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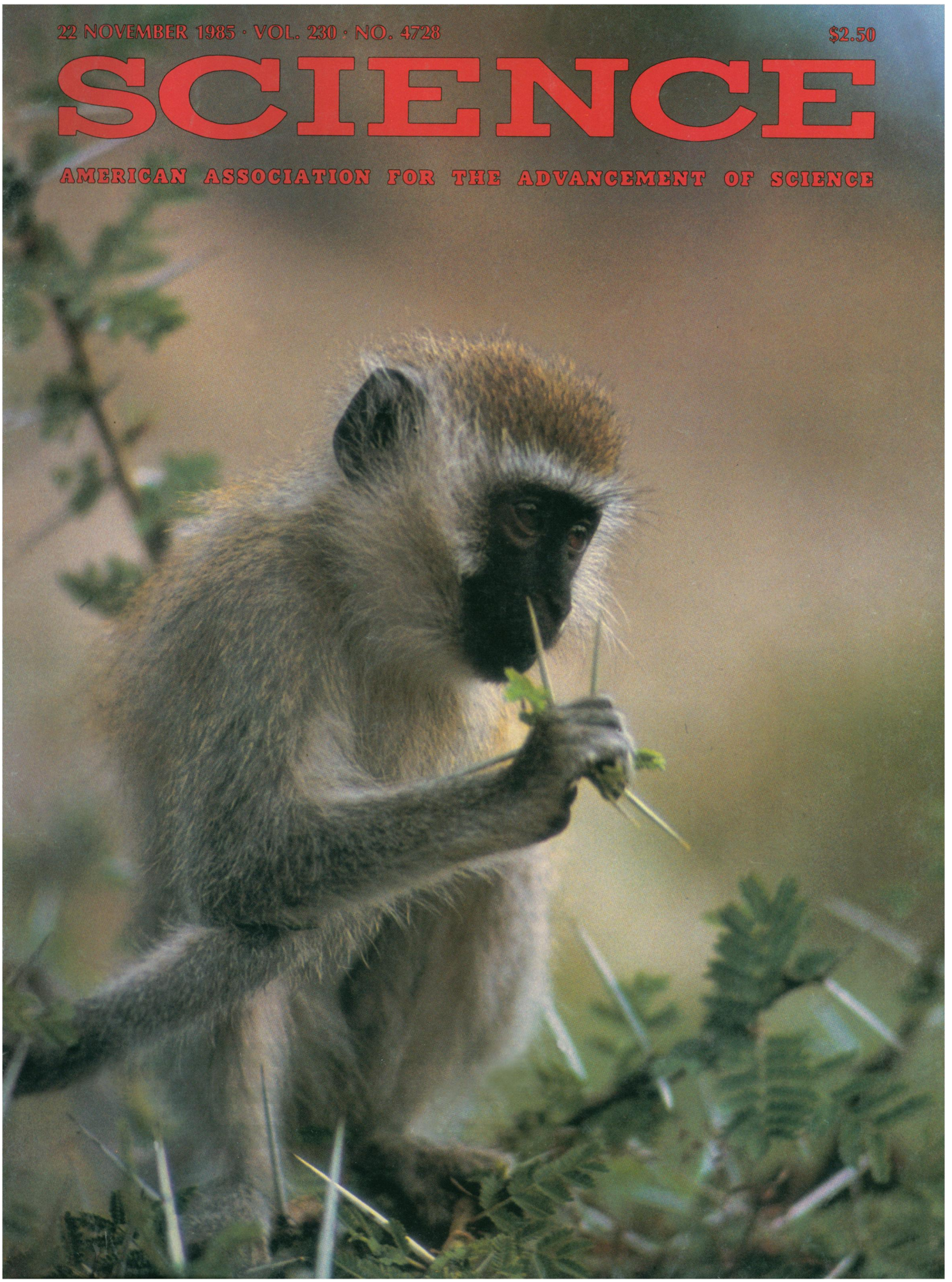

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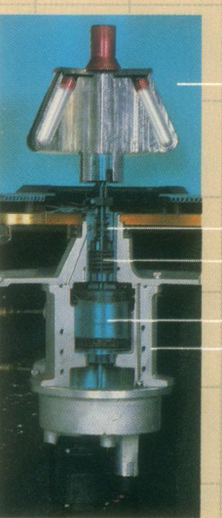

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COVER

African Green monkey (*Cercopithecus aethiops*), small primate found throughout most of sub-Saharan Africa. This animal is now known to be naturally infected with a virus related to the AIDS virus of humans (HTLV-III/LAV), designated simian T-lymphotropic virus type III ($STLV\text{-}III_{AGM}$). It is postulated that the human AIDS virus in Africa may have arisen from this group of simian retroviruses. See page 951. [Stessen Casteel/FPG]

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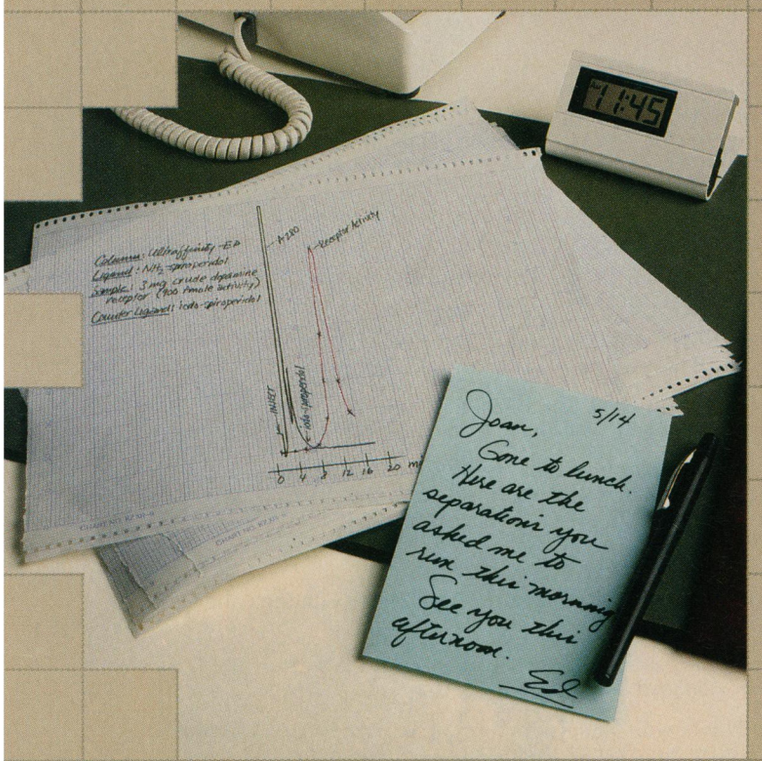

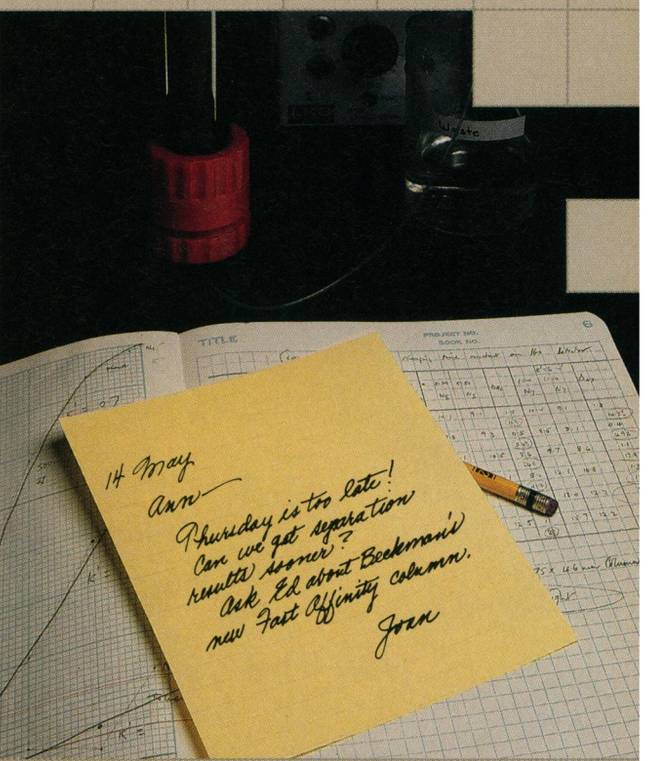

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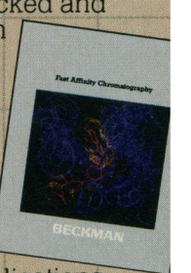

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Meteorite anomalies

Two unusual meteorites, Bencubbin from Australia and Weatherford from Oklahoma, have such similar isotope compositions that they are thought to have come from the same or a comparable parent celestial body (page 935). Among their idiosyncracies are a unique nitrogen isotope signature (^{15}N:^{14}N) that differs greatly from the signatures of other meteorites. Prombo and Clayton discuss several possibilities for the origin of the isotopic anomalies, particularly the ^{15}N that would have been abundantly produced by novae (exploding stars). An understanding of the time and manner of formation of these meteorites will contribute to theories that describe the formation of Earth and other bodies in the solar system, since meteorites carry with them records of past astrophysical events.

Chromosomal position of one myelin gene

Inheritance of certain myelin diseases occurs along with inheritance of a specific maternal X chromosome; this association may now be explained by the discovery that genetic information for production of lipophilin, one of two major proteins of myelin (the sheath around the nerves of the central nervous system), is carried on X (page 940). Willard and Riordan mapped the lipophilin gene to a region of the X chromosome that also contains several other important structural genes. Since heritable diseases are known in which there are deficiencies of one or both proteins of myelin and since some of these diseases are genetically linked to X, a connection between such diseases and mutations in the lipophilin gene and aberrations in lipophilin can now be explored. Pelizaeus-Merzbacher disease is one likely example. It is a progressive neurologic disorder of male infants in which myelin is virtually absent from the nerves of the central nervous system.

Versatility of tumor necrosis factor

Some cells stop dividing or die in the presence of tumor necrosis factor (TNF), others have augmented growth, and still others are unaffected by exposure to this macrophage factor (page 943). Sugarman *et al.* studied cellular responses of 39 tumor and normal cell lines in the presence of TNF that had been made with recombinant DNA technology. Growth enhancement was observed only for normal cells; tumor lines showed no response or reduced viability in the presence of TNF. Some lines that were unaffected by TNF or by interferon (another immunomodulatory protein) stopped dividing when both factors were given together. The contrasting effects of TNF must in some way be mediated by signals within responding cells, since neither the numbers of cell surface receptors on different cell types nor the binding affinities of receptors for the factor accounted for the differences.

Images of blood vessels

Blood vessels as small as 1 millimeter in diameter can be pictorially represented and evaluated with a noninvasive imaging technique (page 946). Magnetic resonance (MR) imaging and standard MR equipment were used by Wedeen *et al.* to measure MR signals from protons in the blood. Signals were measured during peak blood flow (cardiac systole) and during the slowest flow (diastole), with the interval between signals determined empirically for each subject. The difference image that is made by subtracting the signals in the systolic and diastolic images highlights only the blood vessels, because all other structures are invariant and cancel out. Pulsatility, the source of the contrast, reflects both anatomy and physiology, making MR imaging useful for evaluating vessel structure and function, the effectiveness of therapies, and the health of arterial grafts.

Heterogeneity of AIDS viral DNA

A great deal of heterogeneity is apparent in the genetic material of different AIDS viruses, and this may bode poorly for vaccine development (page 949). Viral DNA from cells of patients in New York, Zaire, and Alabama was characterized with seven enzymes that cut the DNA at distinctive sites. Benn *et al.* found that when the fragments were separated and analyzed, each new isolate was unique, although a "signature" of an AIDS virus could be constructed from a group of stable fragments found in most isolates. If this diversity holds for different isolates from a single individual, it may be key to the virus's ability to elude host defenses and succeed as a pathogen. Diversity between viruses from different sources accounts for some of the difficulties that have been encountered in the development of a vaccine for which an invariant region in the viral envelope structure is the candidate of choice.

AIDS-related virus of monkeys

African Green monkeys, whose cells are used for preparing vaccines, are carriers of a retrovirus that closely resembles the AIDS virus (page 951). Kanki *et al.* found that the structure, growth characteristics, and antigenic markers of seven viral isolates from wild monkeys were similar to those of human AIDS viruses. Of 67 monkeys tested serologically, 40 percent had circulating antibody to the virus, indicating a current or past viral infection. None of these carriers showed signs of illness. The discovery is worrisome because the monkey cells are used in the preparation of biologics and could introduce contaminating viruses into the preparations. On the other hand, these monkeys could be a helpful model system in which to analyze AIDS pathology and resistance to disease. Whether the monkeys are a reservoir from which the AIDS virus entered the human population in Africa remains to be determined.

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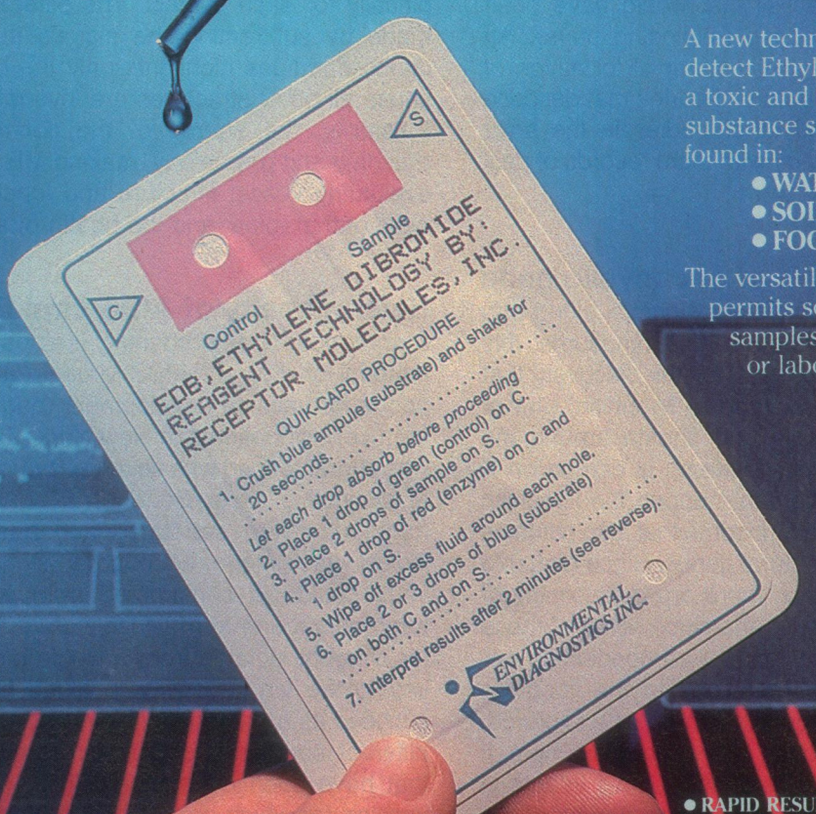

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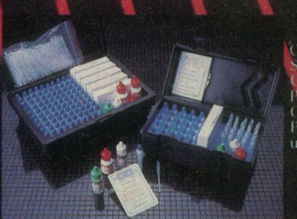

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Co-Chairmen:

Zenon Steplewski, The Wistar Institute, Philadelphia, PA • Hilary Koprowski, The Wistar Institute, Philadelphia, PA • Joseph Davie, Washington University, St. Louis, MO

Keynote Speaker: Mark Davis, Stanford University, Stanford, CA **Title:** T-cell Receptor Gene Structure and Function.

We are planning six Working Group Meetings on "Murine Monoclonal Antibodies Available for Clinical Application". These Group Meetings will be restricted to 20 participants each in the following fields:

Group A: Immunohistological Diagnosis
Leader: J. Schlom, NCI, Bethesda, MD
Repporteur: M. Nuti, Laboratorio Di Immunologia, Rome, Italy

Group B: Radioimmunoscintigraphy
Leader: J.-F. Chatal, Center Rene Gauducheau, Nantes, France
Repporteur: J. Powe, Victoria Hospital, Ontario, Canada

Group C: Antigens Shed by Tumor Cells
Leader: R. Bast, Duke University, Durham, NC
Repporteur: J.-Y. Douillard, Center Rene Gauducheau, Nantes, France

Group D: Immunotherapy of Solid Tumors
Leader: A. Houghton, Sloan Kettering Cancer Center, New York, NY
Repporteur: S. Ferrone, New York Medical College, Valhalla, NY

Group E: Immunotherapy of Leukemia and Lymphoma
Leader: J. Ritz, Dana Farber Cancer Institute, Boston, MA
Repporteur: K. Foon, University of Michigan, Ann Arbor, MI

Group F: Immunoconjugates
Leader: K. Krolick, University of Texas, San Antonio, TX
Repporteur: J. Fulton, Southwestern Medical School, Dallas, TX

It is our intent to select participants *actively* involved in the above listed research for in-depth discussion of progress made recently.
The entire day of Monday, January 27, 1986 will be available for these group discussions. The consensus reached by the groups will be presented by the Repporteurs to the whole Congress and results of these discussions will be published in Hybridoma.
Investigators interested in participating in Group Meetings should send a short summary to Dr. Ralph Reisfeld, Scripps Clinic and Research Foundation, 10666 North Torrey Pines Road, La Jolla, California 92037 by November 30, 1985.

Workshop Topics & Chairmen:

HUMAN REPERTOIRE and AUTOIMMUNE DISEASE
A. Notkins, NIH, Bethesda, MD.

GENETIC PROBES IN IMMUNOLOGY
J.D. Capra, University of Texas, Dallas, TX.

MONOCLONAL ANTIBODIES in DISSECTING NORMAL and MALIGNANT STEM CELLS
I. Bernstein, Fred Hutchinson Cancer Center, Seattle, WA.

ISOTYPE SWITCH VARIANTS IN ANALYSIS of ANTIBODY FUNCTION
M. Scharff, Albert Einstein College of Medicine, New York, NY.

Poster Sessions: TECHNOLOGICAL ADVANCES IN HYBRIDOMA RESEARCH

Participants are invited to submit abstracts for the poster sessions. These abstracts will be reviewed up until the time of the meeting; however, only those accepted by Nov. 15 will be published in the journal, Hybridoma. Contact Dr. Zenon Steplewski (215) 898-3924.

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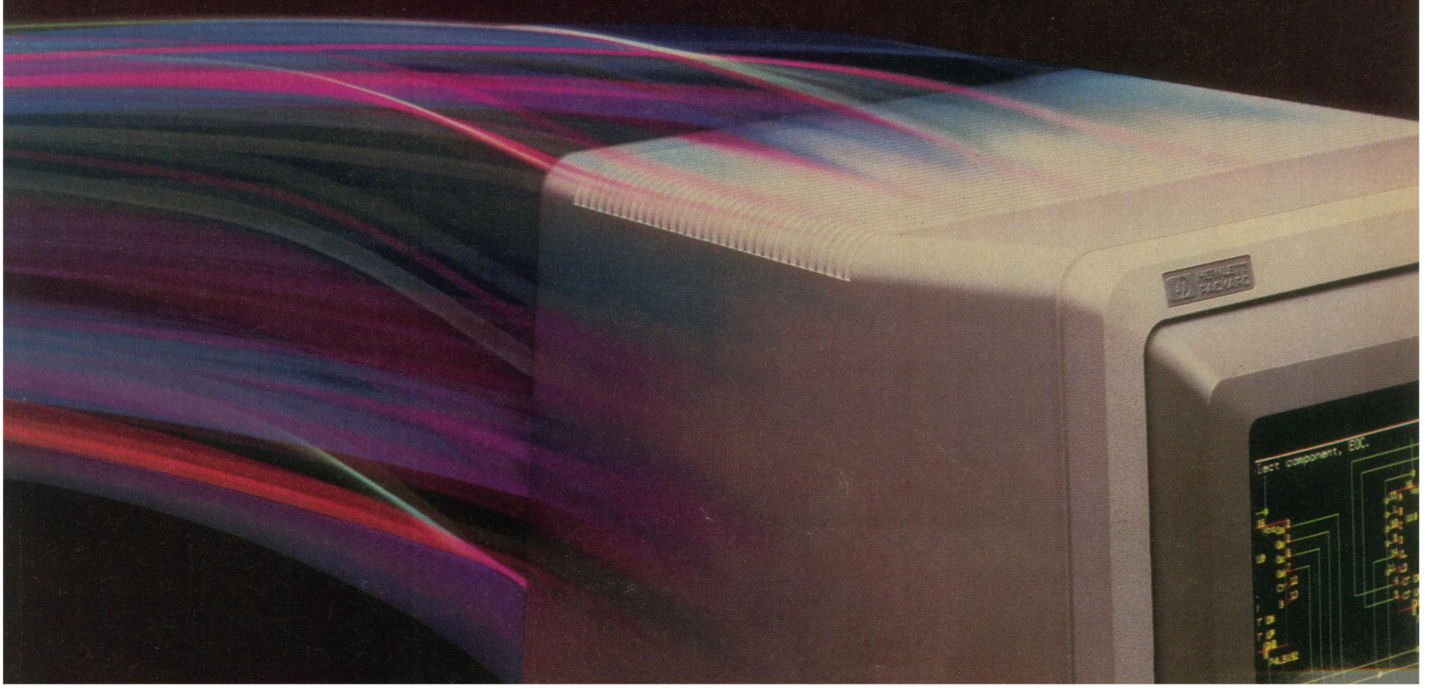

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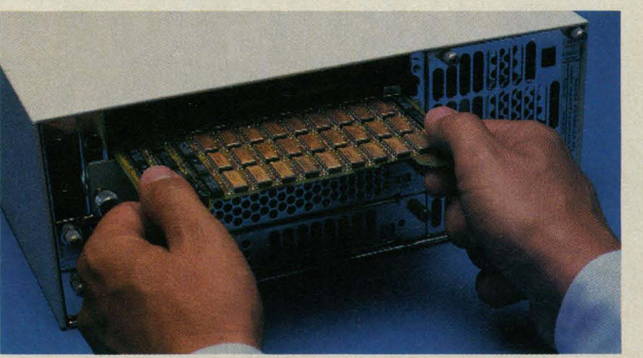

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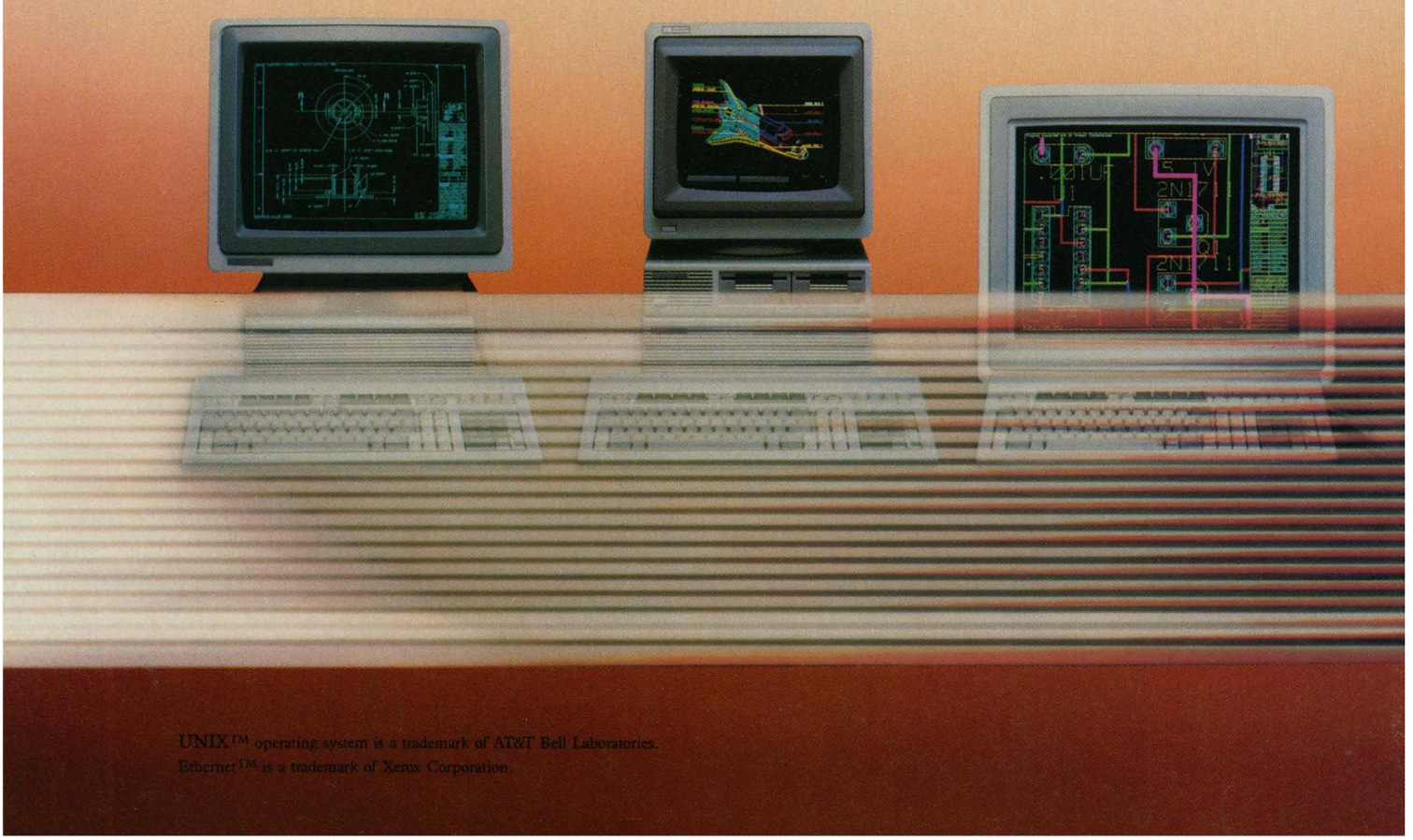

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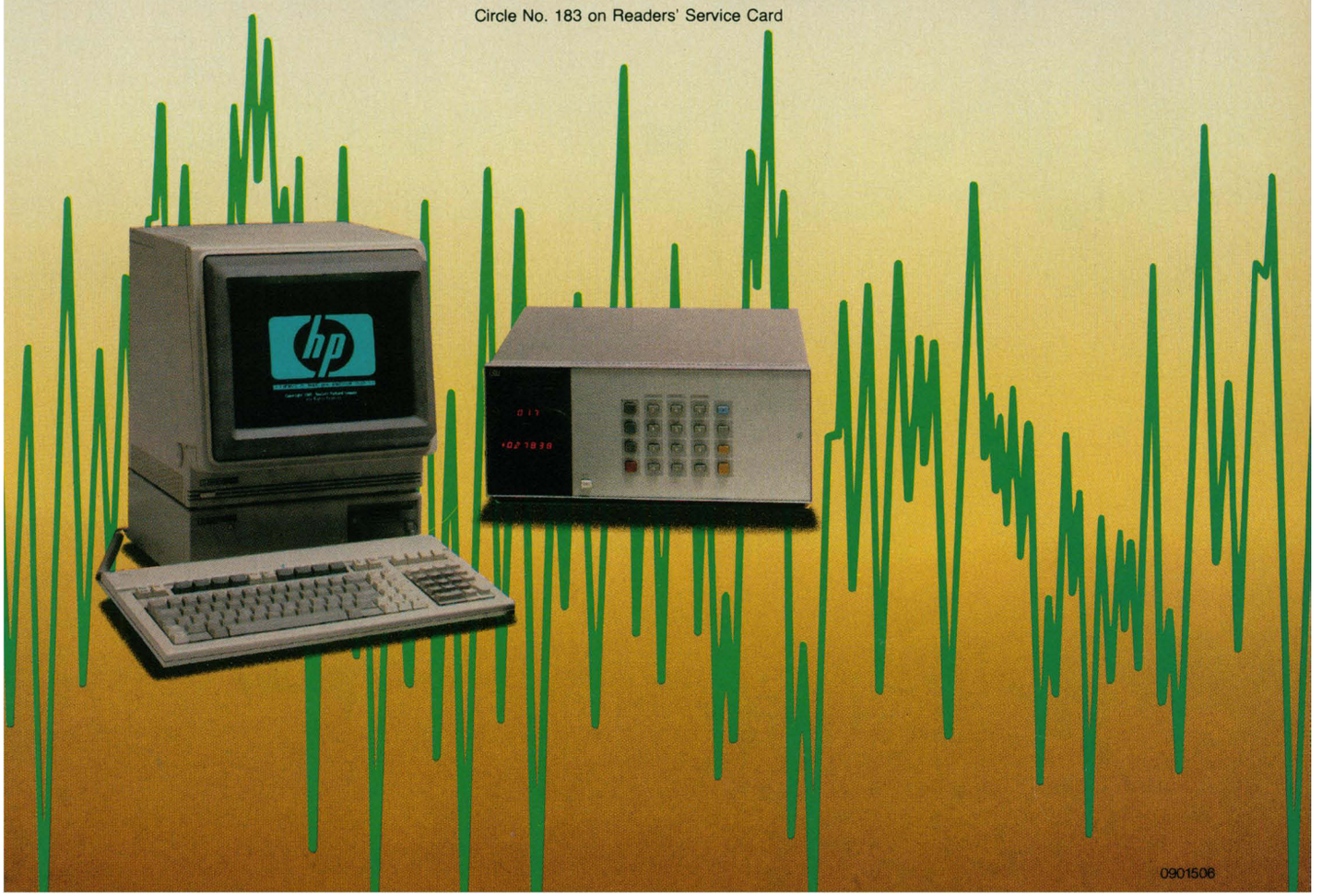

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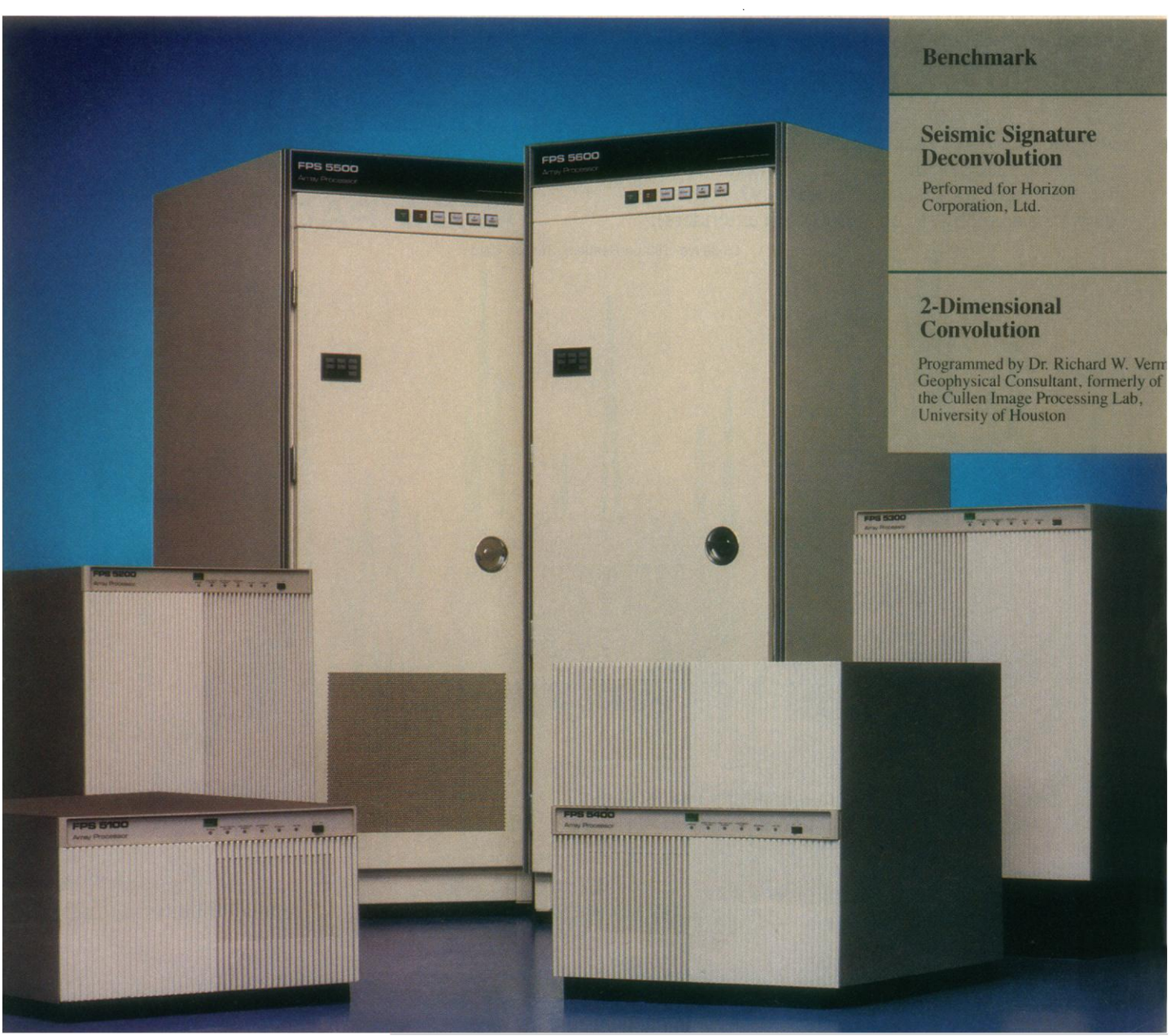


Benchmark

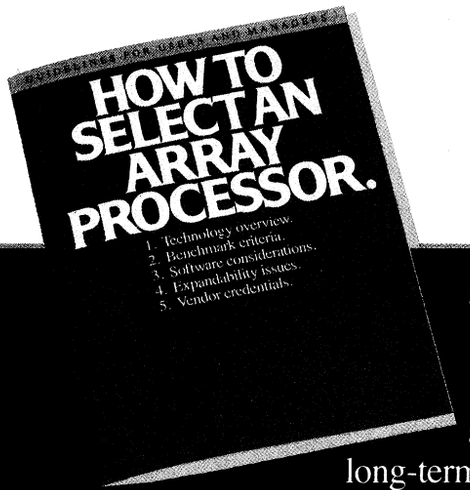
Seismic Signature Deconvolution

Performed for Horizon Corporation, Ltd.

2-Dimensional Convolution

Programmed by Dr. Richard W. Verm Geophysical Consultant, formerly of the Cullen Image Processing Lab, University of Houston

F A R R A Y P R O C E S S O R S



To guide users and managers through all aspects of an array processor investment, Floating Point Systems has compiled this analysis of selection basics—including architectures, benchmarking, software considerations, long-term strategies and much more. For a copy, contact your FPS representative or call the toll-free number below.

Data Set	Array Processor Configuration	Execution Time	Effective MFLOPS	Comments
9 traces 048 real amples per race	FPS5420	0.323 sec	23.8	Uses a frequency domain convolution with a 1024 point complex operator. All computation performed on 2 coprocessors with calls from 5000 FORTRAN 77.
20 traces 525 samples er trace 1 by 31 point perator	FPS 5410	33.60 sec	11.1	One coprocessor
	FPS 5420	17.12 sec	21.9	Two coprocessors
	FPS 5430	11.48 sec	32.6	Three coprocessors

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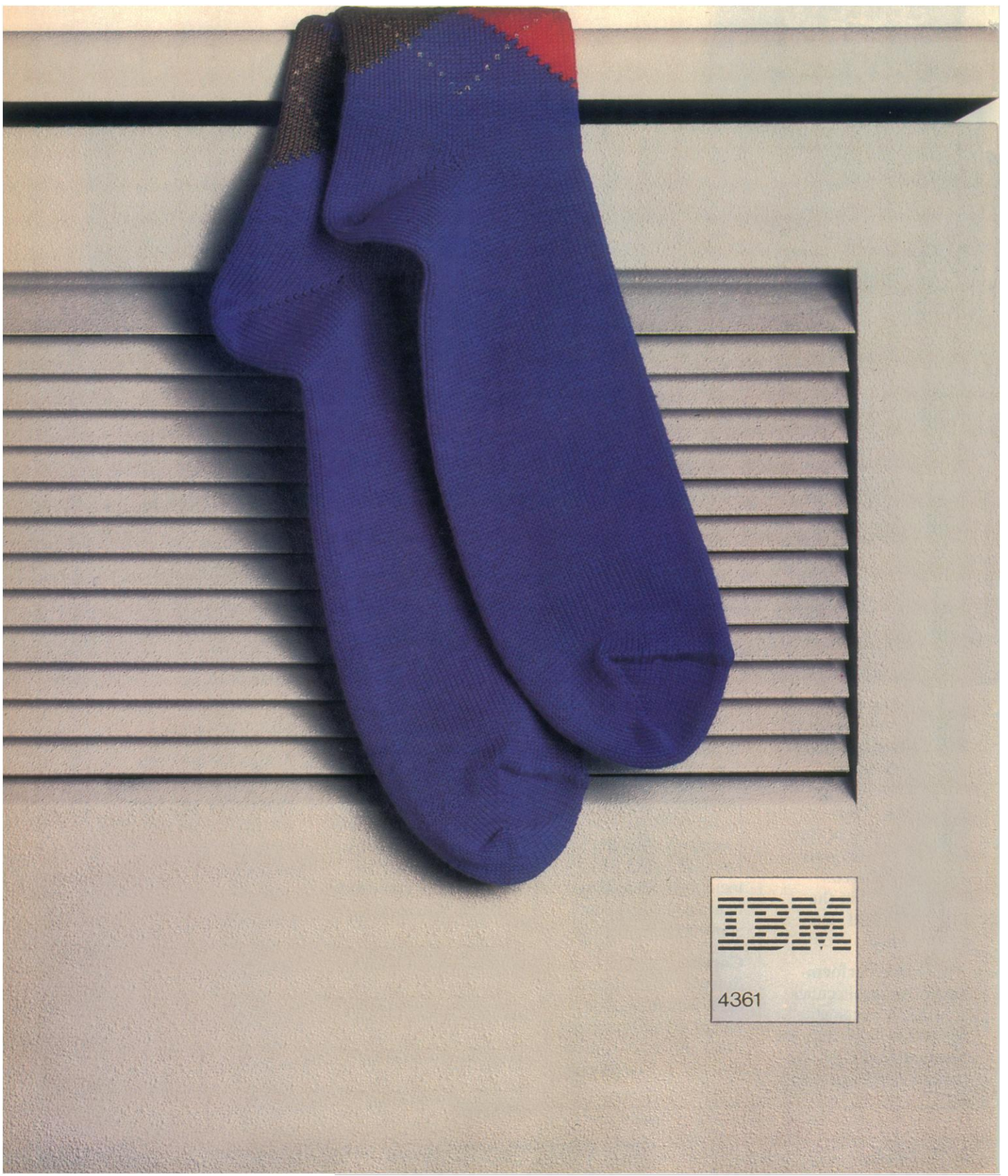

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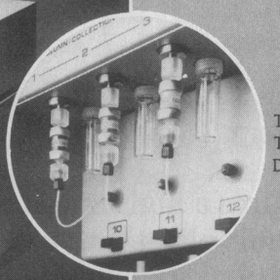

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22 November 1985, Volume 230, Number 4728 SCIENCE

Computers and Interdisciplinary Research

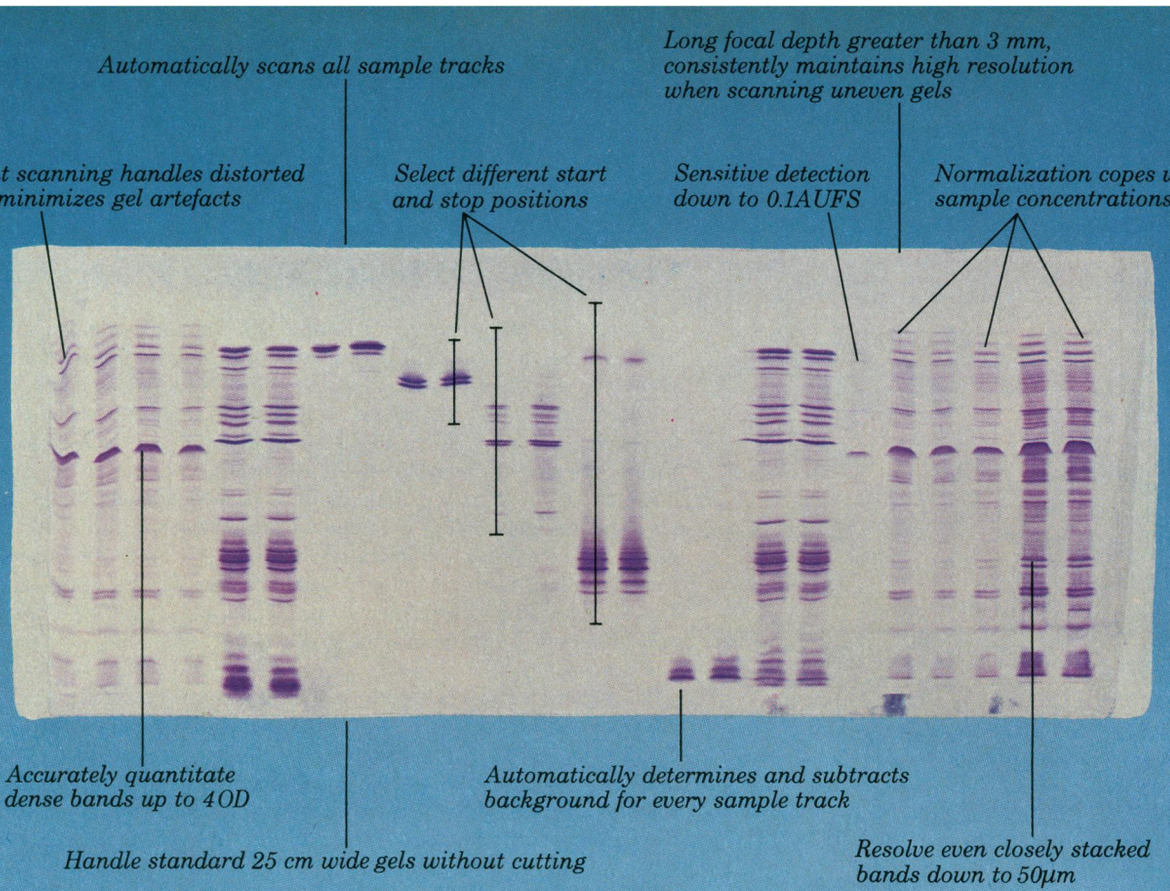
Faculty at the University of Illinois at Urbana-Champaign say that their university is on a roll. During the past year their institution has received a combination of large-scale support. The National Science Foundation selected this Illinois campus to be the site of one of four National Centers for Supercomputing Applications and will supply $43 million over a 5-year period. Arnold O. and Mabel M. Beckman have given $40 million for a building to house a Beckman Institute. The state of Illinois has made a number of commitments in support of the National Center for Supercomputing Applications, the Beckman Institute, a Center for Supercomputing Research and Development, a Microelectronics Center, and additions to the Digital Computer Laboratory. Immediate new state commitments and appropriations for these purposes total about $50 million, and more support has been pledged.

The Microelectronics Center will ultimately be housed in a new building. However, it is already a leading university laboratory for research on compound semiconductors such as gallium arsenide and other 3-5 combinations. It has been successful in the epitaxial growth of gallium arsenide on silicon substrates. Efforts at the Center for Supercomputing Research and Development are devoted to the development of supercomputers with novel architectures and operating systems. This activity, directed by David Kuck, is regarded as one of the best efforts of its kind.

The National Center for Supercomputing Applications (NCSA) is rapidly becoming operational. A Cray X-MP24 has been received and will soon be fully operational. Time on it will be made available to users nationally. The Illinois campus will get its share of time, and already work stations with good computer graphics have been installed as well as connections to other buildings on campus. Supercomputer capabilities will be upgraded every year or two. The sequence of Cray X-MP machines will have two, four, eight, and finally sixteen processors in 1990. By then, the intent is to have a machine 50 to 100 times as fast as a current Cray-1 supercomputer. Larry Smarr, director of the NCSA, has established an Intellectual Center that will bring together some of the nation's best physical and natural scientists and computer engineers, social scientists, and computer professionals.

The Beckman Institute will be housed in a building that is expected to be ready in 1988. Many decisions must still be made concerning design of facilities and governance of this Institute. However, some of the essential decisions have been made and were part of the basis on which the Beckman gift was made. A key objective of the Institute is to foster interdisciplinary research. And it will consist of two centers: a Center for Materials Science, Computers, and Computation and a Center for Biology, Neuroscience, and Cognition. It is contemplated that in each center there will be a continuous transition from research on the atomic and molecular levels to systems of increasing complexity and higher levels of organization. Efforts will be made to ensure that the investigators at the two centers will interact. Indeed, in its proposal to the Beckmans the university stated, "We pledge ourselves at the outset to the creation within a state-of-the-art facility of an integrated array of research efforts that will make the Beckman Institute a model for forefront interdisciplinary research in the world...."

On the basis of a history at other universities where efforts to maintain interdisciplinary research often failed, it would be easy to scoff at the plans at Illinois. However, the university has a good record in interdisciplinary activities, and many of the future opportunities in research lie in complex phenomena requiring an interdisciplinary approach. In addition, members of the Beckman Institute will find common ground in their mutual use of excellent computational facilities. Finally, there is the morale factor. When you are on a roll, success breeds success.—PHILIP H. ABELSON



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