SCIENCE

22 August 1969
Vol. 165, No. 3895

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

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That's Why You Can Count on SIEMENS!

If there's one area we are especially proud of in the years since we introduced the commercial electron microscope, it's the reputation we've earned for building dependable instrument systems. A typical example is the new Model 101. The Siemens "101" is a total system concept. Each component is engineered to provide consistent performance —plate after plate, year after year—whether you produce 10 plates, or 10,000 plates a year.

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SEE THE "RELIABLES" AT THE EMSA SHOW IN THE "PIONEER SUITE EAST"

22 August 1969
Vol. 165, No. 3895

SCIENCE

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Peromyscus boylei in Miller Canyon of the Huachucha Mountains, Arizona. See review of *Biology of Peromyscus* (Rodentia), page 782. [Lee R. Dice, Professor Emeritus of Zoology, University of Michigan]

How to put today's instrumentation to work for you.

Resolution so high we're finding new norms to test against

The Philips EM 300 Electron Microscope is capable of reaching a resolution of 2.3A under favorable circumstances.

Columbian Carbon Company for example, has been able to approach this limit in its studies of carbon black particles used in the manufacture of rubber. The photo on the right shows the basic lamellar structure with crystal planes 3.4A. apart.

Knowledge of lattice structures of various carbon blacks is extremely important because of the relationship of ultra structure to performance in rubber matrices.

The scientists at Columbian Carbon have been able to photograph the double sinuous form of the DNA molecule by supporting unstained and unshadowed strands between graphitized carbon black particles. The helical form is easier to see by viewing stereo image pairs.

In the thirteen years that Philips microscopes have been used at Columbian Carbon, more than one half million carbon black micrographs have been made.

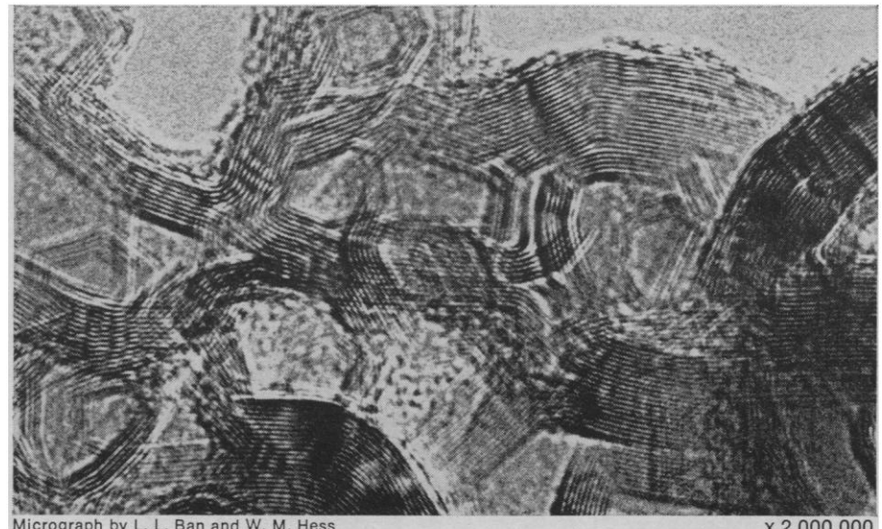
Using several Philips microscopes, Columbian Carbon now has a laboratory that operates at practically production speeds.

General Electric is another company extremely interested in the basic structure of crystalline materials. The micrograph on the right clearly shows the {111} lattice planes of a {112} slice of silicon. The spacing is 3.138A.

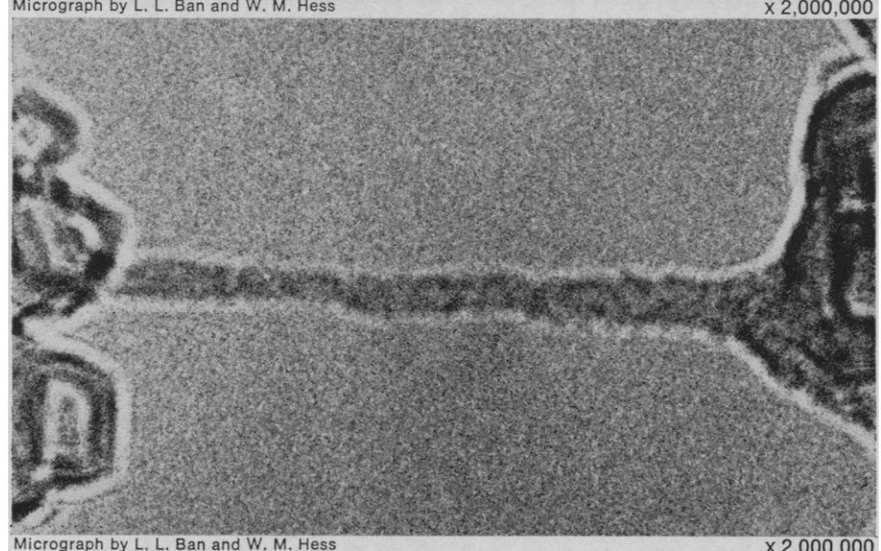
In addition to silicon crystal studies, General Electric researchers have obtained electron micrographs of germanium crystals with resolutions so fine they clearly show lattice defects only one atom wide.

If you have a resolution problem that's challenging, we'd like to hear from you.

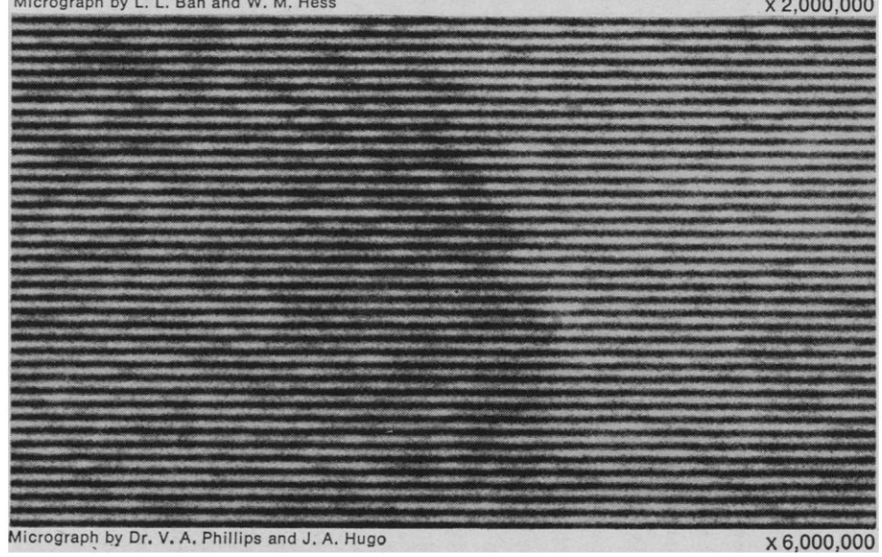
For more information, circle #1.



Micrograph by L. L. Ban and W. M. Hess x 2,000,000



Micrograph by L. L. Ban and W. M. Hess x 2,000,000



Micrograph by Dr. V. A. Phillips and J. A. Hugo x 6,000,000

PHILIPS
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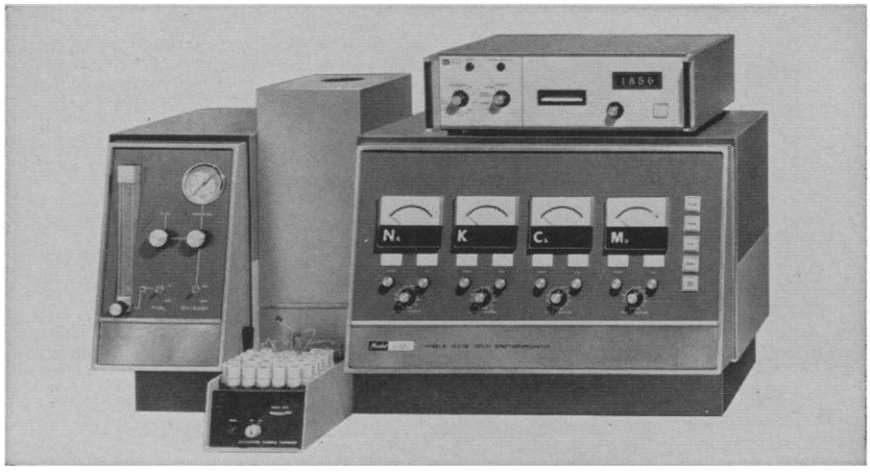
INSTRUMENTS

Simultaneous flame emission/atomic absorption analysis of a single blood sample for Na, K, Ca and Mg.



The Model 4 Blood Serum Spectrophotometer simplifies the approach to blood serum and biological fluid analysis by combining Flame Emission and Atomic Absorption techniques to allow simultaneous 4-element analysis.

Simply dilute a 0.1 ml blood serum with deionized water. Aspirate and, within 16 seconds, the automated Model 4 will produce a direct concentration digital printout for Na, K, Ca and Mg with sample identification.

Your laboratory technician can maintain a 40 to 50 per hour sample rate with results reproducible within 1% coefficient of variation.

Interfaced for computer systems, the Model 4 fits readily into the automated laboratory.

Circle #2.

Atomic absorption spectrophotometry anyone can afford

The SP 90 Atomic Absorption/Flame Emission Spectrophotometer was designed to provide the chemist rapid, accurate and economical analysis of metals in solution.

It incorporates a wide selection of burners, completely variable monochromator slits, scale expansion and fully enclosed burner system.

Accessories are also available for automation with the SP 92 and concentration readout with the SP 45. A triple lamp turret, the SP 91, also demonstrates the flexibility of the system.

Circle #4.

The big X-ray diffractometer controversy: horizontal or vertical

We wonder why people continue to debate the merits of one over the other. We make both because each has its own advantages.

For example, a vertical goniometer is better suited for powder diffractometry. And the Philips vertical goniometer has the best X-ray protection available.

On the other hand, a horizontal goniometer permits you to study bulky and odd shaped samples maintaining the high resolution required for X-ray diffraction. Philips horizontal goniometers let you use Eulerian cradles for single crystal work. They also provide separate θ and 2θ drives.

But goniometers are only a small part of our X-ray equipment line. For full details circle #3.

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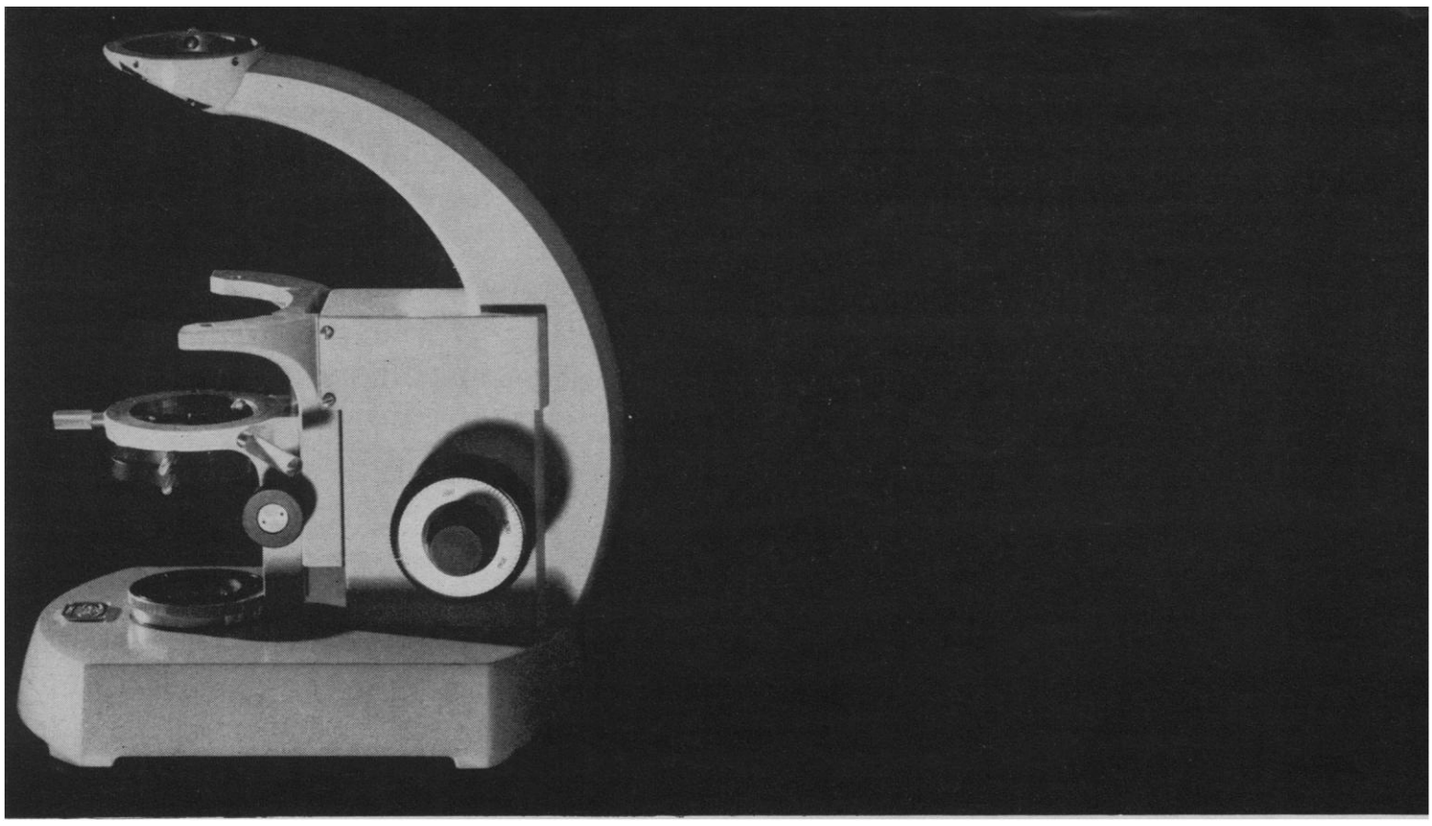

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7 Lamps—for anything you want including polarization, fluorescence and reflected light. The illuminator and the microscope become always an integrated system to eliminate scattered light, stray light, dealigning.

2 Beam Splitters—fixed (50% light to each tube) or variable (5 different settings.)

14 Condensers—bright field, dark field, phase contrast, fluorescence, fluorescence-phase, Nomarski interference contrast, Jamin-Lebedeff interference microscopy, UV . . . whatever techniques you use.

50 Objectives — Planapochromats, Neofluars, Planachromats, Achromats, Epiplans.

16 Eyepieces—from 5x to 25x, from 23° to 50°. (Including micrometer eyepieces.)

11 Other Observation Systems—2 camera attachments, 4 drawing attachments, 3 viewing screens, 1 television system, 1 projection attachment.

Figure it out for yourself.

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Circle No. 7 on Readers' Service Card

It used to take longer to process spectral data than gather it.

Running a spectrum used to be only the beginning. After that, it had to be processed manually. And, depending on the type of study (such as peak resolving or multi-scan averaging), it took as many as three days before an end result could be established.

Not anymore. With SpectroSystem 100, a new dimension in speed, efficiency and capability has been opened up for users of any Cary spectrophotometer or spectropolarimeter. SpectroSystem 100 offers on-line computer processing of data from the instrument for a wide variety of spectrophotometric tasks.

The heart of the system is the Varian Data Machines 620/i general purpose digital computer. There's also an interface, Teletype readout and a comprehensive, flexible software package.

COLLECTS & REDUCES DATA EXTRAORDINARILY WELL

It's important to point out that the primary purpose of SpectroSystem 100 is to collect, and then reduce, spectral data.

This data gathering function doesn't affect the performance of your instrument, nor does it completely automate its operation. (Although, with presently available accessories, wavelength scanning can be started, stopped or reversed; and automatic sample changing can be controlled.)

CHEMISTS' SOFTWARE PACKAGE

SpectroSystem 100's unique software package was designed to anticipate just about any spectroscopist's needs. Without being a programmer, you can manipulate data in a number of ways.

For instance, you can multiply an array of points representing a spectrum by a constant, or by another spectrum. Or add, subtract, divide, take the log, square root, integrate, differentiate.

All these are done with a series of *macro routines* which cover a wide variety of generalized applications. After you type in the macro name, the system guides you in setting up parameters for a particular operation. At the command word LIST, for example, the system will ask you which spectrum and over what range. Then, the computer prints out the spectral data on the Teletype.

In addition, for special applications other macros may be constructed by the use of brief, simple commands.

AUTOMATE YOUR LAB

Several Cary spectrophotometers (like the Model 14, right) can utilize the SpectroSystem's computer sequentially. Moreover, interfaces are available so that Varian instruments such as an NMR, EPR or mass spectrometer can connect directly to the system. There's even a dataphone link for transmitting information to a remote computer.

COMPLETE SYSTEM RESPONSIBILITY

At Cary, we assume complete system responsibility—from the instrument through the interface to the computer. In that way, you're assured of a totally integrated product and results which are second to none in performance, reliability and service.

If you'd like to know more about the new SpectroSystem 100, write Cary Instruments, A Varian subsidiary, 2724 South Peck Rd., Monrovia, Calif. 91016.

Ask for Data File E902-89.

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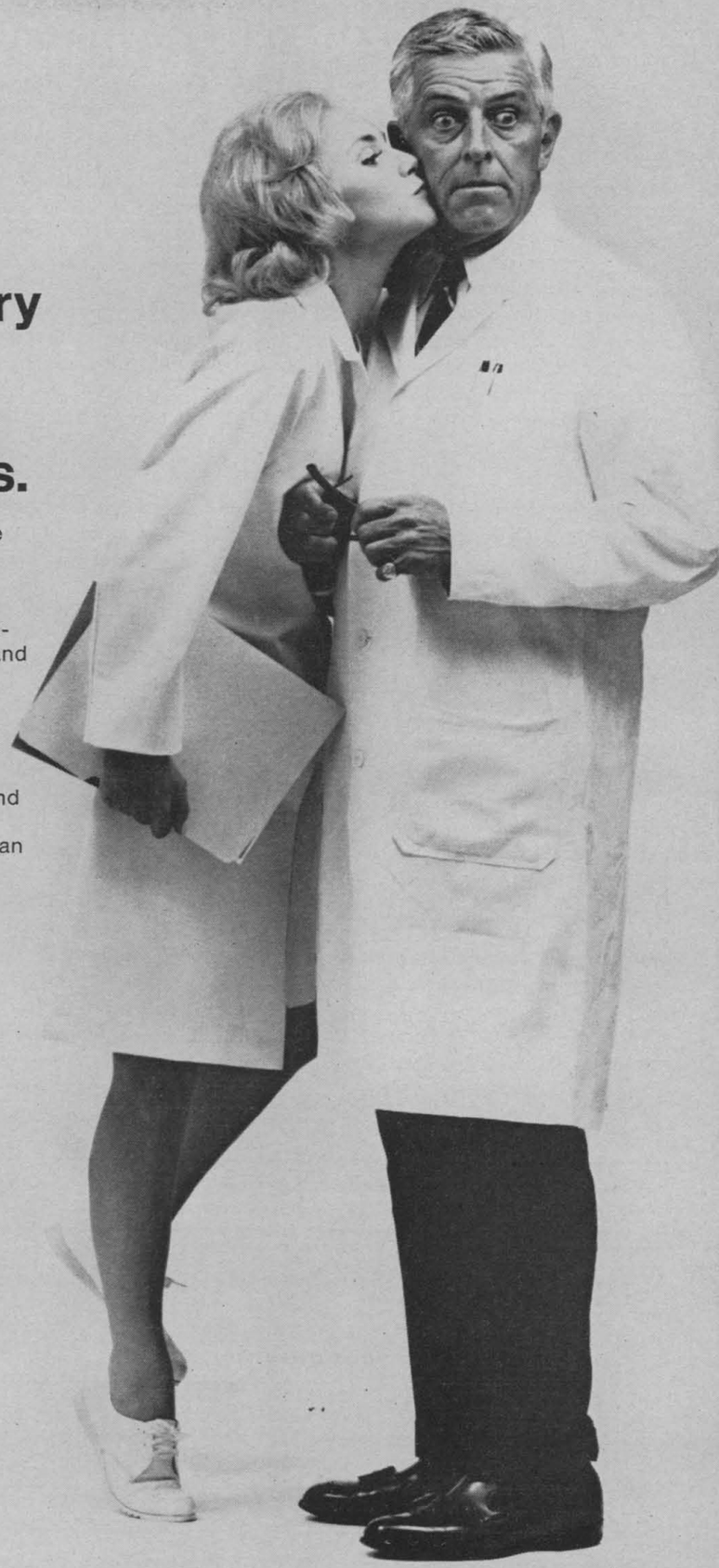

AUDIOTAPES OF AAAS ANNUAL MEETING SYMPOSIA AND PANEL DISCUSSIONS

Dallas, Texas, 26–31 December 1968

Through a cooperative arrangement between AAAS and Science Service, tape recordings of 15 symposia and panel discussions, presented at the Annual Meeting of the AAAS, are now being released at cost for general distribution. The objective of this undertaking is to make the proceedings of these meetings rapidly available to a wide public.

In a number of sessions, some information was presented on slides. Authors should be contacted directly for copies. Because of a serious epidemic of influenza at the time of the Dallas meeting, a few of the contributions were not given by the originally announced authors.

Tapes are sold as self-contained, half-day sessions. They can be purchased as conventional open reels (3¾ inches per second speed) that can be played back on any conventional audiotape player, or as cassettes for playback on a cartridge player. Each half-day session is identified, for ordering purposes, by a number ("1/68," "2/68," and so on). An order form is at the bottom of this page.

Acknowledgment is made to Ampex Corp. for assistance in recording and distribution and to WAMU, American University, for aid in editing.

The Scientific Research Society of America (RESA) Annual Address and Discussion
- 1/68, 3 hours, $7.00

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- 2/68, 3 hours, $7.00

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- 3/68, 3 hours, $7.00 (Part I)
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More complete information about the tapes appears in *Science*, 11 April 1969, pages 113–117.

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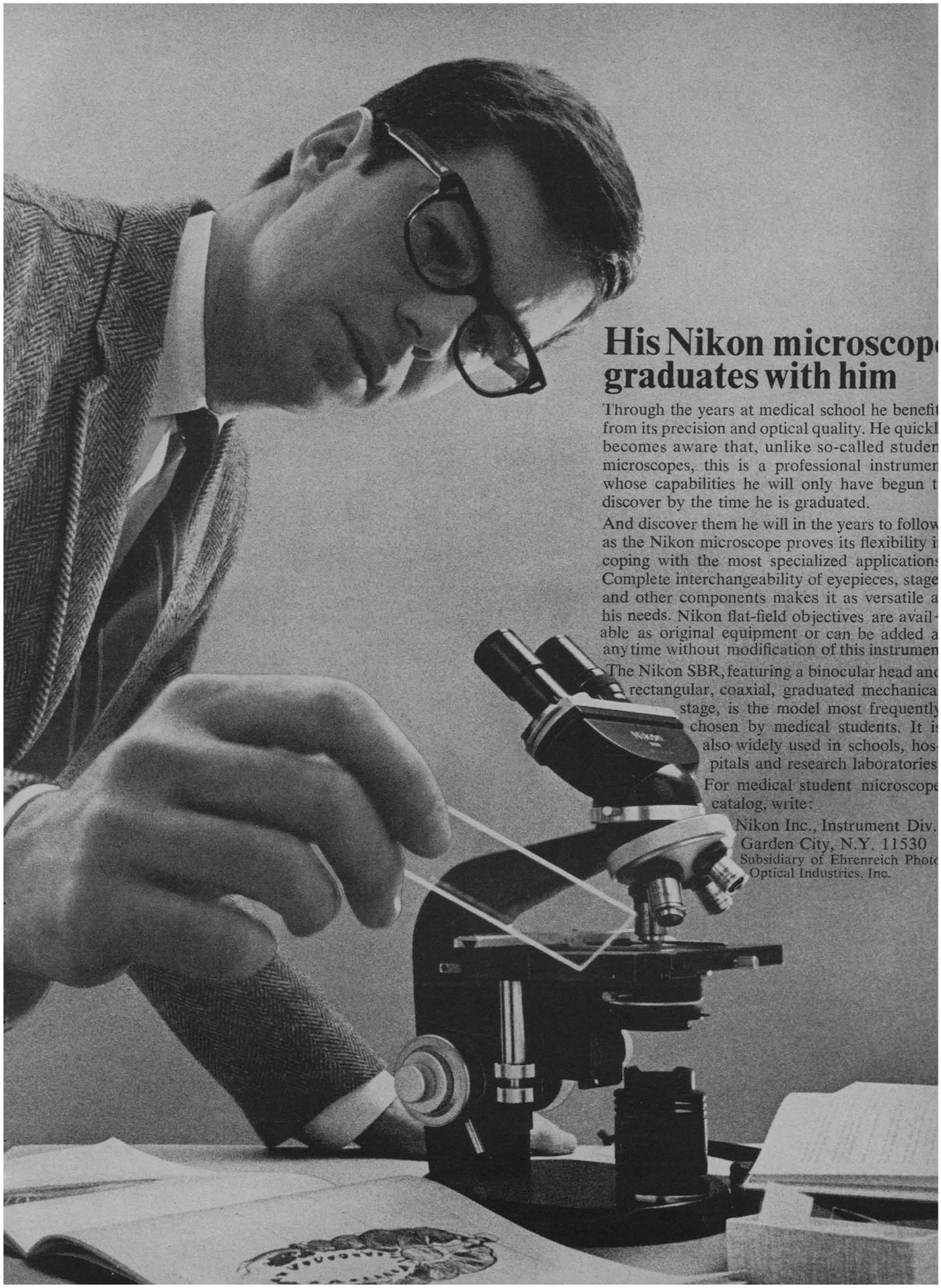
AAAS ANNUAL MEETING AUDIOTAPES



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 a 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:

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Subsidiary of Ehrenreich Photo-Optical Industries, Inc.

Electron Microscopes from Picker and AEI

(The company that built the first commercial electron microscope now offers: three new superior instruments for biology, metallurgy, crystallography and general research, and the most advanced ultra-high voltage electron microscope.)

The EM801: the biologist's electron microscope.
High resolution: 5Å, point-to-point, guaranteed. Flexible specimen handling: exclusive double-tilt stage (±30° motordriven tilt in X and Y directions) operates at full resolution.
Multiple specimen holder: accepts 6 specimens at one loading (or, with a slit serial section stage, 250 specimens). Simple to operate: minimum controls.
Magnification: 1,000 to 160,000.
Automated vacuum system: push-button controlled.
Write for detailed information on the EM801.

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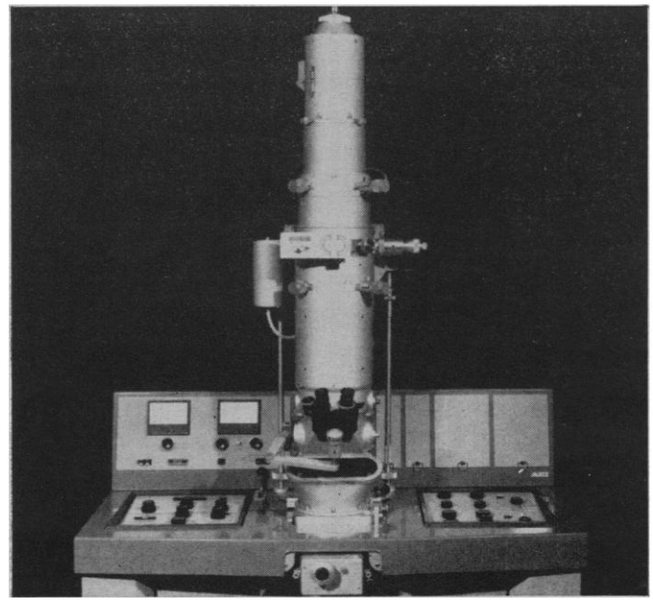

The EM8: the electron microscope for scientists requiring ultra-high resolution.
Resolution: 3Å, point-to-point, guaranteed. Multiple specimen holder: accepts 6 specimens at one loading. Magnification: 2,500 to 400,000 with a single control. Automated vacuum system: push-button controlled. Simplest ultimate performance microscope: minimum controls, virtual elimination of day-to-day alignment. Write for detailed literature on the EM8.

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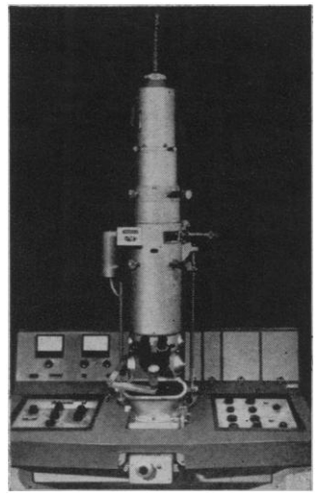

The EM802: the electron microscope for the metallurgist and crystallographer.
High resolution goniometer stage: allows 5Å resolution (guaranteed) even at the highest angle of tilt. Magnification: 1,000 to 160,000. Automated vacuum system: push-button controlled. Selected area diffraction: push-button choice of camera lengths.
Write for detailed information on the EM802.

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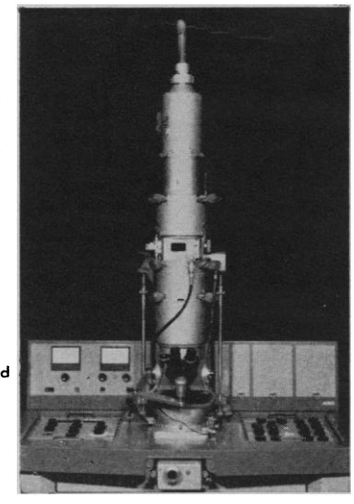

The EM7: the ultimate in high-voltage electron microscopy.
The EM7 1 million volt electron microscope represents a major advance in ultra-high voltage microscopy. Designed by and for biologists and metallurgists, the EM7 will be installed at several sites in 1969. It includes advanced specimen handling facilities and is available with a full line of accessories. Extensive radiation shielding provides complete protection and safety for the operator, even at highest beam currents.
Detailed specifications on the EM7 are available.

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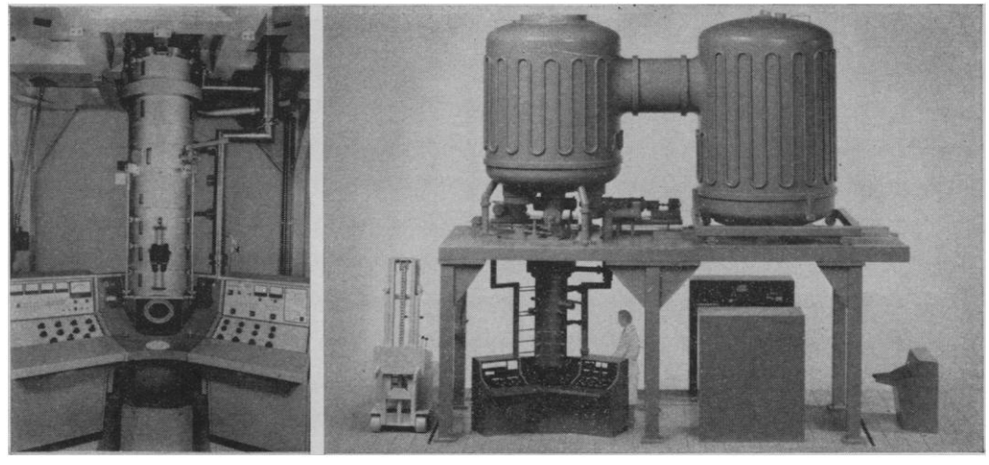

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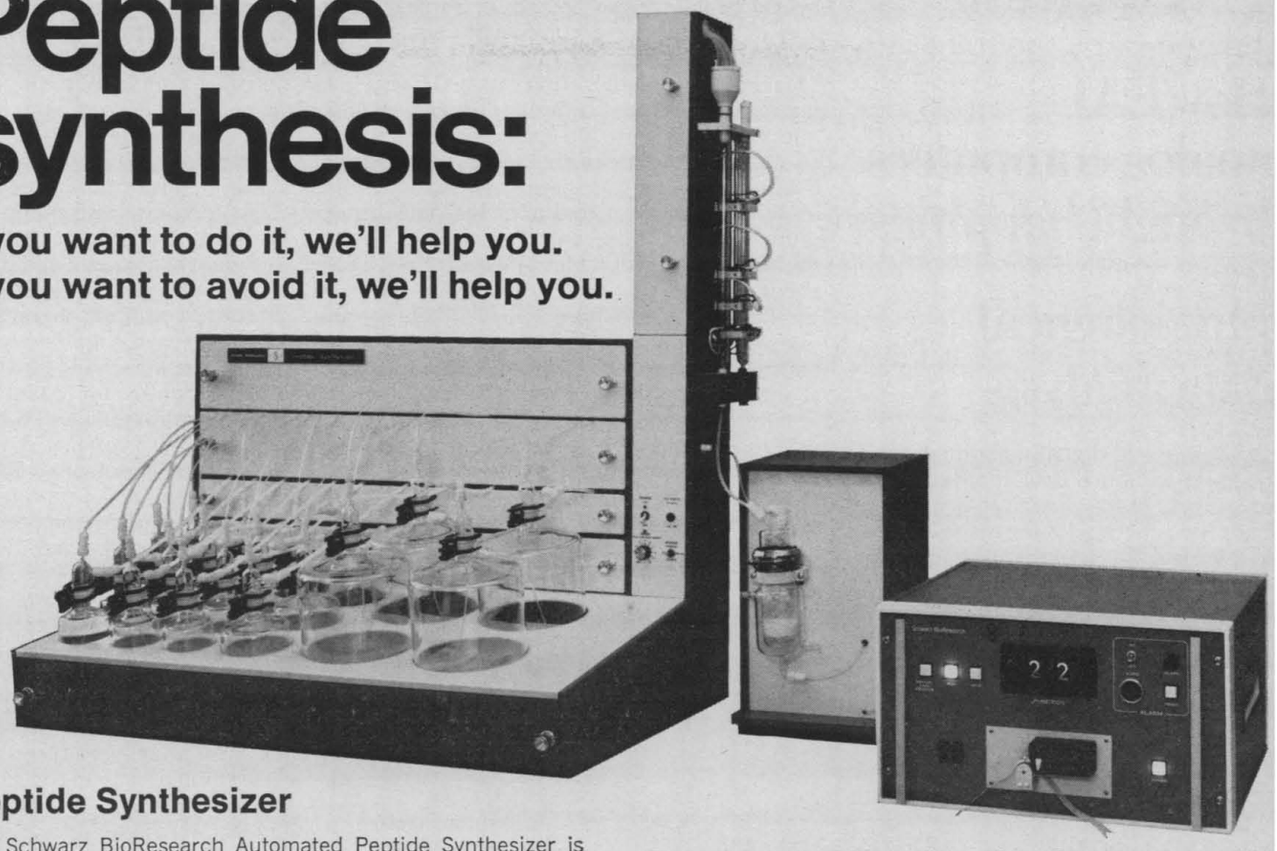

Peptide Synthesizer

The Schwarz BioResearch Automated Peptide Synthesizer is the first commercially-available peptide synthesizer. Under license from the Danish Institute of Protein Chemistry, the synthesizer makes use of Merrifield's solid-phase chemistry. The heart of the unit is an automated control unit which dictates the sequence, volumes, and mixing times for reagents and solvents per the program determined by the operator. And because the instrument can be programmed to run for a full 24-hour day, the time required for peptide synthesis can now be significantly shortened. Please use the coupon to get details.

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We now can supply the following biologically active, chemically pure (> 95%) synthetic peptides: [Asp^1, Ile^5] Angiotensin I and II, Bradykinin, Lysyl bradykinin, Methionyl lysyl bradykinin, Tetradecapeptide renin substrate.

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[Ile^5–^{14}C (UL)] [Asp^1, Ile^5] Angiotensin II
[Pro^2–^{14}C (UL)] Bradykinin
[Pro^3–^{14}C (UL)] Lysyl bradykinin
[Pro^4–^{14}C (UL)] Methionyl lysyl bradykinin
[Val^3–^{14}C (UL)] Tetradecapeptide renin substrate.
Please use the coupon for details:

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As is evident from this page, our commitment to peptide synthesis is rather substantial. And supporting the endeavors described here is an unusually competent and innovative group of synthetic organic chemists. This puts us in the position to suggest that you query us about custom synthesis of peptides you'd like to have. Drop us a line, or give us a call at 914-359-2700, or use the coupon for further information.

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These inexpensive, space-filling models are most useful for the study of structure, function, and synthesis of polypeptides. Schwarz supplies CPK Atomic Models, kits, or pre-constructed amino acids. Write for details by using the coupon.

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How EAI analog computers brought happiness to physiological data analysis

The use of digital computers to reduce experimental data in physiological investigations has proven to be no small boon. Just check with the man who used to perform the tedious, time-consuming calculations by hand.

Yet now there is a dramatic and clean-cut improvement on the improvement: EAI analog/hybrid computers. And that improvement comes in always important realms: results, time and — inevitably — money.

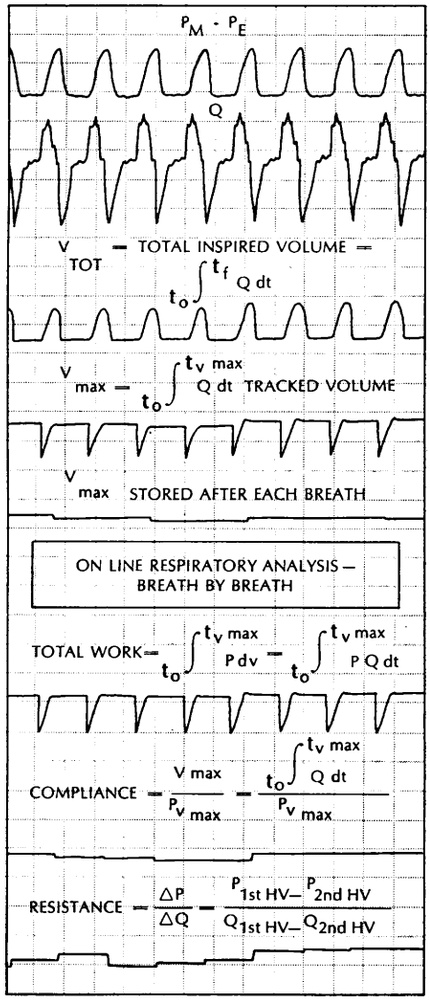

Figure 1.

Let's start with time. An analog/hybrid computer can be had for a fraction of the cost of a comparably adequate digital computer (there's money sneaking in already). That means it's feasible to tie the computer *directly* into the experiment. On-line operation, so-called. And because an analog/hybrid computer calculates essentially instantaneously, the results of the data reduction are plotted and presented to the researcher *simultaneously* with the event.

Refer now to Figure 1, which represents an analysis and display of respiratory characteristics. The two events at the top are chest pressure and volumetric flow rate through the trachea which are measured directly from the subject with appropriate transducers and presented to the analog/hybrid computer as voltage levels.

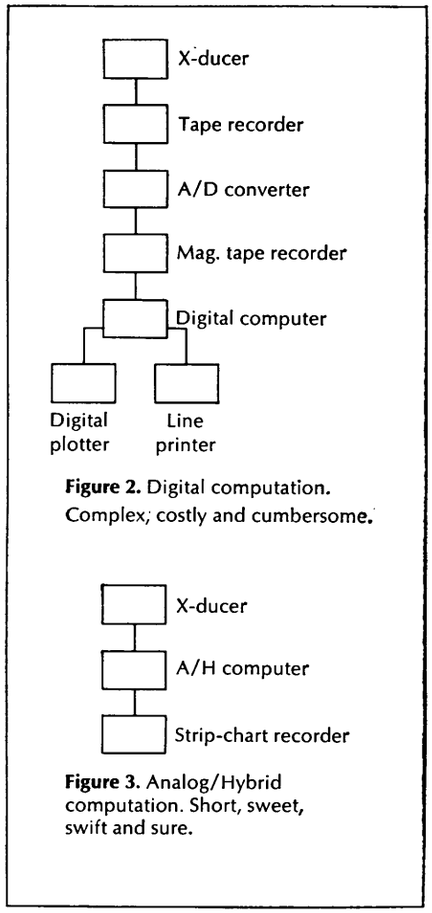

Figure 2. Digital computation. Complex, costly and cumbersome.

Figure 3. Analog/Hybrid computation. Short, sweet, swift and sure.

The analog computer performs the required calculations and presents the results on the stripchart recording simultaneously with the direct measurements.

Notice that, unlike most digital analytical techniques, the business of recording on magnetic tape, processing the tape through a digital computational facility, and waiting for the results is eliminated. This can mean reducing project time from months to days. Or from days to hours.

Now in terms of results. Because the experimenter can work on-line with an analog/hybrid computer, he sees what is happening *while* it's happening. Thus, he can perceive a trend, and modify or end his experiment accordingly. Moreover, because an analog/hybrid computer works directly to the recorder in voltages, the inelegant (and, not infrequently, less accurate) transformation of voltages-to-bits-to-voltages is eliminated, as shown in Figures 2 and 3. And very often in digital techniques, for economic reasons, compromise methods of calculation are used with further degradation of results.

Even if you don't want to work on-line, an analog computer is still the best way to go. You record voltages onto FM tape. Compute with voltages. Display voltages. Of course, unlike on-line, you do lose instantaneous interaction. But time and money are still saved. Results are still superior.

Equally dramatic improvements in physiological research are being attained by EAI analog computers in cardiovascular work and in the investigation of the human pupil servomechanism, membrane permeability, blood flow dynamics and pharmacokinetics to name a few. Our people can also suggest some startling uses for these remarkable machines to monitor patients in ways never before possible.

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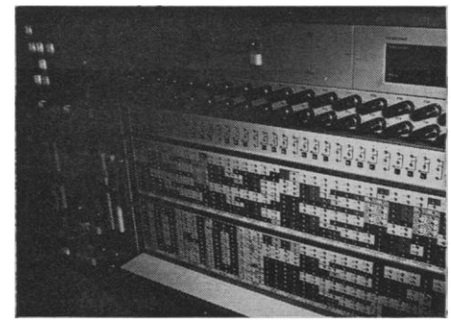

Figure 4. EAI 380 Analog/Hybrid computer. Smallest, least-expensive desktop computer available with hybrid capability.

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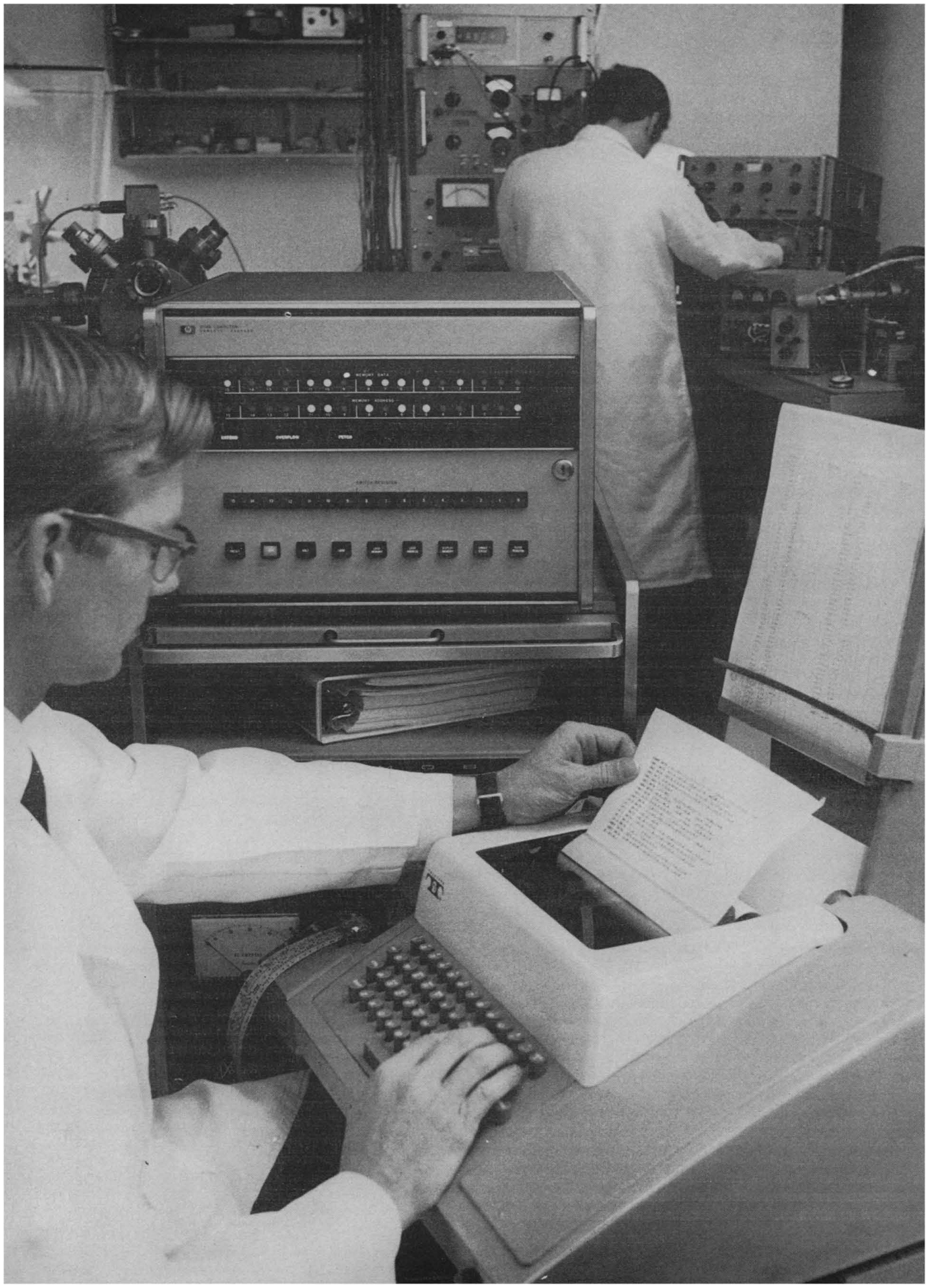

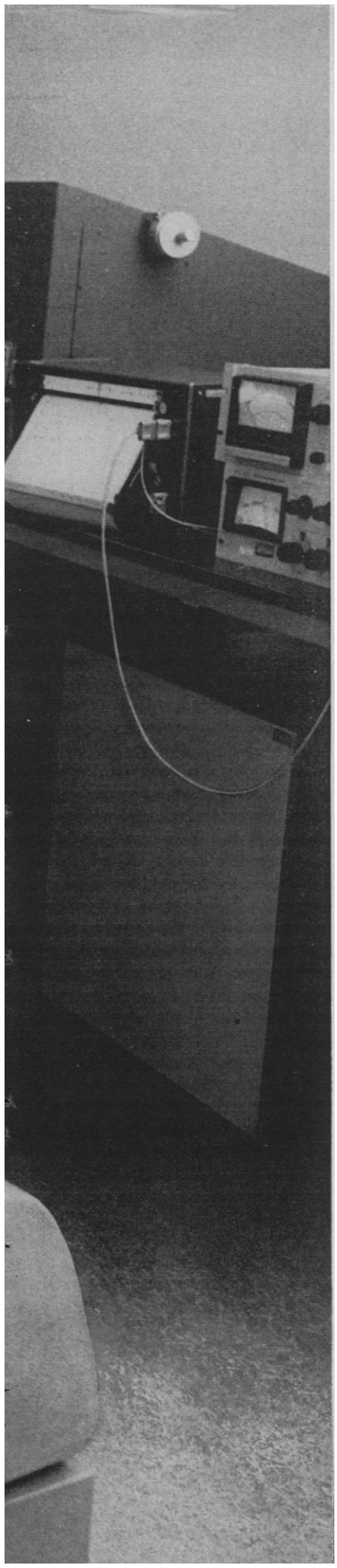

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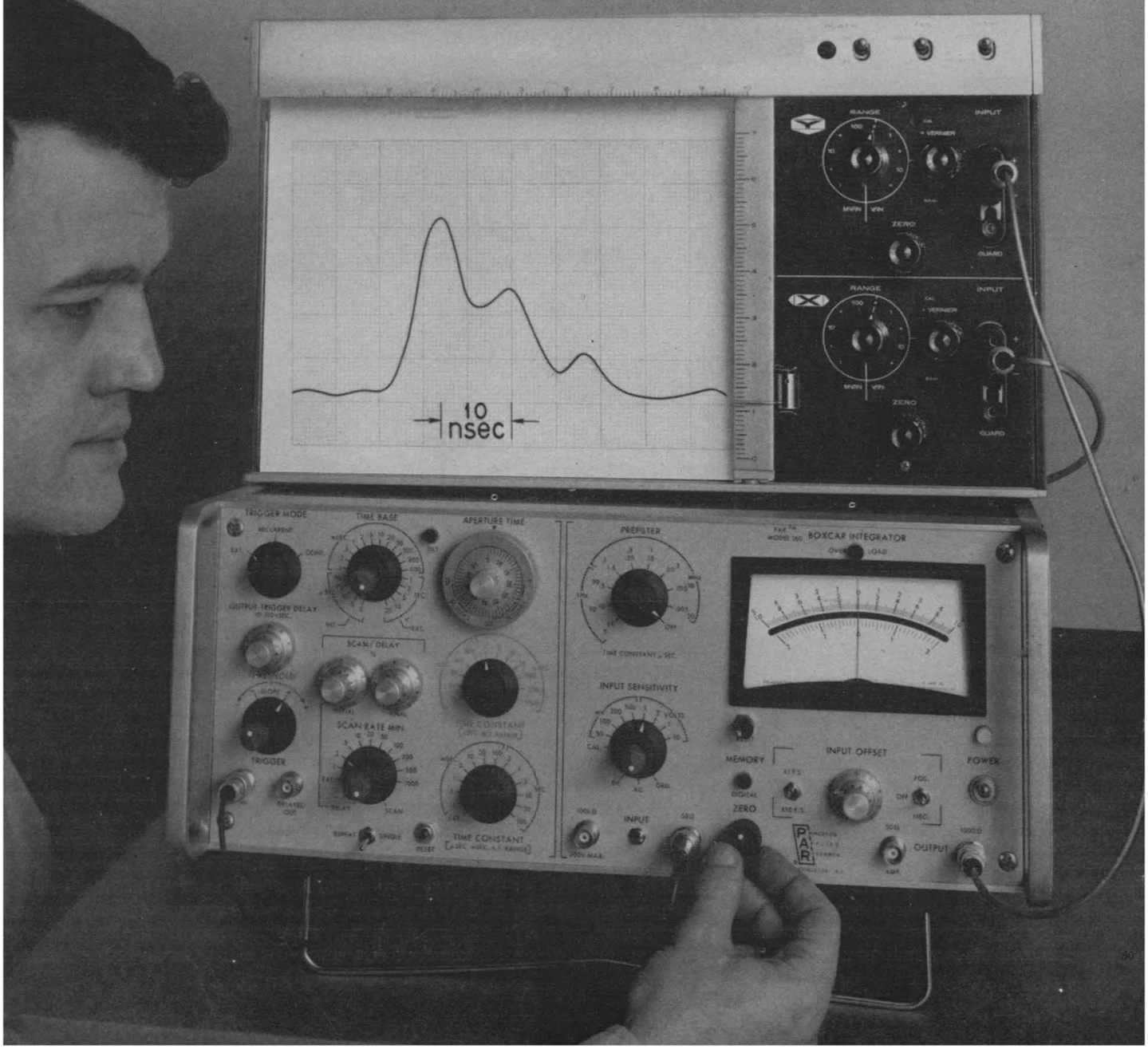

cause they do not represent large nations. At the present time it appears that the scientifically advanced countries are widening the gap in knowledge and abilities between themselves and the smaller nations of the world as a result of the high cost of conducting modern research.

Finally, the very existence of such a facility as an international laboratory will stimulate the formulation of higher levels of problems which cannot be considered with present resources. New dimensions to oceanographic research will be added with the wider availability of the best tools of the trade.

HENRY STOMMEL
Massachusetts Institute of Technology, Cambridge, Massachusetts 02139
EDWARD D. GOLDBERG
Scripps Institution of Oceanography, La Jolla, California 92037

Pyrotechnics

The editors of *Science* deserve praise for the clever and subtle cover of the Fourth of July issue. Bombs bursting in air and fireworks represented by droplets of the spray of the bombardier beetle! Man is a part of nature, sermons in stones, scientists as humorists.

DAVID L. SILLS
Population Council, 245 Park Avenue, New York 10017

Intellectual Loneliness

Since reading various solutions for preventing the intellectual brain drain from underdeveloped countries and suggestions for improving the "intellectual loneliness" of educated and talented people in those areas (Singer, editorial, 7 June 1968, and Wolfle, editorial, 2 Aug. 1968), I have also found in my copies of *Science* (which arrive in irregular fashion) letters describing both the glut of doctoral graduates in developed countries such as Australia (Willix, 22 Nov. 1968) and the need for relevance in the training of Ph.D.'s who plan to work in underdeveloped countries (Ronkin, 3 Jan. 1969).

These editorials and letters all stress that future planning for technical manpower is essential, but it should not be done at the expense of creative and intellectual freedom. If the supply of Ph.D.'s exceeds the demand in many Western countries, there is a great need for them in developing countries, especially in higher education, industrial research, and government services. I suggest that those Western countries with a surplus of trained people establish overseas research and development divisions which would accept requests, for the services of certain specialists, from hardpressed and understaffed developing countries. This would appear to me to be more relevant than bringing foreign associates from underdeveloped countries temporarily to our Western institutions, as it would answer their immediate problems and use available facilities, instead of farming out the work to be done in a sterile, air-conditioned (and irrelevant) setting in a North American or European institute. The presence of scientists and engineers from the developed countries would also help relieve the "intellectual loneliness" of their less fortunate colleagues in these poorer nations.

MICHAEL B. KATZ
Canadian International Development Agency, Department of Geology, University of Ceylon, Peradeniya

I am a Pakistani who received higher training in England and the United States and am now teaching in Canada. . . . Basically I agree with Ronkin's and Stone's (Letters, 6 June) proposals for certain supplementary training of foreign students. But I object to the idea of training a foreign student exclusively on the basis of the needs of his homeland, although these should be important considerations of the agencies which award fellowships. When a modified program for a particular student is requested, such a request should originate in the student's home institution or his homeland and should not be imposed upon him by the institution where he will be trained. Many universities rightfully impose a few necessary conditions on the foreign students from a developing country, such as proficiency in English, a number of extra courses as prerequisites, and so forth, but to go beyond that and offer them a compulsory modified program would appear to be a kind of selective training, depriving them of working in all other areas beyond the current needs of their homelands. Such a practice will obviously discourage development of future programs in their countries beyond those needs. . . .

As Stone pointed out, it is a fallacy that the developing countries should

not do basic research. It has been proved many times that such countries are capable of producing talented men: for example, Khorana (molecular biology) from India and Salam (theoretical physics) from Pakistan. The foreign training of these two scientists was not limited to the needs of India or Pakistan. Had they been assigned to narrowly selective programs in their early years based on the needs of their countries, they would have provided two more examples of misplacement.

The problems of educating foreign students from the developing countries are many but a selective program custom-made for them is not the answer.

S. M. HUSAIN
Département de Biologie,
Université de Sherbrooke,
Sherbrooke, Québec, Canada

Starvation: Weapon of Warfare

Abelson's editorial (4 Apr., p. 17) implicating malnutrition with poor learning ability should awaken scientists and politicians to world starvation problems. Winick and Rosso have also recently associated malnutrition with inadequate brain development (*1*). Current reports from Biafra, where great numbers of people, especially pregnant mothers and children, have been deprived of adequate protein and mineral nutrition for 2 years seem to confirm the observations of Winick and Rosso (*2*). The reports are that four babies out of ten born in maternities in Biafra are deformed. This would indicate that severe prenatal malnutrition can induce small fetal brain size as well as severe skeletal and muscular malformations.

The scientific community should publicize these findings in order to educate governments of the inherent dangers of severe malnutrition, whether it is in the ghettoes, in Appalachia, in Mississippi, or in Biafra. . . . It would appear that future generations are equally threatened if starvation becomes a legalized weapon of warfare.

PAUL O. OKONKWO
Coagulation Laboratory,
Boston City Hospital,
818 Harrison Avenue,
Boston, Massachusetts 02118

References

1. M. Winick and P. Rosso, *J. Pediat.* **74**, 774 (1969).
2. B. Gans, *Lancet* **1969-I**, 660 (1969).

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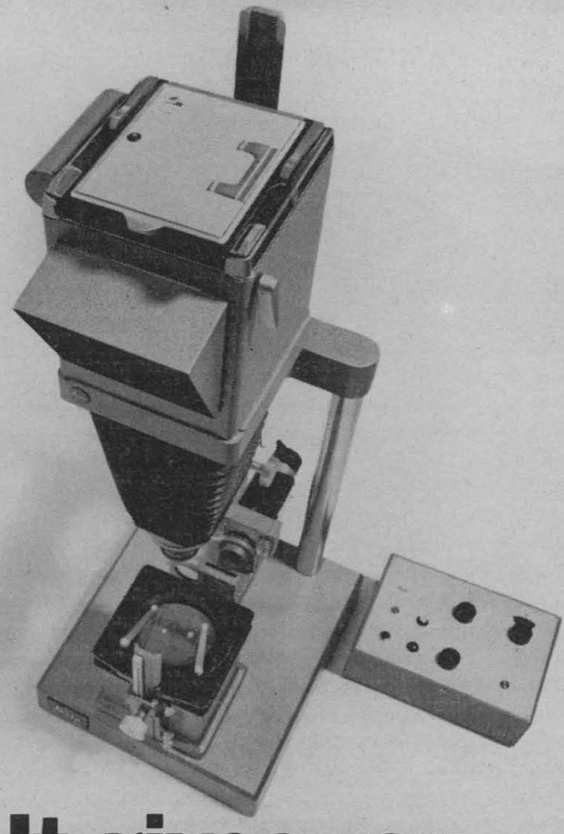

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22 August 1969, Volume 165, Number 3895 **SCIENCE**

For Full Technological Assessment

In 1966 Allen Astin, Isadore Perlman, and I were asked to visit Czechoslovakia to complete arrangements between our own National Academy of Sciences and the Czechoslovakian Academy of Sciences for an exchange of scientists between the two countries. We were most hospitably received and were taken to visit the many institutes under the aegis of the Czechoslovakian and Slovakian academies. In Bratislava I came upon one with the intriguing name, "The Institute for the Study of the Biological Landscape." I inquired about the meaning of this title and the objectives of the Institute and was told a tale of considerable interest.

At the close of World War II, the economic planners decided that a large aluminum processing plant was to be located somewhere in Slovakia. Military authorities strongly preferred a site in one of the narrow valleys of the Lower or Middle Tatra. Some scientists demurred on the ground that the smelter fumes would cause damage, but they had no hard facts to present, and the plant was constructed in the valley. At that time, the available fuel was the local coal, high in sulfur content. Within a few months, it became evident that the valley had a typical atmospheric inversion layer that trapped fumes in the valley. As the sulfur dioxide content of the air increased, all plants were killed, and all animals that were not killed were driven away. The mill workers had to live at a considerable distance, and at times—so I was told—they even had to wear gas masks in order to continue work. The result was an almost total industrial disaster that might have been foreseen. Hence arose the belated recognition of the need to study the "biological landscape."

This is only one example, on a limited scale, of the destruction that man today is visiting upon his environment. Many other examples were related at a conference held in December 1968 on the ecological aspects of international development, a brief report of which has been published.* Particularly glaring consequences of lack of foresight followed the completion of Aswan High Dam on the Nile. Clearly not included in the reckoning was the catastrophic effect upon the sardine fisheries of the eastern Mediterranean. Another effect of the Aswan Dam has been the rapid spread through the Egyptian population of infestation with parasitic blood flukes, or schistosomes, whose intermediate hosts are snails. The snails, of course, spread through the irrigation canals. Finally, there is the matter of the very brief life of the reservoirs impounding the irrigation waters. When a river carries a heavy burden of silt—like the Nile or the Colorado or nearly all rivers in arid lands—the reservoir is filled with mud very quickly. What is to happen to the irrigation when the reservoir is filled?

Whether it be Nile or Colorado or Mekong, every river system presents unique features. Each is a local system that is itself part of a wider system of interacting regions and successive times.

These issues, multiplied by hundreds for the sum of our technological alterations of the natural terrestrial environment, explain why environmental scientists today speak with louder insistence of the need for a new approach to technological assessment. No piecemeal, limited approach can suffice. The biological, psychological, and sociocultural aspects, as well as the engineering and physicochemical aspects, must be introduced into the full analysis, and long-range economic aspects cannot be ignored in the prospect of immediate gain.—BENTLEY GLASS, *State University of New York at Stony Brook*

* H. Henkin, *Environment* **11** (No. 1), 28 to 35, 48 (1969).

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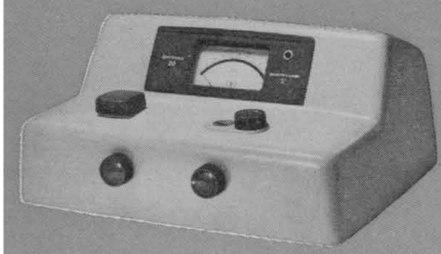

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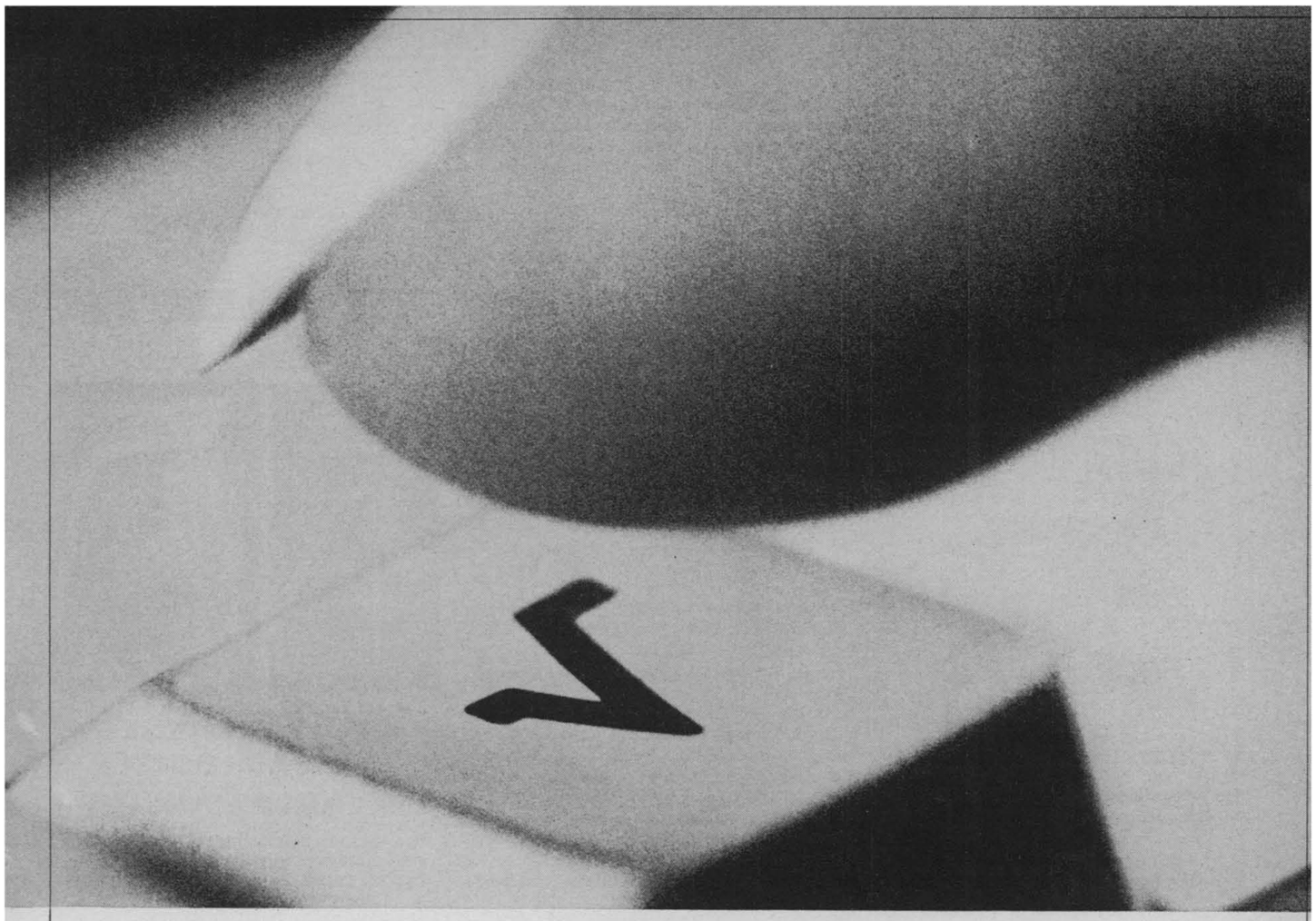

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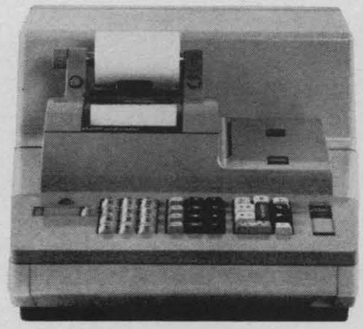

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October

1–3. American **Nuclear** Soc., San Juan, P.R. (H. Gomberg, Puerto Rico Nuclear Center, Univ. of Puerto Rico, Mayageus 00709)

1–5. American Soc. for **Information Science**, San Francisco, Calif. (J. E. Bryan, ASIS, 2011 Eye St., NW, Washington, D.C. 20006)

2–5. American Soc. of **Human Genetics**, San Francisco, Calif. (C. J. Witkop, Jr., 429 Owre Hall, Univ. of Minnesota, Minneapolis 55455)

2–9. **Use of Computers in Clinical Medicine**, 2nd symp., Buffalo, N.Y. (H. J. Alvis, Associate Dean, Continuing Medical Education, 2211 Main St., Buffalo, 14214)

5–9. **Electrochemical** Soc., Detroit, Mich. (E. G. Enck, The Society, 30 E. 42 St., New York 10017)

5–9. **Prestressed Concrete** Inst., Boston, Mass. (W. B. Bennett, Jr., PCI, 205 W. Wacker Dr., Chicago, Ill. 60606)

5–10. **Water Pollution Control** Federation, 42nd annual, Dallas, Tex. (R. E. Fuhrman, WPCF, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

6–8. International Congr. on **Antiparasites**, 3rd, Milan, Italy. (CONGITA, Via Barberini 86, 00185 Rome, Italy)

6–10. International Seminar on **Neoplastic Diseases**, Heidelberg, Germany. (R. H. Jackson, 10607 Miles Ave., Cleveland, Ohio 44105)

6–10. **Research Equipment** Exhibit and Instrument Symp., 19th annual, Bethesda, Md. (J. B. Davis, Chief, Supply Management Bureau, National Institutes of Health, Bldg. 12A, Room 4003, Bethesda 20014)

7–8. Conference on **Automation in Injection Molding**, Cincinnati, Ohio. (R. P. Fox, Soc. of Plastics Engineers, 656 W. Putnam Ave., Greenwich, Conn. 06830)

7–8. Symposium on Recent Progress in **Diabetes and Insulin Research**, Omaha, Neb. (M. A. Mehlman, Dept. of Biochemistry, Univ. of Nebraska, College of Medicine, Omaha 68105)

7–9. Conference on **Environmental Effects on Aircraft and Propulsion Systems**, Bordentown, N.J. (R. A. Bard, Naval Air Propulsion Test Center, P.O. Box 176, 1440 Parkway Ave., Trenton, N.J. 08628)

8–9. Society for **Management Information Systems**, Minneapolis, Minn. (G. W. Dickson, Management Information Systems Research Center, School of Business Administration, Univ. of Minnesota, Minneapolis 55455)

8–10. American Council on **Education**, 52nd annual, Washington, D.C. (F. Skinner, ACE, 1785 Massachusetts Ave., NW, Washington, D.C. 20036)

8–11. National Assoc. of **Biology Teachers**, Philadelphia, Pa. (J. R. Lightner, NABT, 1420 N St., NW, Washington, D.C. 20005)

12–16. American Soc. of **Plastic and Reconstructive Surgeons**, St. Louis, Mo. (P. Randall, The Society, 18 Laughlin Lane, Philadelphia, Pa. 19118)

13–14. **Psychological Aspects of Perception,** New York, N.Y. (E. Harms, 158 E. 95 St., New York 10028)

13–16. Association of Official **Analytical Chemists,** Washington, D.C. (L.G. Ensminger, Box 540, Benjamin Franklin Station, Washington, D.C. 20044)

13–17. American Assoc. for **Laboratory Animal Science,** 20th annual, Dallas, Tex. (J. J. Garvey, The Association, Box 10, Joliet, Ill. 60434)

13–17. Symposium on **Radiation Safety Problems in the Design and Operation of "Hot" Facilities,** Saclay, France. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

14–16. **Remote Sensing of Environment** Symp., Ann Arbor, Mich. (Univ. of Michigan, Extension Service, Conf. Dept., 412 Maynard St., Ann Arbor 48103)

14–17. Society for **Experimental Stress Analysis,** Houston, Tex. (B. E. Rossi, SESA, 21 Bridge Sq., Westport, Conn. 06880)

14–22. Pan-Pacific **Surgical** Assoc., 11th congr., Honolulu, Hawaii. (H. DeVault, Room 236, Alexander Young Bldg., Honolulu 96813)

16–17. Association of **Earth Science Editors,** 3rd annual conf., Houston, Tex. (W. D. Rose, Kentucky Geological Survey, Univ. of Kentucky, Lexington 40506)

16–17. National Conf. on **Fluid Power,** Chicago, Ill. (W. R. Smith, NCFP, 3300 S. Federal St., Chicago 60616)

16–17. **Rapid Excavation,** 2nd symp., Sacramento, Calif. (H. L. Hartman, Dean of Engineering, Sacramento State College, Sacramento 95819)

17–19. Society for **Social Responsibility in Science,** New Haven, Conn. (H. Bloom, SSRS, 221 Rock Hill Rd., Bala-Cynwyd, Pa. 19004)

18–23. American Acad. of **Pediatrics,** Chicago, Ill. (G. E. Hughes, Secretary for Education Affairs, 1801 Hinman Ave., Evanston, Ill. 60204)

19–22. American **Mining** Congr., San Francisco, Calif. (R. W. Van Evera, Ring Bldg., Washington, D.C. 20036)

19–25. American College of **Gastroenterology,** 34th annual, Houston, Tex. (D. Weiss, Executive Director, ACG, 33 W. 60 St., New York 10023)

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23–25. American **Astronautical** Soc., Las Cruces, N.M. (J. Penwarden, New Mexico State Univ., Las Cruces)

24–26. **Orton** Soc., 20th annual, New York, N.Y. (V. A. Graff, The Society, 15 Claremont Ave., New York 10027)

25–29. American Soc. of **Anesthesiologists**, San Francisco, Calif. (W. S. Marinko, 515 Busse Highway, Park Ridge, Ill. 60608)

25–31. American Assoc. of **Medical Record Librarians**, New York, N.Y. (M. Waterstraat, The Association, 211 E. Chicago Ave., Chicago, Ill. 60611)

26–30. Society for **Industrial and Applied Mathematics**, Anaheim, Calif. (R. K. Windsor, 33 S. 17 St., Philadelphia, Pa. 19103)

27–29. Interscience Conf. on **Antimicrobial Agents and Chemotherapy**, 9th, Washington, D.C. (R. W. Sarber, American Soc. for Microbiology, 1913 I St., NW, Washington, D.C. 20006)

25–26. International Soc. for **Homotoxicology** and **Antihomotoxicological Therapy** Symp., Baden-Baden, Germany. (F. Doerper, Secy., Bertholdstr. 7, 757 Baden-Baden)

27–30. National **Powerplant** Mtg., Cleveland, Ohio. (W. I. Marble, 2 Pennsylvania Plaza, New York 10001)

27–30. National **Safety** Congr. and Exposition, Chicago, Ill. (H. W. Champlin, The Congress, 425 N. Michigan Ave., Chicago 60611)

29–31. Symposium on **Pharmacology of Selected Drugs Used in Dermatology: Principles of Action and Uses**, New York, N.Y. (P. Merwin, New York Univ. Medical Center, 550 First Ave., New York 10016)

30–3. Association of American **Medical Colleges**, Cincinnati, Ohio. (D. E. Mattson, Div. of Educational Measurement and Research, AAMC, 2530 Ridge Ave., Evanston, Ill. 60201)

31–2. American Soc. of **Criminology**, Columbus, Ohio. (R. M. Susman, ASC, 800 Fourth St., SW, S-610, Washington, D.C. 20024)

November

2–5. **Atherosclerosis**, 2nd intern. symp., Chicago, Ill. (L. N. Katz, Chicago Heart Assoc., 22 W. Madison St., Chicago 60602)

2–7. Society of **Cosmetic Chemists**, Harriman, N.Y. (A. R. Korte, 521 W. 57 St., New York 10019)

3–4. Institute of **Navigation**, San Diego, Calif. (R. E. Freeman, Inst. of Navigation, Suite 912, 711 14th St., NW, Washington, D.C. 20005)

3–4. **Veterinarians**, 45th annual conf., Columbia, Mo. (F. McCulloch, School of Veterinary Medicine, Univ. of Missouri, Columbia 65201)

3–5. **Engineering Science in Biomedicine**, 7th annual, St. Louis, Mo. (E. Y. Rodin, Dept. of Applied Mathematics and Computer Science, Box 1176, Washington Univ., St. Louis, Mo. 63130)

3–6. National Bureau of Standards, 3rd **Materials Research** Symp., Gaithersburg, Md. (R. R. Stromberg, A-307, Polymers Bldg., NBS, Washington, D.C. 20234)

3–7. American Soc. of **Parasitologists**, Washington, D.C. (D. V. Moore, Dept. of Microbiology, Univ. of Texas, Southwestern Medical School, Dallas 75235)

4–5. **Chemical Marketing Research** Assoc., Toronto, Canada. (P. E. Levesque, FMC Corp., 633 Third Ave., New York 10017)

4–6. Society of **Plastics Engineers**, Dallas, Tex. (C. C. Campbell, SPE, 656 W. Putnam Ave., Greenwich, Conn. 06830)

4–7. **Acoustical** Soc. of America, San Diego, Calif. (B. H. Goodfriend, 335 E. 45 St., New York 10017)

5–7. Pittsburgh **Diffraction** Conf., 27th, Pittsburgh, Pa. (J. H. Scott, U.S. Steel Research Center, Monroeville, Pa. 15146)

5–8. American **Chemical** Soc., southeastern regional mtg., Richmond, Va. (H. R. R. Wakeham, Philip Morris Inc., Box 3D, Richmond 23206)

5–8. Federation of Socs. for **Paint Technology**, Chicago, Ill. (R. W. Matlack, 121 S. Broad St., Philadelphia, Pa. 19107)

6–7. National Symp. on **Industrial Robots**, Chicago, Ill. (D. W. Hanify, IIT Research Inst., 10 W. 35 St., Chicago 60616)

6–8. American Soc. of **Cytology**, 17th annual scientific mtg., Chicago, Ill. (W. R. Lang, 7112 Lincoln Dr., Philadelphia, Pa. 19119)

6–8. American **Physical** Soc., Gainesville, Fla. (W. Seagondollar, Dept. of Physics, North Carolina State Univ., Raleigh 27607)

10–12. **Geological** Soc. of America, Atlantic City, N.J. (R. C. Becker, P.O. Box 1719, Boulder, Colo. 80302)

10–12. **Operations Research** Soc. of America, 36th natl., Miami, Fla. (M. E. Thomas, Dept. of Industrial and Systems Engineering, Univ. of Florida, Gainesville 32601)

10–12. **Paleontological** Soc., Atlantic City, N.J. (R. L. Langenheim, Jr., Dept. of Geology, Univ. of Illinois, Urbana 61801)

10–14. American College of **Preventive Medicine**, Philadelphia, Pa. (E. A. Piszczek, 6410 N. Leona Ave., Chicago, Ill. 60646)

10–14. American **Public Health** Assoc., 97th annual, Philadelphia, Pa. (B. F. Mattison, APHA, 1740 Broadway, New York 10019)

10–14. Technical Conf. on **Tin**, 2nd, Bangkok, Thailand. (W. Fox, Intern. Tin Council, Haymarket House, 28 Haymarket, London, S.W.1., England)

11–13. **Neurosurgical** Soc., 28th annual, Kyoto, Japan. (H. Handa, Dept of Neurosurgery, Kyoto Univ., Kyoto)

11–14. **Neutrons in Radiobiology** Symp., Oak Ridge, Tenn. (J. A. Auxier, Oak Ridge National Lab., P.O. Box X, Oak Ridge 37830)

12–15. American **Speech and Hearing** Assoc., Chicago, Ill. (K. O. Johnson, APHA, 9030 Old Georgetown Rd., Washington, D.C. 20014)

13–14. **Biochemical** Soc., Warwick, England. (A. I. P. Henton, 7 Warwick Court, Holborn, London, W.C.1., England)

16–18. Academy of **Psychosomatic Medicine**, Scottsdale, Ariz. (E. Dunlop, The Academy, 150 Emory St., Attleboro, Mass. 02703)

16–19. Association of **Military Surgeons** of the U.S., Washington, D.C. (Brig. Gen. F. E. Wilson, USAR, Executive Director, 1500 Massachusetts Ave., NW, Washington, D.C. 20005)

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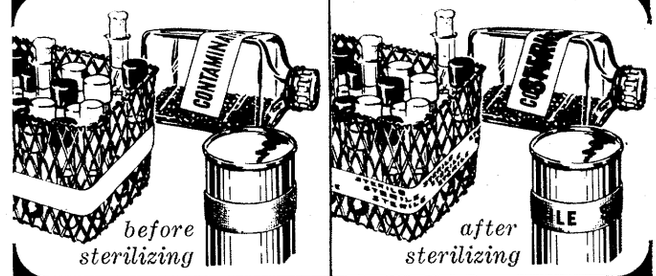

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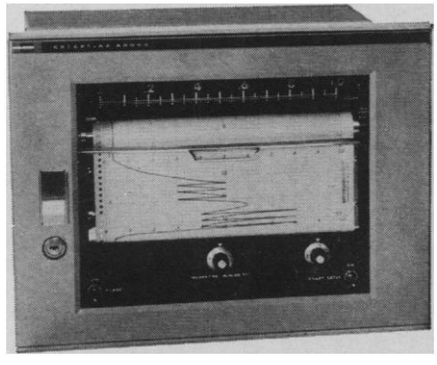

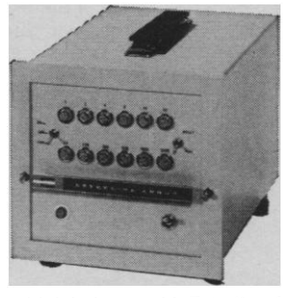

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16–20. American Assoc. of **Blood Banks**, Houston, Tex. (L. J. James, AABB, 30 N. Michigan Ave., Chicago, Ill. 60602)

16–20. **Gulf and Caribbean Fisheries** Inst., 22nd annual, Miami Beach, Fla. (Executive Secretary, Gulf and Caribbean Fisheries Inst., 10 Rickenbacker Causeway, Miami 33149)

16–20. American Soc. of **Mechanical Engineers**, Los Angeles, Calif. (O. B. Schier, II, United Engineering Center, 345 E. 47 St., New York 10017)

17–19. National **Fire Protection** Assoc., Denver, Colo. (D. Richardson, The Association, 60 Batterymarch St., Boston, Mass. 02110)

17–21. **Electronic Industries** Assoc., Laser Subdivision, Paris, France. (J. Davis, EIA Subdivision, 2001 Eye St., NW, Washington, D.C. 20006)

17–21. World **Mental Health** Assembly, Washington, D.C. (P. V. Lemkau, Assembly Chairman, 615 N. Wolfe St., Baltimore, Md. 21205)

18–19. International Federation of **Surgical Colleges**, Buenos Aires, Argentina. (R. S. Johnson-Gilbert, Secretary, c/o Royal College of Surgeons of England, Lincolns Inn Fields, London, W.C.2, England)

18–21. **Magnetism and Magnetic Materials**, 15th conf., Philadelphia, Pa. (J. Blades, Franklin Inst., Research Labs., Philadelphia 19103)

19–21. Eastern **Analytical** Symp., New York, N.Y. (R. J. Knauer, Advanced Materials Div., Armco Steel Corp., P.O. Box 1697, Baltimore, Md. 21203)

20–21. Association for the Study of **Animal Behaviour**, London, England. (J. Cullen, Psychology Dept., The University, Stirling, England)

20–23. American **Anthropological** Assoc., New Orleans, La. (C. C. Reining, Suite 112, 3700 Massachusetts Ave., NW, Washington, D.C. 20016)

20–24. **Audio Engineering** Soc., 37th conv., New York, N.Y. (J. D. Colvin, Room 428, 60 E. 42 St., New York 10017)

21–22. **Clinical** Conf., 13th annual, Houston, Tex. (J. Brandenberger, M. D. Anderson Hospital & Tumor Inst., Univ. of Texas, Houston 77025)

30–3. American Acad. for **Cerebral Palsy**, Las Vegas, Nev. (G. Solomons, University Hospitals, Iowa City, Iowa 52240)

30–4. American **Nuclear** Soc., San Francisco, Calif. (O. J. Du Temple, ANS, 244 E. Ogden Ave., Hinsdale, Ill. 60521)

December

1–4. **Entomological** Soc. of America, Chicago, Ill. (R. H. Nelson, 4603 Calvert Rd., College Park, Md. 20740)

2–5. **Reticuloendothelial** Soc., 6th natl., San Francisco, Calif. (E. Dobson, Donner Lab., Univ. of California, Berkeley 94720)

3–5. International **Wire and Cable** Symp., Atlantic City, N.J. (J. Spergel, U.S. Army Electronics Command, Amsel-K1-EE, Fort Monmouth, N.J. 07703)

3–6. American Assoc. of **Physicists in Medicine**, Chicago, Ill. (J. G. Kereiakes,

Radioisotope Lab., Cincinnati General Hospital, Cincinnati, Ohio 45229)

5–6. **Oklahoma Acad. of Science**, Edmond. (J. T. Self, 730 South Oval, Univ. of Oklahoma, Norman 73069)

5–6. **Interferon** Symp., New York, N.Y. (I. Saulpaugh, New York Heart Assoc., 2 E. 64 St., New York 10021)

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

5–7. American Acad. of **Oral Medicine**, New York, N.Y. (B. Tuchman, 200 Central Park South, New York 10019)

5–7. American Acad. of **Psychoanalysis**, New York, N.Y. (M. Carroll, AAP, 125 E. 65 St., New York 10021)

6–11. Galaxy Conf. on **Adult Education**, Washington, D.C. (E. Sydnor, 900 Silver Spring Ave., Silver Spring, Md. 20910)

7–9. American Soc. of **Hematology**, Cleveland, Ohio. (F. H. Gardner, Presbyterian–Univ. of Pennsylvania Medical Center, Philadelphia 19104)

7–12. American Soc. for **Testing and Materials**, Cincinnati, Ohio. (T. A. Marshall, Jr., ASTM, 1916 Race St., Philadelphia, Pa. 19103)

8–10. **Applications of Simulation**, 3rd conf., Los Angeles, Calif. (P. J. Kiviat, RAND Corp., 1700 Main St., Santa Monica, Calif. 90406)

8–10. **Circuit Theory**, intern. symp., San Francisco, Calif. (B. J. Leon, School of Electrical Engineering, Cornell Univ., Ithaca, N.Y. 14850)

8–10. National **Electronics** Conf. and Exhibition, 25th, Chicago, Ill. (R. J. Napolitan, NEC, Oakbrook Executive Plaza #2, 1211 W. 22 St., Oak Brook, Ill. 60521)

8–10. Southern **Surgical** Assoc., Hot Springs, Va. (D. C. Sabiston, Jr., Duke Univ. Medical Center, Durham, N.C. 27706)

8–11. Oak Ridge Associated Universities Symp. in **Medicine**, 12th, Oak Ridge, Tenn. (R. M. Kniseley, Medical Div., Oak Ridge Associated Universities, Oak Ridge 37830)

11–12. Conference on **Holography and the Computer**, Houston, Tex. (J. A. Jordan, Jr., IBM, Houston Scientific Center, 6900 Fannin St., Houston 77025)

12–14. American **Psychoanalytic** Assoc., New York, N.Y. (H. Fischer, 1 E. 57 St., New York 10022)

14–18. American Assoc. of **Hospital Pharmacists**, Washington, D.C. (J. A. Oddis, ASHP, 4630 Montgomery Ave., Bethesda, Md. 20014)

15–18. American **Geophysical** Union, San Francisco, Calif. (W. E. Smith, AGU, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

17–19. Symposium on **Infections and Immunosuppression in Sub-Human Primates**, Rijswijk, Netherlands. (H. Balner, Radiobiological Institute TNO, Lange Kleiweg 151, Rijswijk Z.H., Netherlands)

18–20. International Symp. on **Computer and Information Science** (COINS-69), Miami Beach, Fla. (J. T. Lou, Univ. of Florida, Gainesville 32601)

26–30. **Sigma Delta Epsilon**, Boston, Mass. (M. Myers, 6234 Mary Lane Dr., San Diego, Calif. 92115)

Books Received

(Continued from page 786)

Walter E. Tolles, Ed. 536 pp., illus. Paper. $21.50. *Annals of the New York Academy of Sciences*, vol. 157, art. 1.

Déformation Plastique des Métaux et Alliages. A summer school, Nancy, 1967. G. Champier and G. Saada, Eds. Masson, Paris, 1968. vi + 318 pp., illus. Paper, 80 F.

37. Deutsche Pflanzenschutz-Tagung der Biologischen Bundesanstalt für Land- und Forstwirtschaft. Coburg, October 1968. Parey, Berlin, 1969. x + 236 pp., illus. Paper, DM 50. Mitteilungen aus der Biologischen Bundesanstalt für Land- und Forstwirtschaft, Berlin-Dahlem, Heft 132.

Early Agricultural Machinery. Michael Partridge. Praeger, New York; 1969. viii + 32 pp., illus. + 16 plates. $8.95.

The Economy of Cities. Jane Jacobs. Random House, New York, 1969. xiv + 274 pp., illus. $5.95.

Electromagnetic Scattering on Spherical Polydispersions. D. Deirmendjian. Elsevier, New York, 1969. xx + 292 pp., illus. $14. Rand Corporation Research Study.

Elementary Particle Theory. Relativistic Groups and Analyticity. Proceedings of the 8th Nobel Symposium, Aspenäsgården, Lerum, Sweden, 1968. Nils Svartholm, Ed. Interscience (Wiley), New York, Almqvist and Wiksell, Stockholm, 1969. 400 pp., illus. $31.75.

The Elementary Structures of Kinship. Claude Lévi-Strauss. Translated from the French edition (Paris, 1967) by James Harle Bell, John Richard von Sturmer, and Rodney Needham, Ed. Beacon, Boston, ed. 2, 1969. xlii + 542 pp., illus. $15.

The Elements of Genetics. C. D. Darlington and K. Mather. Schocken, New York, 1969. xvi + 448 pp., illus. Cloth, $7.50; paper, $2.95. Reprint, with a new introduction by C. D. Darlington, of the 1949 edition.

The Emergence of Order in Developing Systems. The 27th symposium of the Society for Developmental Biology, New York, 1968. Michael Locke, Ed. Academic Press, New York, 1968. xxviii + 356 pp., illus. Paper, $10. *Developmental Biology*, supplement 2.

Enzyme Induction by Viruses. Saul Kit and Del Rose Dubbs. Karger, Basel, 1969 (U.S. distributor, Phiebig, White Plains, N.Y.). x + 114 pp., illus. $6.50. Monographs in Virology, vol. 2.

Essais sur L'Evolution. Theodosius Dobzhansky and Ernest Boesiger. Monograph 9. Masson, Paris, 1968. x + 184 pp., illus. 54 F. Les Grands Problèmes de la Biologie.

Expédition Antarctique Belgo-Néerlandaise 1964. Belgisch-Nederlandse Antarctische Expeditie 1964. Ionosphere. H. A. Vandevelde. Expéditions Antarctiques Belgo-Néerlandaises, Brussels, 1968. 180 pp., illus. Paper.

Extraction et Purification des Espèces Chimiques. D. Gagnaire, P. Jaulmes, and R. Bugarel. Masson, Paris, 1969. viii + 560 pp., illus. 170 F. Monographies de Chimie Organique, vol. 5.

Fire Investigation. Including Fire-Related Phenomena: Arson, Explosion, Asphyxiation. Paul L. Kirk. Wiley, New York, 1969. x + 262 pp., illus. $8.95.

Foundations of College Chemistry. Daniel B. Murphy and Viateur Rousseau. William F. Kieffer, editorial consultant. Ronald Press, New York, 1969. xvi + 680 pp., illus. $10.50.

Fracture. An Advanced Treatise. Vol. 1, Microscopic and Macroscopic Fundamentals. H. Liebowitz, Ed. Academic Press, New York, 1968. xviii + 598 pp., illus. $29.60.

Fracture. An Advanced Treatise. Vol. 4, Engineering Fracture Design. H. Liebowitz, Ed. Academic Press, New York, 1969. xvi + 456 pp., illus. $23.

Fundamentals of Rock Mechanics. J. C. Jaeger and N. G. W. Cook. Methuen, London, 1969 (U.S. distributor, Barnes and Noble, New York). xiv + 514 pp., illus. $19.

Generalized Feynman Amplitudes. Eugene R. Speer. Princeton University Press, Princeton, N.J.; University of Tokyo Press, Tokyo, 1969. x + 122 pp. Paper, $3.50. Annals of Mathematics Studies, No. 62.

Genetic and Environmental Influences on Behaviour. A symposium, 1967. J. M. Thoday and A. S. Parkes, Eds. Plenum, New York, 1969. x + 218 pp., illus. $14. Eugenics Society Symposia, No. 4.

Genius and Creative Intelligence. Nathaniel D. Mttron Hirsch. Philosophical Library, New York, 1969. 340 pp. $10. Reprint of the 1931 edition.

Geological Investigations by the Australian National Antarctic Research Expeditions, 1965. D. S. Trail, I. R. McLeod, P. J. Cook, and G. R. Wallis. Bureau of Mineral Resources, Geology and Geophysics, Canberra, Australia, 1967. viii + 48 pp., illus. + 6 plates. Paper, $1.40. BMR Report No. 118. Also issued as ANARE Scientific Report, Series A (III) Geology, Publication No. 100.

Grain Storage. The Role of Fungi in Quality Loss. Clyde M. Christensen and Henry H. Kaufmann. University of Minnesota Press, Minneapolis, 1969. x + 154 pp. + plates. $6.50.

Handbook of Clinical Neurology. P. J. Vinken and G. W. Bruyn, Eds. Vol. 5, Headaches and Cranial Neuralgias. North-Holland, Amsterdam; Interscience (Wiley), New York, 1968. xii + 416 pp., illus. $36; by subscription, $30.50.

Handbook of Clinical Neurology. P. J. Vinken and G. W. Bruyn, Eds. Vol. 6, Diseases of the Basal Ganglia. North-Holland, Amsterdam; Interscience (Wiley), New York, 1969. xii + 892 pp., illus. $77; by subscription, $65.50.

Handbuch der Tierernährung. In 2 volumes. Vol. 1, Allgemeine Grundlagen. Walter Lenkeit, Knut Breirem, and Edgar Crasemann, Eds. Parey, Hamburg, 1969. xxxii + 706 pp., illus. DM 268.

Holography. State of the Art Review, 1969. Thomas Kallard, Ed. Optosonic Press, New York, 1969. vi + 182 pp., illus. Paper, $12.

Interface Conversion for Polymer Coatings. Proceedings of a symposium, Warren, Mich., 1967. Philip Weiss and G. Dale Cheever, Eds. Elsevier, New York, 1968. xiv + 390 pp., illus. $20. General Motors Research Symposia.

International Review of Experimental Pathology. Vol. 7. G. W. Richter and M. A. Epstein, Eds. Academic Press, New York, 1969. xiv + 442 pp., illus. $24.

An Introduction to Chemical Nomenclature. R. S. Cahn. Plenum, New York; Butterworths, London, ed. 3, 1968. x + 118 pp., illus. Paper, $3.50.

Introduction to Quantum Field Theory. Paul Roman. Wiley, New York, 1969. xviii + 638 pp., illus. $18.

An Introduction to Virology. Clyde R. Goodheart. Saunders, Philadelphia, 1969. x + 438 pp., illus. $10.

Mathematics. Its Content, Methods, and Meaning. A. D. Aleksandrov, A. N. Kolmogorov, and M. A. Lavrent'ev, Eds. Translated from the Russian edition (Moscow, 1956). M.I.T. Press, Cambridge, Mass., ed. 2, 1969. Vol. 1 (S. H. Gould and T. Bartha, Translators, xiv + 386 pp., illus.); vol. 2 (S. H. Gould, Translator, xii + 404 pp., illus.); vol. 3 (K. Hirsch, Translator, xii + 388 pp., illus.). Paper, $3.95 per volume; the set, boxed, $10.

Measurements in Applied Physics. A. A. Burr, K. J. Dean, and R. J. Trebilcock. Chapman and Hall, London, 1968 (U.S. distributor, Barnes and Noble, New York). viii + 230 pp., illus. Paper, $6.

Le Métabolisme des Lipides dans les Plantes Supérieures. P. Mazliak. Masson, Paris, 1968. iv + 224 pp., illus. Paper, 80 F. Monographies de Physiologie Végétale, No. 3.

Les Méthodes Analytiques dans les Recherches sur le Métabolisme des Médicaments. Jean Hirtz. Masson, Paris, 1968. x + 368 pp., illus. Paper, 98 F. Monographies de Pharmacie.

Methods for Chemical Analysis of Fresh Waters. H. L. Golterman and R. S. Clymo, Eds. Published for the International Biological Programme by Blackwell Scientific Publications, Oxford, 1969. xviii + 174 pp., illus. Paper, 30s. IBP Handbook No. 8.

Methods for the Measurement of the Primary Production of Grassland. C. Milner and R. Elfyn Hughes, with contributions by C. H. Gimingham, G. R. Miller, and R. O. Slatyer. International Biological Programme, London; Blackwell Scientific Publications, Oxford, 1968 (U.S. distributor, Davis, Philadelphia). xii + 74 pp., illus. Paper, $1.25. IBP Handbook No. 6.

Microbiologie Générale. Jacques C. Senez. Editions Doin, Paris, 1968. 592 pp., illus. 105 F. "Biologie" series.

Microbiology in Health and Disease. Martin Frobisher, Lucille Sommermeyer, and Robert Fuerst. Saunders, Philadelphia, ed. 12, 1969. x + 550 pp., illus. $9.25.

Microwave Components. P. A. Matthews and I. M. Stephenson. Chapman and Hall, London, 1968 (U.S. distributor, Barnes and Noble, New York). viii + 196 pp., illus. $9.50. Modern Electrical Studies.

Modern General Topology. Jun-iti Nagata. North-Holland, Amsterdam; Wolters-Noordhoff, Groningen; Interscience (Wiley), New York, 1968. viii + 356 pp. $14.75. Bibliotheca Mathematica, vol. 7.

Modern Principles of Mathematics. Robert T. Craig. Prentice-Hall, Englewood

Cliffs, N.J., 1969. xii + 404 pp., illus. $8.95.

Morphology and Taxonomy of the Adult Males of the Families Pseudococcidae and Eriococcidae (Homoptera: Coccidea). S. A. Afifi. British Museum (Natural History), London, 1968. 212 pp., illus. Paper, £5. Bulletin of the British Museum (Natural History). Supplement 13.

The National Halothane Study. A Study of the Possible Association between Halothane Anesthesia and Postoperative Hepatic Necrosis. A report of the Subcommittee on the National Halothane Study, of the Committee on Anesthesia, National Academy of Sciences–National Research Council, Washington, D.C. John P. Bunker, William H. Forrest, Jr., Frederick Mosteller, and Leroy D. Vandam, Eds. National Institutes of Health, Bethesda, Md., 1969 (available from the Superintendent of Documents, Washington, D.C.). xii + 420 pp., illus. Paper, $3.75.

Nuclear Standards for Chemistry and Technology. Nuclear Standards for Industry, Science, Government and Consumer. Proceedings of a symposium, Atlantic City, 1968. H. F. Beeghly, J. P. Cali, and W. W. Meinke, Eds. National Bureau of Standards, Washington, D.C., 1968 (available from the Superintendent of Documents, Washington, D.C.). vi + 258 pp., illus. Paper, $1.25. NBS Special Publication No. 310.

La Nutrition Minérale des Végétaux. M. V. Homès and G. H. van Schoor. Masson, Paris, 1969. vi + 164 pp., illus. Paper, 60 F. Monographies de Physiologie Végétale, No. 4.

Observations Aérologiques. Aërologische Waarnemingen. Statistiques Quinquennales, Station d'Uccle, 1951–1955. Institut Royal Météorologique, Brussels, 1968. 76 pp. Paper.

The Optics of Dipole Magnets. John J. Livingood. Academic Press, New York, 1969. xviii + 262 pp., illus. $13.50.

L'Oscilloscope Normal et à Echantillonnage. Principes et Utilisations. J. Henry. Masson, Paris, 1969. iv + 112 pp., illus. Paper, 36 F.

Outline Course of Pure Mathematics. A. F. Horadam. Pergamon, New York, 1968. xvi + 578 pp., illus. $9.

Les Particules Elémentaires. Physique des hautes énergies. Théo Kahan. Presses Universitaires de France, Paris, 1969. 128 pp., illus. Paper. "Que Sais-je?", No. 1293.

Peintures et Vernis. Techniques et Industrie. Pierre Grandou and Paul Pastour, Eds. Hermann, Paris, 1969. xiv + 442 pp., illus. 180 F.

La Peste Equine. Paul Mornet and Yves Gilbert. Expansion Scientifique Française, Paris, 1968. 204 pp., illus. Paper, 36 F. Maladies Animales à Virus.

Physics. Foundations and Frontiers. George Gamow and John M. Cleveland. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1969. xvi + 592 pp., illus. $10.95.

Plant Cells. F. A. L. Clowes and B. E. Juniper. Blackwell Scientific Publications, Oxford, England, 1968 (U.S. distributor, Davis, Philadelphia). xviii + 550 pp., illus. $21. Botanical Monographs, vol. 8.

The Political Evolution of the Mexican People. Justo Sierra. With notes and a new introduction by Edmundo O'Gorman.

Translated from the Spanish edition (1948) by Charles Ramsdell. University of Texas Press, Austin, 1969. xx + 408 pp. $8.50. Texas Pan American Series.

Polyvinyl Chloride. Harold A. Sarvetnick. Van Nostrand Reinhold, New York, 1969. xii + 260 pp., illus. $13.50. Reinhold Plastics Applications Series.

Poudres et Explosifs. Paul Tavernier. Presses Universitaires de France, Paris, 1969. 128 pp., illus. Paper. "Que Sais-je?" No. 259.

Practical Diakoptics for Electrical Networks. A. Brameller, M. N. John, and M. R. Scott. Chapman and Hall, London, 1969 (U.S. distributor, Barnes and Noble, New York). xii + 244 pp., illus. $10. Associated Electrical Industries–Chapman and Hall Series.

Precision Measurement and Calibration. Selected NBS Papers on Statistical Concepts and Procedures, vol. 1. Harry H. Ku, Ed. National Bureau of Standards, Washington, D.C., 1969 (available from the Superintendent of Documents, Washington, D.C.). x + 440 pp., illus. $5.50. NBS Special Publication 300, vol. 1.

Principles of Perception. S. Howard Bartley. Harper and Row, New York, ed. 2, 1969. xx + 524 pp., illus. $9.95.

Principles of Physical, Organic, and Biological Chemistry. An Introduction to the Molecular Basis of Life. John R. Holum. Wiley, New York, 1969. xiv + 738 pp., illus. $10.95.

Problems in Geophysics Relating to the Crust of the Earth. Proceedings of a symposium, Hyderabad, India, 1964. National Geophysical Research Institute, Hyderabad, 1966. viii + 224 pp., illus. Rexine bound, $2.80; paper, $2.40.

Proceedings, Fourth Forum on Geology of Industrial Minerals. Austin, Texas, March 1968. L. F. Brown, Jr., Ed. Bureau of Economic Geology, University of Texas, Austin, 1968. iv + 176 pp., illus. Paper, $2.

Proceedings of the Fifteenth Southern Water Resources and Pollution Control Conference. Raleigh, N.C., April 1966. Department of Civil Engineering, North Carolina State University, Raleigh, 1969. vi + 190 pp., illus. Paper, $4.

Proceedings of the Fourth International Conference on Operational Research. Boston, 1966. David B. Hertz and Jacques Melese, Eds. Interscience (Wiley), New York, 1969. xxxviii + 1098 pp., illus. $24.95. Publications in Operations Research, No. 15.

Proceedings of the Second Symposium on Diseases and Husbandry of Aquatic Mammals. Boca Raton, Fla., 1968. David K. Caldwell and Melba C. Caldwell, Eds. Marineland Research Laboratory, St. Augustine, Fla., 1968. viii + 160 pp., illus. Paper, $3.

Processes of Cognitive Growth: Infancy. Jerome S. Bruner. Clark University Press, Worcester, Mass., with Barre Publishers, Barre, Mass., 1968. viii + 76 pp., illus. $4.50. Heinz Werner Lecture Series, vol. 3.

Progress in the Chemistry of Fats and Other Lipids. Ralph T. Holman, Ed. Vol. 9, Polyunsaturated Acids, Part 3, pp. 349–452. Hydrogenation of Fats, by H. J. Dutton; Peroxidation of Polyunsaturated Fatty Compounds, by W. O. Lundberg and Pentti Järvi; Preparation of Polyunsaturated Fatty Acids from Natural Sources, by O. S. Privett. Pergamon, New York, 1968. Illus. Paper, $5.

Quantitative Problems in the Biochemical Sciences. Rex Montgomery and Charles A. Swenson. Freeman, San Francisco, 1969. xiv + 314 pp., illus. Paper, $2.95.

RCA Silicon Power Circuits Manual. RCA Electronic Components, Harrison, N.J., 1969. 448 pp., illus. Paper, $2. Technical Series SP-51.

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