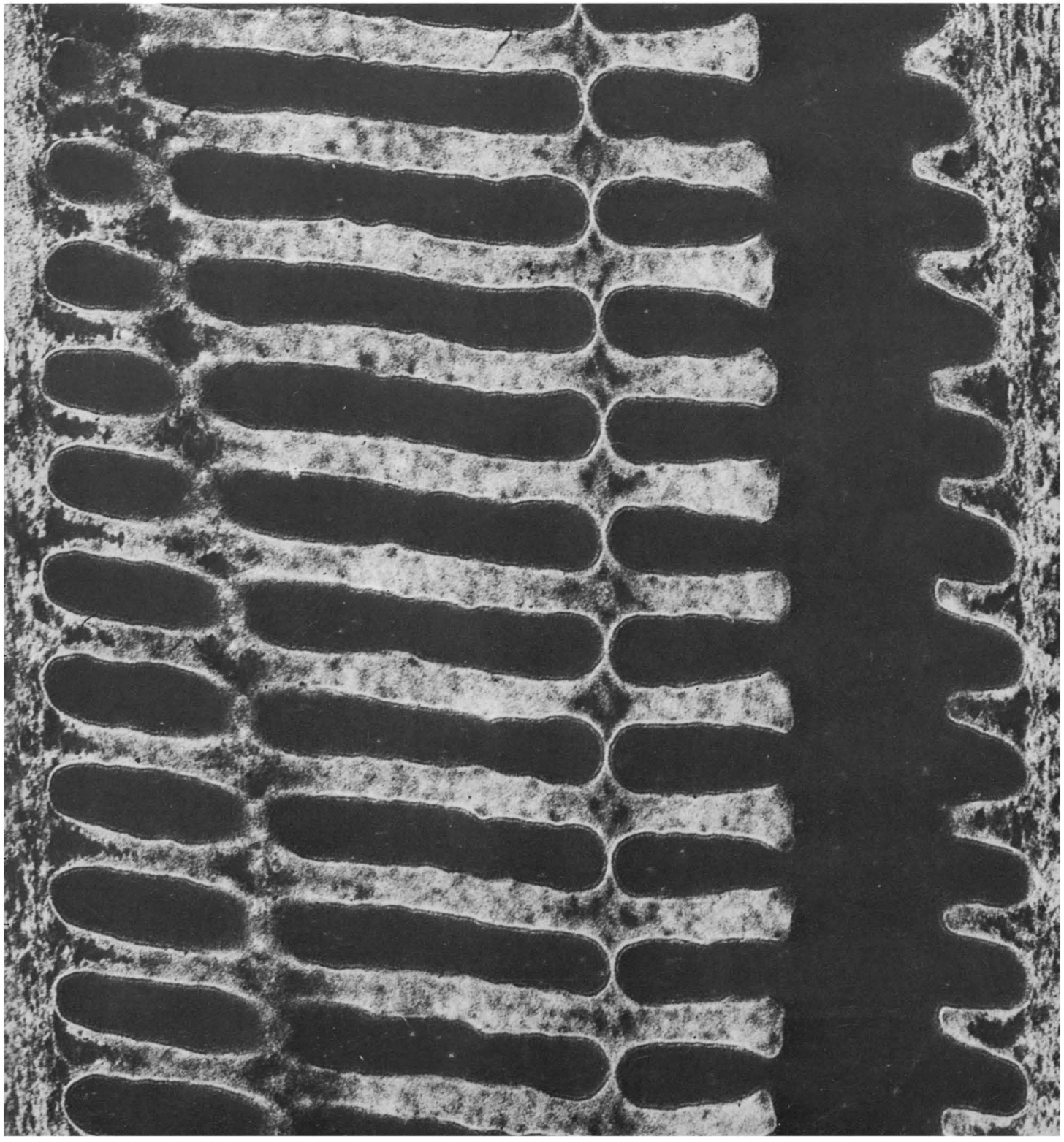
SCIENCE 15 November 1968
Vol. 162, No. 3855
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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15 November 1968
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SCIENCE

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Tapetum lucidum of a butterfly ommatidium which shows blue eyeshine. Air spaces (black) and cytoplasmic platelets in this interference filter each are one-quarter wavelength in thickness in their respective mediums for the eyeshine hue. Tapetal reflection increases intensity in rhabdom for a band of hues, thus enhancing selected color contrasts. (Negative print of electron micrograph, about × 100,000). See page 760. [W. H. Miller and G. D. Bernard, Yale University School of Medicine, New Haven, Connecticut]

New Computing Expressway

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VIA THE 9100A COMPUTING CALCULATOR**

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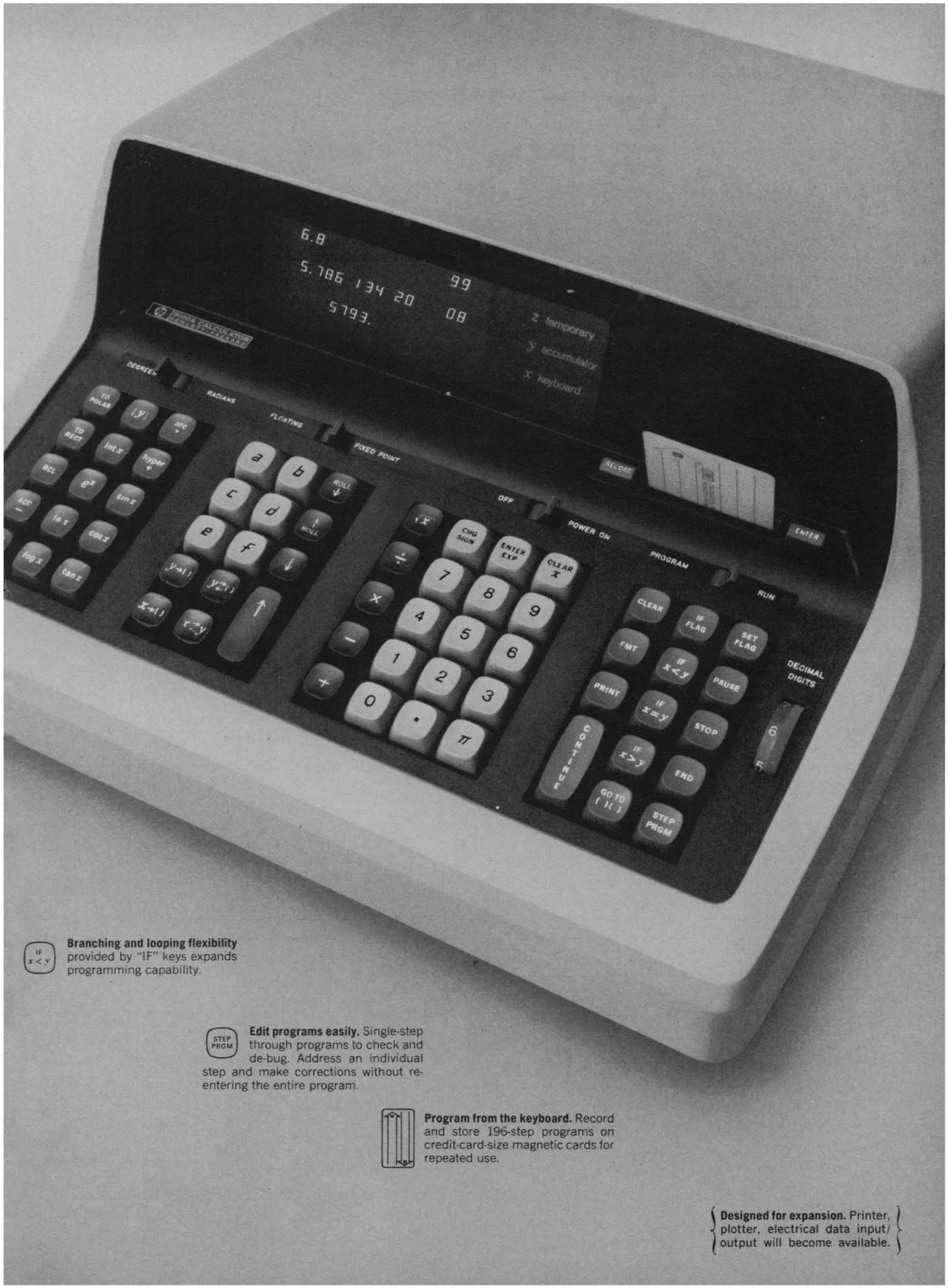

Branching and looping flexibility provided by "IF" keys expands programming capability.

Edit programs easily. Single-step through programs to check and de-bug. Address an individual step and make corrections without re-entering the entire program.

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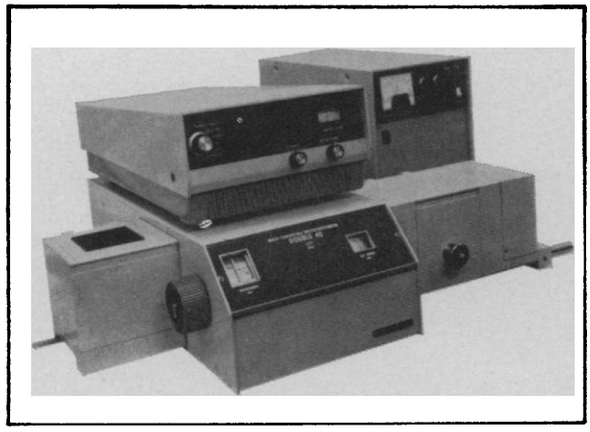

Shown above is the Double 40D model. This unit includes a digital display of absorbance or transmittance with the highest accuracy available in the Double-40 Series. Included in this configuration is an output drive through which data-processing equipment, such as a tape punch or computer, can be utilized.

The addition of a thermostated six-cell sample compartment and cell-positioner control constitutes a complete enzyme analyzer system. The operator can control automatically the period between sampling and the number of samples to be run sequentially. An indicator light shows visibly which sample is being read.

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Interchangeable detection modules are easily manipulated on a rigid optical bench, offering optimum accuracy and sensitivity for studies of either turbid samples or solutions. Interchangeable sample compartments and monitoring systems (direct meter readout, digital readout device, and recorder presentation) are also available. The system can be made to function as a single beam or double beam ratio recording spectrophotometer.

A solid state electronic unit, common to all systems, features chopper-stabilized operational amplifiers. The single unit, of modular construction, contains the power supplies for the tungsten and deuterium lamps, the high voltage power supply for the PMT, the dynode feedback system and the 0 and 100% automatic adjustments.

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			INDICATING UNIT	SAMPLE COMPARTMENT UNIT	DETECTOR UNIT
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2	Double-40SB	Same as Above for Biological Uses			END-ON PHOTOMULTIPLIER
3	Double-40D	Quantitative Analysis with Digital Readout	DIGITAL READOUT		SIDE-ON PHOTOMULTIPLIER
4	Double-40DB	Same as Above for Biological Uses			END-ON PHOTOMULTIPLIER
5	Double-40OR	Qualitative and Quantitative Analysis with a recording system	RECORDER	DOUBLE BEAM SYSTEM	SIDE-ON PHOTOMULTIPLIERS[1]
6	Double-40DF	Difference Spectrophotometry		DOUBLE BEAM SYSTEM[2]	END-ON PHOTOMULTIPLIER

1) Two different types of photomultipliers are provided.
2) A vibrating-mirror is employed as a beam switching device.

The Shimadzu Double-40 Series Spectrophotometers are distributed exclusively in the U.S. and Canada by the American Instrument Co., Inc.

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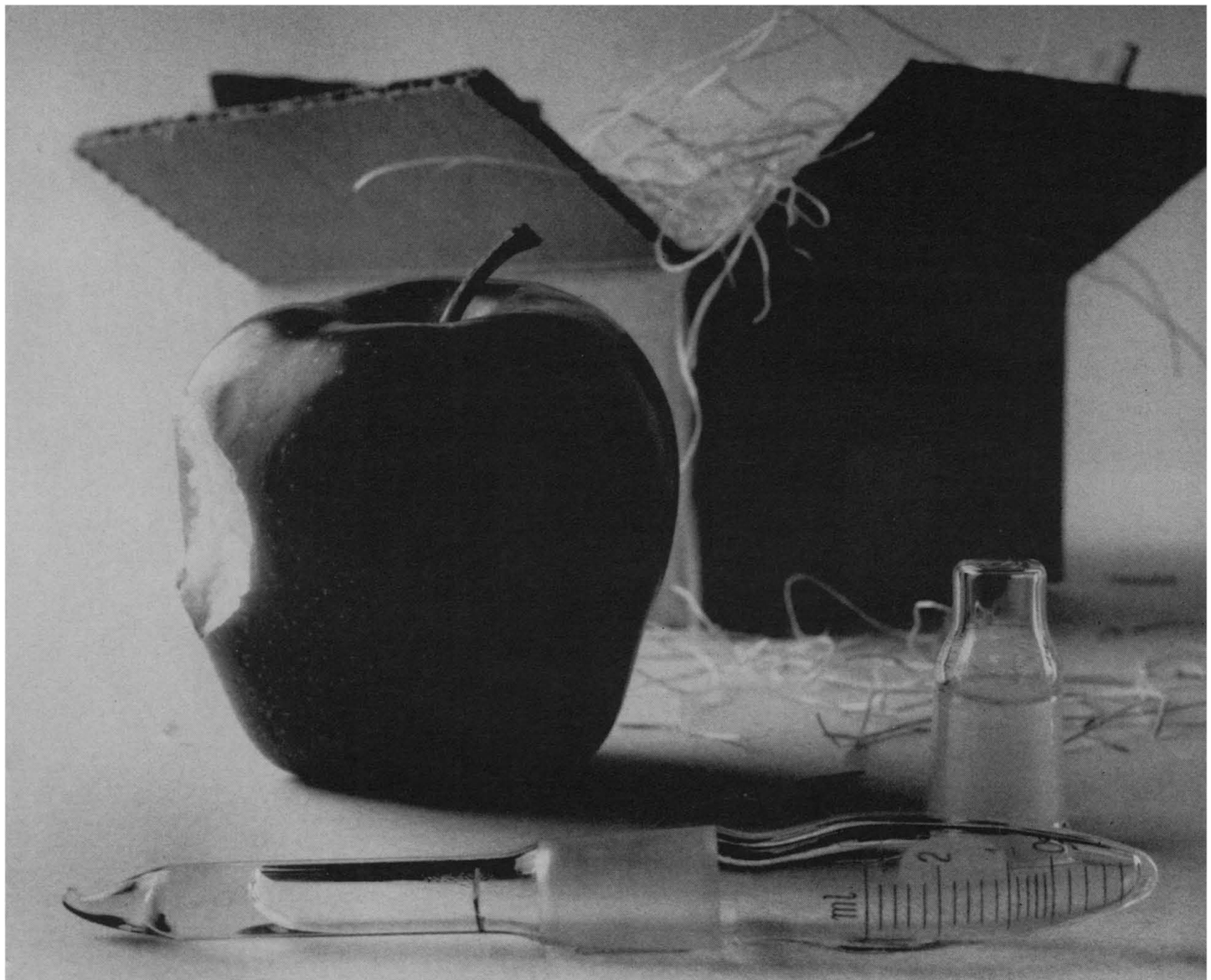

Sorry, we just never ship [^{3}H] acetic anhydride to anyone until after lunch.

Because on the *morning* of the day that we ship it to you, we are busily distilling it. *Double*-distilling it.

Why? Because (if the truth were known) everybody's benzene solutions of [^{3}H] acetic anhydride form, on standing, radioactive, non-volatile impurities which can—and often do—jeopardize the results of your subsequent efforts. So, to minimize problems, we periodically distill our [^{3}H] acetic anhydride and then finally double-distill it on shipment day. Result: an exceptionally pure product less likely to lead your research astray. Purity, incidentally, is determined by quantitative gas/liquid chromatography and all applicable analytical data are included on the detailed Product Analysis Report that accompanies your shipment.

But despite this extra processing and unusual purity, the prices are low. To get a listing of these prices and further details, write [^{3}H]AcOAc on a postcard with your name, address and zip code, please.

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In Agriculture and Related Fields

AGRICULTURE AND THE QUALITY OF OUR ENVIRONMENT

Editor: N. C. Brady

476 pages, bibliography, author and subject indexes. 1967.
Price: $13.50. AAAS members' cash orders: $11.50.

Agriculture and the Quality of Our Environment addresses itself to this two-pronged problem: How does environmental quality affect agriculture and how does agriculture affect the quality of the environment?

This book provides a good summary and analysis of agriculture's stake in the quality of our environment. It also identifies the part which science must play to solve environmental pollution problems.

AGRICULTURAL SCIENCES FOR THE DEVELOPING NATIONS

Editor: A. H. Moseman

232 pp., 37 illus., bibliog., index, 1964.
Price $6.75. AAAS members' cash orders: $6.00.

The symposium was devoted to the role of agricultural science and technology in the acceleration of economic progress in newly developing nations. The twelve chapters of this volume comprise an informed summary of the problems and opportunities of technical, economic, and educational assistance in agriculture. The book will be helpful in furnishing some background experience for the use of agricultural planners in the newly emerging countries.

GROUND LEVEL CLIMATOLOGY

Editor: Robert H. Shaw

408 pp., 144 illus., bibliog., index, 1967.
Price: $12.50. AAAS members' cash orders: $10.50.

Ground Level Climatology consists of twenty papers dealing generally with the theme of weather and agriculture (including forestry) and specifically with the climate closely surrounding plants and animals—the microclimate. Investigators in the field of ground level climatology seek to understand the complex relationships between living organisms and their environment: the relation of climate to the distribution and abundance of plants and animals; the effects of weather modification on physical processes within the microclimate; and the effects of moisture, temperature, and energy balance on physiological functions.

GERM PLASM RESOURCES

Editor: Ralph E. Hodgson

394 pp., 59 illus., bibliog., index, 1961.
Price: $9.75. AAAS members' cash orders: $8.50.

The 25 papers treat the subject according to origin of germ plasm, developmental programs, new approaches to uses and perpetuation, and protection of plant and animal germ plasm.

Progress in improving the usefulness of the available germ plasm is measured. The need for additional germ plasm is pointed out, and problems relating to further development, preservation, and utilization of germ plasm to advance plant and animal production are indicated.

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This Picker computerized liquid scintillation system is a lot more than a computerized liquid scintillation system.

First you should know its genealogy. We combined Picker's most sophisticated liquid scintillation counter (the Liquimat® 330—a 200 sample, 5 channel, temperature-controlled instrument) with a *substantial* computer (Picker's DAC digital stored program computer) and then added a teletypewriter with tape punch and reader. This accomplished two things.

First thing. It created the most sophisticated liquid scintillation counting system available today. This system can take you far beyond cpm and dpm analysis. It can perform complex statistical analyses, calculate specific activities, derive uptake curves, do analysis of variance, and, in general, perform the computations necessary for deriving really meaningful answers from a liquid scintillation counter. And since it takes over the tedious and time-consuming task of converting raw, uncorrected data into meaningful information, much *more* work can be done. The computer does other things too: e.g., it automates calibration and quench correction, making it the world's easiest system to recalibrate when desirable.

Second thing. Although the DAC computer functions with the Liquimat 330 as a true on-line computer, it is easily and completely divorceable from the liquid scintillation counter. Accordingly, you can marry it to your other instruments that now just generate raw data. And this DAC computer is no toy. It is a full-fledged programmable, general-purpose computer with a substantial capability. As such, it can also be used by itself for polynomial computations, statistical analyses, curve-fitting, interpolation, and even as an everyday calculator.

Now learn more about how this one system can give you both the most sophisticated liquid scintillation system available today *and* a computer data reduction center for a variety of instruments. Call your local Picker Nuclear representative, or write Picker Nuclear, 1275 Mamaroneck Avenue, White Plains, N.Y. 10605 and ask for our brochure 330B.

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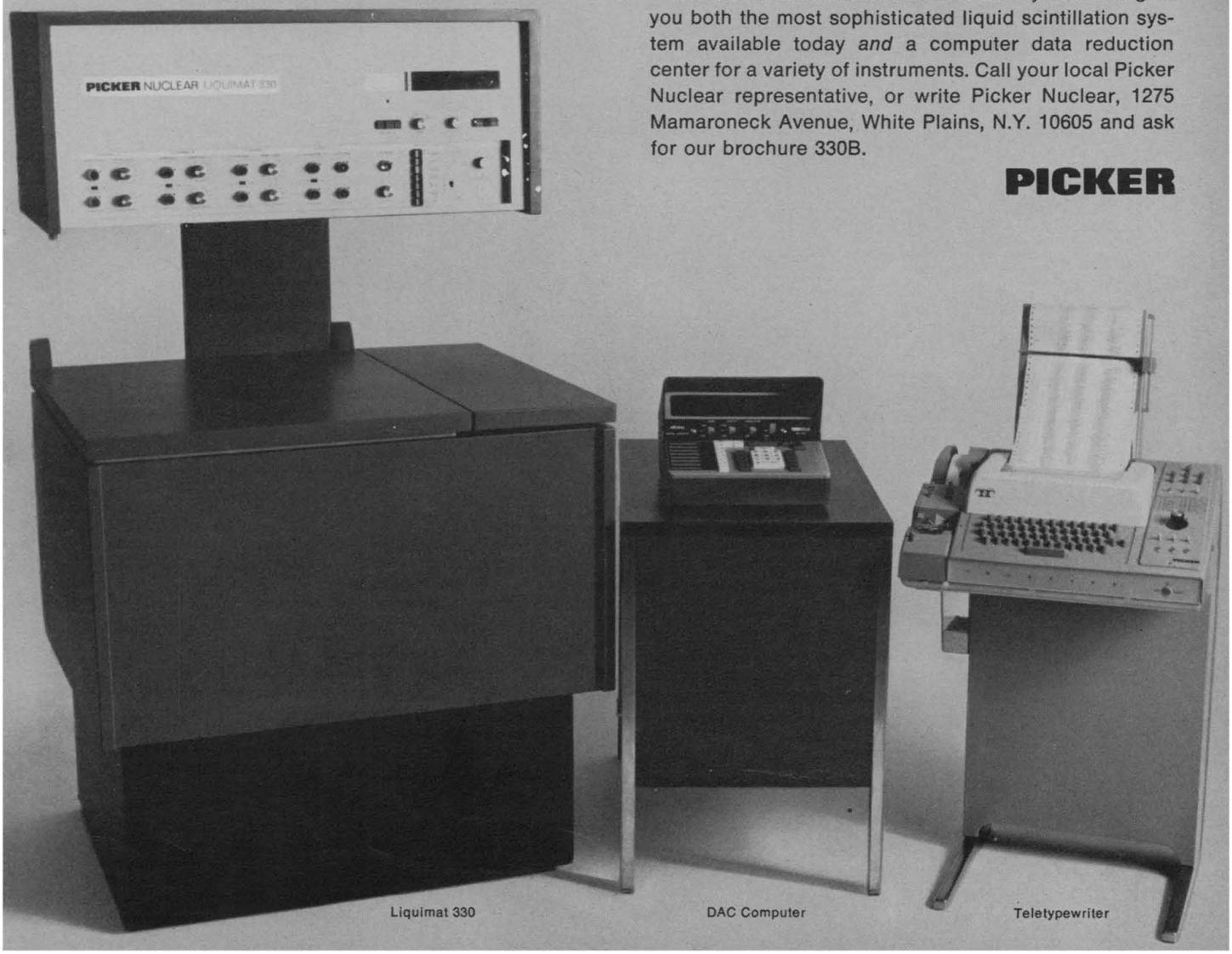
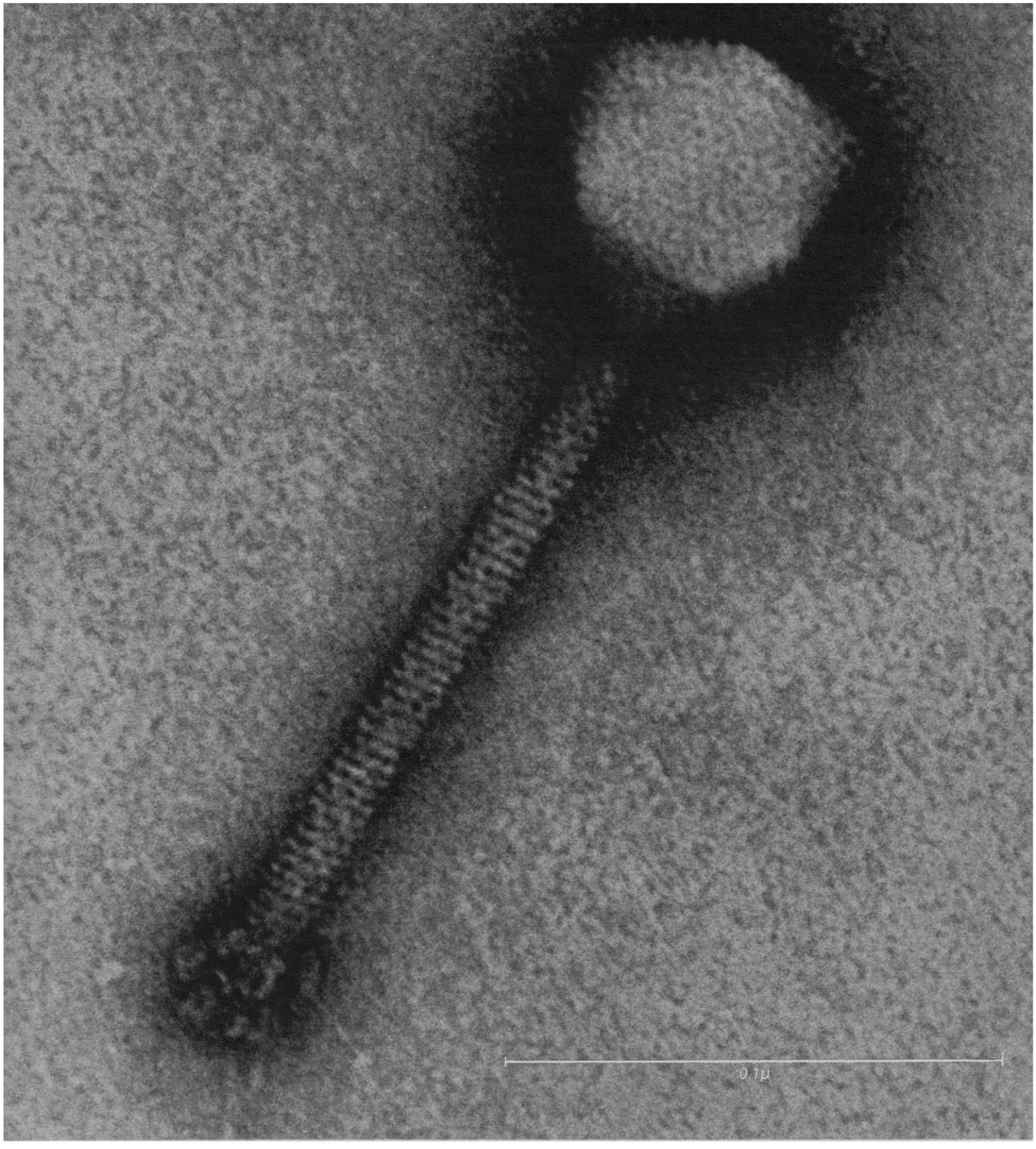


Liquimat 330 DAC Computer Teletypewriter



SP50-B Subtilis bacteriophage; photographed at 80,000x in a Siemens-Elmiskop electron microscope; enlarged to 1,500,000x with a Durst S-45EM*(Courtesy of Dr. A. K. Kleinschmidt, New York University School of Medicine, Dept. of Biochemistry.)

The above illustration was reproduced from a 16x20" print — a 19.5x enlarged section of a 3¼x4 EM plate — made with a Durst S-45EM enlarger. The specular point-light source and condenser system used in this enlarger are analogous to Koehler illumination as applied to optical microscopes, and is responsible for the extremely high resolution and contrast obtained, so essential to retaining definition in electron micrograph prints.

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*Shown at 950,000x

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Engis INSTRUMENTATION DIVISION
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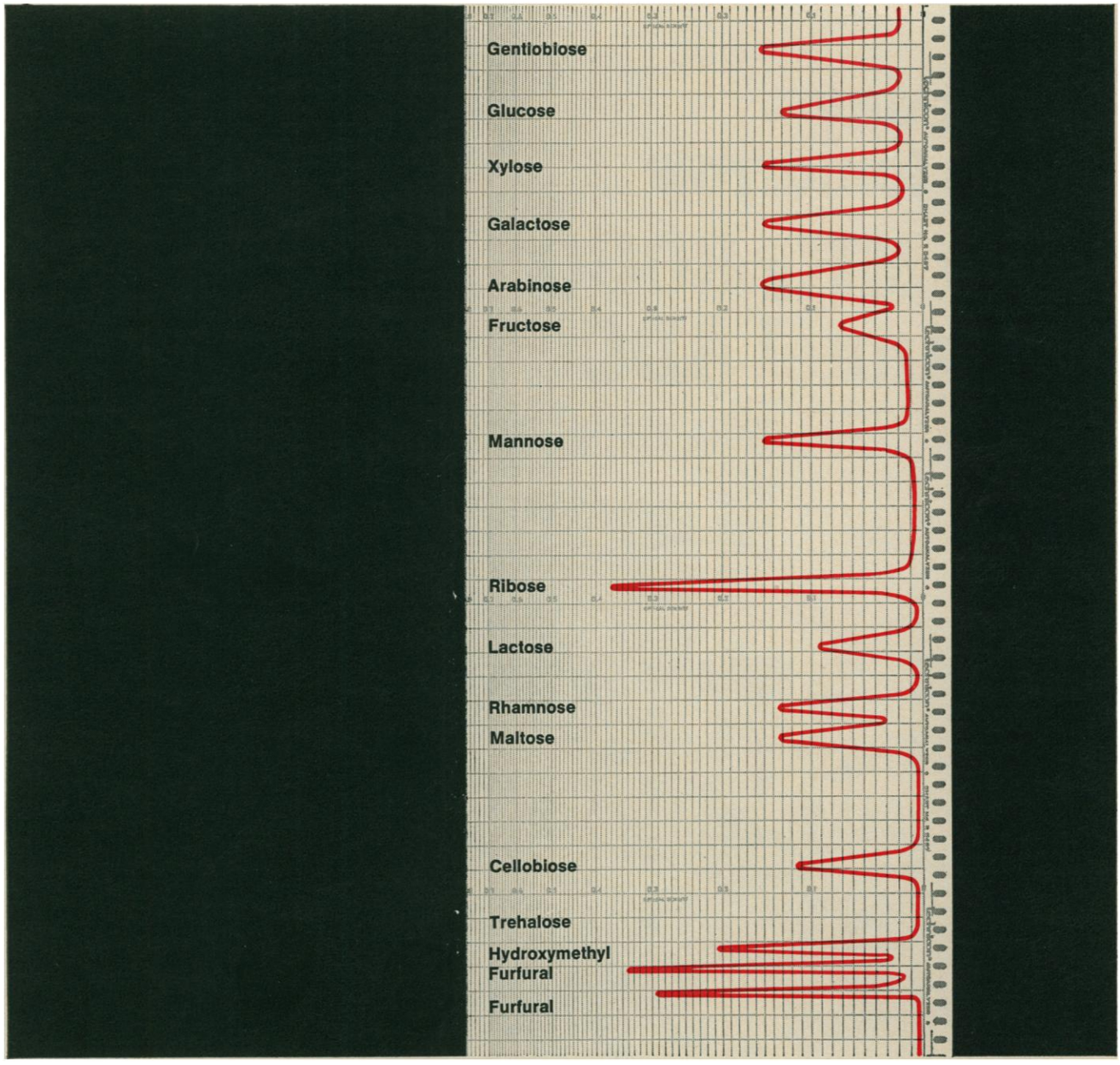

■ The 15-sugar chromatogram reproduced about one-sixth size above was produced on the new, automated Technicon® Sugar Chromatography System in 7½ hours. Notice that furfural, hydroxymethylfurfural, pentoses, hexoses, and disaccharides are well resolved.

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And so began the most complete line of electron optics around. The Jeolco line.

1968. People still think all we make is an electron microscope. People, that is, who think of us at all.

Maybe we better introduce ourselves, in force.

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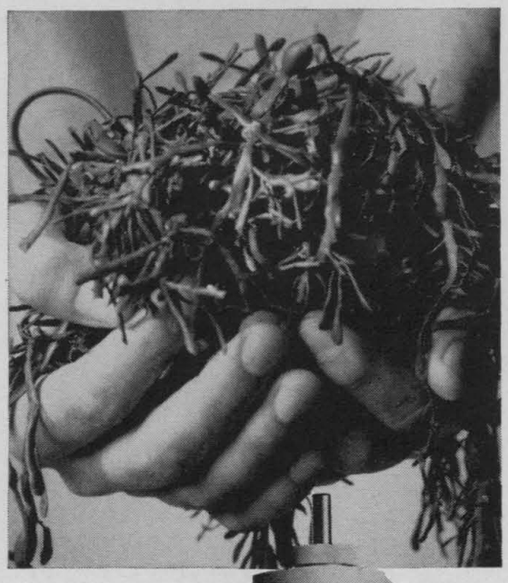
Introducing the JEM-50
Our everyday electron microscope. At an everyday price.

It has 20 times higher resolution than an optical microscope, but it's just as easy to use.

And since it works on ordinary house current, you can use it almost anywhere.



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Our high performance compact. With an accelerating voltage of 200KV. And 70% higher transmissive power.

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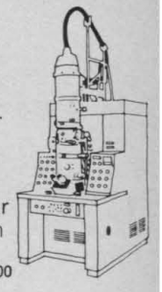
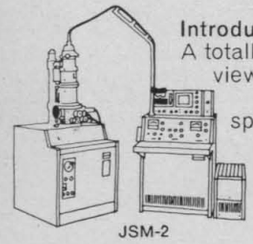


JEM-200



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A totally new concept in viewing.

You see solid specimens in depth. As you're used to seeing them.

As no transmission scope can show them to you.

And Jeolco makes them especially easy to see. (We hope you also notice our unique design.)

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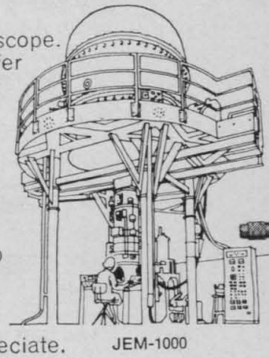
Our super-sensitive, super-expensive scope.

With an ultra-high transmissive power of 1 million volts. And an ultra-gentle way of handling the most delicate of specimens.



JEM-1000

Introducing the JEM-100B
With so many versatile features, we don't know what to point out first.

There's its outstanding resolution to 2 angstroms. Its high image contrast. Its full automation.

And a long list of convenience features you really have to see to appreciate.

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JEM-100B

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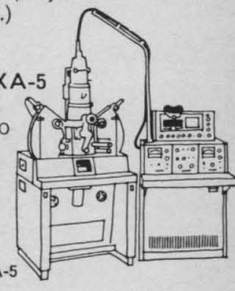
The only probe built that can detect beryllium (at. no. 4).



JXA-5

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A routine replacement for any 100KV (except ours).

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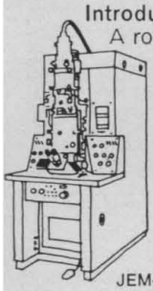

JEM-120

Now that you've met some of us on paper, we'd like you to meet all of us in person.

Just give us a call. Collect. 617-396-6021.

So we know when to give you a demonstration. And maybe even tell you another story about Kenji Kazato.

Our Jeolco president.

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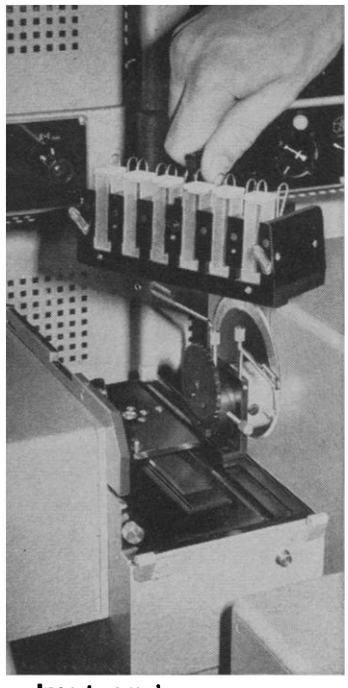
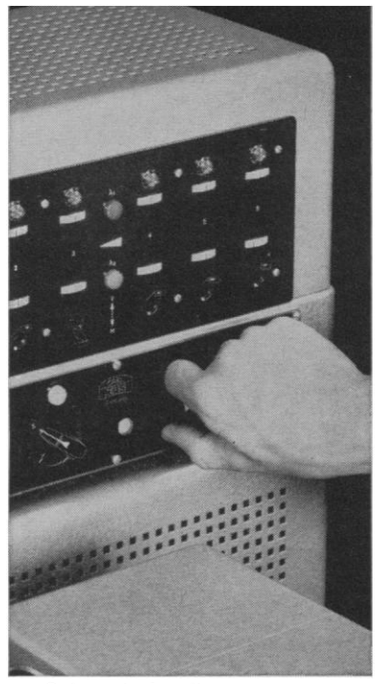
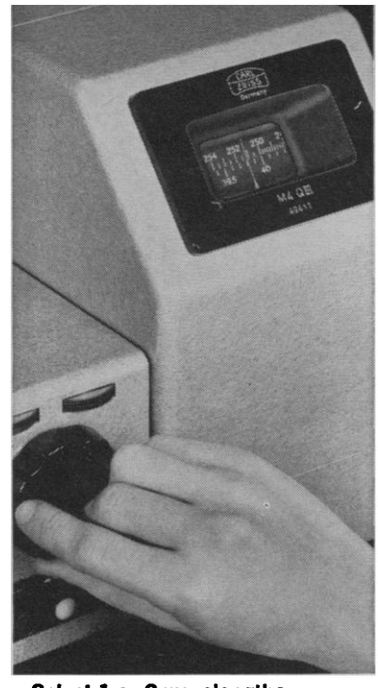


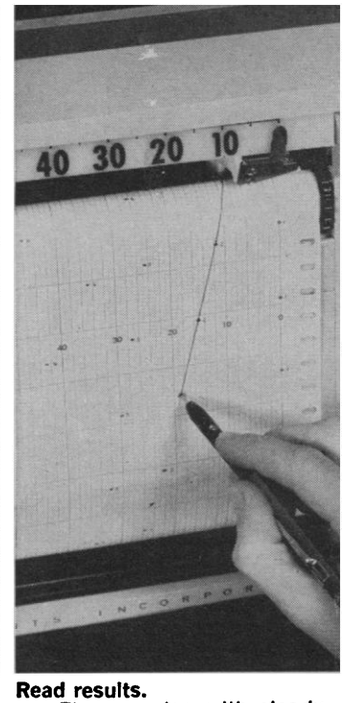
Insert samples.
The Zeiss Automatic Sample Changer accommodates six cells . . . *any* of which may be used as reference. Cells are supplied with pathlengths from 0.1 to 50mm, and volumes from 12μl to 15ml. Only Zeiss Automatic Changers have a six-cell capacity.



Set control unit.
Offers automatic "in-the-beam" dwell time from 2 to 60 seconds, and cycle time from 1 to 15 minutes. An automatic slit adjustment repeats the setting of each blank with an accuracy of ±0.002A after each cycle. This unit automatically controls movement of sample holder.



Select 1 or 2 wavelengths.
You can match the six cells electronically to ±0.002A at two wavelengths, or offset any up to 0.4A in case of overlapping curves. A long (180cm) parallax-free projected scale gives you unmatched reading accuracy and permits precise repeatability.



Read results.
The recorder, with clearly coded and numbered chart, is automatically operated on command. This eliminates the confusion of meandering lines, and the inconvenience of miles of waste recorder paper. Only Zeiss offers this important feature.

Now...automated spectrophotometry, ±0.002A accuracy!

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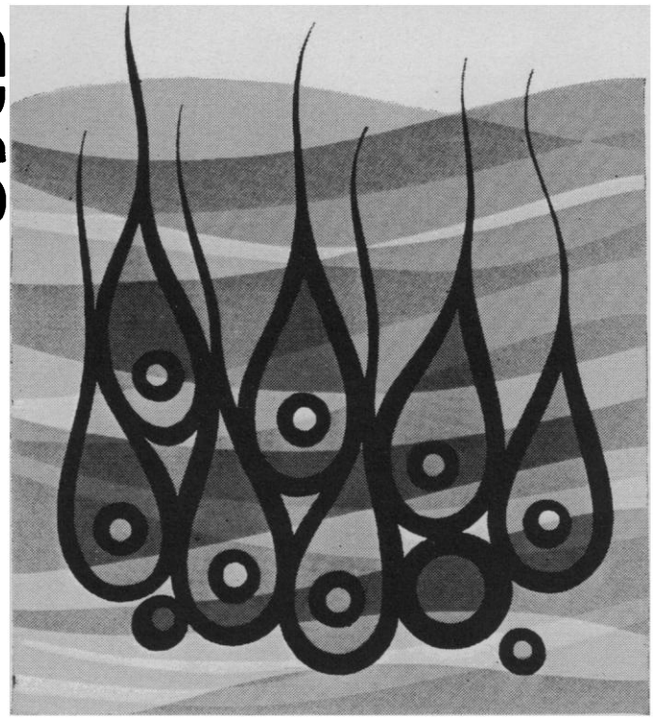

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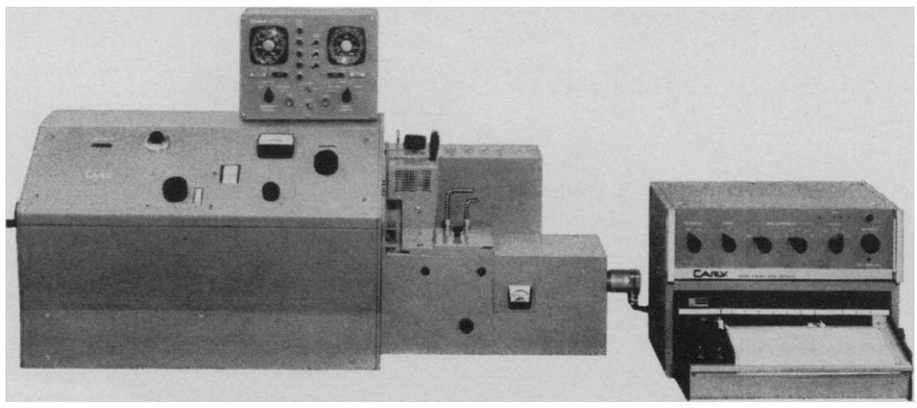

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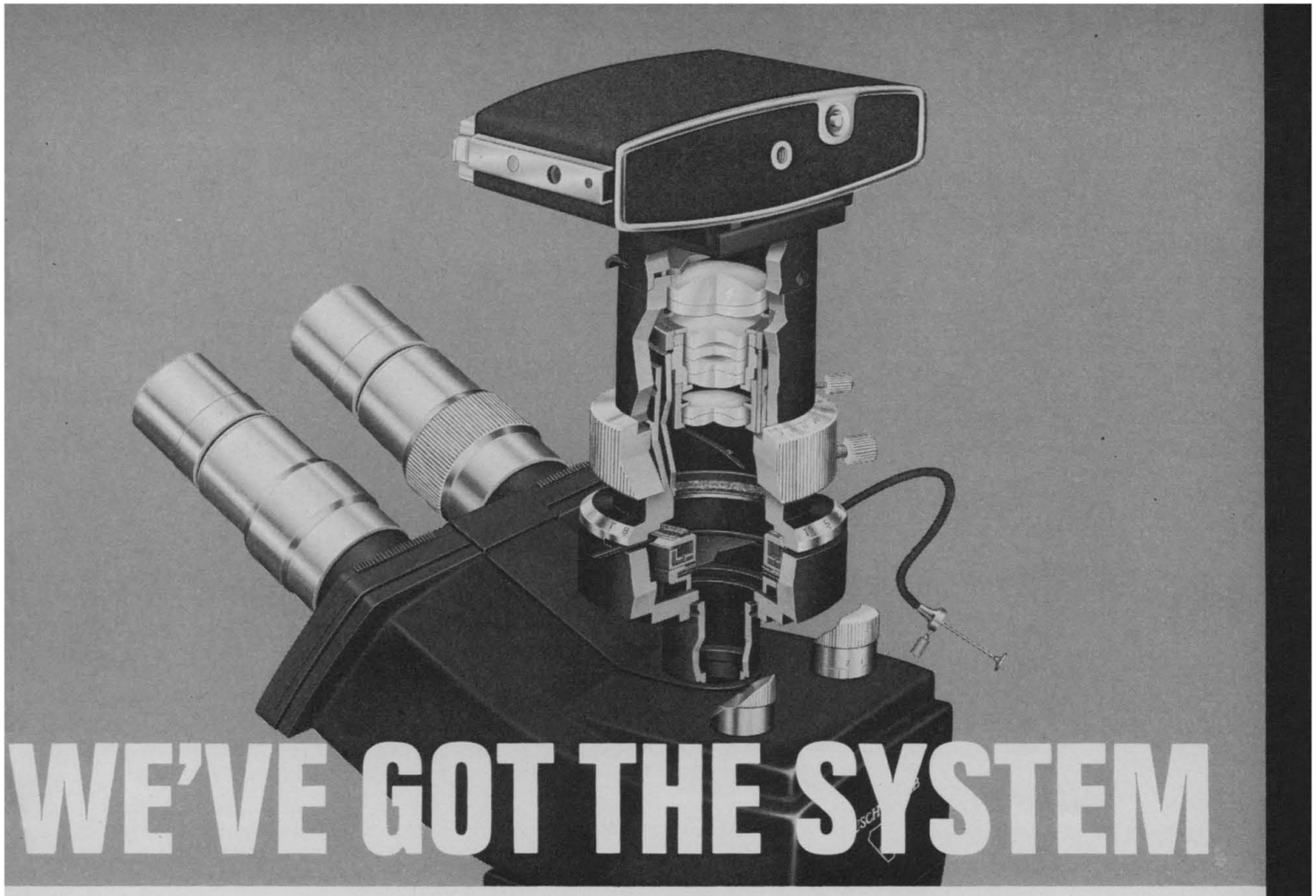

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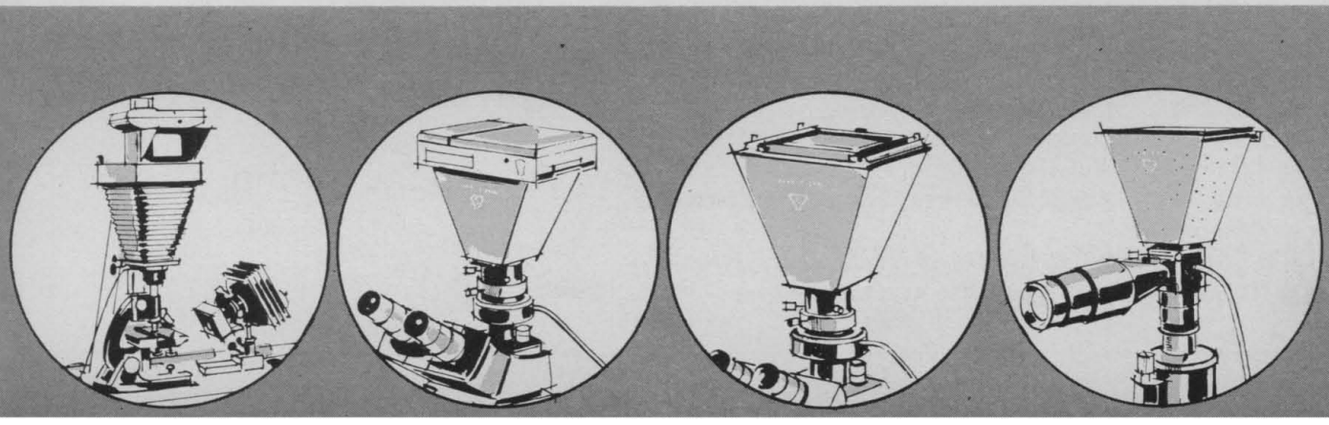

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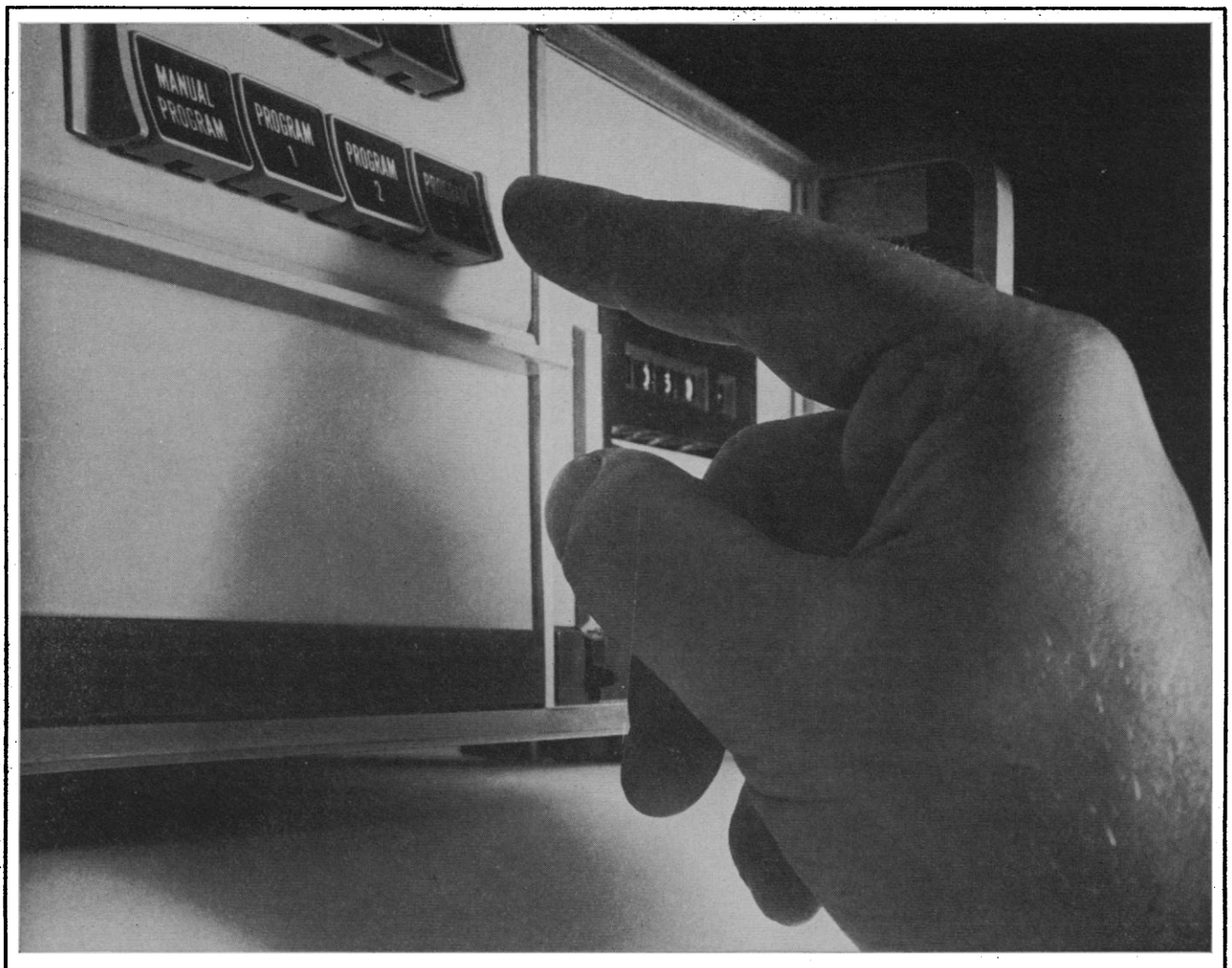

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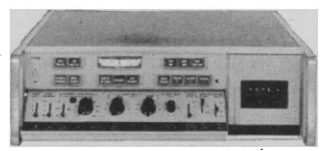

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(Advance Registration accepted only until 29 November)

☐ Enclosed is $10 Registration Fee (*Program* and Convention Badge)

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☐ Enclosed is $..... for tours

PLEASE PRINT OR TYPE

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(List student's full name. Attach list if space is insufficient.)

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FIELD OF INTEREST: _____

CONVENTION ADDRESS: _____

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Please print or type and mail to: **AAAS Housing, Dallas Convention Bureau, 1507 Pacific Avenue, Dallas, Texas 75201**

(Reservations received after 13 December cannot be assured.)

CHOICE OF HOTEL: First_____ Second_____ Third_____

ROOM: ☐ Single ☐ Double ☐ Twin ☐ Suite Preferred rate $_____

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DEPARTURE: Date_____; _____AM, _____PM

Be sure to list definite arrival and departure date and time. Hotel reservations will be held *only* until 6 PM unless otherwise specified.

NAME:_____
(Individual requesting reservation)

ADDRESS:_____
(Street) (City and State) (Zip Code)

Tours at the AAAS Annual Meeting

The AAAS is pleased to offer tours to institutions of particular scientific interest for registrants at the Association's annual meeting. Personally conducted tours arranged by officials of each institution will afford the visitor a unique opportunity to see special exhibits, displays, behind-the-scenes operations, and scientific activities of various kinds which are not usually seen by the general public. Attendance at each site is necessarily limited in order to give the visitor full opportunity to see and hear about work in progress. At some locations refreshments will be served by the host institution. Details on the special attractions at each site will be published in later issues of *Science*.

Chartered buses will provide round-trip transportation from the Statler-Hilton Hotel. Afternoon tours will return to the Statler-Hilton Hotel no later than 6 p.m. Ticket sales are limited to registrants. A fee of *$2.00 per person* is charged for each tour to cover transportation costs. Your ticket is your receipt and is required for transportation and admission. Tickets will be mailed with the *Program* and convention badge. Advance registration for tours will not be accepted after 29 November. Tickets for spaces unsold by 29 November will be on sale at the AAAS Tours desk in the registration area at the Statler-Hilton Hotel, starting 26 December.

Please use the form to register for tours. Indicate the number of tickets you wish to order for each tour and enclose payment of $2.00 for each ticket ordered.

Since attendance at each site is limited, early registration is recommended. Refund requests on tour tickets cannot be accepted after 18 December.

AAAS Tour Registration

Price of tickets is $2.00 each

Number of tickets	
.....	Texas Instruments, Inc., 27 December, 9:00 a.m.–noon
.....	Ling-Temco-Vought, Inc., 27 December, 2:00–5:00 p.m.
.....	Callier Hearing and Speech Center, 28 December, 10:00 a.m.–noon
.....	Amon Carter Museum, Fort Worth, 28 December, 1:00–5:00 p.m.
.....	Dallas Museum of Fine Arts, 29 December, 1:00–4:00 p.m.
.....	Ling-Temco-Vought, Inc., 30 December, 9:00 a.m.–noon
.....	Texas Instruments, Inc., 30 December, 2:00–5:00 p.m.
.....	Southwest Center for Advanced Studies, 30 December, 2:00–5:00 p.m.

Total number of tickets ..... Total amount remitted for tours $.....

Please indicate on reverse side total amount remitted for tours.

The American Association for the Advancement of Science will hold its 1968 Annual Meeting in Dallas, Texas, 26–31 December. The Adolphus (1321 Commerce), Baker (1400 Commerce), Sheraton-Dallas (Southland Center), and Statler-Hilton (1914 Commerce) hotels will be used for housing. All the hotels will have Registration Centers.

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HOTEL	SINGLE	DOUBLE	TWIN	SUITES†	PARKING
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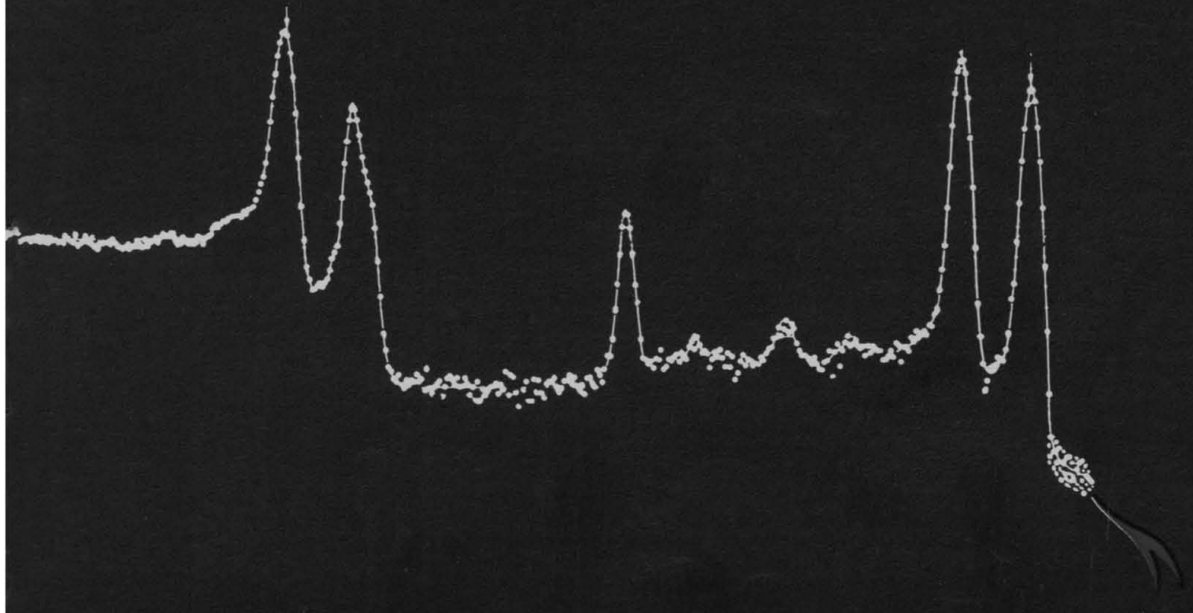

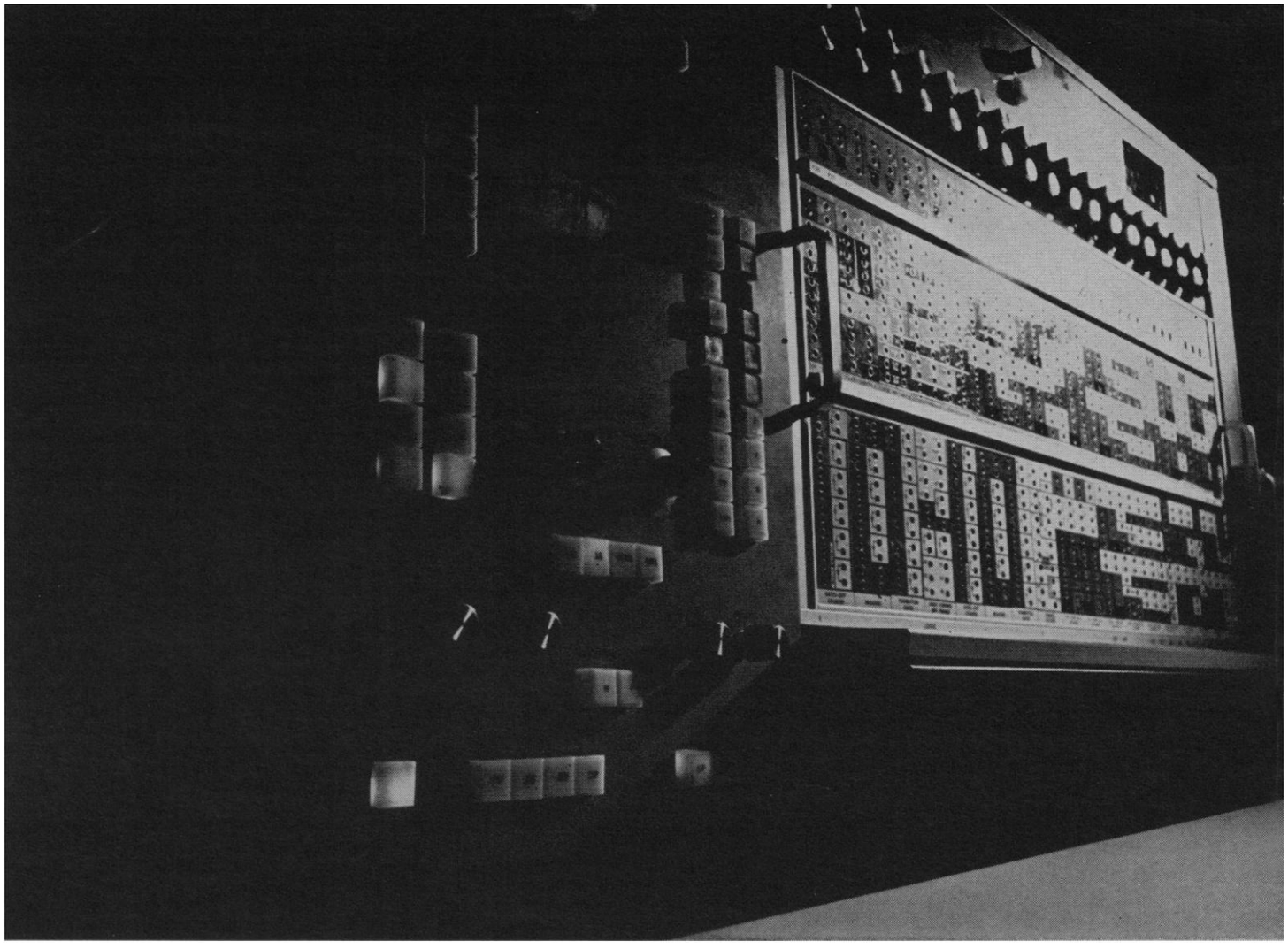

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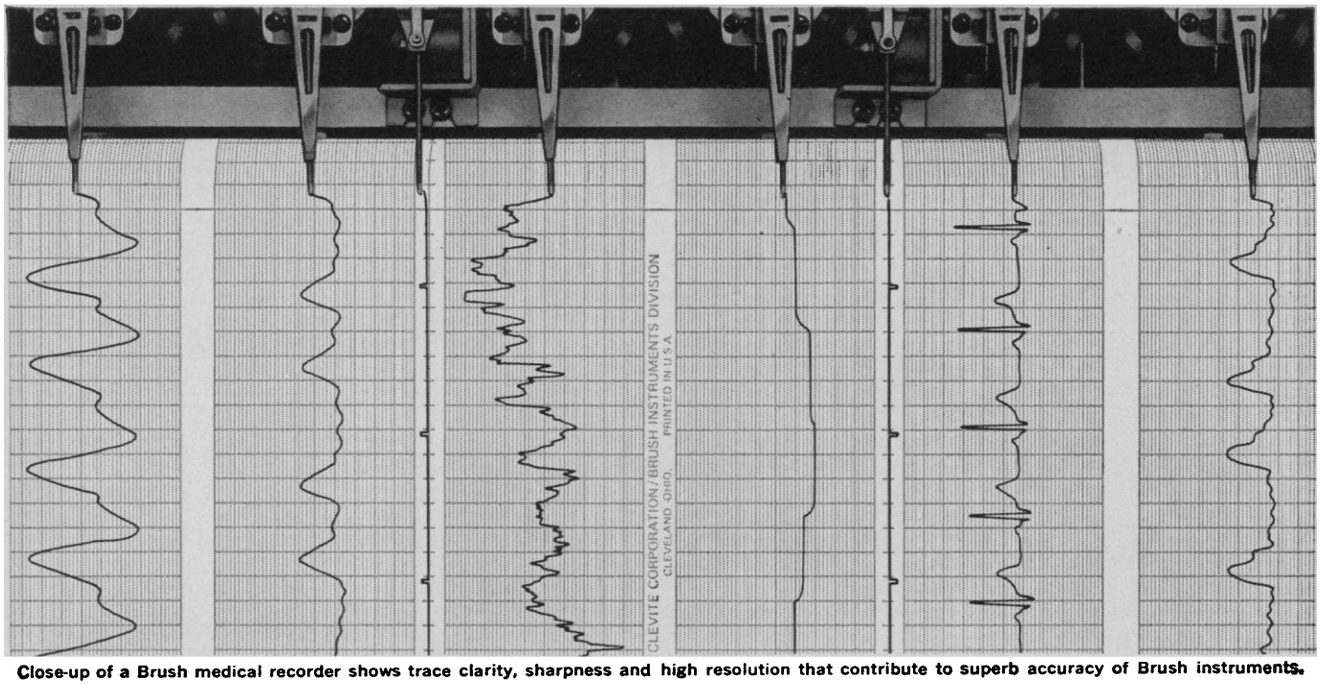

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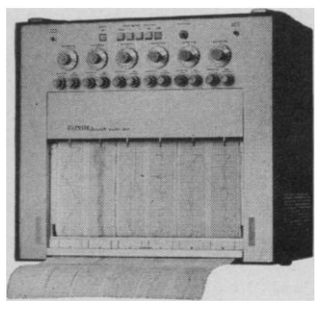

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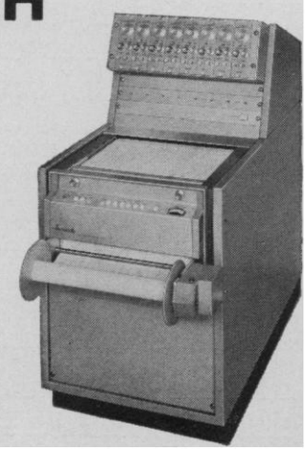
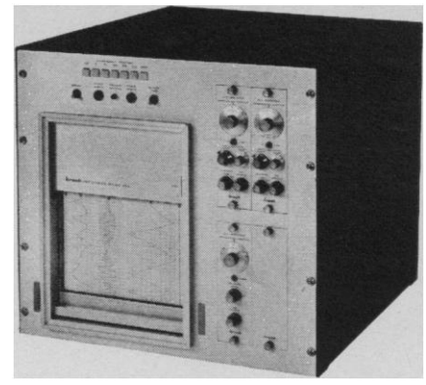


Six important reasons why Brush medical recorders are best for physiological data acquisition



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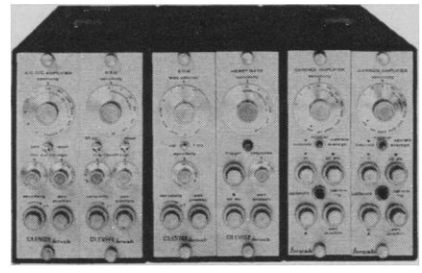

not only preserves wave-form fidelity, but, combined with high power output, provides ample capability to drive tape recorders, oscilloscopes, digital counters, computers, and oscillographs. Or any combination at the same time.

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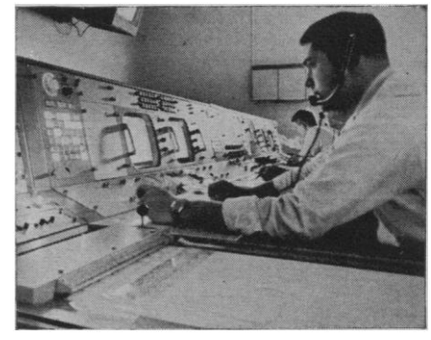

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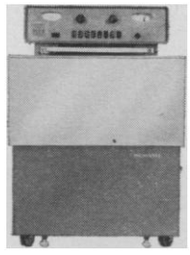

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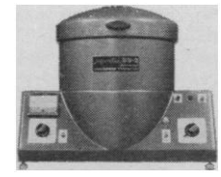

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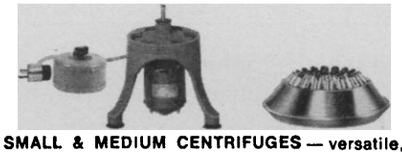

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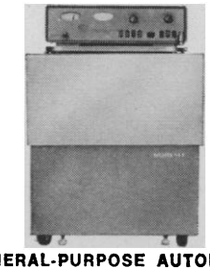

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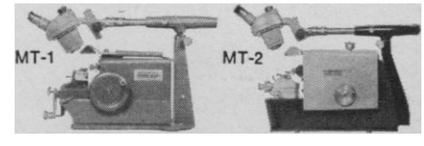

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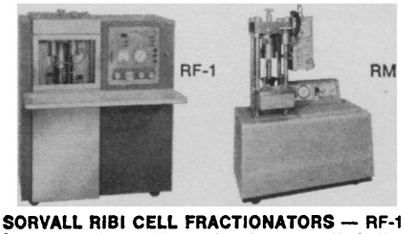

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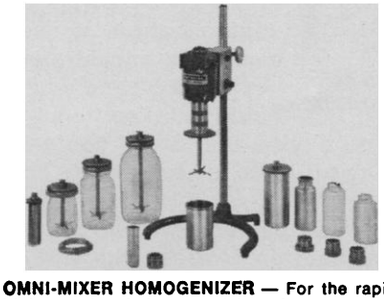

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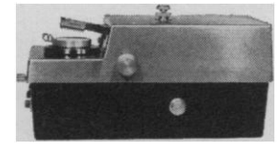

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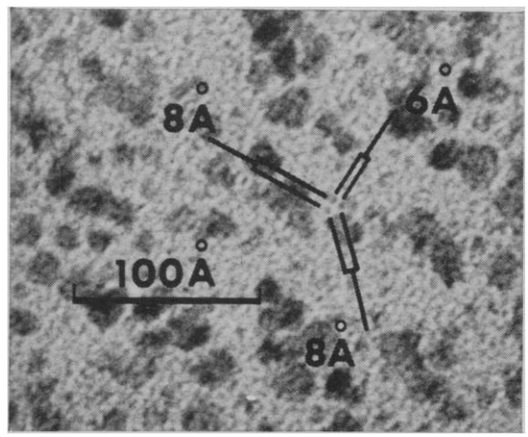

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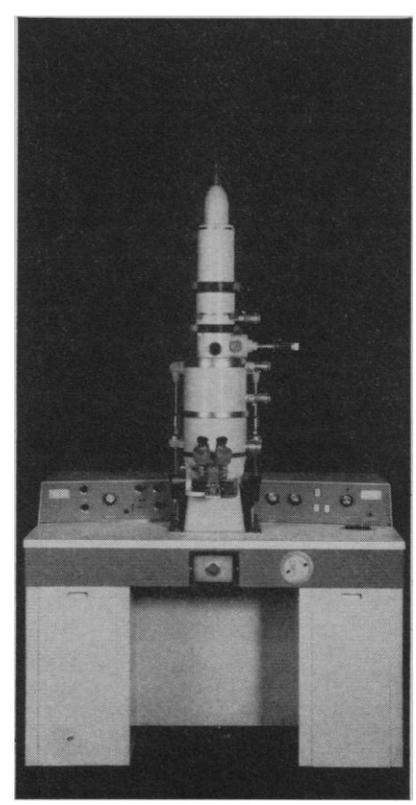

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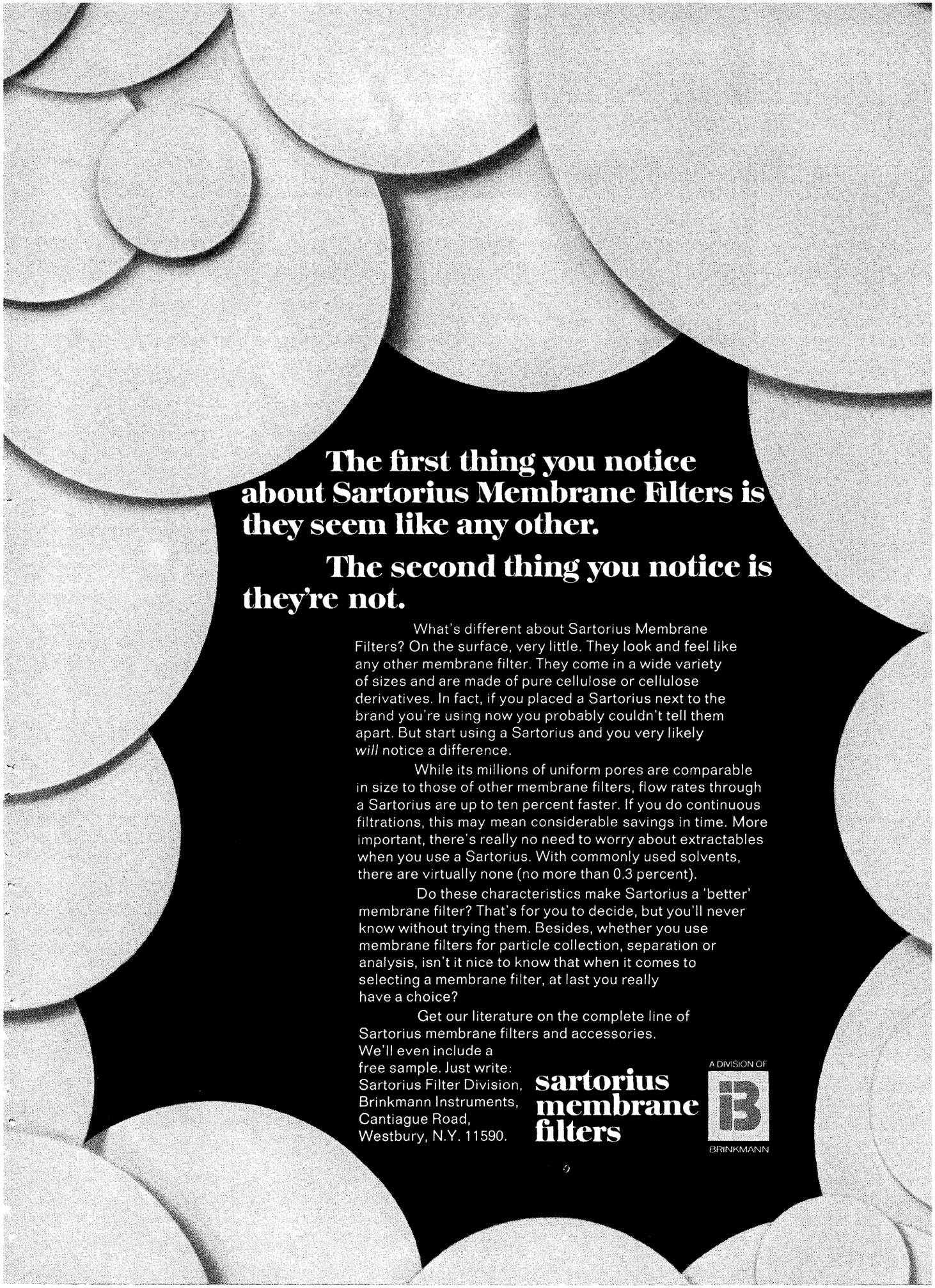
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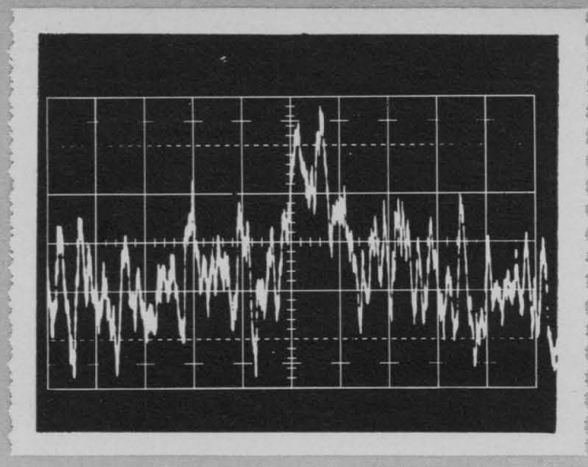

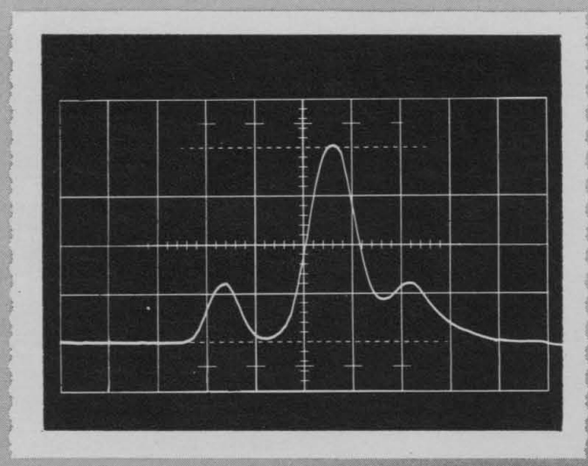

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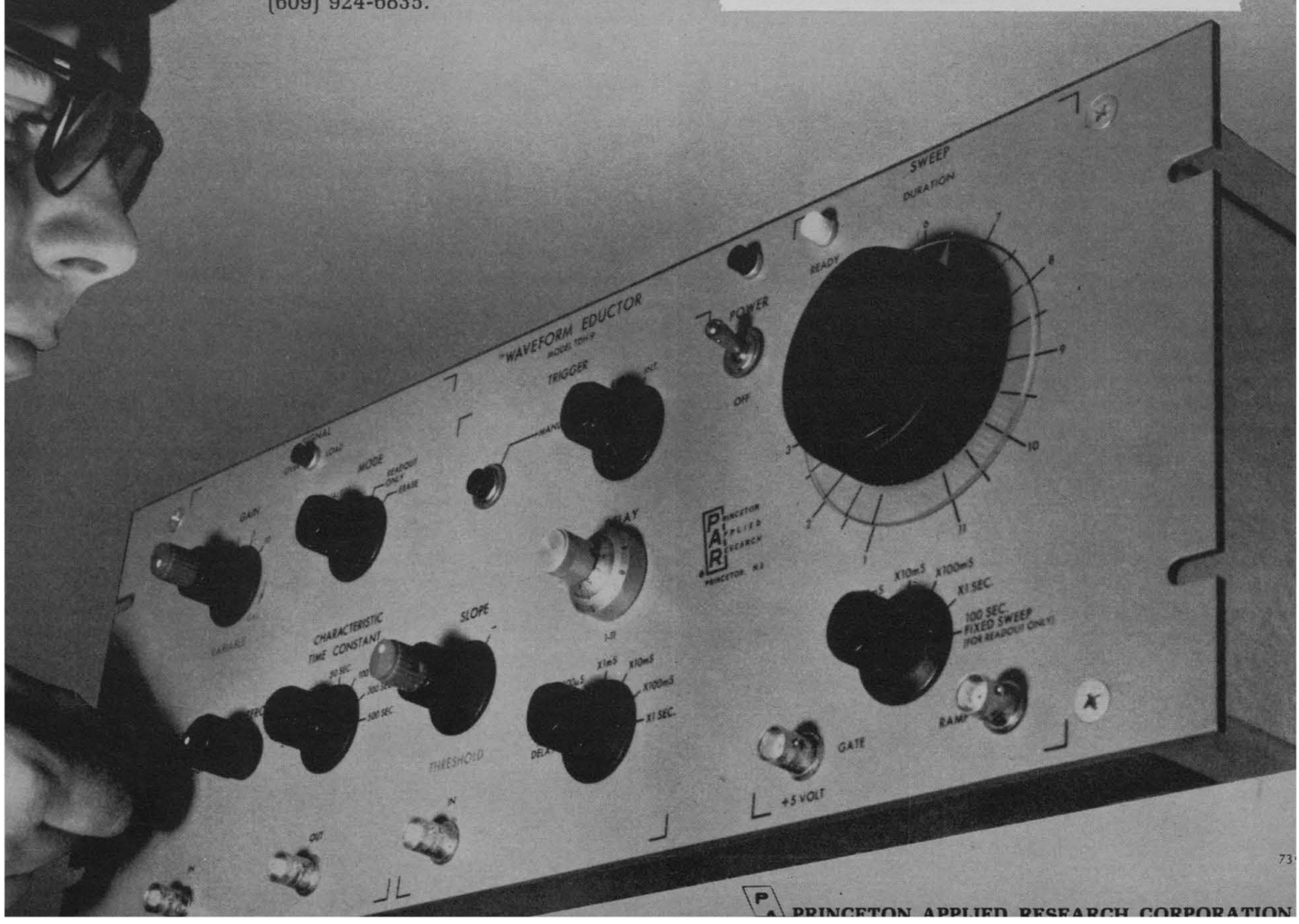

PRINCETON APPLIED RESEARCH CORPORATION

inations while under the influence of stimulatory and depressant drugs? Should we take urine samples or blood samples from those achieving the highest scores? Should we take urine samples from all the students and select several for evaluation? And then, how much of the drug is too much? What are the proper educational standards? How can we compare drugged and nondrugged students?

And this also—how can we turn out professionally trained doctors, lawyers, engineers, and architects whose learning periods were framed by a border of tranquilizers and whose test periods were flown through on stimulants? Can a doctor who spent his clinical years on tranquilizers maintain the standards established by those free from these drugs?

We need standards for this problem. *They are not being developed.* The student counselors steadily tranquilize nervous sophomores—without controls and without study of the effect of these drugs on the individual during the time of his schooling and later in his career.

GILBERT E. CORRIGAN
Department of Pathology, University of Texas Medical Branch, Galveston

A Pretty Kettle of Fish

With reference to the cover (13 Sept.), all I can say is Holy Mackerel!

FRANCIS V. HOWELL
Post Office Box 1965, La Jolla, California 92037

. . . Fish may have many local names but to transplant Boston mackerel from New England to the Pacific Ocean and name them Pacific salmon is jolting. I caught enough Boston mackerel during the time I worked on a seine boat in Maine to recognize one even if mislabeled.

D. W. FRANCIS
Department of Poultry Science, New Mexico State University, University Park 88070

Eternity of Print

On reading Dael Wolfle's editorial, "The next Rosetta Stone" (6 Sept., p. 967), I was reminded of an inscription in the market place of Haarlem, Holland, carved on the home of Lourens Janszoon Coster (who, it is still contended by a dwindling few, was the true inventor of printing with movable type): *Memoriae sacrum typographia, ars artium omnium conservatrix . . .* which has since been modified to the more familiar and more euphonius "Printing: the art preservative of all the arts."

While Wolfle rightly emphasizes the question of information content of any "Rosetta Stone" we may leave for scholars of future civilizations, he also raises the interesting point of the medium of language communication between "lost" civilizations. Future scholars digging into the remains of our world in search of some meaningful communication symbols will undoubtedly have to do their research without the help of contemporary linguistics' sophisticated equipment for recording and analyzing oral language. They will have to rely—as today's paleographers must—on remnants of our *visible* language.

Visible language may be an unfamiliar distinction. Linguists were early to stake out oral language as being the only meaningful province for language research. Indeed, it would be improper to speak of visible language, since all but a few linguists consider any written or printed medium of communication as only a system of visual signs with which language is *symbolized.*

The study of visible language is fragmented, an academic orphan, and only in the first stages of international organization. Omnipresent as letter forms and related symbols are today, we are conducting relatively little research on them; much basic information and theory is yet to be determined. What, for example, constitutes the "g-ness" of the scores of differently shaped letter g's you see as you page through the advertisements of this number of *Science*? Could we isolate the nature of a prototype "g"? Or, what is behind the contemporary artist's fascination with letter forms? The answer may be reflected in the emphasis the program committee for the AAAS Annual Meeting this year has placed on the interaction between art and science (three general symposia are scheduled: Arts and Science—will there be a difference? Interface—art and technology, and Art and Science—the analysis of communication of form). Since its earliest beginnings, the alphabet has provided a meeting ground for such an interaction. No educated person can look at letter forms without encountering two conflicting stimuli: the *meaning*

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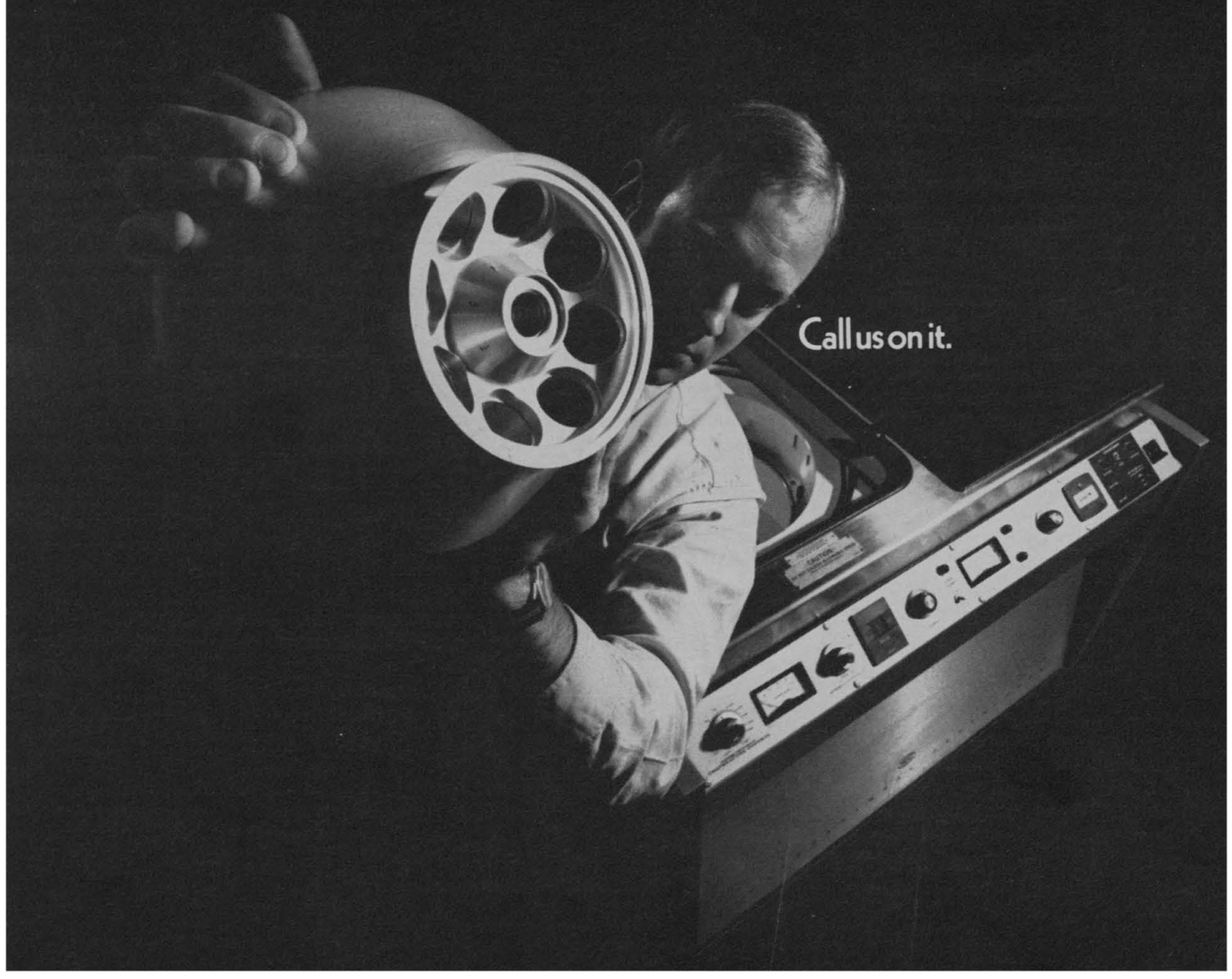

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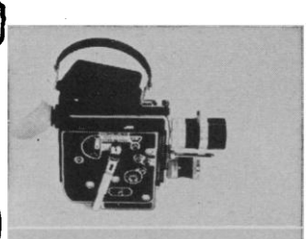

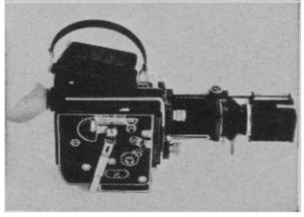

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of the letters (the underlying "g-ness") and the *form* of the letters (the presence of genius)—in other words, a convergence of reason and beauty.

Certainly the more immediate communication problems in our own society take precedence, but if we hope to save future civilizations some of the ambiguity our contemporaries find in ancient language remains, an important part of this concern should be more careful analysis and understanding of what may well be our only link with the distant future—our visible language.

MERALD E. WROLSTAD
Journal of Typographic Research,
Cleveland Museum of Art,
Cleveland, Ohio 44106

First AIBS National Biological Congress

The American Institute of Biological Sciences, at its recent meeting, passed a resolution to hold national biological congresses in 1970, 1971, and 1972. The first will be held in Detroit, 6–10 November 1970, under the chairmanship of William D. McElroy of Johns Hopkins University. The congresses will be concerned with various social, educational, and scientific problems with the morning sessions devoted to interdisciplinary symposia covering the major scientific advances in all areas of biology. National and international leaders in the biomedical sciences will be invited to participate. Afternoon sessions will be devoted to papers by biologists who are active in research in areas ranging from molecular, genetic, and developmental biology to evolutionary, ecological, and environmental sciences. Younger scientists will be invited to contribute original research papers on the subjects covered by the major symposia. The evening session, to be open to the public, will be designed to provide a forum in which the interrelationships of biology, technology, society, and public affairs are considered. National, state, and local leaders will be invited to participate. Among the topics to be considered are water and air pollution, pest control, population pressures, community health, food quality, and the effects of drugs on human development and behavior. Ideas are needed for other topics that might be considered.

Programs of lectures, exhibits, and organized tours will be arranged for

local high school and college students who are interested in careers in the biomedical sciences.

The National Biological Congress will not supplant the regular AIBS meetings, which will continue to be held on college campuses in late August. The 1969 meeting will be at the University of Vermont, Burlington, 17–22 August, and the 1970 meeting will be held at Indiana University, Bloomington, 23–28 August.

JOHN R. OLIVE
American Institute of Biological Sciences, 3900 Wisconsin Avenue, NW, Washington, D.C. 20016

New Roles for Pharmacology

Maren has presented a case for greater medical school support and recognition for pharmacology departments ("Pharmacology: Its nature in medicine," 2 Aug., p. 443). Perhaps pharmacology can make one of its greatest contributions by helping prepare many health professionals for roles in total health care. It seems unlikely that future health care demands will be filled merely by turning out more health professionals. Even if we could do this, we must find ways of better utilizing those health professionals that we have and will train.

Pharmacy is at last making some strong effort to prepare its young graduates to make a more significant contribution to patient care. The pharmacy student during his 5 (or 6) years of academic training has the greatest exposure to drugs—their use and misuse—of any health professional. The average curriculum well prepares the pharmacy student in the natural sciences and, increasingly, in the biological sciences. A key course prior to his clinical pharmacy experience is pharmacology. It is the fortunate pharmacy school that has the optimal type of pharmacology courses which aid its students in preparing for their roles as "drug-use control" specialists. More and newly designed pharmacology courses are now needed.

Perhaps pharmacologists can find the additional recognition which I believe they deserve if they look beyond their traditional roles in medical schools and determine the needed contributions which they can make to *all* the health sciences (dentistry, medicine, pharmacy, nursing, veterinary medicine). This will take courage and a realistic look at

health care needs. It also will take a change in attitude toward the nongraduate teaching programs. A meaningful contribution will earn pharmacology departments the recognition they seek. We in the other health sciences will welcome their increased interest.

L. C. WEAVER

College of Pharmacy, University of Minnesota, Minneapolis 55455

Impudence Displaces Discipline

The title of Carter's article, "Making of a president: Stanford students decry lack of voice" (20 Sept., p. 1229), is evidence of the currently distorted idea of the role of students in our institutions of higher learning. I noted the impudent statement of a Stanford student leader regarding the choice of Kenneth S. Pitzer as university president, a selection which was made without any participation by student representatives.

Students are in college to get an education, not to tell their elders how to run the school. It is typical of youngsters growing up for them to think they know more than their parents and even their teachers. But discipline, the most important factor in education, is the antidote for this impudence. If the young don't learn discipline at home or in school, they will learn it in the workaday world in a measure of cruelty beyond their capacity to withstand.

GEORGE EVERSON

Azalean, Gualala, California 95445

Bioenergetics: Birth of a Bulletin

At a recent Gordon Research Conference on Energy Coupling Mechanisms held in New Hampshire, it was decided to establish a means of rapid and informal communication among workers in the field of bioenergetics, including electron transfer, oxidative phosphorylation, photosynthesis and photophosphorylation, associated energy-linked functions, biogenesis of mitochondria and chloroplasts, and related topics.

A scientific memorandum to be called *Bioenergetics Bulletin* will be circulated monthly and will contain summaries of research results and papers submitted for publication in regular journals, conceptual insights into bioenergetic

phenomena with or without factual bases, requests for information, summaries of meetings which only a fraction of the workers in bioenergetics are able to attend, news of artifacts arising from commercial samples of biochemicals containing contaminants, and so forth, as well as reports of controversial research which might not otherwise come to the attention of other interested parties. Communications from participating members of the group should not exceed two typewritten pages. This service is expected to begin at the end of November 1968.

Information presented in *Bioenergetics Bulletin* will be treated as a private, nonquotable communication, although this restriction will be considered by the group members at a later date. It should be stressed that the success of such a venture depends almost entirely upon the eagerness with which members will be willing to supply information to their colleagues through such a medium.

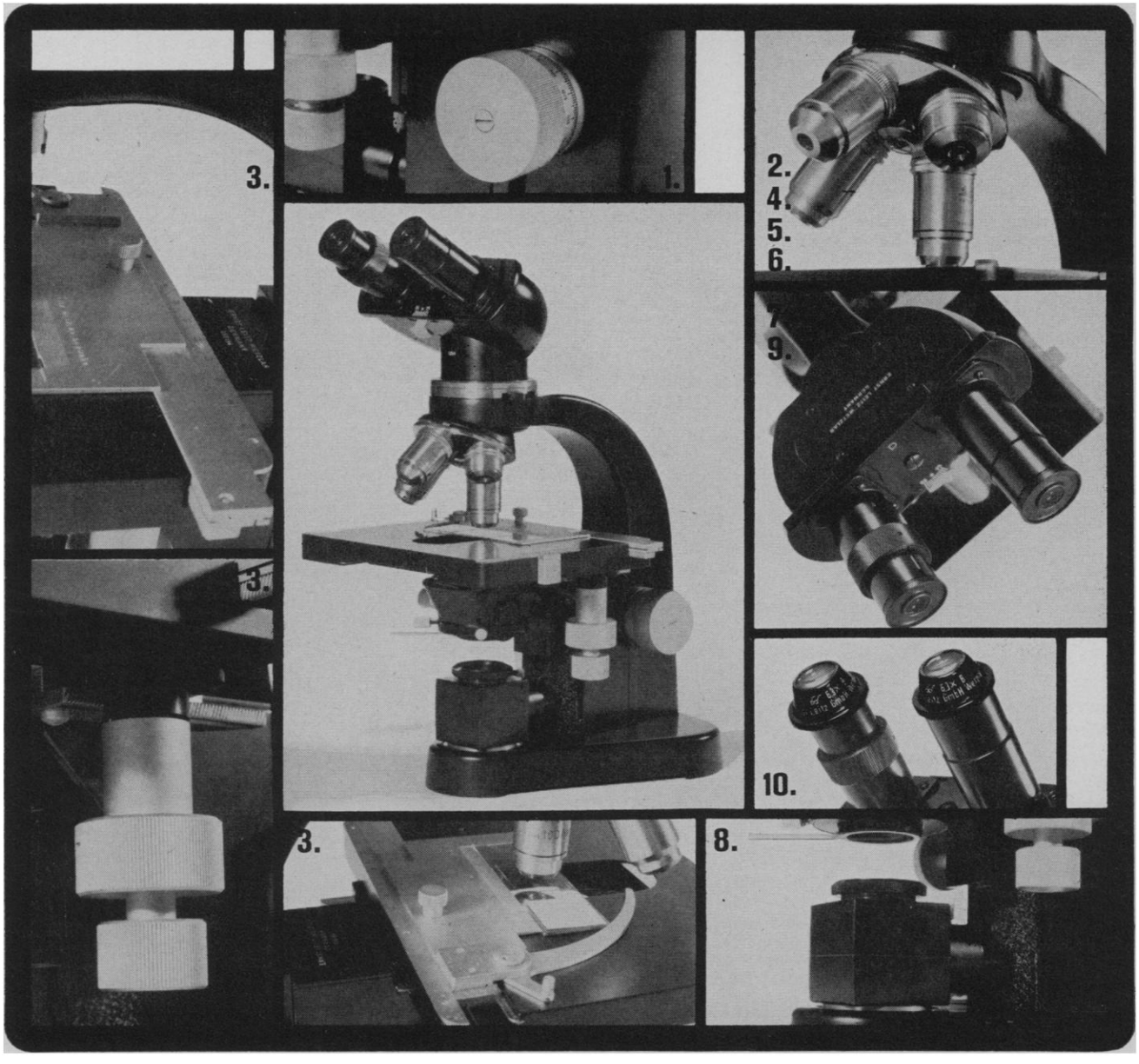
The initial annual subscription rate will be $20 (U.S.) or 8 pounds, 8 shillings (British), according to the region of the subscriber, and checks should be made out to *Bioenergetics Bulletin*. It is hoped that the cost will be lowered in subsequent years. Membership is open to individuals and groups of workers, but groups should designate an individual to whom *Bioenergetics Bulletin* should be addressed. Inquiries and subscriptions from areas of the Western Hemisphere should be addressed to me; and those from remaining areas should be directed to R. B. Beechey, Shell Research Ltd., Woodstock Agricultural Research Centre, Sittingbourne, Kent, England.

ROBERT E. BEYER
Laboratory of Chemical Biology, Department of Zoology, University of Michigan, Ann Arbor 48104

Einstein Memorabilia

I have been commissioned by British, American, and Continental publishers to write a life of Albert Einstein which will deal not only with his scientific work, but with his influence on contemporary affairs. I would be grateful to hear from readers who have letters from him, reminiscences, or other material which would be relevant to the book.

RONALD W. CLARK
10, Campden Street, Kensington, London, W.8, England



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15 November 1968, Volume 162, Number 3855

SCIENCE

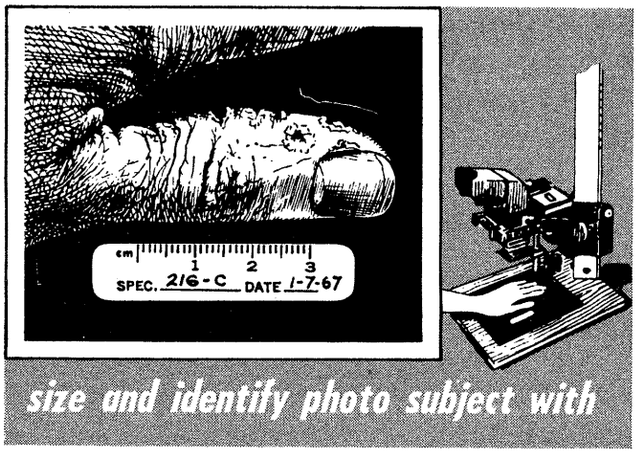
The Administration of NASA

The retirement of James E. Webb as Administrator of the National Aeronautics and Space Administration has evoked a flurry of congressional and newspaper tributes to his leadership of the space agency for the past 7½ years. Most of the compliments have been directed to the achievements in space that preceded and led up to the recent successful mission of Apollo 7. But not all have had this emphasis. Senator Holland spoke of "an outstanding accomplishment of management," and Congressman Albert hailed Webb as "one of the finest administrators in the history of this country." It is the administrative history of NASA that Webb himself emphasized in an address at Harvard a few days before his retirement. He spoke not of what NASA had done but of how it had been accomplished. This emphasis is consistent with his long-standing personal interest in organizational problems and administrative methods, his service to the American Society for Public Administration and the Municipal Manpower Commission, and his policy of opening NASA's offices and records to study by advanced students who wanted to learn how NASA worked.

In terms of numbers of dollars or of men, NASA has not been our largest national undertaking, but in terms of complexity, rate of growth, and technological sophistication it has been unique. Involved have been a government headquarters and widely dispersed set of laboratories and technological facilities; some 20,000 industrial contractors, subcontractors, and suppliers; almost 400,000 nongovernmental workers; and faculty members and students at 200 universities. Keeping all of these parts—often working right at the edge of technological knowledge and capacity—finely tuned and in close harmony has been an organizational achievement of high order.

How NASA accomplished its missions should be of interest to the planners and directors of other great national undertakings. Many of the large problems that confront us—for example, health care, the control of pollution, and the remaking of our urban living and working accommodations—differ from those of the space program in focusing on people rather than on rockets and space vehicles. And already there are protests against thinking of social problems as engineering tasks or in terms of technological models. True enough, human welfare is the objective, and the customs, the values, and even the idiosyncrasies and prejudices of man must influence means as well as ends. But the social programs, like the space program, call for management structures linking government, industry, and universities. The new programs will involve research, planning, coordination, and testing. And they will be bothered by multiple divisions of responsibility, conflicting ambitions and interests, decisions to use existing facilities or to assemble new ones, multiple channels of communication and authority, and the problems of building up and of phasing down as priorities shift to new targets or as new opportunities open up. In all of these respects NASA has had extensive and recent experience; its procedures have been deliberately thought out; and its records are available.

Ever since the space program began to take shape there has been talk of technological spin-offs. It may turn out that the most valuable spin-off of all will be human rather than technological: better knowledge of how to plan, coordinate, and monitor the multitudinous and varied activities of the organizations required to accomplish great social undertakings.—DAEL WOLFLE



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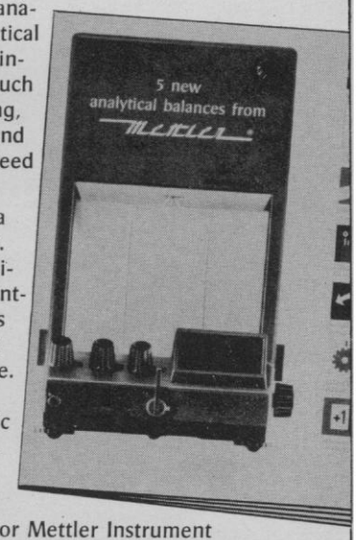

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neutral beams is that of neutralizing the charge from ionic beams without disturbing the momentum of the traveling species. N. Utterback (Defense Research Laboratory, General Motors Corp., Santa Barbara) reviewed this topic in a session chaired by E. Greene (Brown University). Using charge transfer, Utterback and his collaborators have produced neutral beams from the high-energy range down to a few electron volts. They have successfully studied several reactions, avoiding the problem of detecting neutrals by choosing processes yielding ionic products. If resonant charge transfer is used, it appears that the internal energy state of the resulting neutral beam can be reasonably well controlled. (Talroze's talk had already made it clear that resonant transfer processes were common and occurred with large cross sections.) L. M. Branscomb (Joint Institute for Laboratory Astrophysics) discussed possibilities of producing neutral beams by photoelectron detachment from negative ions. This technique should become useful when more intense lasers and negative ion beams are developed. In competition with positive-ion-neutralization methods this technique has potential advantages at low energies, at high angular resolution and when excited-state control in the initial beam is needed.

A partial solution to the detection problem is inherent in experiments being performed by J. Paulus (Centre de Recherches Nucléaire, Strasbourg), S. Wexler (Argonne National Laboratory), and M. Menzinger and R. Wolfgang (University of Colorado). They have used beams labeled with radioisotopes to detect labeled products by radioactivity counting. The Colorado group reported experiments in which a tritium ion beam was charge exchanged and reacted with a solid target. By this means they found it possible to make the first determinations of the thresholds of hot-atom displacement reactions. Given the availability of radioisotopes of useful half-life, this detection method could have wide applicability. An even more general, indeed universal, method of detection is reionization of neutrals by electrons or protons. So far, however, such reionizers only operate with low efficiency.

J. Ross (MIT) was chairman of a session in which nozzle expansion techniques were discussed. This method, growing out of a suggestion by Kantrowitz and Grey, has been more intensively investigated than any other

for the production of neutral beams. J. Fenn (Yale University) reviewed the topic, emphasizing "seeding" methods in which a heavy species is swept along by lighter "driver" molecules, thus increasing its translational energy. E. Knuth (UCLA) discussed means of reaching higher energies by plasma heating the gas before expansion. In general, nozzle expansion seems an excellent approach to the low- and medium-energy range (1 to 10 ev). It should provide intense beams and excellent energy control. However, the seeding technique is limited to heavier species, and high-temperature heating before expansion leaves some question as to the internal state of the beam molecules. At the time of the conference, no hot reaction appears to have been identified by using nozzle techniques. However, J. Deckers (University of Toronto) and J. Anderson (Princeton University) discussed some interesting negative results.

In a session conducted by E. Ferguson (ESSA, Boulder), L. Wharton (University of Chicago) first reviewed the historic device of Bull and Moon (University of Birmingham) which can claim the distinction of being the first chemical accelerator. Regretfully, this charming method of acceleration by slapping molecules with a spinning rotor seems limited to the low energies achieved by these pioneers. Wharton then reviewed the building of his accelerator for neutral species having permanent dipole moments or which are highly polarizable. Though expensive and time consuming in its construction, this is a most interesting machine. Cost considerations tend to limit the device to the acceleration of permanent dipolar molecules at low energies. However, it should have excellent energy control. Moreover it was the only concept discussed which inherently yields a polarized beam.

C. Schlier (University of Freiburg) and J. Los (FOM Institute, Amsterdam) discussed sputtering methods in which atoms are dislodged from surfaces by impact of high-energy ions. The atoms in the resulting spray have electron-volt energies, but their velocity distribution is so wide that a high-speed chopper is required to select a reasonably homogeneous beam. To date, sputtering has been used largely to study nonreactive scattering, but its future as a means of studying chemical reactions appears bright.

This does not exhaust the catalog of methods discussed at the meeting. For

instance, D. Hansen (Thompson-Ramo-Woolridge) mentioned experiments aimed at producing bursts of fast atoms by volatilizing electrostatically accelerated dust particles with a laser pulse. And it seems certain that additional techniques will be developed in the future.

The meeting closed with a panel discussion led by I. Amdur (MIT). The panelists, R. Bernstein (University of Wisconsin), S. Datz (Oak Ridge National Laboratories), M. Karplus, A. Kupperman (California Institute of Technology), B. Mahan, and the undersigned organizing committee, discussed the problems and the prospects of the field. Much of the critical appraisal of the comparative merits of chemical accelerators, which has already been mentioned in this report, resulted from this session. Quite obviously the field is in its early infancy and the direction of its development is still far from evident. However, it was generally agreed that in the more distant future the production of beams having not only a high kinetic energy, but also in selected states of internal excitation, would be important. Just what combination of techniques will prove to be most useful in the next 10 years is something about which few participants were willing to speculate. One general conclusion seems quite clear; the field will grow rapidly now that its fundamental importance to elementary chemical kinetics has been recognized.

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R. WOLFGANG
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Calendar of Events

National Meetings

December

1. **Medical Aspects of Sports,** 10th, Miami Beach, Fla. (F. Hein, American Medical Assoc., Dept. of Health Education, 535 N. Dearborn St., Chicago, Ill.)

1. American Acad. of **Oral Medicine,** New York, N.Y. (S. Conrad, 133-28 228th St., Laurelton, N.Y. 11413)

1–4. American **Medical** Assoc., Miami Beach, Fla. (F. J. L. Blasingame, 535 N. Dearborn St., Chicago, Ill. 60610)

1–4. **Reticuloendothelial** Soc., 5th, New York, N.Y. (F. J. DiCarlo, Warner-Lambert Research Inst., Morris Plains, N.J. 07950)

1–5. American Inst. of **Chemical Engineers,** 61st, Los Angeles, Calif. (Secretary, 345 E. 47 St., New York 10017)

1–6. **Radiological** Soc. of North America, Chicago, Ill. (M. D. Frazer, 1744 S. 58 St., Lincoln, Neb. 68506)

2. **Quantum Chemistry,** 9th winter inst., Gainesville, Fla. (Winter Institute, 525 Nuclear Sciences Bldg., Univ. of Florida, Gainesville 32601)

2–3. **Applications of Simulation,** 2nd conf., New York, N.Y. (A. Ockene, IBM Corporation, 112 E. Post Road, White Plains, N.Y. 10601)

2–4. New England Conf. on **Air Pollution,** Waterville, Maine. (Director, Colby News Bureau, Colby College, Waterville 04901)

2–4. Western National **Geophysical** Union, San Francisco, Calif. (J. C. Harrison, Dept. of Geophysical Sciences, Univ. of Colorado, Boulder 80302)

2–6. Greater New York **Dental** Mtg., 44th, New York, N.Y. (M. Purdy, Room 106A, Statler-Hilton, New York 10001)

3. American Soc. of **Therapeutic Radiologists,** Chicago, Ill. (J. A. del Regato, Penrose Cancer Hospital, 2215 N. Cascade, Colorado Springs, Colo. 80907)

3–4. **Vehicular Technology** Conf., San Francisco, Calif. (W. G. Chaney, Lenkurt Electric, 1105 Country Rd., San Carlos, Calif. 94070)

3–5. **Entry Vehicle Systems and Technology** Conf., Williamsburg, Va. (M. H. Bloom, Polytechnic Inst. of Brooklyn, Graduate Center, Route 110, Farmingdale, N.Y. 11735)

4–6. **Optical Character Recognition in Computerized Management of Information** in the Next Decade, Hollywood, Fla. (International Business Forms Industries, 20 Chevy Chase Circle, NW, Washington, D.C. 20015)

4–6. Academy of **Psychosomatic Medicine,** Miami Beach, Fla. (E. Dunlop, 150 Emory St., Attleboro, Mass. 02703)

4–7. American Assoc. of **Physicists in Medicine,** Chicago, Ill. (R. O. Gorsop, Stein Research Center, Jefferson Medical College, 920 Chancellor St., Philadelphia, Pa. 19107)

5–6. American **Rheumatism** Assoc., Tucson, Ariz. (M. M. Walsh, 1212 Avenue of the Americas, New York 10036)

6–7. American Federation for **Clinical Research,** Boston, Mass. (H. J. Levine, New England Medical Center Hospitals, 171 Harrison Ave., Boston 02111)

7–12. American Acad. of **Dermatology and Syphilology,** 27th, Chicago, Ill. (S. E. Huff, 1636 Church St., Evanston, Ill.)

8–13. American Soc. of **Agricultural Engineers,** Chicago, Ill. (P. L. Bellinger, Technical Coordinator, 420 Main St., St. Joseph, Mich. 49085)

8–15. Symposium of **Analogue and Digital Computers in Hydrology,** Tucson, Ariz. (American Federation of Information Processing Societies, 211 E. 43 St., New York 10017)

9–11. **Computer** Conf., San Francisco,

Calif. (R. H. Glaser, 1968 Joint Computer Conf., P.O. Box 2309, Stanford, Calif. 94305)

9–12. **Electrical Insulation** Conf., Los Angeles, Calif. (Secretary, 3600 Wilshire Blvd., Los Angeles 90005)

9–12. National **Electronics** Conf. and Exhibition, 24th, Chicago, Ill. (E. C. Jones, Electrical Engineering Dept., Iowa State Univ., Ames)

11–13. National **Oceanography** Conf., Portland, Ore. (J. H. Jorgenson, National Security Industrial Assoc., Suite 800, 1030 15th St., NW, Washington, D.C. 20005, or K. R. Cannon, Governor's Committee on Natural Resources, State Capitol, Salem, Ore. 97310)

15–17. New York State Soc. of **Anesthesiologists**, New York, N.Y. (E. C. Sinisi, 30 E. 42 St., New York, 10017)

16–18. Symposium on **Adaptive Processes**, 7th, Univ. of California, Los Angeles. (J. M. Mendel, Advance Flight Mechanics, Douglas Aircraft Co., Inc. 3000 Ocean Park Blvd., Santa Monica, Calif. 90406)

16–20. Texas Symp. of **Relativistic Astrophysics**, 4th, Dallas. (I. Robinson, South West Center for Advanced Studies, P.O. Box 30365, Dallas 75230)

18–20. American **Physical** Soc., San Diego, Calif. (W. Whaling, California Inst. of Technology, 1201 East California St., Pasadena 91109)

20–22. American **Psychoanalytic** Assoc., New York, N.Y. (American Psychoanalytic Assoc., 1 E. 57 St., New York 10022)

23–25. International **Electron Devices** Mtg., Washington, D.C. (D. A. Chisholm, Bell Telephone Labs., Murray Hill, N.J. 07974)

26–31. American Assoc. for the **Advancement of Science**, 135th, Dallas, Texas. (Secretary, 1515 Massachusetts Ave., NW, Washington, D.C. 20005)

26–31. Society for **General Systems Research**, Dallas, Texas. (M. D. Rubin, Mitre Corp., Bedford, Mass. 01730)

27–30. Institute of **Mathematical Statistics**, Washington, D.C. (J. R. Rosenblatt, 337 Administration Bldg., Gaithersburg, National Bureau of Standards, Washington, D.C. 20234)

28–30. **History of Science** Soc., Dallas, Texas. (J. C. Greene, Dept. of History, Univ. of Connecticut, Storrs 06268)

January

9–11. Society for **Historical Archaeology**, 2nd, Tucson, Ariz. (B. L. Fontana, Arizona State Museum, Arizona Univ., Tucson 85721)

12–17. **Brain Research**, Snowmass-at-Aspen, Colo. (J. E. Swett, Dept. of Anatomy, Univ. of Colorado Medical Center, Denver 80220)

13–14. Applications of **Sea-Going Computers**, La Jolla, Calif. (C. B. Jackson, MTS Data Engineering Committee, P.O. Box 2158, La Jolla 92037)

13–15. **Agricultural Waste Management** Conf., Syracuse, N.Y. (Agricultural Waste Management Conf., 400 Roberts Hall, Cornell Univ., Ithaca, N.Y. 14850)

13–15. **Animal Waste Management**, Syracuse, N.Y. (R. C. Loehr, 208 Riley-Robb Hall, Cornell Univ., Ithaca, N.Y.)

13–17. Society of **Automotive Engineers,** Inc., Detroit, Mich. (Manager, Meetings Div., 485 Lexington Ave., New York 10017)

15–18. National Soc. of **Professional Engineers,** Las Vegas, Nev. (K. E. Trombley, Natl. Soc. of Professional Engineers, 2029 K St., NW, Washington, D.C. 20006)

17–18. Symposium on **Blood,** Detroit, Mich. (E. F. Mammen, Dept. of Physiology and Pharmacology, Wayne State Univ., 1400 Chrysler Freeway, Detroit 48207)

17–18. American Soc. for **Surgery of the Hand,** New York, N.Y. (L. Milford, 869 Madison Ave., Memphis, Tenn. 38104)

18–23. American Acad. of **Orthopaedic Surgeons,** New York, N.Y. (J. K. Hart, 29 E. Madison, Chicago, Ill. 60602)

19–21. American Soc. for **Engineering Education,** Flint, Mich. (E. H. Wright, American Soc. for Engineering Education, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

20–21. Symposium on **Control Mechanisms in Intermediary Metabolism,** Miami, Fla. (Dept. of Biochemistry, Univ. of Miami Medical School, P.O. Box 875, Biscayne Annex, Miami 33152)

20–22. American Inst. of **Aeronautics and Astronautics,** New York, N.Y. (AIAA, 1290 Sixth Avenue, New York 10019)

20–22. Society of **Thoracic Surgeons,** San Diego, Calif. (F. C. Byron, City of Hope Medical Center, 1500 E. Duarte Rd., Duarte, Calif. 91010)

21–24. **Physiological Aspects of Crop Yield,** Lincoln, Neb. (F. A. Haskins, Dept. of Agronomy, Univ. of Nebraska, Lincoln 68503)

22–24. Symposium on **Membrane Function and Electron Transfer to Oxygen,** Miami, Fla. (Dept. of Biochemistry, Univ. of Miami Medical School, P.O. Box 875, Biscayne Annex, Miami 33152)

23–25. American Soc. for **Engineering Education,** Baton Rouge, La. (E. H. Wright, American Soc. for Engineering Education, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

23–25. **Radiotherapy** Symp., Miami, Fla. (M. Vuksanovic, Radiation Therapy Div., Univ. of Miami Medical School, 1700 NW Tenth Ave., Miami 33136)

23–27. American **Mathematical** Soc., 75th, New Orleans, La. (H. M. Geham, Univ. of Buffalo, Buffalo, N.Y. 14214)

24–27. American **Group Psychotherapy** Assoc., New York, N.Y. (M. Schiff, Room 702, 1790 Broadway, New York 10019)

26–28. Conference of **Immunologists,** Pasadena, Calif. (J. S. Garvey, Div. of Chemistry and Chemical Engineering, California Inst. of Technology, Pasadena)

26–31. Modern **Dispatch Techniques of Interconnected Power Systems,** New York N.Y. (Inst. of Electrical and Electronics Engineers, Inc., 345 E. 47 St., New York 10017)

27–30. American Soc. of **Heating, Refrigerating and Air-Conditioning Engineers,** Inc., Chicago, Ill. (J. H. Cansdale, American Soc. of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 345 E. 47 St., New York 10017)

28–30. **Fast Burst Reactor,** Albuquerque, N.M. (G. R. Keepin, Box 1663, Los Alamos, N.M. 87544)

29. New York **Heart** Assoc., New York, N.Y. (New York Heart Assoc., Inc., Heart House, 2 E. 64 St., New York 10021)

BOOKS RECEIVED

(*Continued from page 788*)

Mich., May–June 1967. John C. Houck, chairman; Bernard K. Forscher, Ed. Pergamon, New York, 1968. xii + 337 pp., illus. $15.

Chemical Warfare, Pyrotechnics and the Fireworks Industry. T. F. Watkins, J. C. Cackett, and R. G. Hall. Pergamon, New York, 1968. viii + 114 pp., illus. Cloth, $4.50; paper, $3.50. Commonwealth and International Library: Chemical Industry.

The Chemistry of the Elements. Howard Nechamkin. McGraw-Hill, New York, 1968. ix + 270 pp. Paper, $3.50.

Circulation in Skeletal Muscle. Proceedings of an International Symposium, Smolenice, Czechoslovakia, Sept. 1966. O. Hudlická, Ed. Pergamon, New York, 1968. xii + 356 pp., illus. $15.

Composers for the American Musical Theatre. David Ewen. Dodd, Mead, New York, 1968. xii + 270 pp., illus. $5.

Comprehensive Analytical Chemistry. Cecil L. Wilson, David W. Wilson, and C. R. N. Strouts, Eds. Vol. 11B, Physical Separation Methods. Elsevier, New York, 1968. xvi + 445 pp., illus. $25.

Comprehensive Biochemistry. Marcel Florkin and Elmer H. Stotz, Eds. Vol. 26, Part A, Extracellular and Supporting Structures. Elsevier, New York, 1968. xvi + 295 pp., illus. $17.

The Computer and Chemistry. An Introduction to Programming and Numerical Methods. T. R. Dickson. Freeman, San Francisco, 1968. xii + 216 pp., illus. $5.75.

Concepts in Catalysis. Eric K. Rideal. Academic Press, New York, 1968. viii + 194 pp., illus.

A Concise Encyclopedia of Astronomy. A. Weigert and H. Zimmerman. Translated from the second German edition (Leipzig, 1967) by J. Home Dickson. Elsevier, New York, 1968. v + 367 pp., illus., 20 plates. $9.

The Crime Laboratory. Case Studies of Scientific Criminal Investigation. James W. Osterburg. Indiana University Press, Bloomington, 1968. xx + 330 pp., illus. Paper, $5.95.

Cryogenic Properties of Polymers. Papers presented the NASA-Case conference, April 1967. Tito T. Serafini and Jack L. Koenig, Eds. Dekker, New York, 1968. x + 302 pp., illus. $13.75.

Description of the Indies (c. 1620). Antonio Vazquez de Espinosa. Translated from the Spanish by Charles Upson Clark. Smithsonian Institution Press, Washington, D.C., 1968. xii + 862 pp. $12.50. Smithsonian Miscellaneous Collections, vol. 102. Reprint of *Compendium and Description of the West Indies* (1942).

Diagnostic Cytology and Its Histopathologic Bases. Leopold G. Koss. Lippincott, Philadelphia, ed. 2, 1968. xx + 653 pp., illus. $27.50.

The Dimensions of Community Psychiatry. Formulated by the Committee on Preventive Psychiatry. Group for the Advancement of Psychiatry, New York, 1968. 48 pp. Paper, $1. GAP Report No. 69.

Direct Analog Computers. Victor Paschkis and Frederick L. Ryder. With contributions by J. A. Harder, S. H. Unger, and Y. Paker. Interscience (Wiley), New York, 1968. xiv + 400 pp., illus. $17.

Directory of Fire Research in the United States, 1965–1967. Committee on Fire Research, Division of Engineering, National Research Council. National Acad. of Sciences, Washington, D.C., ed. 4, 1968. vi + 267 pp. Paper, $7. NAS Publication 1590.

Ecological Adaptations for Breeding in Birds. David Lack. Methuen, London, 1968 (distributed in the U.S. by Barnes and Noble, New York). xii + 409 pp., illus. $15.

EDP for Auditors. Harry L. Brown. Wiley, New York, 1968. xii + 195 pp., illus. $7.95.

Electrochemical Machining. A. E. De Barr and D. A. Oliver, Eds. Elsevier, New York, 1968. x + 248 pp., illus. $12.75. MacDonald Trends and Developments in Engineering Series.

Electrolyte Metabolism in Severe Infantile Malnutrition. J. S. Garrow, Roger Smith, and E. Eugene Ward. Pergamon, New York, 1968. xii + 168 pp., illus. $9.

Encyclopedia of Animal Care (Formerly *Black's Veterinary Dictionary*). William C. Miller and Geoffrey P. West. Williams and Wilkins, Baltimore, ed. 8, 1967. viii + 1015 pp., illus. $10.25.

Environmental Effects on Polymeric Materials. Dominick V. Rosato and Robert T. Schwartz, Eds. Vol. 2, Materials. Interscience (Wiley), New York, 1968. xvi + 987 pp., illus. $42. Polymer Engineering and Technology.

Environmental Problems. Pesticides, Thermal Pollution, and Environmental Synergisms. Billy Ray Wilson, Ed. Lippincott, Philadelphia, 1968. xvi + 183 pp., illus. $5.25.

Essays on Form in Plants. C. W. Wardlaw. Manchester University Press, Manchester; Barnes and Noble, New York, 1968. xiv + 399 pp., illus. $8.75.

Evolution in Changing Environments. Some Theoretical Explorations. Richard Levins. Princeton University Press, Princeton, N.J., 1968. x + 120 pp., illus. $6.50. Monographs in Population Biology, No. 2.

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by Interscience (Wiley), New York). ix + 338 pp., illus. $11.

A Glossary of Psychoanalytic Terms and Concepts. Burness E. Moore, Bernard D. Fine, Mark Kanzer, Bernard L. Pacella, and George H. Wiedeman, Eds. American Psychoanalytic Assoc., New York, 1967. vi + 96 pp. Paper, $3.25.

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The Great American Water-Cure Craze. A History of Hydropathy in the United States. Harry B. Weiss and Howard R. Kemble. Past Time Press, Trenton, N.J., 1967. viii + 236 pp., illus. $7.50.

Group Theory and Its Applications. Ernest M. Loebl, Ed. Academic Press, New York, 1968. xxvi + 696 pp., illus. $19.50.

Grundlagen der Pharmakokinetik. F. H. Dost. Thieme, Stuttgart, ed. 2, 1968 (distributed in the U.S. by Intercontinental Medical Book Corp., New York). xx + 449 pp., illus. DM 98.

Handbook of Fuel Cell Technology. Carl Berger, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1968. xvi + 607 pp., illus. $18.50.

Handbook of Middle American Indians. Vol. 5, Linguistics. Norman A. McQuown, Ed. University of Texas Press, Austin, 1968. x + 402 pp., illus. $15.

Heredity, Evolution, and Society. I. Michael Lerner. Freeman, San Francisco, 1968. xviii + 307 pp., illus. $8. A Series of Books in Biology.

Histological Typing of Breast Tumours. R. W. Scarff and H. Torloni. World Health Organization, Geneva, 1968 (distributed in the U.S. by Columbia University Press, New York). 20 pp. + 40 figures, boxed with 50 color transparencies. $16. International Histological Classification of Tumours, No. 2.

Illusions. André Maurois. Columbia University Press, New York, 1968. xiv + 101 pp. $4.95. George B. Pegram Lectures, Brookhaven National Laboratory, 1967.

Immunity to Parasites. Sixth Symposium of the British Society for Parasitology, London, Nov. 1967. Angela E. R. Taylor, Ed. Blackwell Scientific Publications, Oxford, 1968 (distributed in the U.S. by Davis, Philadelphia). viii + 118 pp., illus. Paper, $6.50.

Immunological Concepts. Loyd Y. Quinn. Iowa State University Press, Ames, 1968. viii + 264 pp., illus.

The Indus Civilization. Supplementary Volume to the Cambridge History of India. Mortimer Wheeler. Cambridge University Press, New York, ed. 3, 1968. xii + 143 pp., illus., 34 plates. Cloth, $7.50; paper, $2.95.

Industrial Marketing Management and Controls. L. A. Williams. Elsevier, New York, 1968. xv + 265 pp., illus. $11.75. Management Studies Series.

Industrial Microbiology. L. E. Casida, Jr. Wiley, New York, 1968. xiv + 460 pp., illus. $14.50.

Infectious Blood Diseases of Man and Animals. Diseases Caused by Protista. David Weinman and Miodrag Ristic, Eds. Vol. 2, The Pathogens, The Infections, and the Consequences. Academic Press, New York, 1968. xvi + 576 pp., illus.

In the Wake of the Sea-Serpents. Bernard Heuvelmans. Translated from the French by Richard Garnett. With drawings by Alika Watteau. Hill and Wang, New York, 1968. xxii + 645 pp., illus. $10.

Introduction to Mass Spectrometry of Organic Compounds. A. A. Polyakova and R. A. Khmel'nitskii. Translated from the Russian edition (Moscow, 1966) by J. Schmorak. Israel Program for Scientific Translations, Jerusalem, 1968 (distributed in the U.S. by Davey, New York). vi + 151 pp., illus. $8.

Introduction to Nuclear Theory. I. E. McCarthy. Wiley, New York, 1968. xvi + 555 pp., illus. $13.95.

The Laser Literature. An Annotated Guide. Kiyo Tomiyasu. Plenum, New York, 1968. viii + 172 pp. $15.

The Last Landscape. William H. Whyte. Doubleday, Garden City, N.Y., 1968. ix + 376 pp., illus. $6.95.

The Laws of Energy Consumption in Nutrition. Max Rubner. Translated from the German edition (Leipzig, 1902) by Allan Markoff and Alex Sandri-White. Robert J. T. Joy, Ed. U.S. Army Research Institute of Environmental Medicine, Natick, Mass., and U.S. Army Medical Research and Development Command, Washington, D.C., 1968 (available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Va.). xii + 374 pp., illus. Paper.

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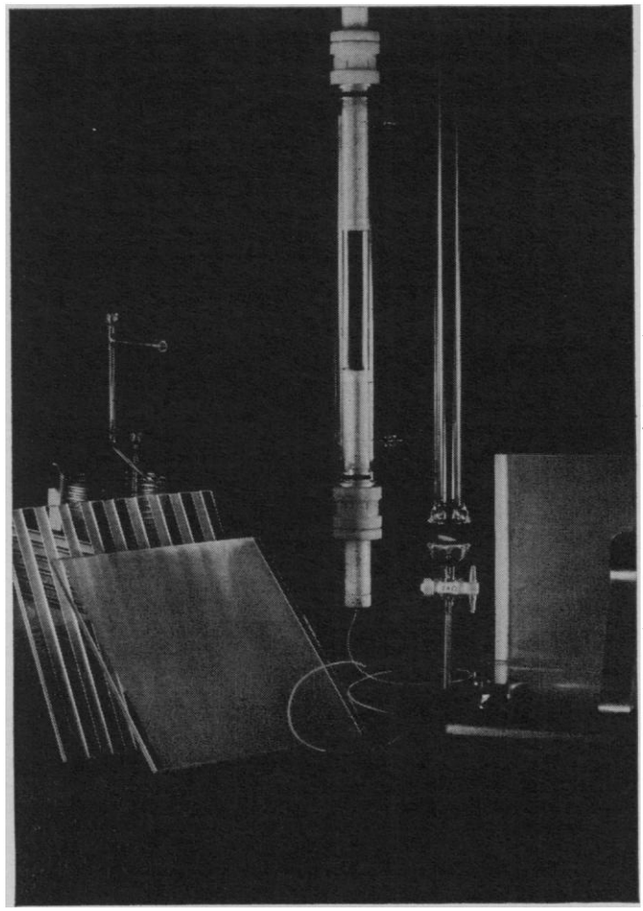

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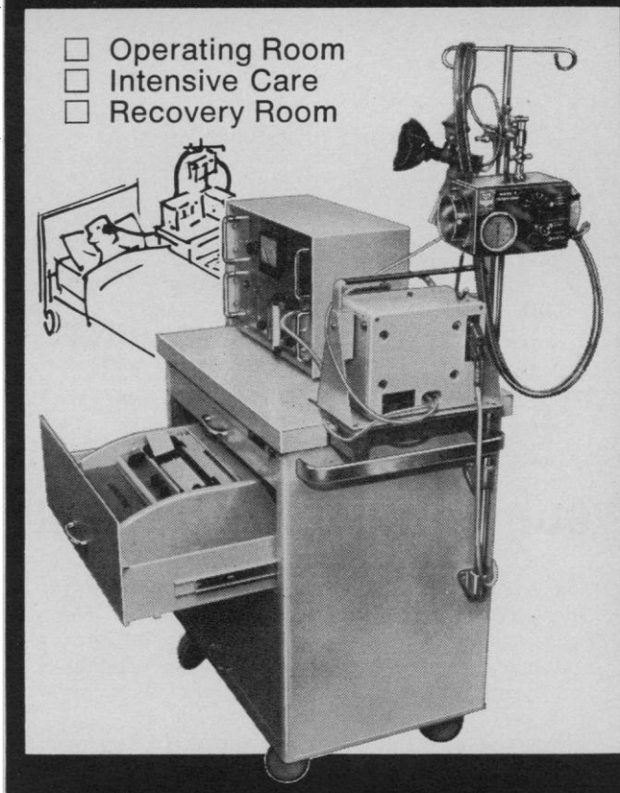

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