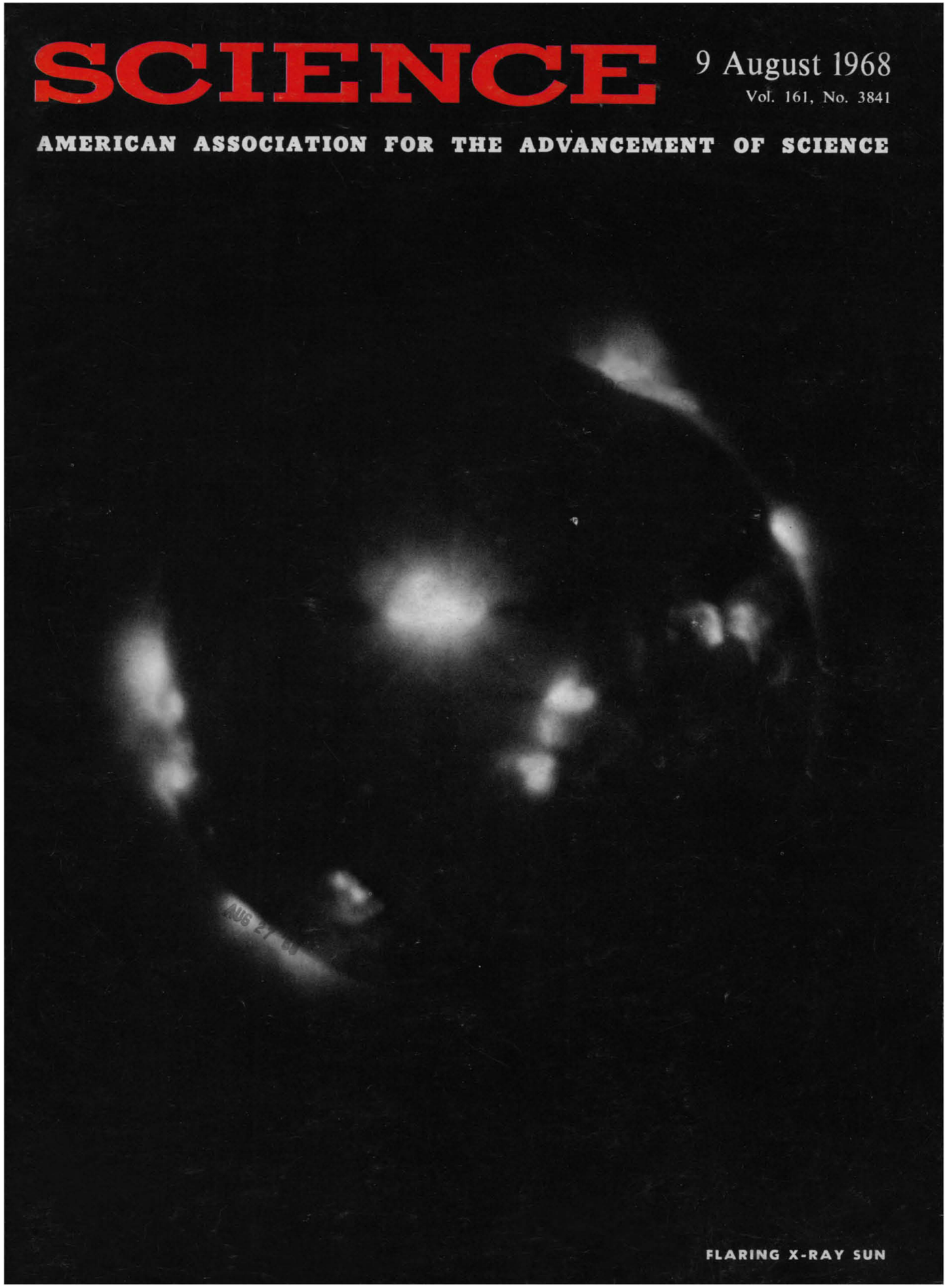
SCIENCE

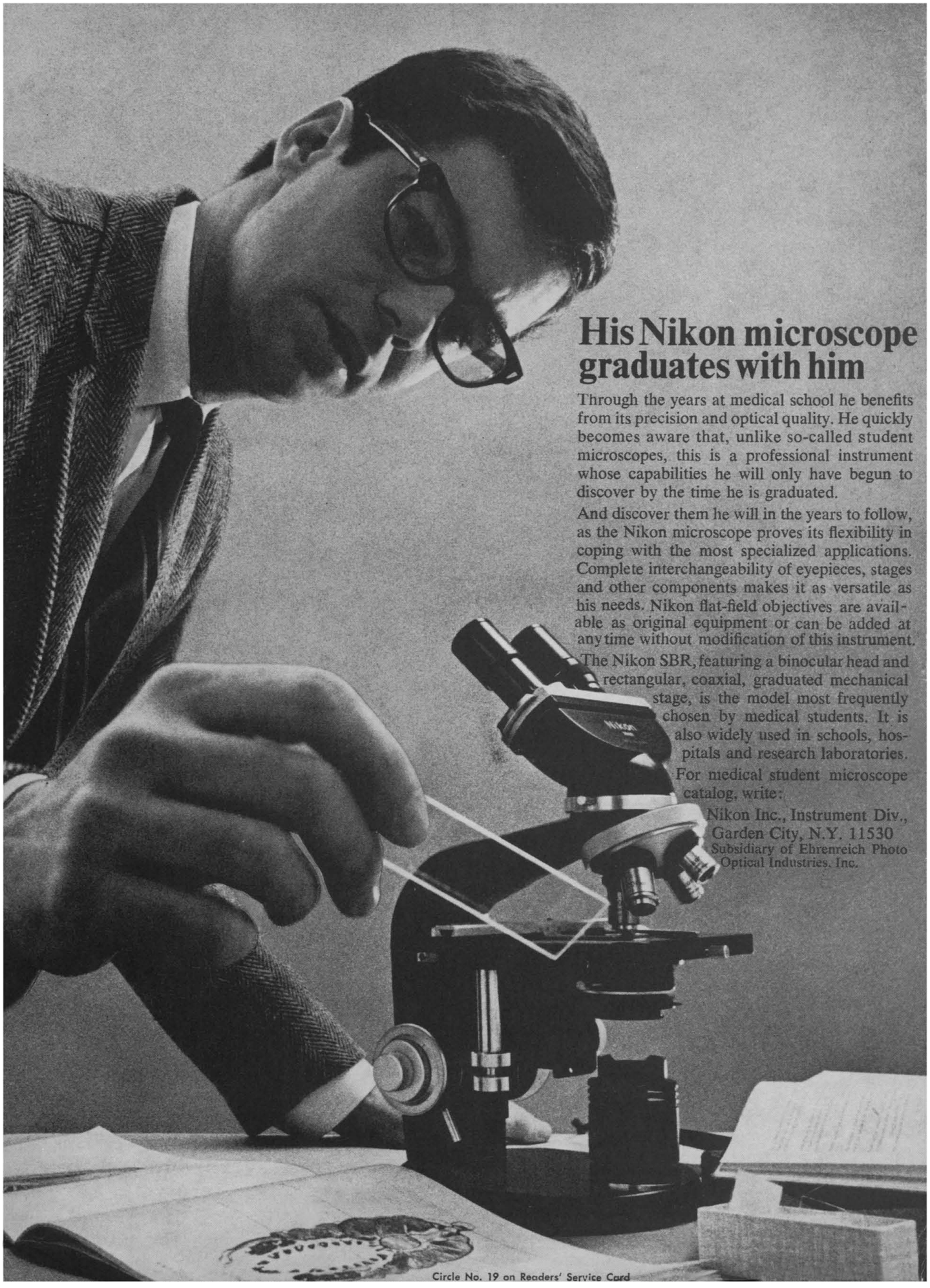
9 August 1968

Vol. 161, No. 3841

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



FLARING X-RAY SUN



His Nikon microscope graduates with him

Through the years at medical school he benefits from its precision and optical quality. He quickly becomes aware that, unlike so-called student microscopes, this is a professional instrument whose capabilities he will only have begun to discover by the time he is graduated.

And discover them he will in the years to follow, as the Nikon microscope proves its flexibility in coping with the most specialized applications. Complete interchangeability of eyepieces, stages and other components makes it as versatile as his needs. Nikon flat-field objectives are available as original equipment or can be added at any time without modification of this instrument.

The Nikon SBR, featuring a binocular head and rectangular, coaxial, graduated mechanical stage, is the model most frequently chosen by medical students. It is also widely used in schools, hospitals and research laboratories.

For medical student microscope catalog, write:

Nikon Inc., Instrument Div.,
Garden City, N.Y. 11530
Subsidiary of Ehrenreich Photo Optical Industries, Inc.

Circle No. 19 on Readers' Service Card

Mettler guide to the budget balance

Low cost, a fair consideration in any purchase, is only one of several compelling benefits resulting from Mettler's thoughtful re-design of its classic substitution balance.

Mettler's objective was to produce five new weighing instruments providing the ultimate in balance performance for the user, whether he be researcher or technician or student. To this end, Mettler applied the latest in design, manufacturing and human engineering concepts.

SIMPLICITY IS THE KEY

Mettler began by simplifying the balance mechanism.

- Individual molded parts were substituted for multi-part assemblies.
- Mettler's exclusive concentric ring weights were used, cutting in half the number of weights needed.
- Optical and mechanical control systems were simplified by placing them at the operator's eye level.

From this re-design comes better balances that are faster and easier to make . . . and they cost considerably less than the instruments they replace.

IMPROVED PERFORMANCE, NEW CAPACITIES

The five new balances range from an economical student model through standard analytical models to a semi-micro balance. All have capacities of 160 grams or greater.

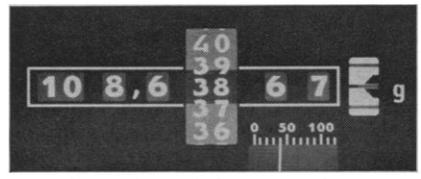
Their new beam designs and pan brakes make them far more stable and permit faster weighings than conventional balances.

Their precision-to-capacity relationships are exceptional. The Model H20, for example, combines the 160.1-gram capacity of an analytical balance with the ±0.01 mg precision of a semi-micro instrument.

READING DIGITS IS EASIER

The new Mettlers are available with either digital or vernier readout of weighing data.

Vernier reading costs less and sometimes is preferred by those who want to read that last numeral without adjusting a digital control knob. Digital readout is preferred by most users because of its speed and convenience. Human factors research has shown digital readout to be twice as fast and three times as accurate as reading dials or scales.



Clear, aligned digital readout

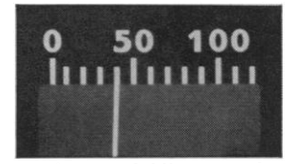
Mettler's digital readout has all numerals grouped and clearly aligned. Even an inexperienced technician or student can obtain highest levels of accuracy in weighing after only a few minutes of instruction.

All controls are clearly labeled and the readout has directional indicators, arrows on the readout panel to tell which way to dial the weight set.

PRE-WEIGHING UNLIMITED

One balance, the Mettler H10W, is equipped with an advanced pre-weighing feature. Pre-weighing gives an immediate indication of approximate weight with no intermediate dialing step. The new Mettler pre-weighing feature operates over the full range of the balance, avoiding the delay of a second dialing step if the sample exceeds 100 grams.

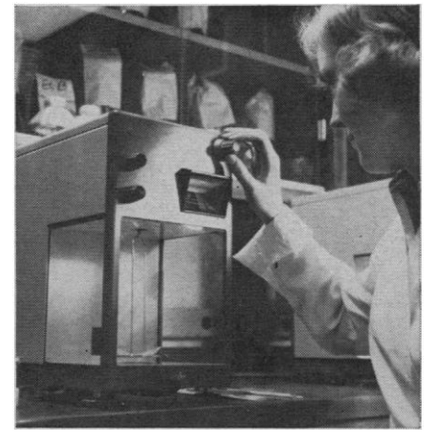
Instrument	Capacity	Precision	Readout
H8 Semi-analytical	160 grams	±0.3 mg	Vernier
H10 Analytical	161 grams	±0.05 mg	Digital
H10W Analytical pre-weighing	161 grams	±0.05 mg	Digital
H18 Analytical	160.1 grams	±0.03 mg	Vernier
H20 Semi-micro	160.1 grams	±0.01 mg	Digital



High-speed filling guide

ONCE AGAIN, WITH FILLING

All five have the exclusive Mettler filling guide. This lets you do one of the most common and time-consuming weighing jobs—filling to a target weight—in less than half the usual time. There are no repeated interruptions to the work. You proceed in orderly manner, filling to within the last few milligrams.



OPTICAL RANGE TARING

Taring across the optical range enables you to return the balance scale to zero to compensate for odd or fractional weights of the container. It goes a long way toward eliminating arithmetic calculations from the weighing operation.

BELOW-BALANCE ACCESSORY

Weighing objects below the balance, as in specific gravity measurements, is a simple job with the new Mettlers. An accessory kit which attaches directly to the balance pan provides the means.

TRY ONE NOW

Call any major laboratory supply dealer. Or write us for descriptive literature. We are Mettler Instrument Corporation, 20 Nassau Street, Princeton, New Jersey 08540.

Mettler®

Circle No. 3 on Readers' Service Card

9 August 1968
Vol. 161, No. 3841

SCIENCE

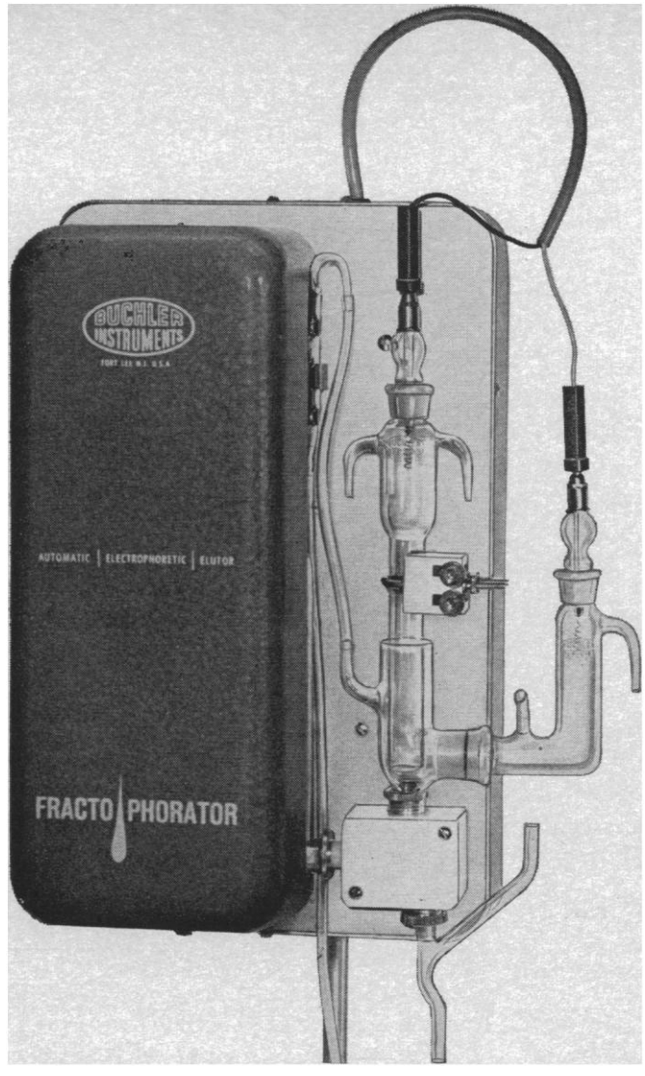
SCIENCE is published weekly on Friday and on the fourth Tuesday in November by the American Association for the Advancement of Science, 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Now combined with **The Scientific Monthly**. Second-class postage paid at Washington, D.C. Annual subscriptions $12; foreign postage: Americas $3; overseas $5; single copies, 50¢ (back issues, $1) except **Guide to Scientific Instruments**, which is $2. School year subscriptions: 9 months, $9; 10 months, $10. Provide 4 weeks notice for change of address, giving new and old address and zip codes. Send a recent address label. SCIENCE is indexed in the **Reader's Guide to Periodical Literature.**

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

X-ray photograph of the sun (taken with a rocket-borne x-ray telescope) shows coronal plasmas at temperatures of millions of degrees. Solar north is approximately at 5 o'clock, with east to the right. The x-ray emitting regions, shaped by magnetic fields and sometimes rich in superthermal particles, provide a natural astrophysical laboratory. The flare (center), probably a sudden release of magnetic energy, reveals for the first time its x-ray structure. See page 564. [G. S. Vaiana, W. P. Reidy, T. Zehnpfennig, L. VanSpreybroeck, and R. Giacconi, American Science and Engineering, Cambridge, Massachusetts]

For
Preparative
Electrophoresis
on Gels...



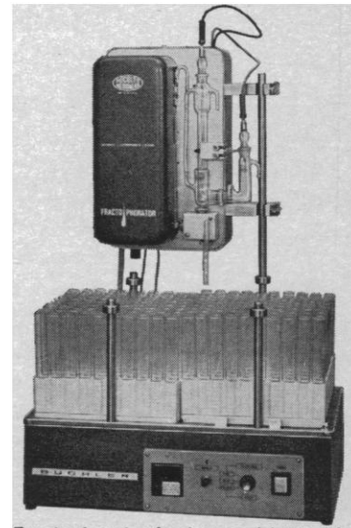
New Automatic Electrophoretic Elutor

BUCHLER **FRACTOPHORATOR**™

Now You Can Use Almost Any Gel... Any Buffer... Any Fraction Collector!

The Fractophorator, for disc electrophoresis, is designed for the separation of proteins, hemoglobin, albumin, enzymes and other compounds using polyacrylamide or any other supporting medium. It automatically elutes in pre-determined amounts of buffer solution, individual bands emerging from the electrophoretic column and delivers the fractions to a collector. The complete unit can be attached to any electrically driven fraction collector and is activated by the collector's timing system. Load capacity is from a few micrograms to 25 mgm in a 13mm diameter by 130mm long column.

No other instrument offers all these advantages: very simple to set up and operate; automatic syncronizations with any fraction collector; all glass columns; extreme flexibility in selection of buffer and gel composition; no loss of sample; may be operated in refrigerator or cold room. **Price: $570.00**



Fractophorator is shown with Buchler Fractomette 200 Fraction Collector.

BUCHLER INSTRUMENTS

For further information request Technical Bulletin S3-1800

BUCHLER INSTRUMENTS, INC.
1327 16TH STREET, FORT LEE, NEW JERSEY 07024

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When you call or write us about our new DR Direct-Reading pH Meter, you'll learn all this:

The DR reads directly, in digits, to 0.001 pH.

Has an absolute accuracy of ±0.01 pH (with a repeatability of ±0.002 pH).

Uses stable, solid-state circuitry.

Accommodates all electrodes.

Is temperature-compensated.

And is priced at $600.00 (with combination electrode and solutions).

Conclusion: Request a demonstration.

B-217

SARGENT-WELCH

Scientific instruments, apparatus, chemicals.
Sargent-Welch Scientific Company
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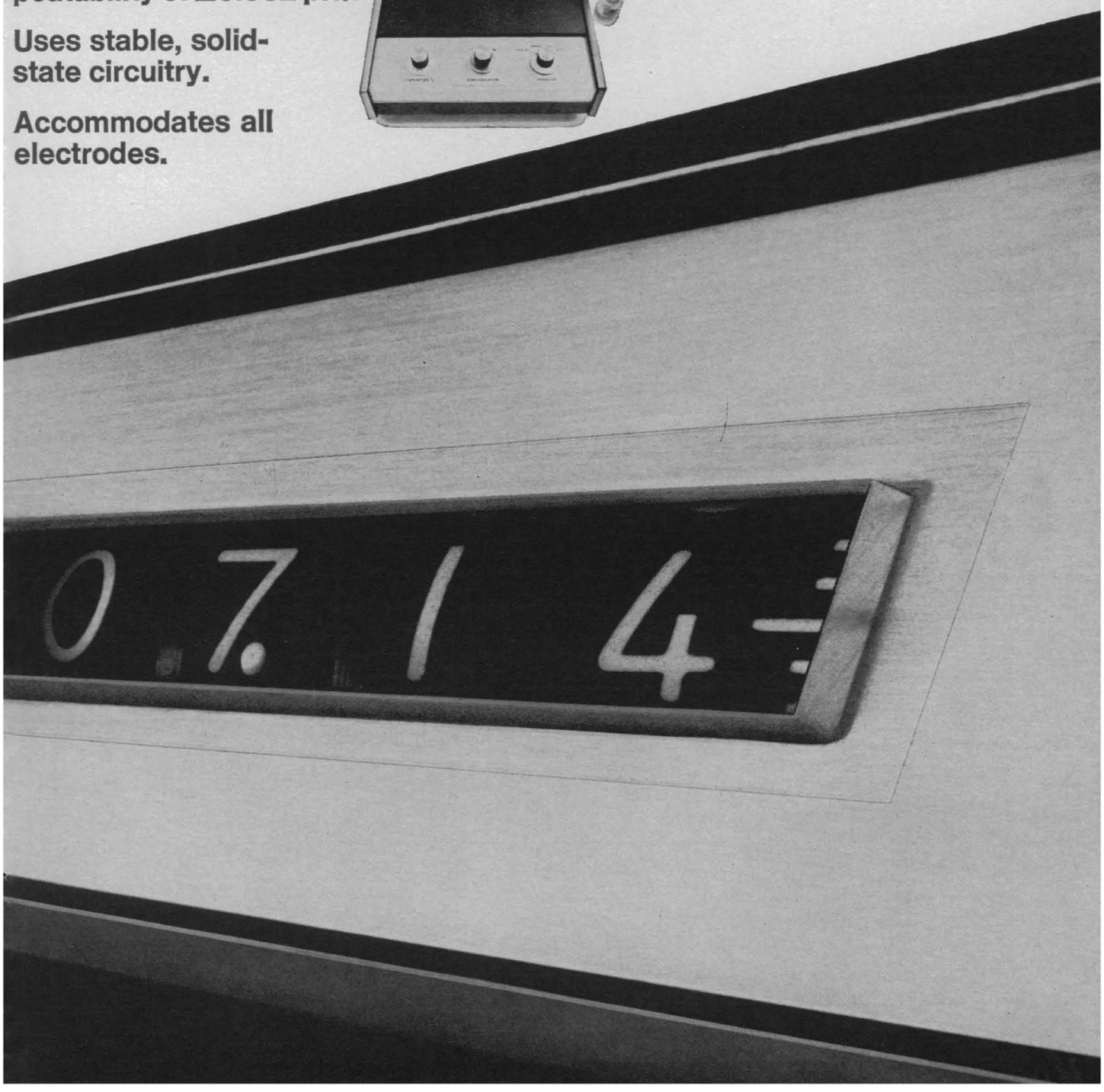


With the new H-P 3370A Electronic Digital Integrator, four different sets of pre-set analysis parameters are instantly available to the operator, at the touch of a pushbutton.

For the research laboratory, this feature allows the experienced chromatographer to choose precisely the correct program for different sections of a chromatogram . . . changing the program at will in order to optimize the integration of every peak.

For the control laboratory, selectable programs give the chief chemist the opportunity to optimize the analysis parameters for each kind of sample, while reducing the set-up and actual integration procedure to simple 1-2-3-4 instructions for technician operators.

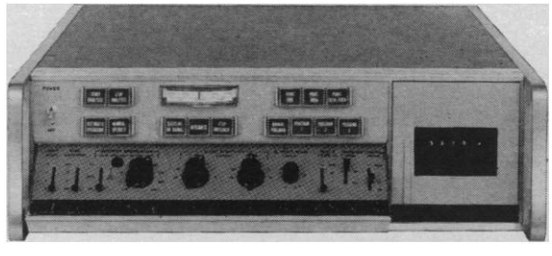
A UNIQUE PROGRAMMING FLEXIBILITY

Like all other electronic digital integrators, the 3370A has a full complement of adjustments that enable it to detect the beginning, apex and end of a peak, to distinguish noise and reject it, and to provide baseline correction when desired.

Unlike any other integrator, regardless of price, the 3370A incorporates a unique programming feature that allows the chromatographer a choice of four pushbutton-selected sets of analysis parameters.

MANUAL PROGRAM

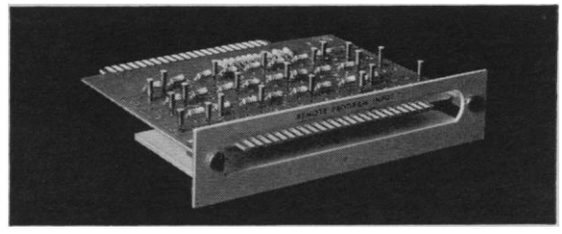
MANUAL PROGRAM



The *Manual Program* pushbutton activates a series of adjustments on a swingdown panel. In addition to a control for each of the important analysis parameters, the swingdown panel also contains a number of drawings which greatly facilitate the use of the controls by graphically showing how each affects the integration.

PROGRAM 1 PROGRAM 2 PROGRAM 3

THREE PLUG-IN BOARD PROGRAMS



The three other pushbuttons activate one of three programs contained on a printed circuit board that plugs into the back of the 3370A. Each program is completely changeable by moving plug-in circuit pins to various positions on the board which correspond to the analysis parameter settings on the swingdown panel.

Additional boards can be pre-set and plugged into the 3370A when desired, thus giving it literally an unlimited choice of pushbutton-selected programs to meet changing requirements.

The 3370A enjoys other exclusive programming features that are equally useful to the chromatographer. Separate up *and* down slope sensitivity controls let the chromatographer optimize the integration of tailing, overloaded and all imperfectly shaped peaks . . . rather than compromise it as he must when using any other integrator. Separate front *and* rear shoulder controls and a peak summation control give him a new dimension of flexibility for the integration of complex peak shapes. Coded superimposed event markers graphically establish the precise relationship of all integrator functions to the recorded chromatogram. And in all three of the most important measures of performance, the 3370A sets new standards: precision of ±0.05%, linearity of ±0.1%, dynamic range of 1,000,000:1.

Get a full description of the 3370A Electronic Digital Integrator by calling the nearest H-P sales office . . . or write for Bulletin 3370A. Price is $4500 including the built-in printer; total area accumulator option is available for an additional $300; and 8-digit visual display costs an additional $700.

Hewlett-Packard, Route 41, Avondale, Pennsylvania 19311. In Europe: 54 Route des Acacias, Geneva.

HEWLETT hp PACKARD

ANALYTICAL INSTRUMENTS

43801

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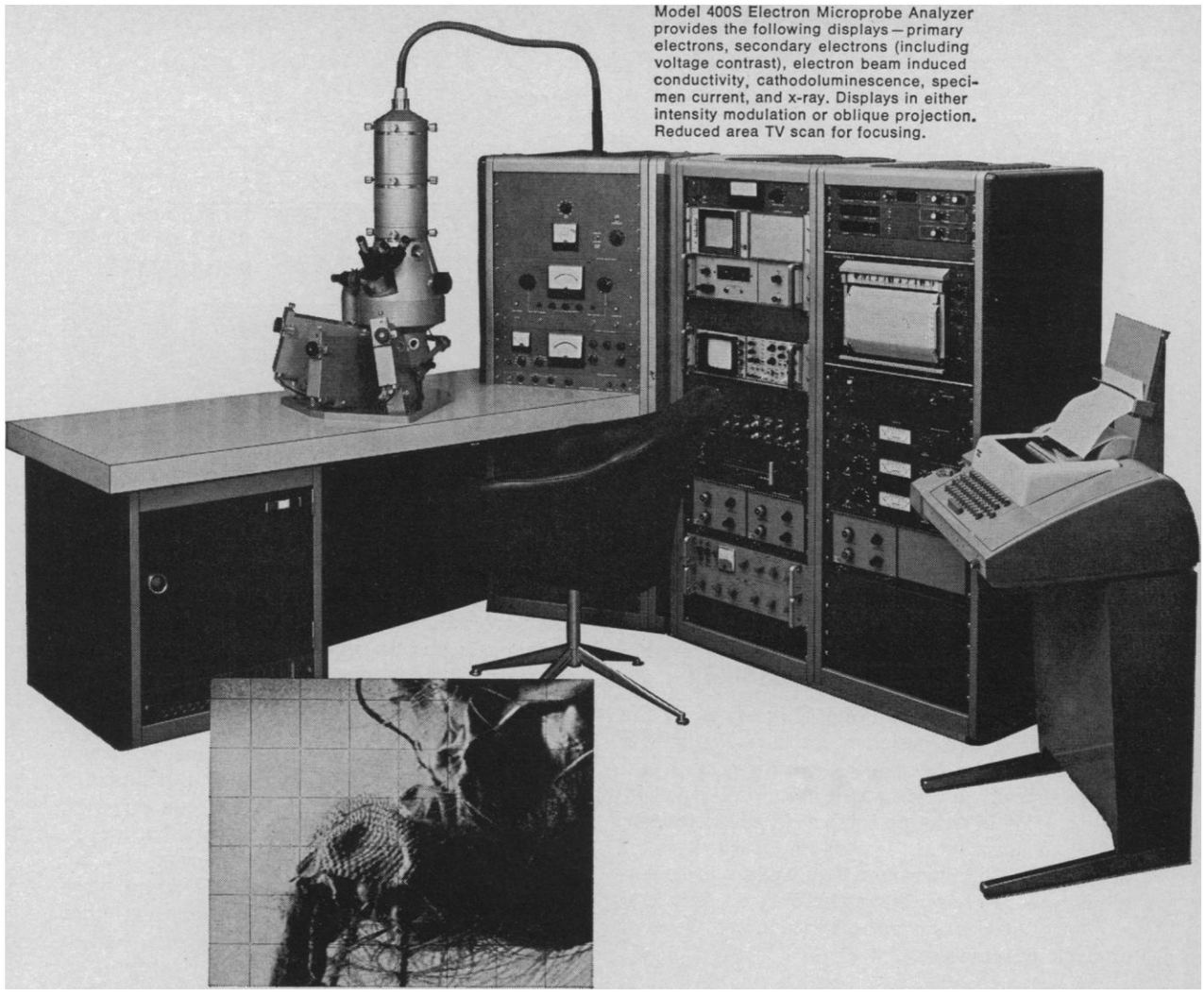


Model 400S Electron Microprobe Analyzer provides the following displays—primary electrons, secondary electrons (including voltage contrast), electron beam induced conductivity, cathodoluminescence, specimen current, and x-ray. Displays in either intensity modulation or oblique projection. Reduced area TV scan for focusing.

A mosquito makes history

Back-scattered electron image of mosquito **(specimen uncoated). Instrument:** Materials Analysis Company Model 400S Combination Electron Microprobe Analyzer-Scanning Electron Microscope. **Voltage:** 24 KV. **Specimen Current:** 200 picoamps. **Magnification:** 80X. **Date:** March 18, 1968.

This remarkable photograph – taken in just 20 seconds—illustrates the unique performance of a new combination electron microprobe analyzer-scanning electron microscope developed by Materials Analysis Company. There's just no other way to get a picture like this.

The mosquito image was produced by the new Model 400S, which provides both microprobe x-ray analysis and scanning electron microscopy capabilities. Resolution is 1,000 Å or better in the scanning mode! And, a spot-size of 0.15 microns is guaranteed. Image magnifications range from 30X to 50,000X. With the x-ray system, both qualitative and quantitative chemical analyses of micron-sized volumes can be performed. All elements from boron up through the periodic table can be analyzed.

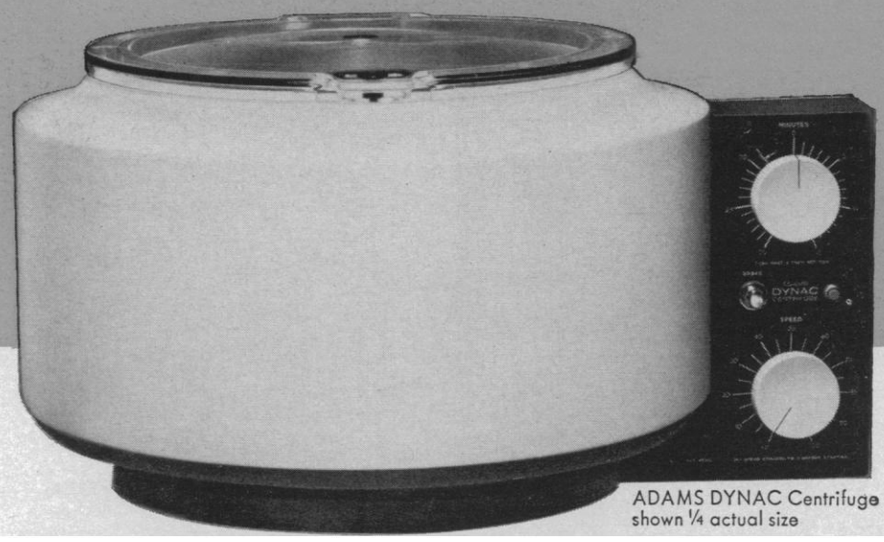
The 400S also features solid-state, modular design, up to three fully-focusing Johansson-type x-ray spectrometers, and a wide range of accessories.

There's more good news. For high-resolution scanning microscopy, Materials Analysis Company has developed the Model 700. And for analysis of highly radioactive specimens, MAC offers the Model 450 Electron Microprobe Analyzer.

All three instruments are available on a leasing basis. For complete details, please write to us at 1060 East Meadow Circle, Palo Alto, California 94303. Phone (415) 326-6556.

MAC MATERIALS ANALYSIS COMPANY

Introducing



ADAMS DYNAC Centrifuge
shown 1/4 actual size

ADAMS DYNAC Centrifuge

Proof that a high performance centrifuge doesn't have to cost too much.

• LARGE IN CAPACITY—UP TO 400 ML. Specific models hold up to four 100 ml., twenty-four 15 ml., or thirty-six 10 x 75 mm. tubes.

• VERSATILE—Accommodates any one of eight interchangeable Horizontal and Angle-Heads. Permits over 50 different combinations of tube sizes, from micro to 100 ml.

• ECONOMICAL—Complete ADAMS DYNAC Centrifuge outfits are available from $192.00.

• SMALL IN SIZE—ONLY 10 INCHES HIGH.

WITH...WIDE SPEED RANGE (UP TO 5500 RPM) AND SOLID STATE ELECTRONIC CONTROL • AUTOMATIC 30-MINUTE TIMER • ELECTRIC BRAKE • LARGE ACCESS OPENING AND TRANSPARENT SHATTERPROOF COVER • COMPACT, LOW PROFILE DESIGN WITH EASY TO SEE AND USE CONTROL PANEL.

For more information, contact your Clay-Adams dealer or write Clay-Adams, 141 East 25th Street, New York, N.Y. 10010.

Clay Adams

Div. Becton, Dickinson and Company B-D
Parsippany, New Jersey 07054

Price shown is suggested retail price

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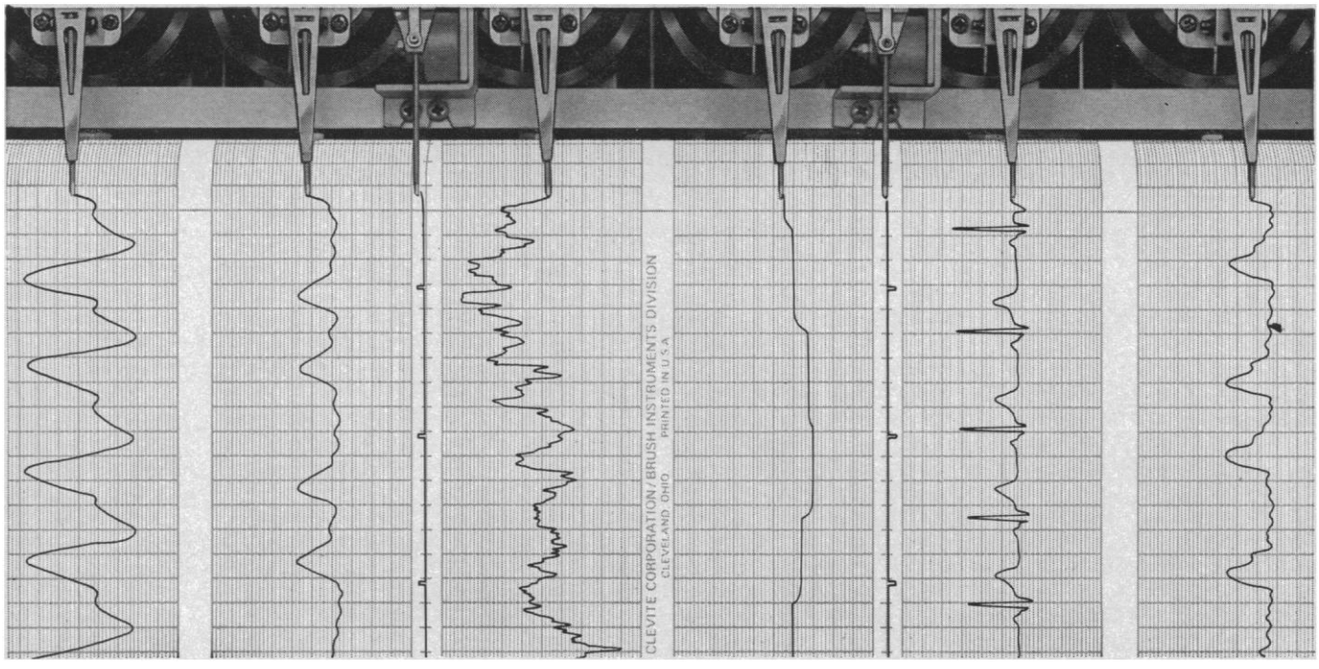


Close-up of a Brush medical recorder shows trace clarity, sharpness and high resolution that contribute to superh accuracy of Brush instruments.

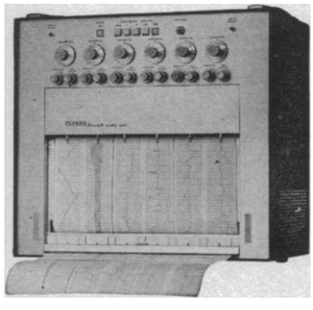
Brush medical recorders deliver more physiology and less fooling than any other make you can buy

We take the fooling out of recording . . . both kinds: the deceptive traces which result from intermingling physiology with artifact, and the need to fool with calibration controls. Unlike ordinary medical recorders, the calibration of Brush recorders remains constant regardless of baseline position, attenuator setting, or gain. Test after test, year after year.

More physiology and less artifact. That's what Brush delivers.

In addition, Brush medical recorders maintain specified system accuracy from one edge of the chart to the other and at *all points* in between.

You can believe the high degree of resolution and system accuracy only when you see some physiological wave forms actually recorded on a Brush instrument. Write for your set of samples.

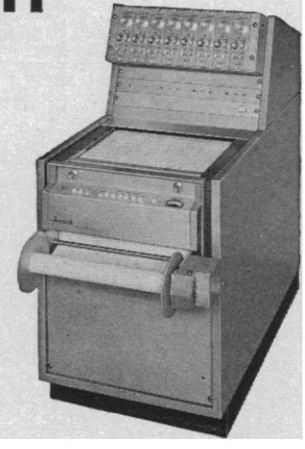


CLEVITE **BRUSH**

There are Brush medical recorders with 1, 2, 3, 4, 5, 6, 7, and 8 channels for physiological data acquisition. Illustrated are the Mark 200 lowboy and the Mark 260.

The Mark 200 lowboy (right) is an eight-channel system that combines solid-state electronics with modular construction to economically meet your specific requirements. Choice of channel widths and biomedical front ends. Range of chart speeds 0.05 to 200 mm/sec. Patented pressure-fluid writing system.

The Mark 260 (left) is a high-performance portable recorder at half the big-system price. Six analog channels and four event channels. Features the Brush patented pressure-fluid system. Frequency response: 70 Hz at 0.5 full scale; 40 Hz at full scale.



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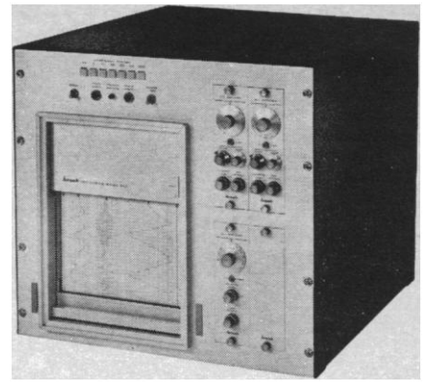
Six important reasons why Brush medical recorders are best for physiological data acquisition



The Mark 240 is a smaller version of the Mark 200 series and therefore displays biophysical data with the fidelity required for exacting research. Choose from two 80-mm channels, four 40-mm, or a 3-channel combination.

1. Self-calibrating

Brush medical recorders are factory calibrated with instrument standards one step removed from The National Bureau of Standards. Unlike ordinary recorders, they stay that way, test after test, year after year, regardless of baseline position, attenuation, or gain setting.

2. More Physiology

We take the fooling out of recording . . . both kinds: the deceptive traces which result from intermingling physiology with artifact, and the need to fool with calibration controls.

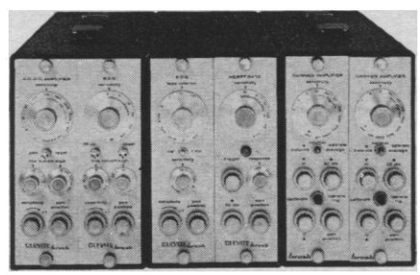
3. Wide Application

Brush data acquisition systems will accommodate a wide variety of physiological parameters, including:

Ballistocardiogram, Blood Pressure, Cardiac Output, Cerebral Potentials, Electrocardiogram, Electroencephalogram, Electrogastrogram, Electromyogram, Electroretinogram, Flow Rate, Gas Concentration, Gas Diffusion, Heart Rate, Muscle Contractions, Nystagmogram, Partial Gas Pressures, Phonocardiogram, Plethysmogram, Pulmonary Capacity, Pulse Waves, Respiration Rate, Smooth-muscle Potential, Temperature, Vectorcardiogram.

4. Choice of Front Ends

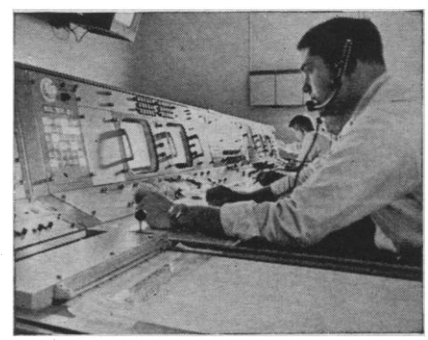
Brush's variety of bio-medical front ends can link nearly all physiological signal sources to *any* display device. All have broadband frequency response (to 10 kHz), a property which



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.

5. High Performance

Physiological monitoring station at NASA's Manned Space Center, Houston, incorporates three 8-channel Brush Mark-200 recorders — one for each Apollo astronaut — for continuous display of ECG, respiration, blood pressure, and body temperature during flight. Telemetered data comes to Houston from stations around the world.



6. Quality Built

Ever since Brush introduced the direct-writing electrocardiograph in 1937 (its crystal penmotor was the first major improvement on Einthoven's string galvanometer), Brush recorders have been the quality standard of the industry.

From component production to system testing, modern Brush medical recorders are built to aerospace standards. No wonder Brush analog recorders are always used *whenever the data is important.*

CLEVITE BRUSH

Clevite Corporation • Brush Instruments Div., 37th and Perkins, Cleveland, Ohio 44114

Gentlemen:

Please send me, without obligation, a set of your sample physiological oscillograms.

Name _____

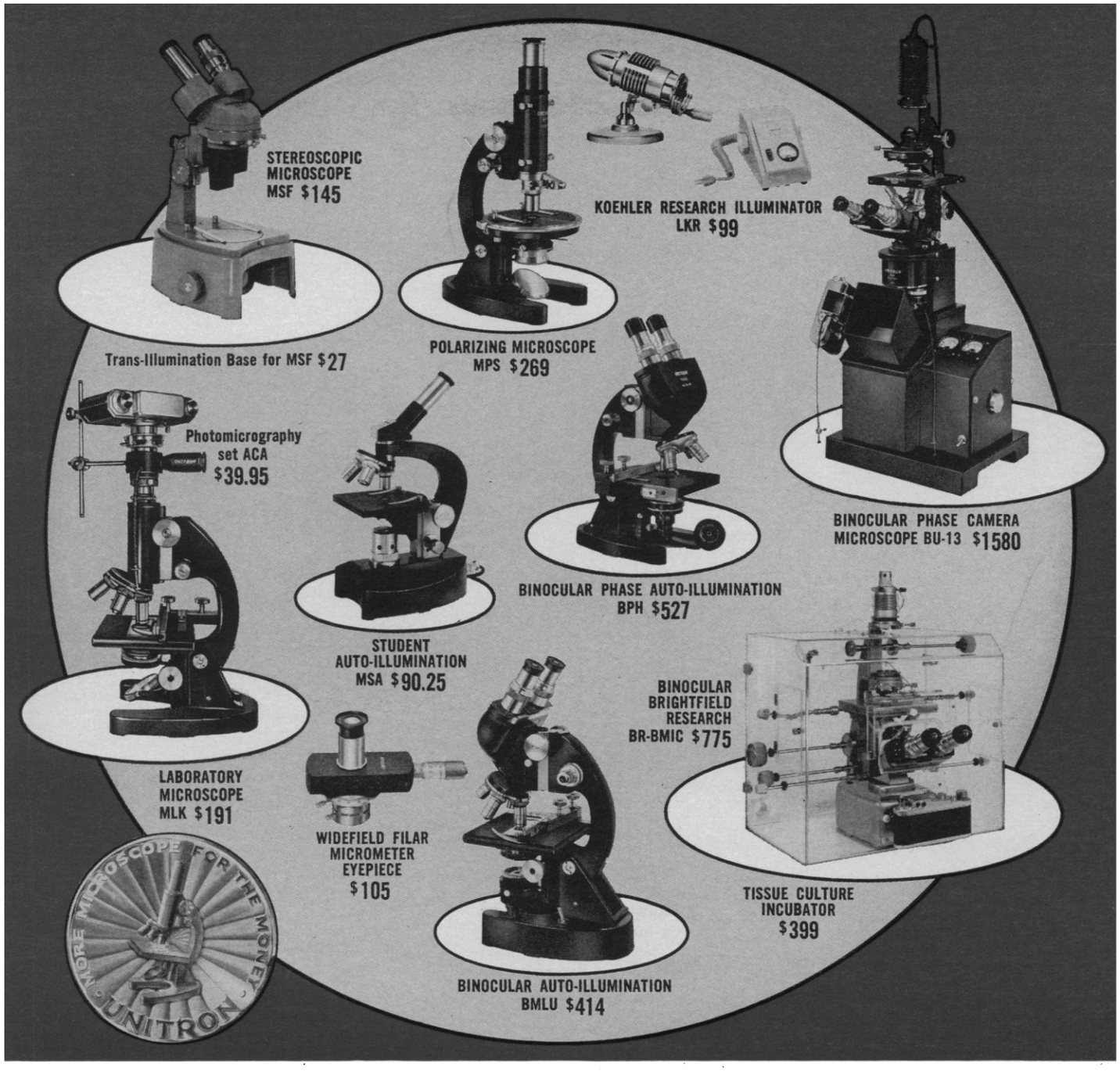
Title _____

Affiliation _____

Address _____

City _____ State _____ Zip _____

PLEASE SEND THIS COUPON FOR A SET OF SAMPLE PHYSIOLOGICAL OSCILLOGRAMS (actual recordings.)



WHY UNITRON MICROSCOPES ARE SEEN IN THE BEST OF CIRCLES

Most brands of microscopes **promise** quality . . . But UNITRON really **delivers** it.

Some other brands **imply** economy . . . UNITRON **proves** it . . . check our prices!

And a few others **claim** both quality and economy . . . But UNITRON is the brand that **guarantees** both.

What's more, this guaranteed UNITRON quality and economy are offered in a complete line of microscopes, to meet the routine and research needs of modern labs. Choose from brightfield, darkfield, and phase contrast models . . . monocular or binocular . . . familiar upright or unique inverted stands . . . with attachable or built-in cameras and illumination systems.

The **extra**ordinary features of many other brands are the **ordinary** in UNITRON Microscopes. Complete optical and mechanical accessories are standard equipment, rather than hidden extras "at slight additional cost". Coated optics are second to none. Original designs provide easy operation, versatility, lab-proven ruggedness and guaranteed performance. All of these are just routine, normal advantages that customers have learned to expect when they specify UNITRON Microscopes — **plus** attractive prices which are so easy on your budget.

UNITRON MEANS MORE MICROSCOPE for the MONEY. Leading labs throughout the world know this. It's the reason, really, why "UNITRON Microscopes are seen in the best of circles". But why take our word? It's easy to prove for yourself, the advantages and value that UNITRON can offer you. Borrow any model (or models) for a **free 10 day trial** in your own lab. No cost . . . no obligation to buy . . . not even any shipping charges. Why not use the coupon to ask for a free trial, the chance to try before you decide whether or not to purchase. Or, ask us to send a catalog that will give you full details.

☐ Please send UNITRON'S Microscope Catalog. 4 W
☐ I accept (without cost or obligation) your invitation to try UNITRON Model _____ for 10 days.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

UNITRON

INSTRUMENT COMPANY • MICROSCOPE SALES DIV.
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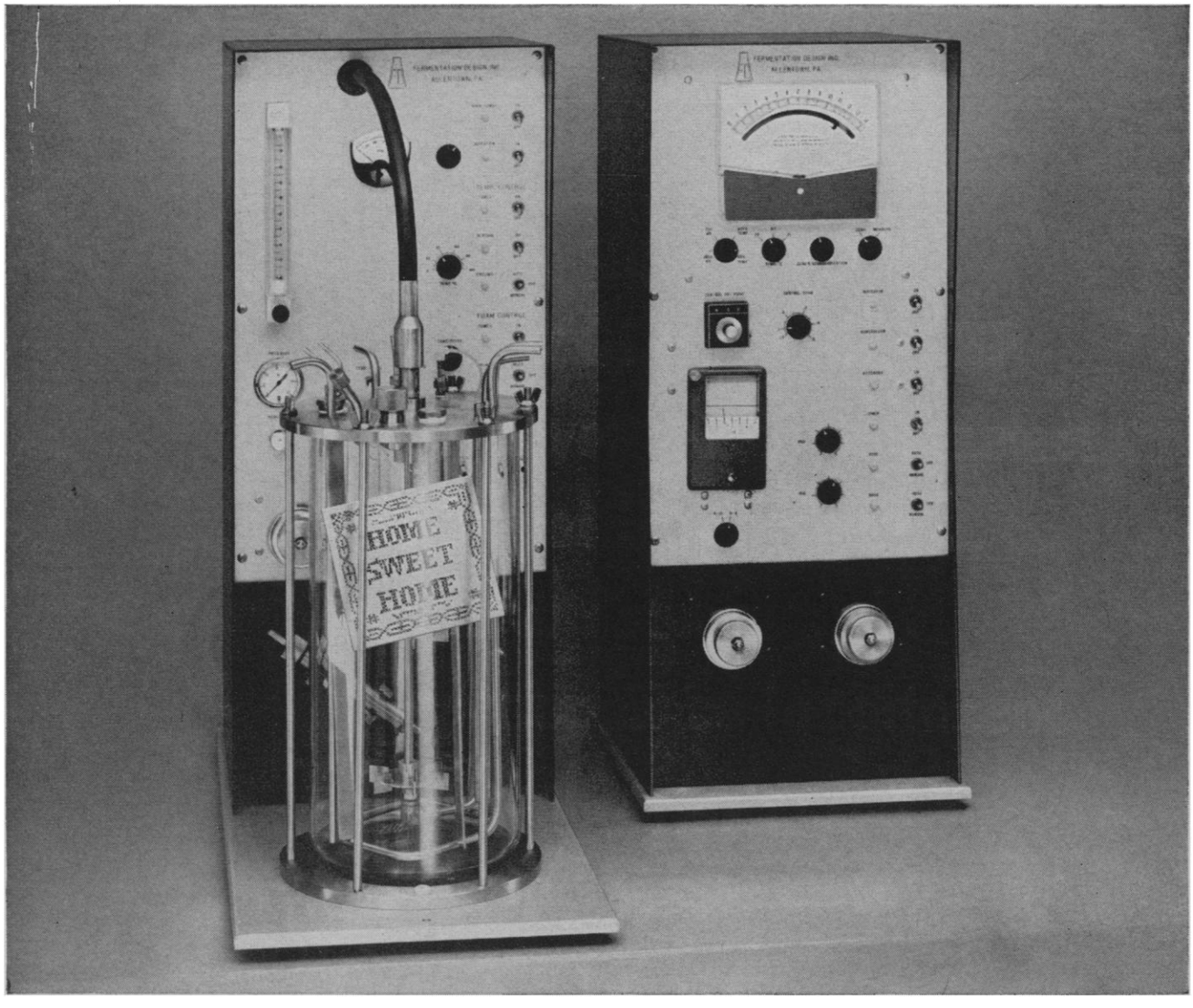
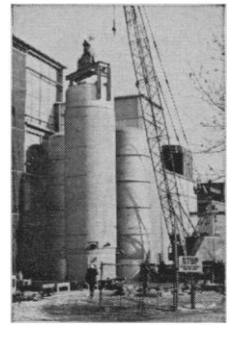


F/D Bench-Scale Bio-Cultural devices from S/P...

provide the ideal environment for cultural growth

Bio-cultural assemblies from Fermentation Design, Inc. are the perfect "home" for microbial and tissue culture processes or waste treatment studies. In the laboratory, they operate quietly on existing bench tops. For industrial pilot plant projects, F/D units can be easily scaled up to the desired production output. Stepless agitation, transistorized temperature control and many other features assure home-sweet-home conditions for any micro-organism. For the utmost in environmental control, complete your bio-cultural setup with a F/D pH controller. Standard units are in stock *now* at S/P.



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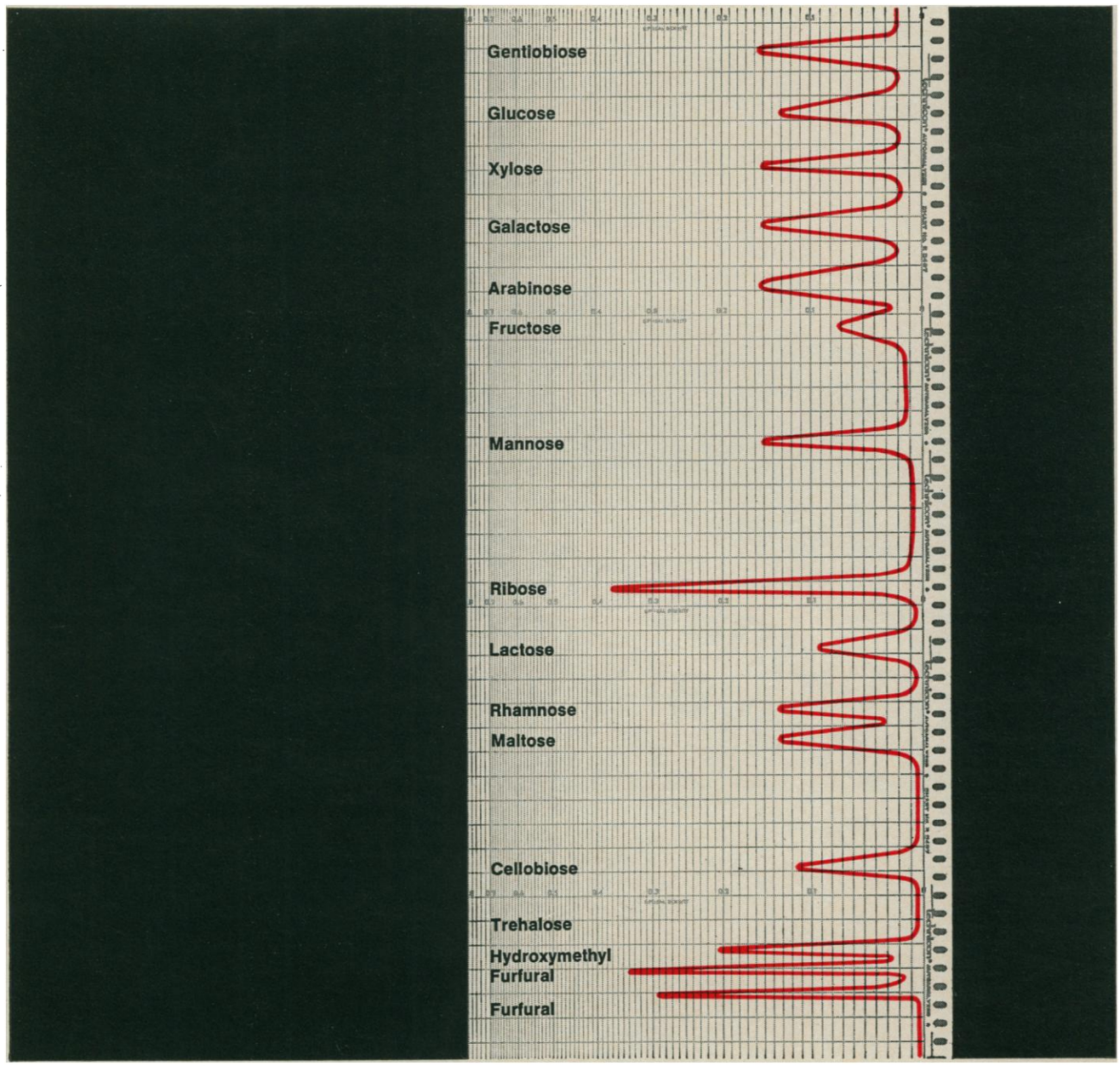

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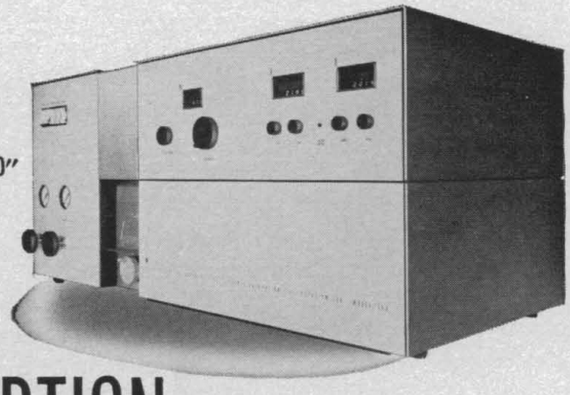

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Materials research: playing a new role in idiopathic spinal curvature research.

Medical researchers are examining the incidence of idiopathic scoliosis among school children. A prevailing theory suggests that abnormalities in the components of ligaments may cause this deformity, but the theory has not been proved because of difficulty in measuring viscoelastic properties in human tissue.

However, today a leading West Coast university is successfully using an Instron tester to stretch and measure effects on interspinous ligaments from patients with idiopathic scoliosis. Tomorrow the theory may be proved.

Spinal curvature research is just one of the areas where Instron testers are now being used in biophysics. Other areas include: establishing accurate profiles of the physical characteristics of tendons; evaluating stress-strain effects on tissue, blood vessels and muscle fibers; exploring chronic degeneration; developing and applying prostheses.

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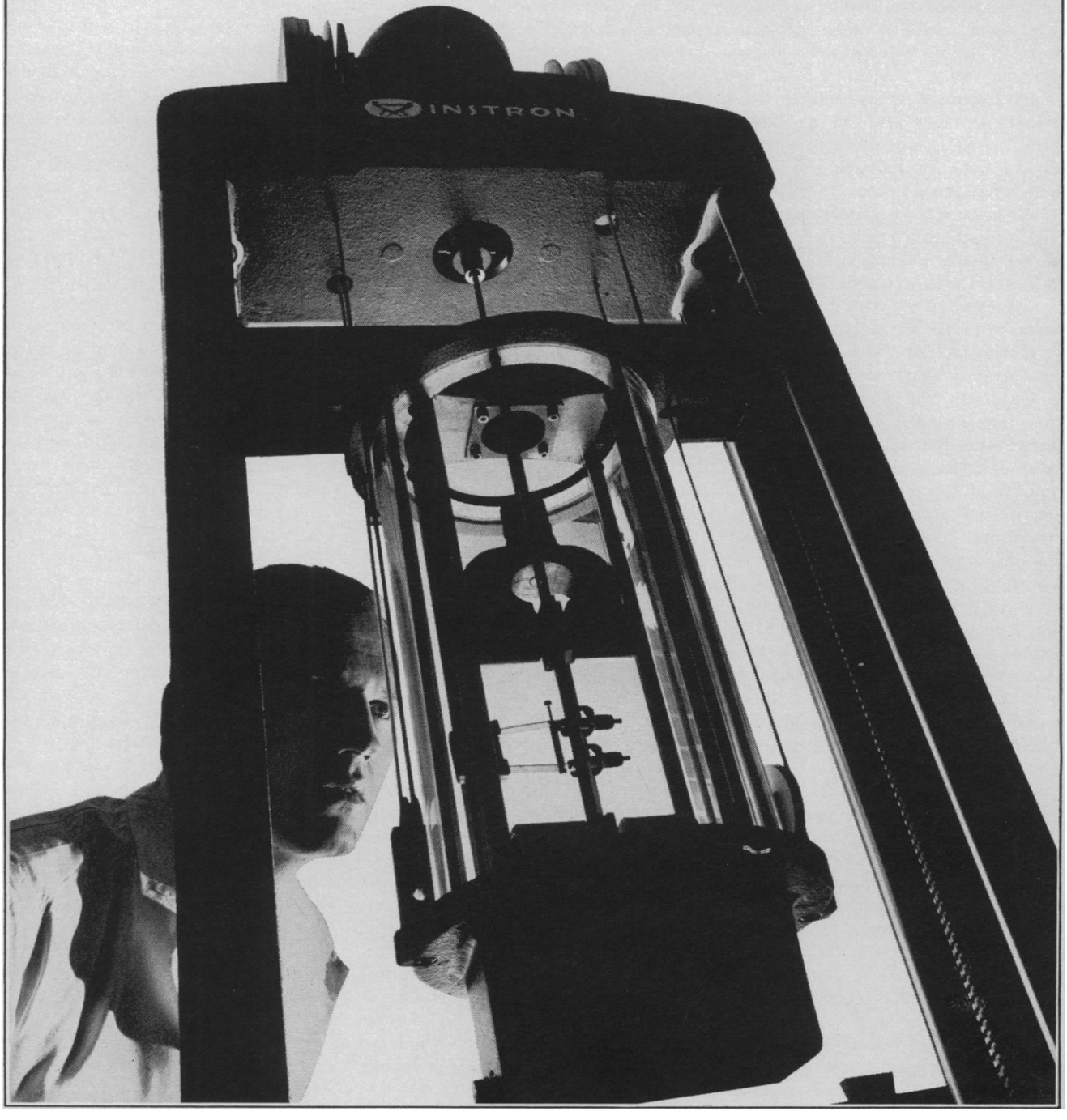

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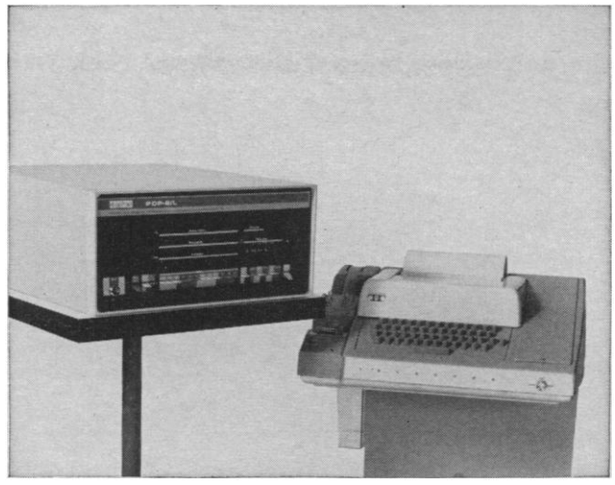

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contextual relativity of social behavior of dogs that has appeared. Although I would have liked to have seen more of the studies reported in greater detail, sufficient information is given to permit attempts to extend the work (*1*).

Clearly the volume is not free of defects: Kuo is polemical, sometimes to a fault; he fails to relate his ideas to recent movements in ethological and learning theory; there is a lack of precision in his use of some concepts, making them vulnerable to misinterpretation. Nevertheless, it is a major statement of position from a distinguished comparative psychologist on issues that are still very much alive. To this reader at least, Kuo's insights (and research) continue to be provocative and stimulating.

ROBERT B. CAIRNS

Department of Psychology, Indiana University, Bloomington 47401

References and Notes

1. Findings generally consistent with Kuo's results have already appeared. See, for example, G. M. Burghardt and E. H. Hess, *Science* **151**, 108 (1966); R. B. Cairns, *J. Comp. Physiol. Psychol.* **62**, 298 (1966); R. B. Cairns and J. Werboff, *Science* **158**, 1070 (1967); V. H. Denenberg, G. A. Hudgens, M. X. Zarrow, *ibid.* **143**, 380 (1964); H. Goot, *Anim. Behav.* **10**, 232 (1962).

A careful reading of Kuo's book will indicate that my review dealt directly with the major positions adopted by the author. My basic objections to the book are not to the positions themselves but to the extreme form in which Kuo would have us adopt these positions. The framework provided by Kuo is a framework within which the science of behavior cannot proceed, and this was the theme of my review.

In response to Cairns's first specific comment, my reference to a "cop-out" was a reference to Kuo's handling of criticisms of the relationship between movements before hatching and later behavior. This example indicated to me that Kuo carries to an extreme the position that behavioral development is a continuous process. I think that if we carry things to the extreme that this example suggests, hypotheses concerning specific relationships (for example, the relationship between embryonic actions of the chick and later specific behavior patterns) are exchanged for vague and certainly much less meaningful statements such as the one made by Kuo on page 114.

Just as the prenatal visual responses and leg movements are historical antecedents of postnatal food-getting behavior, the prenatal movements of the beak, the head,

and, in fact, the whole visceral system are part and parcel of innumerable gradient patterns of postnatal behavior such as "courtship," "threat," "preening," "running," "attacking," and innumerable other patterns of social behavior.

Cairns's second specific criticism of my review concerns Kuo's treatment of behavior and evolution. Certainly, environmental contributions to the evolutionary process cannot be denied. It should, however, be kept in mind that the very plasticity with which Kuo would have us deal has not appeared independent of genetic changes, nor can we ignore the adaptive value of changes of behavioral patterns and their selective value on the genetic composition of surviving generations. If Kuo thus couples an evolution of behavior independent of somatic changes with a freedom from "the rather dubious twin concepts of 'natural selection' and 'survival value' of behavior for the species . . .," I think calling this view of evolution mystical is justified.

The remainder of Cairns's comments are matters of individual taste, and not subject to the same kind of discussion as the aforementioned material. I do agree, however, that the experiments included are not reported in great detail, and this is a factor which interferes with proper evaluation.

ERNST W. HANSEN
Institute of Animal Behavior, Rutgers University, Newark, New Jersey

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In writing about the Institute of Defense Analyses (17 May, p. 744) Greenberg says ". . . RAND was created by and works almost exclusively for the Air Force. . . ." In fact, the RAND Corporation was formed in 1948 as a California nonprofit corporation by its private organizers who selected its own board of trustees. Air Force Project RAND was initiated in 1946 and the contract was transferred from the Douglas Aircraft Company to the RAND Corporation in 1948. While Project RAND was its nearly exclusive concern for some years, RAND's contracts with other federal agencies, private foundations, and the City of New York (and its program of research supported with its own funds) now account for about 35 percent of its total effort.

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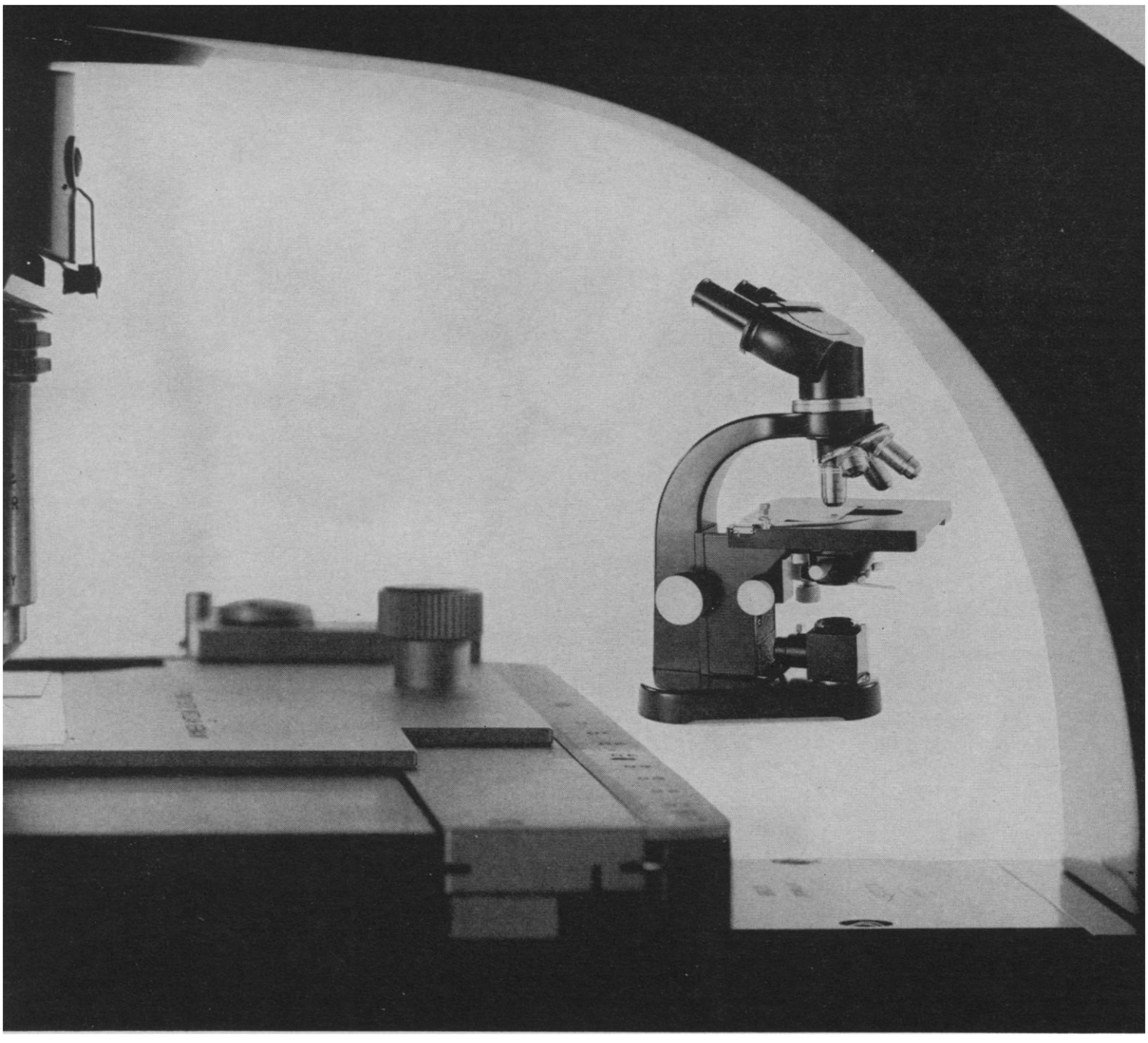

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9 August 1968, Volume 161, Number 3841 **SCIENCE**

University Response to Social Needs

The violence and lawlessness on some college campuses obscure the general student demand that universities devote more energy and attention to the pressing problems of the moment. The students who are not engaged in strikes or sit-ins nonetheless do object to the emphasis placed on certain forms of research and scholarship.

Students are appalled by the energy expended by faculty members in doing seemingly trivial things. They note how often research involves reducing and limiting a problem until it is small enough to be reported within the pages of a single journal article or book. They believe that a professor devotes himself to some tiny sub-area because he seeks to gain recognition within his lifetime as a leading authority.

We remind students that scientific progress evolves by this very process of reduction, that new knowledge stems from the work of thousands of persons and many tiny discoveries. Great men of science have made great breakthroughs only as a consequence of enormous amounts of work done previously.

The academic setting provides rewards not for good intentions but for completed work that adds to knowledge. And attacks on large problems seldom yield definitive results. Those few who have dealt successfully with large-scale problems are esteemed. However, the likelihood of a young professor's attaining this status is remote. When he tries, he gambles with his future academic position.

Our students point to the tremendous effects of organized concentration on a problem. For example, they note that the first nuclear reaction was produced by massive expenditure of money and effort and that our space program thrives when huge numbers of people devote their energies to it. They ask us to direct the energies of professors toward truly critical problems—to find peace, to eradicate poverty, to attain universal civil rights.

Students can see within our society no institution other than the university capable of launching the attack on the problems that must be solved. They consider it a defect when our courses present subject matter within a disciplinary rather than a problem-oriented framework, and when we do not assign problems for study to the faculty or do not require that they join together to cure the ills of our society.

The choice of research strategy is especially difficult in the social sciences, where one finds very few examples of great benefits accruing from research unrelated to major problems. Breakthroughs with enormous multiplying effects observable in the physical sciences are unlikely or, at least, have not yet occurred. To learn more about a given social phenomenon it seems almost inevitable that we must study it directly.

It is clearly within the capability of the university to assume an expanded role in dealing with society's problems while assuring that the modes of attack are in accord with scholarly values. We can review the objectives of our programs of graduate education, reorient our textbooks, and restructure introductory courses to attract students who can apply our knowledge and techniques. Departments in our universities can manage to emphasize problem areas while maintaining solid subject orientation. We can recognize, reward, and establish as models those of our colleagues brave enough to tackle the major problems of the real world and smart enough to find how to do it. If our students, by their protests and dissents, stir us to speed this process, we shall be in their debt.—KENNETH E. CLARK, *Dean, College of Arts and Sciences, University of Rochester, Rochester, New York*

4 ways to view displays with the Tektronix Type 564

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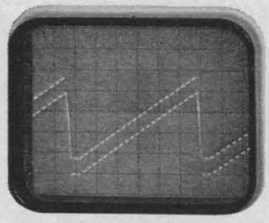

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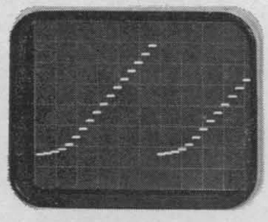

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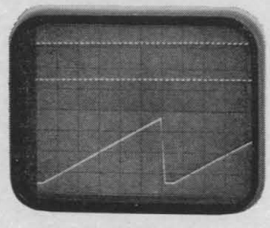

Each half of split-screen can be used independently for stored displays.

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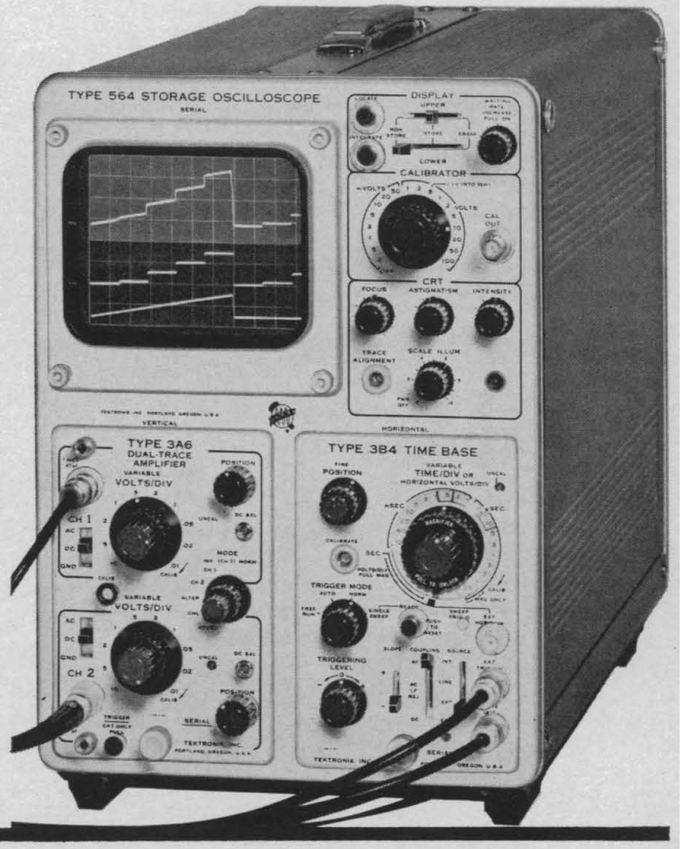

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tors, Chicago, Ill. (C. S. Holt, 738 Keystone Ave., River Forest, Ill. 60305)

30. Society for **Pediatric Radiology**, New Orleans, La. (J. L. Gwinn, Children's Hospital, 4614 Sunset Blvd., Los Angeles, Calif. 93027)

30–3. American **Psychiatric** Assoc., 20th, Washington, D. C. (Public Information Officer, 1700 18th St., NW, Washington, D. C. 20009)

30–3. American **Roentgen Ray** Soc., Washington, D. C. (T. F. Leigh, Emory Univ. Clinic, Atlanta, Ga. 30322)

International and Foreign Meetings

September

1–6. Asian-Pacific Congr. of **Cardiology**, 4th, Jerusalem and Tel Aviv, Israel. (L. Sherf, Tel Hashomer Government Hospital, Ward 22, Tel Hashomer, Israel)

1–6. International Soc. of **Hematology**, 12th, New York. (P. Reznikoff, 449 E. 68 St., New York 10021)

1–7. Italian Soc. of **Electron Microscopy**, Rome. (D. S. Bocciarelli, Conference Secretary, c/o Instituto Speriere di Sanita, Viale Regina Elens 299, Rome)

1–7. European Regional Conf. on **Electron Microscopy**, 4th, Rome, Italy. (D. S. Bocciarelli, Inst. Superiore di Sanita, Viale Regina Elena 299, Rome)

1–7. **Embryology**, 6th intern. congr. Paris, France. (Secretariat, Faculté des Sciences, Bat C, 9, Quai Saint-Bernard, Paris 5)

1–8. Balkan **Medical** Union, 9th, Istanbul. (A. M. Popescu Buzen, 10 rue Pregresului, Bucharest, Rumania)

2–5. International Conf. on **Laboratory Astrophysics**, Lunteren, Netherlands. (J. Rosenberg, Sterrewacht Sonneborgh der Rijksuniversiteit, Zonnenburg 2, Utrecht, Netherlands)

2–5. National Conf. of **Pure and Applied Physical Chemistry**, Bucharest, Rumania. (V. E. Sahini, Conferinta de Chimie Fizica, str Dumbrava Rosie 23, Bucharest 9)

2–6. International **Ophthalmologic** Symp., Johannesburg, South Africa. (Secretary, Dept. of Ophthalmology, Medical School, Univ. of Witwatersrand, Hospital St., Johannesburg)

2–6. Asian Cong. of **Pharmaceutical Sciences**, 2nd, Seoul, Korea. (K. Haw, B1 18–2 Dwan-Chul-Dong Chong-Bo-Ky, Seoul)

2–6. International **Fermentation** Symp., 3rd, New Brunswick, N.J. (G. M. Shull, Squibb Inst. for Medical Research, 5 Georges Rd., New Brunswick, N.J. 08903)

2–7. International Conf. on **Coordination Chemistry**, 11th, Haifa and Jerusalem, Israel. (M. Cais, Technion, Haifa)

2–7. International Union of **Pure and Applied Chemistry**, Toronto, Ont., Canada. (Organizing Committee, Box 932, Terminal A, Toronto)

2–8. World Commission on **Cerebral Palsy**, Hong Kong. (B. S. Miller, United Cerebral Palsy, 321 W. 44 St., New York 10036)

3–5. **Drugs Affecting Lipid Metabolism**, 3rd intern. symp., Milan, Italy. (H. J. Prian, Inst. of Pharmacology, Via Vanvitelli, 32, 20129 Milan)

3–6. **Archives**, intern. congr., 6th, Madrid, Spain. (L. S. Belda, Direction

Generale des Archives et des Bibliotheques Despagne, Eduardo Dato 31-33, Madrid 10)

3–6. International Symp. on **Macromolecular Chemistry**, Toronto, Ont., Canada. (Intern. Symp. on Macromolecular Chemistry, Box 932, Terminal A, Toronto)

3–6. European **Malacological** Congr., 3rd, Vienna, Austria. (Organizing Committee, Naturhistorisches Museum, Burgring 7, A-1014 Vienna)

3–10. International Union of **Anthropological and Ethnological Science**, 8th, Tokyo and Kyoto, Japan. (Organizing Committee, Science Council of Japan, Ueno Park, Tokyo)

3–12. International Congr. of **Surveyors**, 12th, London, England. (R. Steel, Intern. Federation of Surveyors, c/o Basingstoke Development Group, Erdesley, Cliddesden Rd., Basingstoke, Hampshire, England)

3–14. International **Electrotechnical** Commission, 33rd, London, England. (L. Rupper, 1 rue de Varembe, Geneva, Switzerland)

4–6. International Conf. on **Electrophotography**, Rochester, N.Y. (W. L. Hyde, Inst. of Optics, Univ. of Rochester, Rochester, N.Y.)

5–11. International Acad. of **Pathology**, 7th, Milan, Italy. (A. Giordano, Inst. of Pathology and Anatomy, Univ. of Milan, Via Francisco Sforza 38, Milan)

7–15. **Tropical Medicine and Malaria**, 8th intern. congr., Teheran, Iran. (C. Mofidi, P.O. Box 1310, Teheran)

8–14. European Soc. of **Cardiology**, 5th, Athens, Greece. (A. Samaras, 24 Ravine St., Athens 140)

9–11. Ciba Foundation Symp. on **Bacterial Plasmids and Episomes**, London, England. (Ciba Foundation, Portland Pl., London W.1)

9–11. European Symp. on **Chemical Reaction Engineering**, 4th, Brussels, Belgium. (R. Jottrand, 50, avenue F. D. Roosevelt, Brussels 5, Belgium, or R. L. Gorring, Mobil Oil Corp., Research Dept., Paulsboro, N.J. 08066)

9–12. South African **Urological** Assoc., Kruger Natl. Park. (E. Abro, 804 Medical Center, Jeppe S., Johannesburg, South Africa)

9–12. International Soc. for **Rehabilitation of the Disabled**, Cork, Ireland. (J. Bermingham, Natl. Organization of Rehabilitation, 133 Oliver Plunkett St., Cork)

9–13. International Council of the **Aeronautical Sciences** Congr., Munich, Germany. (R. R. Dexter, American Inst. of Aeronautics, 1290 Sixth Avenue, New York 10009)

9–13. World Congr. of **Anaesthesiologists**, 4th, London, England. (D. D. C. Howat, Royal Marsden Hospital, Fulham Rd., London, S.W.3)

9–13. International Congr. of **Phlebology**, 3rd, Amsterdam, Netherlands. (J. Van Limbough, Mauritskade 61, Amsterdam)

9–13. International **Seaweed** Symp., 6th, Santiago de Compostela, Spain. (E. Booth, Inst. of Seaweed Research, Inveresh, Midlothian, Scotland)

9–13. International Congr. on **Surfactants**, 5th, Barcelona, Spain. (Secretary General, 5th Congr. on Surfactants, Avd. Generalissimo Franco 730, Barcelona 14)

9–14. **Biodeterioration,** 1st intern. symp., Southampton, England. (First Intern. Biodeterioration Symp., 14 Belgrave Sq., London, S.W.1, England)

9–15. International Conv. on **Vital Substances, Nutrition, and Civilisation Diseases,** Travemunde, Germany. (H. Schmulling, Bemeroder Str. 61, Hannover-Kirchrode)

10–13. French Soc. of **Electronic and Radio Engineers,** Paris, France. [Societé Française des Electroniciens et Radioelectriciens, 10 Ave. Pierre-Larousse, Malakoff (Seine), France]

10–13. **Yeast Protoplasts,** 2nd intern. symp., Brno, Czechoslovakia. (A. Svoboda, Dept. of Biology, Medical Faculty, J. E. Purkyne Univ., Brno)

10–14. **Internal Medicine,** 10th intern. congr., Paris, France. (E. Reezyo, Dept. of Medicine, Inst. for Postgraduate Medical Education, ul. Solec 93, Warsaw 30, Poland)

10–20. International Conf. on **General Relativity and Gravitation,** 5th, Tiflis, U.S.S.R. (A. Mercier, Inst. de Physique Theoretique de l'University, 3000 Berne, Sidlerstrasse 5, Switzerland, or Acad. of Science, U.S.S.R., Lenin Prospekt, Moscow)

12–14. Federation of French Speaking Societies of **Gynecology,** 22nd, Paris. (Sureau, Maternire Pinard, 74 Ave. Denfert-Rochereau, Paris 14)

15–17. Society of **Radiology,** Bucharest, Rumania. (I. Caloenescu, Union of Medical Science, Societies of the Socialist Republic of Rumania, 8, Rue Progresul, Bucharest)

15–19. International Congr. of **Group Psychotherapy,** 4th, Vienna, Austria. (Z. I. Moreno, P.O. Box 311, Beacon, New York 12508)

15–19. **Audiology,** 9th intern. congr., London, England. (R. Hinchcliffe, Inst. of Laryngology and Otology, 330 Gray's Inn Rd., London, W.C.1)

16–18. Conference on **Laser Measurements,** Warsaw, Poland. (S. Hahn, Komitet Narodowy URSI, Warsaw IPPT, Swietokrzyska 21, Poland)

16–20. Austrian **Mathematical** Congr., 7th, Linz. (A. Adam, Hochschule fur Sozial-und Wirtschaftswissenschaften, A4045 Linz, Auhof, Austria)

16–21. International Soc. for **Fat Research,** 9th, Rotterdam, Netherlands. (Unilever Research Labs., P.O. Box 114, Vlaardingen, Netherlands)

17–20. Society of **Physical Chemistry,** Paris, France. (G. Emschwiller, 10, rue Vauquelin 75, Paris 5)

19–21. International **Leprosy** Assoc., 9th, London, England. (S. G. Browne, 16 Bridgefield Rd., Sutton, Surrey, England)

20–24. **Fouling and Marine Corrosion,** 2nd intern. congr., Athens, Greece. (Université Technique Nationale d'Athenes, Laboratoire Chimie-Physique, 42, rue 28 Octobre, Athens)

22–25. American Inst. of **Chemical Engineers,** Montreal, P.Q., Canada. (Chemical Inst. of Canada, 48 Rideau St., Ottawa 2, Ont.)

22–27. International Committee on **Electrochemical Thermodynamics and Kinetics,** 19th, Warren, Michigan. (S. E. Beacom, Electrochemistry Dept., Research Labs., General Motors Corp., 12 Mile & Mound Rds., Warren, Michigan 48090)

BOOKS RECEIVED

(Continued from page 563)

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Autoradiographic Techniques. Localization of Radioisotopes in Biological Material. William D. Gude. Prentice-Hall, Englewood Cliffs, N.J., 1968. xiv + 113 pp., illus. Paper, $3.95. Biological Techniques Series.

Basic Algebraic Systems. An Introduction to Abstract Algebra. Richard Laatsch. McGraw-Hill, New York, 1968. xiv + 224 pp., illus. $7.95.

Basic Organic Chemistry. Part 2. J. M. Scott, Foresman, Glenview, Ill., 1968. xiv + 295 pp., illus. $8.75.

Basic Organic Chemistry. Part 2. J. M. Tedder and A. Nechvatal. Wiley, New York, 1967. xii + 466 pp., illus. Paper, $7.

Basic Physics. Kenneth W. Ford. Blaisdell (Ginn), Waltham, Mass., 1968. xxiv + 968 pp., illus. $11.75. Blaisdell Book in the Pure and Applied Sciences.

The Biochemistry of Memory. With an Inquiry into the Function of the Brain Mucoids. Samuel Bogoch. Oxford University Press, New York, 1968. xii + 254 pp., illus. $7.50.

The Biogenesis of Mitochondria. D. B. Roodyn and D. Wilkie. Methuen, London, 1968 (distributed in the U.S. by Barnes and Noble, New York). viii + 123 pp., illus. $4. Methuen's Monographs on Biological Subjects.

Biology. Helena Curtis. Worth, New York, 1968. xviii + 854 pp., illus. $10.75.

A Biology of Lower Invertebrates. W. D. Russell-Hunter. Macmillan, New York; Collier-Macmillan, London, 1968. x + 181 pp., illus. Paper, $2.95. Current Concepts in Biology.

Boston Studies in the Philosophy of Science. Vol. 3. In Memory of Norwood Russell Hanson. Proceedings of the Boston colloquium, 1964–1966. Robert S. Cohen and Marx W. Wartofsky, Eds. Reidel, Dordrecht-Holland; Humanities Press, New York, 1968. xlx + 489 pp., illus. $18.50. Synthese Library.

British Miniature Electronic Components Data 1967–68. G. W. A. Drummer and J. Mackenzie Robertson, Eds. Pergamon, New York, 1967. xiv + 1461 pp., illus. $44.

Calculus. Robert G. Bartle and C. Ionescu Tulcea. Scott, Foresman, Glenview, Ill., 1968. xviii + 718 pp., illus. $10.95.

Calculus I. Albert A. Blank, with the assistance of Florence L. Elder and Clarence W. Leeds III. Houghton Mifflin, Boston, 1968. xx + 436 pp., illus. $7.50.

Casebooks in Production Management. Basic Problems, Concepts, and Techniques. Arch R. Dooley, William K. Holstein, James L. McKenney, Richard S. Rosenbloom, C. Wickham Skinner, and Philip H. Thurston. Wiley, New York, ed. 2, 1968. xviii + 738 pp., illus. $10.95.

Ceramic Processing. Prepared by the Committee on Ceramic Processing. National Academy of Sciences, Washington, D.C., 1968. xiv + 296 pp., illus. $15. National Academy of Sciences Publication No. 1576.

Chemical Environment in the Aquatic Habitat. Proceedings of an International Biological Programme Symposium, Amsterdam and Nieuwersluis, October 1966. H. L. Golterman and R. S. Clymo, Eds. North-Holland, Amsterdam, 1967. 320 pp., illus. Paper, $8.40.

Chemical Zoology. Vol. 2, Porifera, Coelenterata, and Platyhelminthes. Marcel Florkin and Bradley T. Scheer, Eds. Academic Press, New York, 1968. xx + 639 pp., illus. $29.

Chemistry in Liquid Dinitrogen Tetroxide and Sulphur Dioxide. Clifford C. Addison, Walter Karcher, and Horstmar Hecht. Pergamon, New York; Vieweg, Braunschweig, 1968. xvi + 206 pp., illus. $18. Chemistry in Nonaqueous Ionizing Solvents: A Series of Monographs.

The Chemistry of the Rarer Platinum Metals (Os, Ru, Ir and Rh). W. P. Griffith. Interscience (Wiley), New York, 1967. x + 491 pp., illus. $16. Interscience Monographs on Chemistry.

Chemistry Simplified. Vol. 1. William E. Caldwell. Barnes and Noble, New York, 1968. vi + 110 pp. Paper, $2.25. Barnes and Noble Keynotes, No. 707.

Clinical Diabetes Mellitus. John Malins. Eyre and Spottiswoode, London, 1968 (distributed in the U.S. by Barnes and Noble, New York). xxiv + 502 pp., illus. $19.

Cohomology Operations and Applications in Homotopy Theory. Robert E. Mosher and Martin C. Tangora. Harper and Row, New York, 1968. x + 214 pp., illus. $12.95. Harper's Series in Modern Mathematics.

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The Commonwealth of Learning. Henry Steele Commager. Harper and Row, New York, 1968. x + 277 pp. $6.95.

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Comparative Odontology. Bernhard Peyer. Translated from the German and edited by Rainer Zangerl. University of Chicago Press, Chicago, 1968. xvi + 347 pp., illus. $12.50.

Computational Handbook of Statistics. James L. Bruning and B. L. Kintz. Scott, Foresman, Glenview, Ill., 1968. xiv + 269 pp., illus. $4.95.

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Current Algebras and Their Application. B. Renner. Pergamon, New York, 1968. xiv + 177 pp., illus. $9. International Series of Monographs in Natural Philosophy, vol. 12.

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The Cycle of Erosion in Different Climates. Pierre Birot. Translated from the French edition (Rio de Janerio, 1960) by C. Ian Jackson and Keith M. Clayton. University of California Press, Berkeley, 1968. 144 pp., illus. $5.50.

Deep-Sea Photography. John Brackett Hersey, Ed. Johns Hopkins Press, Baltimore, 1967. 310 pp., illus. $17.50. Johns Hopkins Oceanographic Studies, No. 3.

The Demography of Tropical Africa. William Brass, Ansley J. Coale, Paul Demeny, Don F. Heisel, Frank Lorimer, Anatole Romaniuk, and Etienne van de Walle. Princeton University Press, Princeton, N.J., 1968. xxx + 539 pp., illus. $15.

Dendritic Cells of Human Skin. Dendritic Cells in Epidermis and Their Related Cells in Dermis. Cytology, Physiology and Pathology with Particular Reference to Melanin. G. Niebauer. Karger, Basel, 1968 (distributed in the U.S. by Phiebig, White Plains, N.Y.). xiii + 144 pp., illus. $8.90. Experimental Biology and Medicine, vol. 2.

Deprivation and Compensatory Education: A Consideration. Helen E. Rees. Houghton Mifflin, Boston, 1968. xiv + 300 pp. $5.50.

Deviancy. The Psychology of Being Different. Jonathan L. Freedman and Anthony N. Doob. Academic Press, New York, 1968. viii + 158 pp., illus. $6.75. Social Psychology Series.

Diapirism and Diapirs. A Symposium. Including papers presented at the 50th Annual Meeting of the Association of Petroleum Geologists, New Orleans, April 1965, and some others. Jules Braunstein and Gerald D. O'Brien, Eds. American Association of Petroleum Geologists, Tulsa, Okla., 1968. viii + 444 pp., illus. $16. Memoir 8.

Dielectric Relaxation. Vera V. Daniel. Academic Press, New York, 1967. xiv + 281 pp., illus. $13.

A Different Kind of Country. Raymond F. Dasmann. Macmillan, New York; Collier-Macmillan, London, 1968. x + 276 pp., illus. $5.95.

Differential Topology. Andrew Wallace. Benjamin, New York, 1968. xiv + 130 pp., illus. Cloth, $9.50; paper, $3.95. Mathematics Monograph Series.

The Digital Logic Handbook. Flip Chip Modules, 1968 edition. Digital Equipment Corp., Maynard, Mass., 1968. x + 486 pp., illus. Paper, distributed free of charge.

Discovery of the Elements. Mary Elvira Weeks. Completely revised and new material added by Henry M. Leicester. Illustrations collected by F. B. Dains. Journal of Chemical Education, Easton, Pa., ed. 7, 1968. x + 896 pp. $12.50.

The Eccentric Ark. The Curious World of Frank Buckland. G. H. O. Burgess. Horizon Press, New York, 1968. xii + 242 pp., illus. $6.50.

Ecological Development in Polar Re-

gions. A Study in Evolution. M. J. Dunbar. Prentice-Hall, Englewood Cliffs, N.J., 1968. viii + 119 pp., illus. $4.95. Concepts of Modern Biology Series.

Ein Nein zu Einstein. Bausteine zur Einheitlichen Elektrik 2. Karl Dürr. Schritt, Bern, ed. 3, 1967. 72 pp., illus. Paper, 12.90 F.

Electron Beam Therapy. Proceedings of the 2nd Annual San Francisco Cancer Symposium, 1966. Karger, Basel, 1968 (distributed in the U.S. by Phiebig, White Plains, N.Y.). viii + 267 pp., illus. $15.50. Frontiers of Radiation Therapy and Oncology, vol. 2.

Elements of Mathematics. Bruce E. Meserve and Max A. Sobel. Prentice-Hall, Englewood Cliffs, N.J., 1968. xii + 303 pp., illus. $7.95.

Elements of Mineralogy. Brian Mason and L. G. Berry. Freeman, San Francisco, ed. 2, 1968. x + 550 pp., illus. $9.50. Books in Geology.

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Elsevier's Dictionary of Pharmaceutical Science and Techniques. In Five Languages: English, French, Italian, Spanish, German. Vol. 1, Pharmaceutical Technology. Compiled and arranged on an English alphabetical basis by A. Sliosberg. Elsevier, New York, 1968. xii + 686 pp. $30.

The Encounter between Christianity and Science. Richard H. Bube, Ed. Eerdmans, Grand Rapids, Mich., 1968. 318 pp. $5.95.

Engineering Plasticity. Papers for a conference, Cambridge, England, March 1968. J. Heyman and F. A. Leckie, Eds. Cambridge University Press, Cambridge, Mass., 1968. viii + 706 pp., illus. $22.50.

Die Erhohung der Fruchtbarkeit der Sandboden. Vortrage der Internationalen Koordinierenden Arbeitstagung in Budapest, 1965. M. Kozak, S. Egerszegi, F. Hepp, and I. Lang, Eds. Akademiai Kiado, Budapest, 1967. 446 pp., illus.

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Experimental Magnetochemistry. Nonmetallic Magnetic Materials. Michael M. Schieber. North-Holland, Amsterdam; Interscience (Wiley), New York, 1967. xxiv + 572 pp., illus. $28. Monographs on Selected Topics in Solid State Physics, vol. 8.

Experimental Organic Chemistry. Ralph L. Dannley and James D. Crum. Macmillan, New York; Collier-Macmillan, London, 1968. x + 341 pp., illus. $7.25.

Experimental Physiology. Experiments in Cellular, General, and Plant Physiology. Arnold Dunn and Joseph Arditti. Holt, Rinehart and Winston, New York, 1968. xiv + 312 pp., illus. Paper, $7.95.

Fluorescent Antibody Methods. Morris Goldman. Academic Press, New York, 1968. xviii + 303 pp., illus. $13.50.

Functions of the Adrenal Cortex. Vol. 1. Kenneth W. McKerns, Ed. Appleton-Century-Crofts, New York, 1968. xvi + 643 pp., illus. $21. Biochemical Endocrinology Series.

Fundamental Aspects of Fiber Reinforced Plastic Compoites. R. T. Schwartz and H. S. Schwartz, Eds. Interscience (Wiley), New York, 1968. xiv + 284 pp., illus. $12.75. Polymer Engineering and Technology Series.

Galilée. Aspects de sa vie et de son oeuvre. Maurice Clavelin *et al.*, Eds. Presses Universitaires de France, Paris, 1968. x + 382 pp., illus. Paper, 24 F. Centre International de Synthèse: Histoire des Sciences.

Gemini. A Personal Account of Man's Venture into Space. Virgil "Gus" Grissom. Macmillan, New York; Collier-Macmillan, London, 1968. xii + 212 pp., illus. $5.95.

Geology Simplified. Richard M. Pearl. Barnes and Noble, New York, 1968. vi + 89 pp., illus. Paper, $2.25. Barnes and Noble Keynotes, No. 712.

German Miniature Electronic Components and Assemblies Data 1967–68. G. W. A. Dummer, J. Mackenzie Robertson, and Paul Dietrich, Eds. Pergamon, New York, 1968. vi + 988 pp., illus. $37.

God, the Atom, and the Universe. James Reid. Zondervan, Grand Rapids, Mich., 1968. 240 pp., illus. $4.95.

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High-Energy Nuclear Reactions in Astrophysics. A Collection of Articles. B. S. P. Shen, Ed. Benjamin, New York, 1967. x + 281 pp., illus. $9.75.

The Higher Learning in America. A Reassessment. Paul Woodring. McGraw-Hill, New York, 1968. xviii + 236 pp. $6.95.

Homosexuality. D. J. West. Aldine, Chicago, 1968. 305 pp. $5.95.

Hormone in Genese und Therapie des Mammacarcinoms. Panel discussion, Berlin and Jena, Sept.–Oct. 1965. H. Gummel and H. Kraatz, Eds. Akademie-Verlag, Berlin, 1967. vi + 135 pp., illus.

How to Qualify as a "Biologist" in the Universities of Europe. Jean Leclercq. Council for Cultural Co-operation of the Council of Europe, Strasbourg, 1967. 240 pp.

Human Growth. Body Composition, Cell Growth, Energy, and Intelligence. Donald B. Cheek, with the assistance of collaborating investigators. Lea and Febiger, Philadelphia, 1968. xxx + 781 pp., illus. $25.

Hydrogen Bonding in Solids. Methods of Molecular Structure Determination. Walter C. Hamilton and James A. Ibers. Benjamin, New York, 1968. xvi + 284 pp., illus. $13.95. Frontiers in Chemistry.

Hydrogen—The Carrier of Life. An Approach to Atomic Biology. Mieczyslaw Taube. Translated from the Polish edition (Warsaw, 1965) by B. Jankowski. Nuclear Energy Information Center, Warsaw, 1967. 144 pp., illus. Review Report No. 25.

Hypnosis. Anatol Milechnin. Translated from the Spanish edition (Buenos Aires, 1961) by Galina Solovey. Wright, Bristol, 1967 (distributed in the U.S. by Williams and Wilkins, Baltimore). xii + 255 pp. $10.

Immunochemistry and the Biosynthesis of Antibodies. Felix Haurowitz. Interscience (Wiley), New York, 1968. xviii + 301 pp., illus. $10.95.

Index-Catalogue of Medical and Veter-

inary Zoology. Subjects: Trematoda and Trematode Diseases, part 7, Supergenera and Genera R-S. Mildred A. Doss, with the assistance of Katharine Forsyth Roach, Marion M. Farr, and Virginia L. Breen. U.S. Department of Agriculture, Washington, D.C., 1968 (available from Superintendent of Documents, Washington, D.C.). vi + 214 pp. Paper, 60¢.

Industrial Organic Chemistry. John K. Stille. Prentice-Hall, Englewood Cliffs, N.J., 1968. xvi + 128 pp., illus. Cloth, $5.95; paper, $2.50. Foundations of Modern Organic Chemistry Series.

Industrial Waste Disposal. R. D. Ross, Ed. Reinhold, New York, 1968. xii + 340 pp., illus. $16.

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Intellectuals Today. Problems in a Changing Society. T. R. Fyvel. Schocken, New York, 1968. 240 pp. $6.95.

Internationale Vortragstagung über Grenzflächenaktive Stoffe. In two parts. Originalbeiträge der Tagung in Berlin, March 1966. xxiv + 953 pp., illus. Akademie-Verlag, Berlin, 1967. Abhandlungen der Detuschen Akademie der Wissenschaften zu Berlin, No. 3.

Introduction to Algebra for College Students. William A. Rutledge and Simon Green. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1968. x + 310 pp., illus. $7.50.

Introduction to Ground-Water Hydrology. Ralph C. Heath and Frank W. Trainer. Wiley, New York, 1968. xii + 284 pp., illus. $9.95.

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Introduction to Statistics. Frank W. Carlborg. Scott, Foresman, Glenview, Ill., 1968. x + 293 pp., illus. $8.50.

An Introduction to the Meaning and Structure of Physics. Leon N. Cooper. Harper and Row, New York, 1968. xiv + 745 pp., illus. $13.95.

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Introductory Calculus. A. Wayne Roberts. Academic Press, New York, 1968. xiv + 527 pp., illus. $8.75.

Journal of Anatomy. Index to the First 100 Years, 1866–1966. Compiled by Doreen Blake and Ruth E. M. Bowden. Cambridge University Press, Cambridge, Mass., 1968. xiv + 450 pp. $37.50.

The June Bug. A Study of Hysterical Contagion. Alan C. Kerckhoff and Kurt W. Back. Appleton-Century-Crofts, New York, 1968. x + 239 pp. Paper, $2.95.

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