22 JULY 1983 · VOL. 221 · NO. 4608

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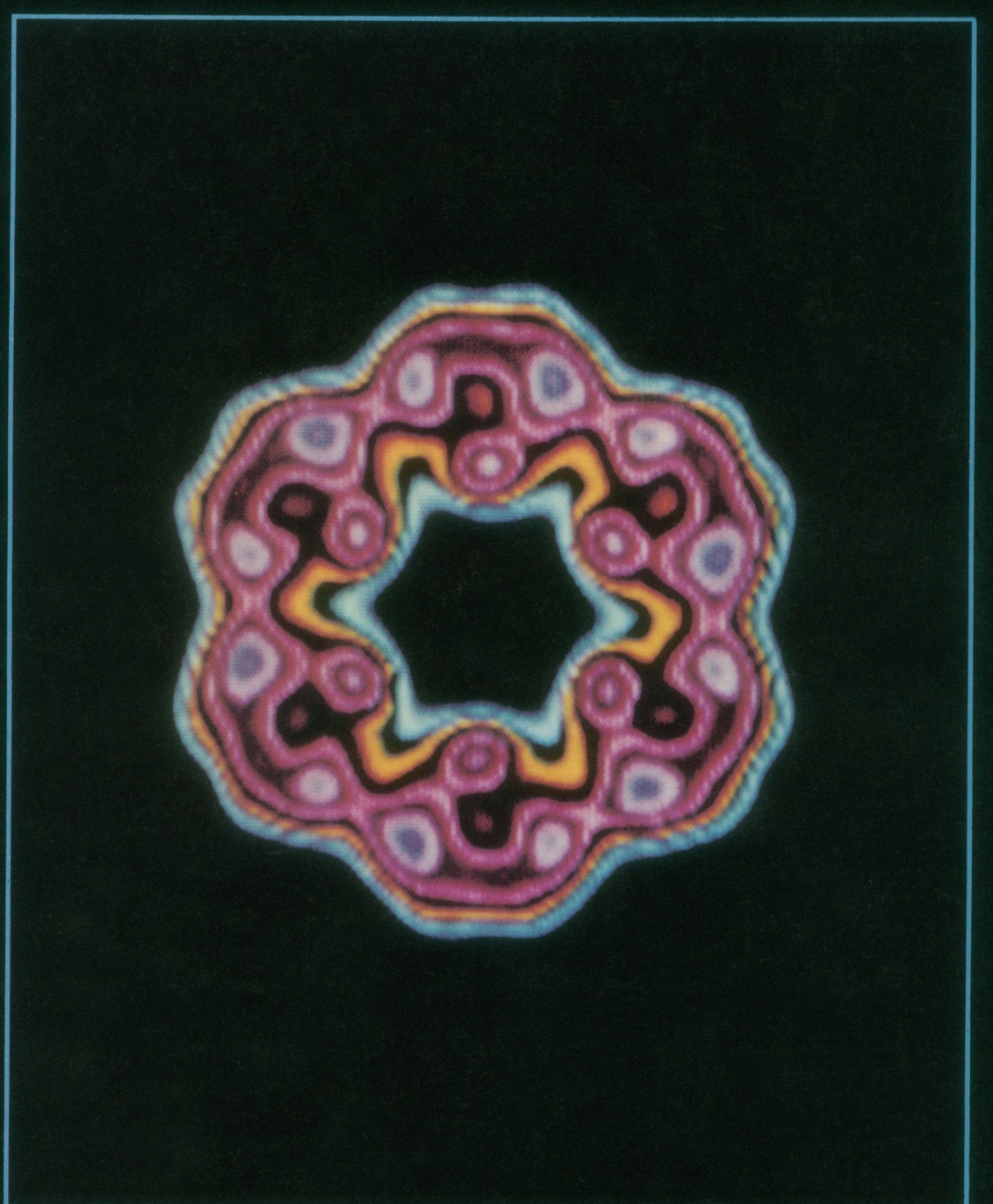

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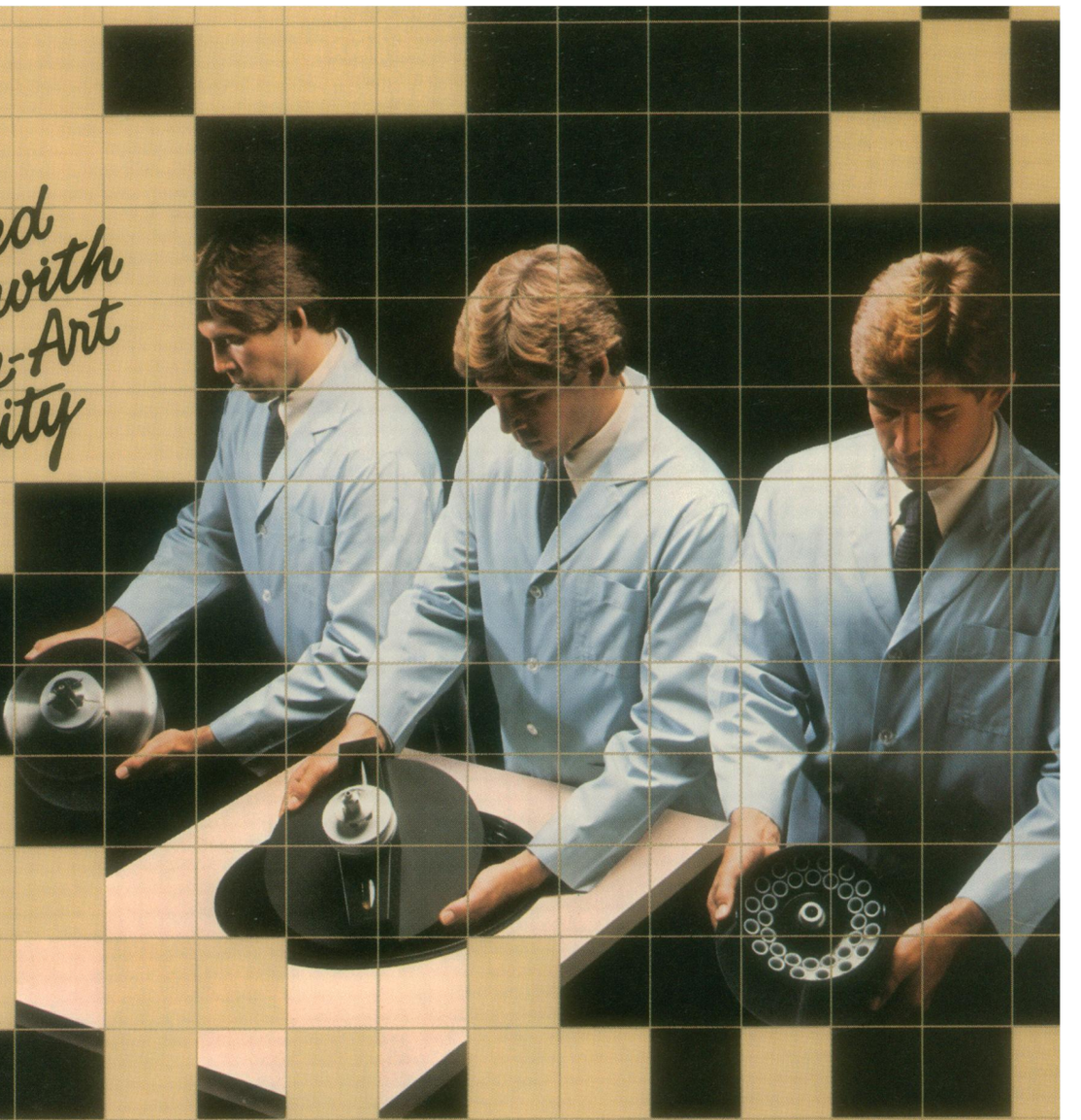

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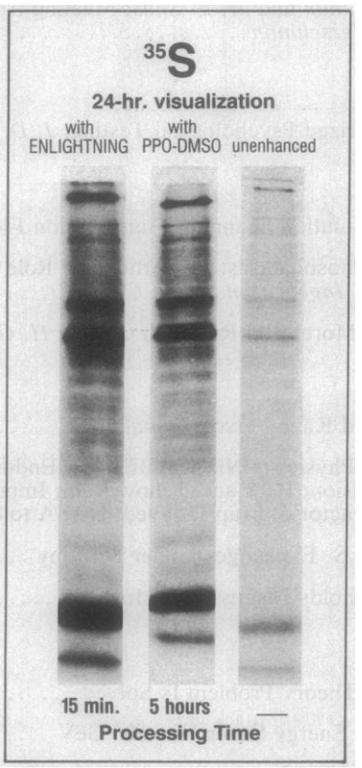

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SCIENCE

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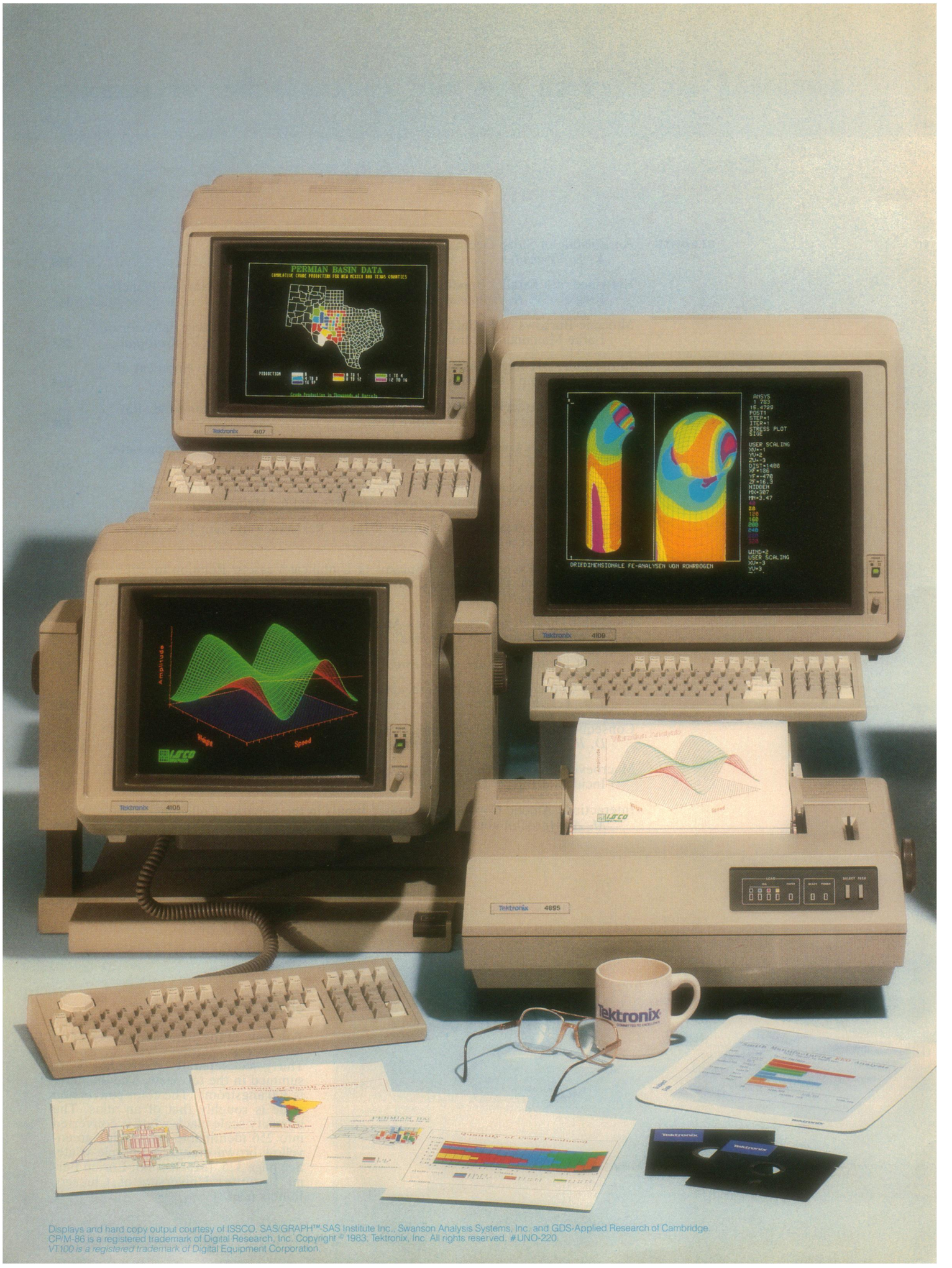
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORTS

COVER

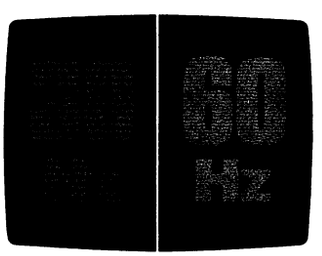
Top view of the giant hemoglobin of an earthworm (*Lumbricus terrestris*). Thirty-six separate molecules were summed in the top view. The diameter is 300 angstroms. The color conversion scale is roughly that of an atlas. The intensity scale black-white is converted into 256 identifiable colors blue-green-yellow-brown-orange-red-purple-white. See page 325. [M. Ohtsuki, Enrico Fermi Institute, University of Chicago, Illinois 60637]



Powerful text editing. High-speed graphics. Color copies. The new desktop family from Tek!

VT100 text editing and PLOT 10 color graphics are now packaged as basic desktop units and priced from $3995 complete.

Tek's new 4100 Series desktop terminals answer a range of resolution, screen size, color palette and local intelligence needs. All three feature outstanding 60 Hz non-interlaced displays and rapid 16-bit graphic processing speeds.



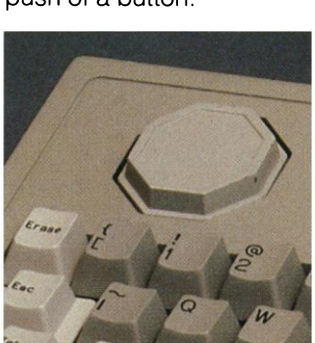
As simulated, Tek's 60 Hz refresh rate and bright phosphors result in a flicker-free image with perceivably better definition than that provided by 30 Hz terminals quoting greater pixel densities.

Standard capabilities include 38.4K baud communications; easy color selection from the keyboard; 4096 x 4096 addressable display space; a separate display surface for alphanumerics or communications dialog; and compatibility with ANSI X3.64 screen editors, including DEC VT100 extensions.

Each offers an unconditional, one-year on-site warranty. Tek Warranty-Plus extends this coverage two additional years at minimal cost.

	4105	4107	4109
Display Size	330mm (13")	330mm (13")	483mm (19")
Displayable Colors			
Graphics	8	16	16
Alphanumeric	8	8	8
Palette	64	64	4.096
Resolution	480x360	640x480	640x480
Segment Memory		128K Bytes	256K Bytes
Price	$3,995	$6,950	$9,950
Warranty-Plus	$195	$295	$395

For less than $1,600, you can add Tek's compact, plug-compatible 4695 Color Graphics Copier. With a palette of up to 125 shades, the 4695 lets you reproduce graphic and alphanumeric displays on report-size paper or transparency film at the push of a button.



All 4100 Series terminals feature programmable keyboards with innovative Joydisk for convenient graphics input.

At any time, you can plug into Tek's new 4170 Local Graphics Processing unit. The CP/M-86-based 4170 provides up to 886K RAM for standalone programming and pre- or post-processing—to help you conserve host power while you build upon a central data base.

Factor in compatibility with Tek PLOT 10 software and 4110 Series terminals, and you'll discover the first desktop graphics that you can't outgrow. Call your Tek Sales Engineer for a demonstration. For the number, or for literature, contact:

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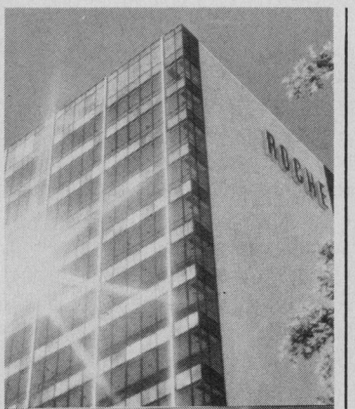

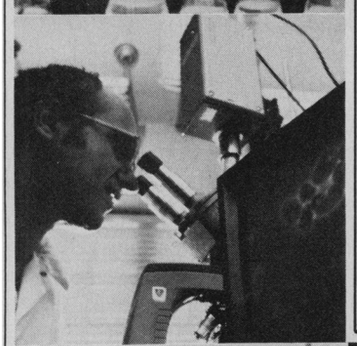

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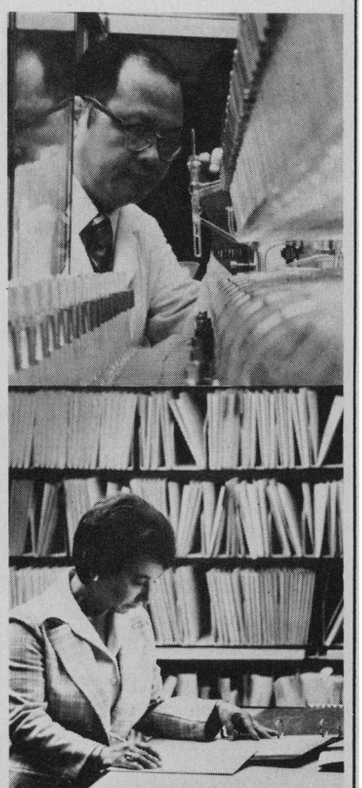

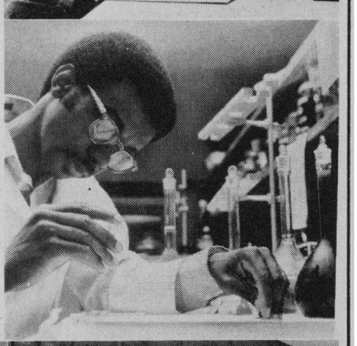

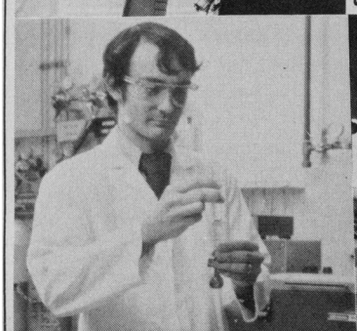

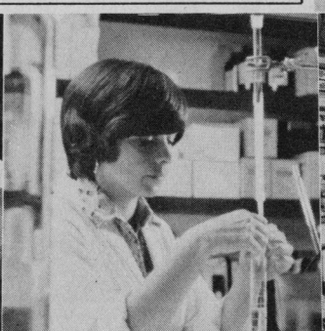

1.5, Sect. 1.1.3). "Early fatalities" are not the result of exposure of the thyroid to radioiodine and hence would not be prevented by ingestion of KI. The report also states that "the radioiodine noble gases are particularly difficult to contain in an accident." In accidents where chemically reactive fission products including iodine-131 are present, "the noble gases will be the principal form of radionuclides released" (*5*, p. 2.7).

These brief excerpts, the importance of which are not touched upon by von Hippel, offer support for our statement opposing storage and distribution of KI in New York City at the time of a reactor accident. Furthermore, attempts to distribute KI at the time of an accident would bring massive numbers of people into the streets with the resultant risk of increased exposure to various radioactive substances. This and our other arguments against the distribution of KI during an accident are not mentioned by von Hippel. They were compelling points to the Committee on Public Health. We believe that the same arguments hold for other major population centers not immediately in or adjacent to nuclear power reactors. We have not taken a position on the use of KI for workers in the plant, for individuals living near the plant, or for those who in their official or medical capacities may need to stay in or near potentially dangerous areas.

It has come to our attention that the Federal Emergency Management Agency (FEMA), which earlier favored and planned to purchase and distribute KI to the states, will not do so despite a congressional appropriation for this purpose. FEMA has decided that policies on stockpiling and use of the drug ought to be made at the state and local level (*6*).

As part of its continuing review of this problem, a panel discussed the use of KI at a Symposium on the Health Aspects of Nuclear Power Plant Incidents at the New York Academy of Medicine on 7 and 8 April 1983 (*7*).

NORMAN SIMON
MAURICE E. SHILS
Committee on Public Health,
New York Academy of Medicine,
2 East 103 Street,
New York 10029

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1. Committee on Public Health, New York Academy of Medicine, *Bull. N.Y. Acad. Med.* **57**, 395 (1981).
2. A. P. Hull, *A Consideration of the Need for Evacuation to Public Safety at Three Mile Island*, paper presented at a meeting of the American Nuclear Society, Las Vegas, Nev., 10 June 1980.
3. M. Levenson and F. Rahn, *Realistic Estimates of the Consequences of Nuclear Accidents* (Electric Power Research Institute, Palo Alto, Calif., 1980).
4. *Report of the President's Commission on the Accident at Three Mile Island* (Pergamon, New York, 1979), p. 31.
5. *Technical Bases for Estimating Fission Products Behavior During LWR Accidents* (NUREG 0772, Nuclear Regulatory Commission, Washington, D.C., 1981).
6. R. Krimm, "Potassium iodide stockpiling," paper presented at a meeting of the Atomic Industrial Forum on Radiation Issues for the Nuclear Industry, New Orleans, La., 6 October 1982.
7. *Proceedings of the Symposium on the Health Aspects of Nuclear Power Plant Incidents* (New York Academy of Medicine, New York, in press).

Meeting Attendance

The *Chronicle of Higher Education* reports (8 June, p. 3) that, because of poor attendance at the 149th annual meeting of the AAAS in Detroit, our association stands to lose close to $300,000. The article cites snowstorms and vacation plans as reasons for the meager attendance.

The insufficient support given to state university professors for travel to such meetings is another reason for the lack of attendance. This past year many professors were kept from attending scientific meetings because funds were "nonexistent" or "frozen" for such activities. Many beneficial contributions returned to state and country have their genesis at professional meetings of this nature.

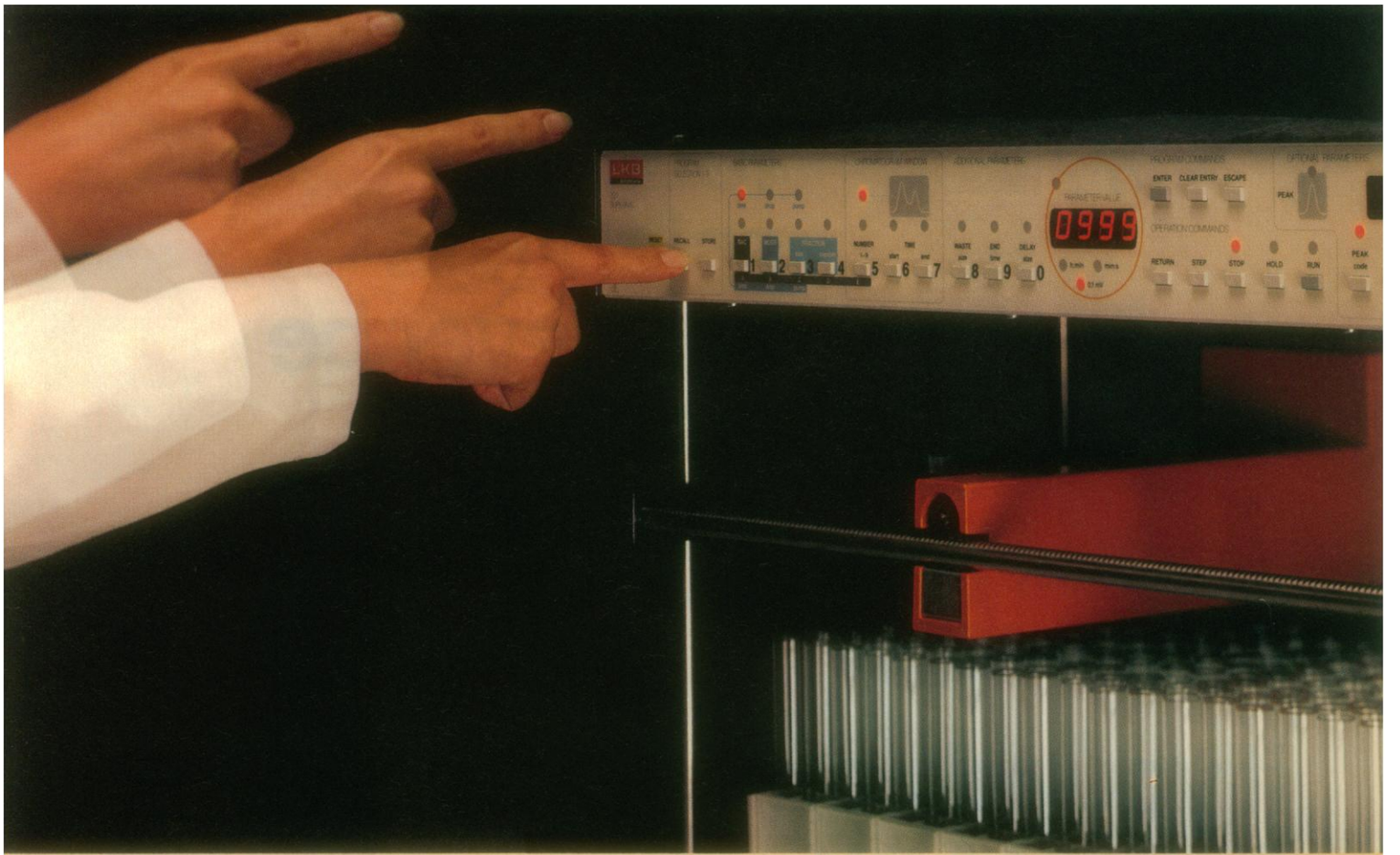
It would be a good idea for those professors and AAAS members who were not financially supported to attend scientific meetings to write their legislators explaining the importance of increased support for such activities.

HAL J. DANIEL III
Departments of Speech, Language and Auditory Pathology and *Anthropology,*
East Carolina University,
Greenville, North Carolina 27834

It is difficult to judge the overall economics of the AAAS annual meeting, as it is construed to be a mandated member activity (similar to the publication of *Science*), and therefore the cost is partially defrayed by member dues. However, the "additional loss" because of the poor attendance in Detroit was significantly less than $100,000 (exact figures are not known, as all the bills have not yet been paid).

ARTHUR HERSCHMAN
Meetings and Publications Center,
AAAS, 1101 Vermont Avenue, NW,
Washington, D.C. 20005

Erratum: In the article "the 0.001557806449023-Second Pulsar" by M. Mitchell Waldrop (Research News, 18 Feb., p. 831), the last sentence of the last full paragraph in the second column should have read: "Within a few weeks he was in Aricebo himself, and on 14 November he verified pulses at an astonishing 642 hertz, equivalent to a period of 1.558 milliseconds."



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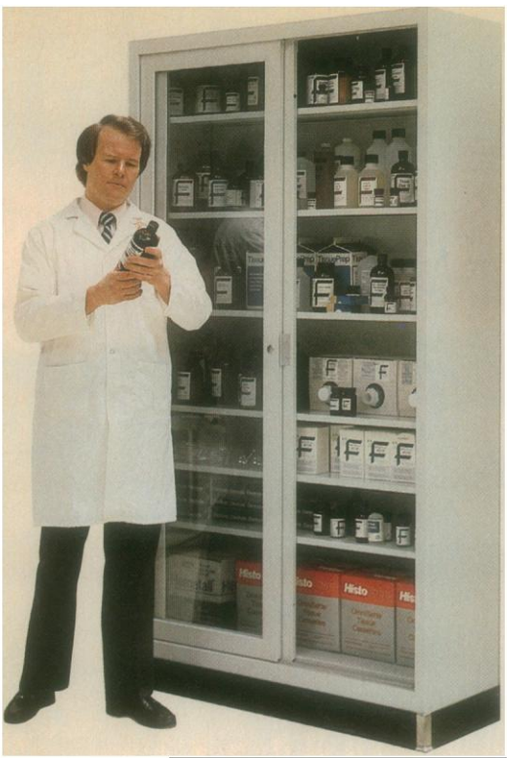

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22 July 1983, Volume 221, Number 4608 **SCIENCE**

Computerized Psychological Testing

Thousands of relatively low-cost microcomputers and associated software are being purchased for use in psychological testing by employers, physicians, psychologists, social workers, counselors, nurse practitioners, and other licensed health care providers. Since the results of psychological tests can affect decisions concerning employment, the handling of handicapped young adults in school, and diagnostic functions such as estimating deficits associated with brain damage, the quality of these tests is a legitimate matter for general concern.

There is a danger that wholesale use of automated tests by people without a knowledge of their limitations will be a disservice to the public. Compounding this danger, the tests have a spurious appearance of objectivity and infallibility as a halo effect from the computer, and their ease of use may cause them to be more widely employed than are current tests.

Typically, computerized psychological tests are administered with the subject unattended and unsupervised. Following a sheet of written instructions, the subject punches in answers to a battery of psychologically oriented questions. In seconds, the practitioner receives a computer printout of up to 50 pages of valid-sounding narrative statements describing the subject's behavioral traits, personality disposition, temperament, vocational interests, intellectual abilities, potential for suicide or drug addiction, medical-legal-psychological diagnosis, and a host of other personal details.

It is critically important that the legions of users of such automated tests be reminded forthrightly that the predictive value of the tests, technically called their validity, remains to be scientifically appraised. To date, there is no evidence published in peer-reviewed journals that one full page of the narrative descriptions is valid.

Even when carried out by a Board-certified specialist in psychology, the interpretation of the products of such psychological assessment is today not a highly objective activity. Rather, it is at a stage of development comparable to the earliest stages of use of laboratory information for making medical diagnoses. Specifically, it is critically dependent on the education, training, and experience of a skilled professional. Psychological testing carried out by a console is no more synonymous with psychological assessment than is the printout from a laboratory computer synonymous with professional assessment in clinical medicine. Fully trained health practitioners cognizant of the limitations of such tests and capable of correlating the test results with other information from the person's history, will find them useful. In this setting, they may be likened to laboratory data in the hands of a good surgeon, internist, accountant, or stress engineer. But in the hands of an untutored and unqualified user—whether psychologist, physician, elementary school teacher, college admissions officer, personnel administrator, or social worker—such test data can be harmful. In the right hands, a scalpel can be an exquisite extension of the fingers of a surgeon; in the wrong hands, an instrument for potential damage.

Automated testing was initiated by responsible psychologists for use by fully informed and sophisticated psychologist colleagues, as well as by professional-level students in psychology and medicine who are being trained to use such data responsibly. Until more research establishes that the validity of application of these computer products by a health practitioner is not dependent on the practitioner's experience and training in psychometric science, such automated consultations should be restricted to these qualified user groups.* My experience as an expert witness leaves me in no doubt that a flood of litigation involving unqualified users of the products of this new technology is just around the corner.—JOSEPH D. MATARAZZO, *Oregon Health Sciences University, Portland, Oregon 97201*

*It is possible that in the future a good computer test might yield better results than an appraisal by an untrained human evaluator, but at present the ease of computer tests enhances the danger of their misuse.

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The powerful 2000/II Fermentation System shown with modular instrumentation. This single mainframe accommodates vessels from 1 to 70 liters. Shown are 3.5 liter, in place; 20 liter glass, foreground; 70 liter stainless steel, right.

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