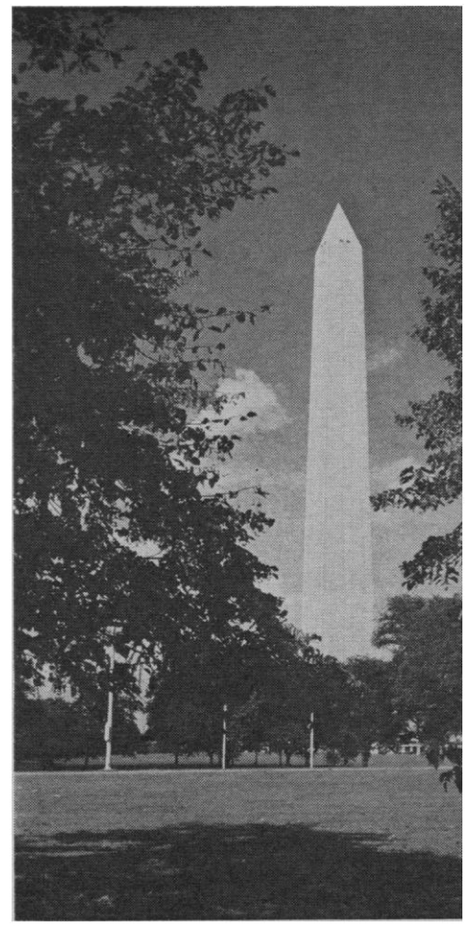

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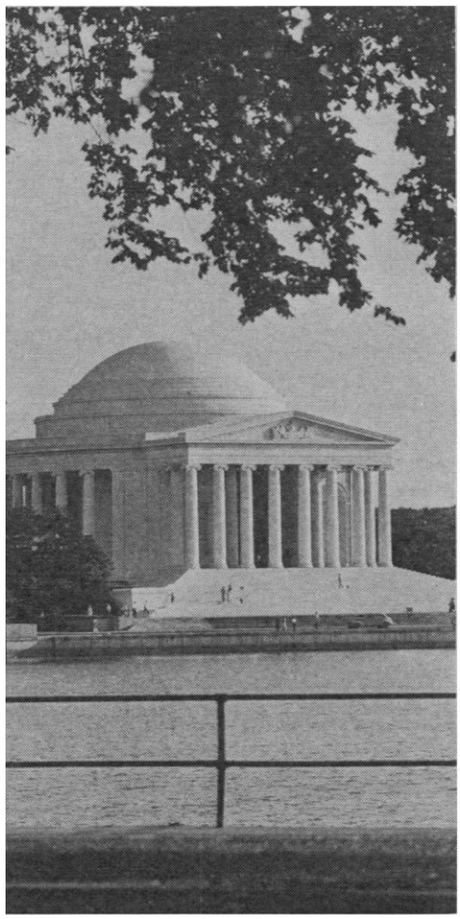

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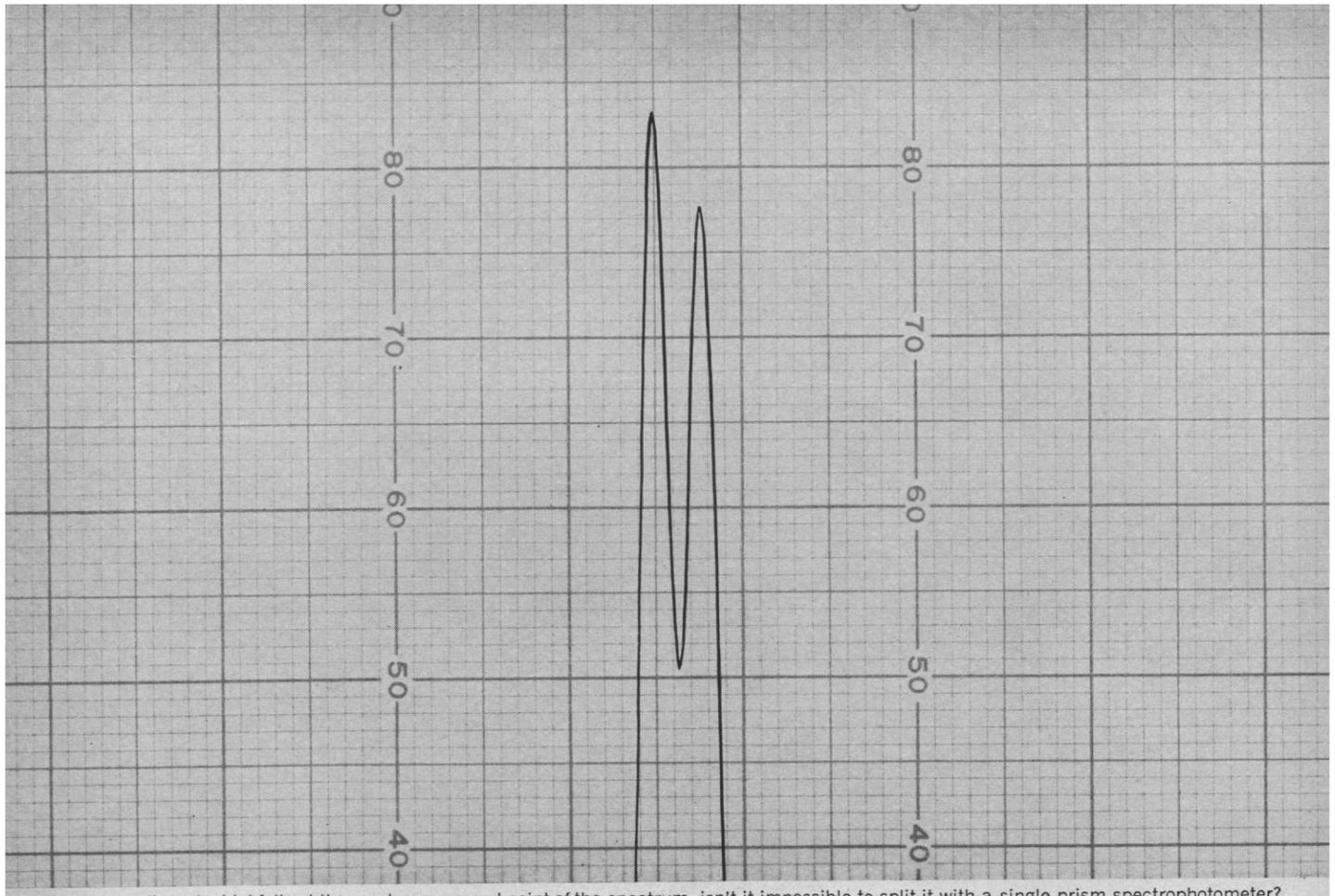

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and more sensible to use in wartime because it requires less manpower." As a consequence of the suppression of the bulletin, the head of Brownlee's department, Professor Theodore William Schultz, resigned and joined the faculty of the University of Chicago, and, by March, 19 other faculty members had left Iowa College in protest. One of them, W. W. Wilcox, actually found refuge at the University of Wisconsin, where much of the work establishing the nutritious qualities of oleomargarine had been carried out by C. A. Elvehjem and his co-workers. In an article entitled "Vegetable fats equal butterfat in mixed rations," R. K. Boutwell, R. P. Geyer, C. A. Elvehjem, and E. B. Hart concluded, on the basis of their own research, that "butterfat is superior to vegetable fats when young animals are restricted to a diet made up almost entirely of milk, but not when the diet includes a mixture of such carbohydrates as starch, sucrose, and dextrose. These are supplied by such common foods as cereals, potatoes, sugar, and molasses" ("What's new in farm science," *Bull 461, Ann. Rept. Agr. Exp. Sta., Univ. Wis.* (December 1943, p. 45). I sincerely regret the mistake, which might seem to impugn the distinguished work of the Wisconsin group. I further deplore that the same error was printed in my book *Science and Ethical Values* (Univ. of North Carolina Press, Chapel Hill, 1965, p. 92), in a more extended form of the essay printed in *Science*. To confuse the rescuer with the drowning man or the bystander with the thug may not be uncommon, but it is truly regrettable.

BENTLEY GLASS
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"Bootlegging" in Research

Although Greenberg is perhaps strictly correct in stating in his article on "bootlegging" in research (News and Comment, 19 Aug., p. 848) that this problem has not been the subject of any published study or conference, it has, nevertheless, been aired and the discussion recorded. At the 12th National Conference on the Administration of Research, University of Denver, 1958, a participant asked how the willingness of research directors to tolerate "bootleg research" accorded with managerial efforts to program and direct research activities toward major objectives of the laboratory and parent organizations. The ensuing discussion revealed two opposing camps, one for "legalizing" and encouraging such efforts by specific allocation of discretionary budgeted funds for extracurricula exploratory studies, the other for excluding any effort not clearly a part of the approved program, on the basis that any "undercover" work is objectionable. The issue was not then and has not been settled but one should take note that there are two kinds of "bootlegging." One involves undercover or diversionary effort and the other, as Greenberg points out, involves clouding the real purposes of approved programs. Perhaps the latter is less harmful, particularly if the effort is not really a departure from the commitments of management and the researcher.

A summary of the above NCAR discussion will appear in a forthcoming text, *The Administration of Research—An Interpretive Summary of the Proceedings of the National Conference on the Administration of Research, 1947–1964*, now being edited by the undersigned.

LESLIE B. WILLIAMS
Coordinator of Research,
University of Delaware, Newark

Calcium and Fluoride

D. M. Hajimarkos discussed the high content of fluoride in fish flour (Letters, 17 June) and called for studies to be undertaken regarding the effect of ingesting fish flour on dental caries and the degree of mottled enamel that might develop in children's teeth. In this letter he has omitted one important paragraph which is found in his reference report [*J. Pediat.* **65**, 782 (1964)] as follows:

> However, since the calcium content of fish flour is appreciable, it should be pointed out that experimental evidence has shown that absorption of fluoride from the intestinal tract is considerably depressed by the presence of high amounts of calcium.

My interest is merely to bring out this information, so that any judgment rendered by readers will also be based on this statement.

ROBERT F. ARMEIT
21 Trowbridge Road,
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Outcast glass is in at Western Electric

Glass has several qualities that make it a choice encapsulant for electronic components. But to seal glass around a component, the glass must be heated to temperatures well above 600°C. Western Electric found that long exposure to these temperatures would damage sensitive components. In fact, ordinary glass required so much heat, applied for so long a time, that both damage and delay occurred in the sealing process.

Glassmakers have long struggled to keep glass free of contaminants, especially the oxides of iron. However, manufacturing engineers at Western Electric's North Carolina works discovered that specific quantities of FeO in glass cause it to absorb infrared energy very readily.

Specifically, glass doped with FeO rapidly absorbs energy from infrared waves in the region of 1.2 microns. This region corresponds to the output of a small, powerful infrared heater developed at Western Electric's Engineering Research Center. When adapted to the sealing process, the heater's ellipsoidal reflector concentrates energy from a quartz iodine lamp at one focus onto the seal area at the other focus.

Today, Western Electric uses FeO-doped glass tubes, sealed by infrared heating, to protect diodes and ferreed switch contacts. A superior seal is made around the component's wire leads — using less energy and consequently causing less damage to components. This is another way Western Electric helps its Bell System teammates to continue to bring you the world's most dependable telephone service at low cost.

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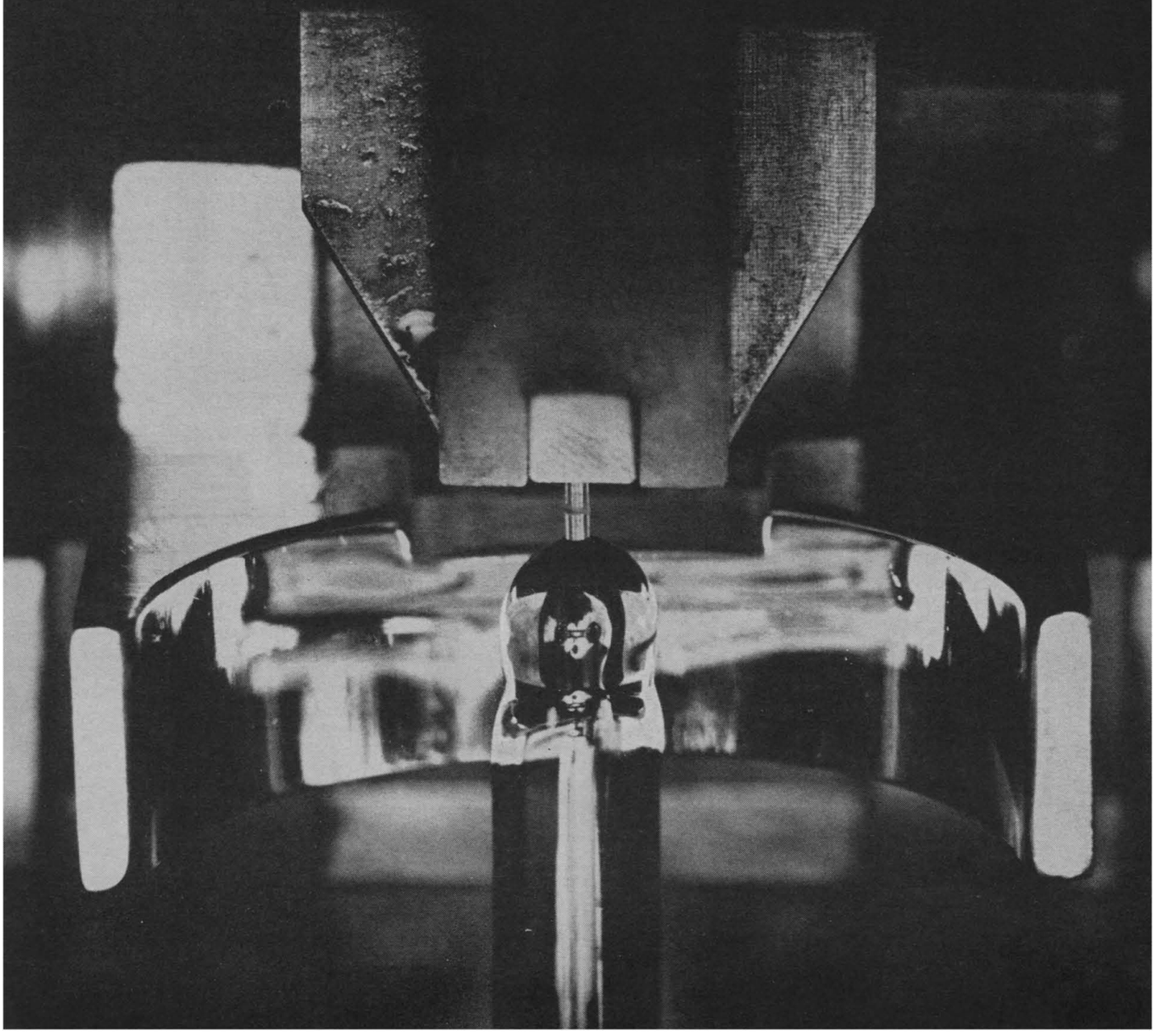

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30 September 1966, Volume 153, Number 3744 **SCIENCE**

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Industry and Education

A trend to watch with interest is the movement of industry into the classroom. General Electric, I.B.M., Raytheon, Xerox, and other industrial giants have recently acquired smaller companies with long experience in educational work, or have established educational divisions or subsidiaries. To help direct these new ventures they have recruited teachers, psychologists, and educators, among them Francis Keppel (former Assistant Secretary of Health, Education and Welfare) and Francis Ianni (former director of research in the Office of Education), who have joined the new General Learning Corporation created by Time and General Electric, and Edward L. Katzenbach, Jr., who left the American Council on Education to direct the educational division of Raytheon.

Not everyone welcomes this industrial invasion. Traditional textbook publishers are keeping a wary eye on their new competitors. Some educators fear that the motivation is wholly financial, for education has now become one of the largest employers and greatest investors of capital in the United States. Some warn against overemphasis on hardware, and have history to cite in justification of their fears. Motion picture film has long been recognized as a useful teaching aid, but some bad pictures have been produced. Programmed instruction is a useful technique, but some programmed courses have paid more attention to method than to material. Television has promise, but has fallen far short of its educational potential.

Statements of some of the top officers of companies with educational interests bring assurance that they recognize these dangers and that their emphasis will be—as any teacher's should be—on the learner and the learning process. Joseph C. Wilson, president of Xerox, told the New York Society of Security Analysts, "Xerox has no intention of imposing hardware on the content of education. . . . We are entering this market with many more questions than answers." Lyle Spencer, president of Science Research Associates, recently commented on the expected competition for the educational market: "Competition for what? Merely to sell textbooks by the carload and teaching machines by the dozen? Hardly. We are in competition to ask questions and find answers. . . . We are looking beyond the pages of a textbook and into the mind of a child. . . . We want to find out—and intend to find out—how a classroom can become a more effective organizer of a child's experience."

If these attitudes are typical, the situation is full of promise, for industry can provide fresh ideas, a largeness of approach, and resources for innovation and experimentation. One opportunity is to treat education more comprehensively than the individual author or curriculum builder can treat it. The term *systems approach* may be overworked, but the educational system could profit from being considered as a whole. Another opportunity is to experiment on a large scale. Much of the educational change of recent years has dealt with single courses, or even smaller units, and much has been introduced without experimental test or verification. A related opportunity is to assess more systematically what happens to students under different forms of educational handling. Competition, for sales as well as for prestige and the satisfaction of making major social contributions, should require industry to evaluate its educational work thoroughly.

Education has profited from the efforts of senior scholars to improve course content. It has benefited from the growing support and involvement of the federal government. It can also profit from the activities of its new ally, industry. A community of interest is evolving. If an effective partnership can be developed, the benefits to education can be great.

—DAEL WOLFLE

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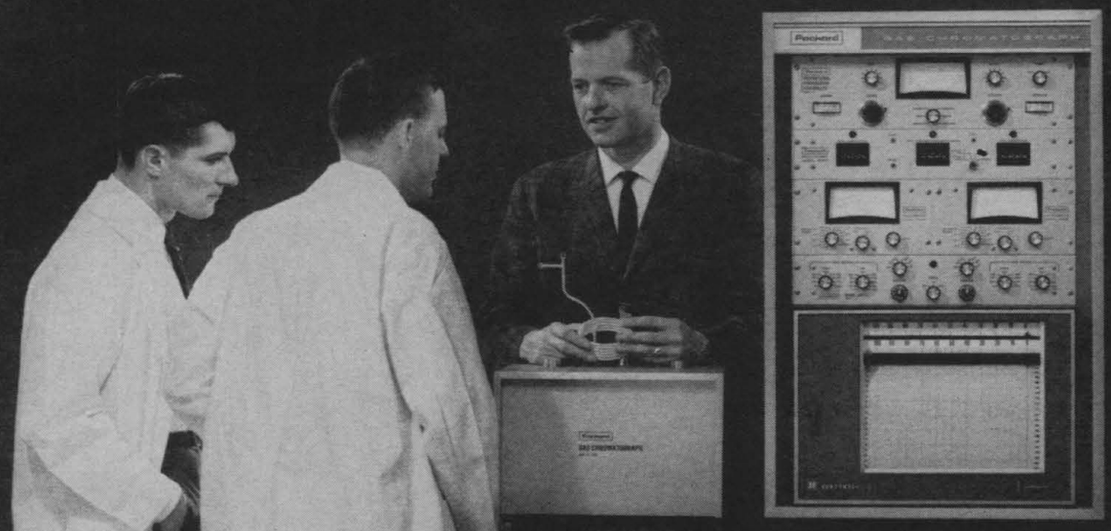

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Sustaining Member. Any person, corporation, or organization contributing to the Society an amount prescribed by the Executive Council, but in no case less than $100, is eligible for election to sustaining membership.

The combined membership of the Society now exceeds 1400 and represents over 20 professional disciplines. The largest percentage of the members is from the following specialties: Psychology, education, sociology, statistics, engineering, physics, mathematics, industrial design, physiology, medicine, anthropology, and biology.

Election of officers is held annually. However, the offices are established so that each officer is a member of the Executive Council for a 3-year period. Current officers of the Society are: President, Ezra V. Saul (Tufts University); president-elect, Stanley Lippert (Douglas Aircraft Company); past president, Julian M. Christensen (Aerospace Medical Research Labs.); secretary-treasurer, Stuart O. Parsons (Lockheed Missiles & Space Company); secretary-treasurer elect, Jack A. Kraft (Lockheed Missiles & Space Company); and past secretary-treasurer, Charles A. Baker (Honeywell Regulator Company). The executive council consists of: Renato Contini (New York University); Stanley Deutsch (National Aeronautics & Space Administration); Joseph W. Wulfeck (Dunlap & Associates, Inc.); Alphonse Chapanis (Johns Hopkins University); John Lyman (University of California, Los Angeles); and Stanley N. Roscoe (Hughes Aircraft Company). The publications board consists of Alan A. Burrows (Douglas Aircraft Company); Wesley E. Woodson (Convair-San Diego); and Joseph L. Seminara (Lockheed Missiles & Space Company).

Appointed officers include publication editors, committee chairmen and the new AAAS Council representative, H. Wallace Sinaiko (Institute for Defense Analysis).

STUART O. PARSONS
Secretary-Treasurer

(Continued from page 1632)

Stokinger, Edward C. J. Urban, Howard S. Van Ordstrand, Arthur J. Vorwald, and John F. Zielinski.

Catecholamines. Richard J. Wurtman. Little, Brown, Boston, 1966. 123 pp. Illus. $6.75. New England Journal of Medicine Medical Progress Series.

The Cell: Chemistry and Function. Roger H. Trumbore. Mosby, St. Louis, 1966. 430 pp. Illus. $12.

Cell Synchrony: Studies in Biosynthetic Regulation. Ivan L. Cameron and George M. Padilla, Eds. Academic Press, New York, 1966. 408 pp. Illus. $15. Eighteen papers.

Chemistry and Therapy of Peptic Ulcer. David C. H. Sun. Thomas, Springfield, Ill., 1966. 254 pp. Illus. $8.50.

The Chemistry of the Antibiotics Used in Medicine. R. M. Evans. Pergamon, New York, 1966. 236 pp. Illus. Paper, $6.50. The Commonwealth and International Library.

The Chlorophylls: Physical, Chemical, and Biological Properties. Leo P. Vernon and Gilbert R. Seely, Eds. Academic Press, New York, 1966. 695 pp. Illus. 200s. Nineteen papers contributed by M. B. Allen, S. Aronoff, N. K. Boardman, Lawrence Bogorad, L. J. Boucher, Warren L. Butler, Roderick K. Clayton, G. Cohen-Bazire, R. C. Dougherty, J. C. Goedheer, A. S. Holt, J. J. Katz, Bacon Ke, Walter Lwowski, John M. Olson, Roderic B. Park, G. R. Seely, W. R. Sistrom, Elizabeth K. Stanton, Harold H. Strain, Walter A. Svec, and Leo P. Vernon.

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