SCIENCE 10 September 1971

Vol. 173, No. 4001

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Why Leading Labs are Buying the J-21 Centrifuge

Model J-21's are now found in leading life science laboratories throughout the world—and in many industrial labs as well. Users prefer them—and choose the J-21 again when adding more high-speed refrigerated centrifuges.

Why?

First, the J-21 is a better centrifuge. It is modern and functional in design, with up-to-date features. And it is thoroughly reliable—just what you would demand from a laboratory workhorse.

Second, people like to use it. The handy work surface for loading and unloading rotors is typical of its operator-oriented nature.

Third, accessories make it more than just a centrifuge. This new JCF-Z rotor, for example, extends the J-21's capability to zonal, continuous-flow, and re-orienting gradient work.

When you think of refrigerated, high-speed centrifuges, think of the Beckman J-21. It is the new centrifuge of choice. For complete information, write Spinco Division, 1117 California Avenue, Palo Alto, California, 94304, for Data File J-21.

Beckman® INSTRUMENTS, INC.

Helping science and industry improve the quality of life.

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The "Paper" Microtomes

The "PORTER-BLUMS" are the "Paper" Microtomes

In scholarly paper after scholarly paper, where the "Materials & Methods" abstract discusses microtomy, you will find a "Porter-Blum" mentioned. The SORVALL "Porter-Blums" have earned a well-deserved reputation for reliability and accuracy that is unsurpassed by any other instrument in this field.

Also, ask for details on the "Smith & Farquhar" Tissue Sectioner for preparing fixed — and certain non-fixed — tissue; the FTS MT2-B (and older MT-2) Cryo-Sectioning Attachment; and the new JB-4 Microtome for clinical and research applications. Ivan SORVALL, Inc. Norwalk, Connecticut 06856.

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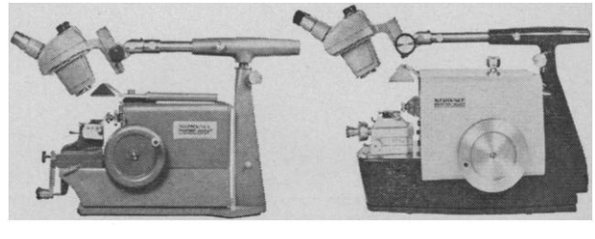

"PORTER-BLUM" MT-1, 25 mμ to ½ μ, is the ideal ultra-microtome for teaching and all routine sectioning — and many of them have been in the forefront of important research advances over many years.

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Write for Bulletin SC-9PMT

10 September 1971

Vol. 173, No. 4001

SCIENCE

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COVER

Drums containing chemical wastes, which were caught by fishermen on the North Sea and brought ashore at Den Helder, Netherlands. "Gevaarlijke vloeistof" means "dangerous liquid." See page 1021. [P. A. Greve, National Institute of Public Health, Utrecht, the Netherlands]

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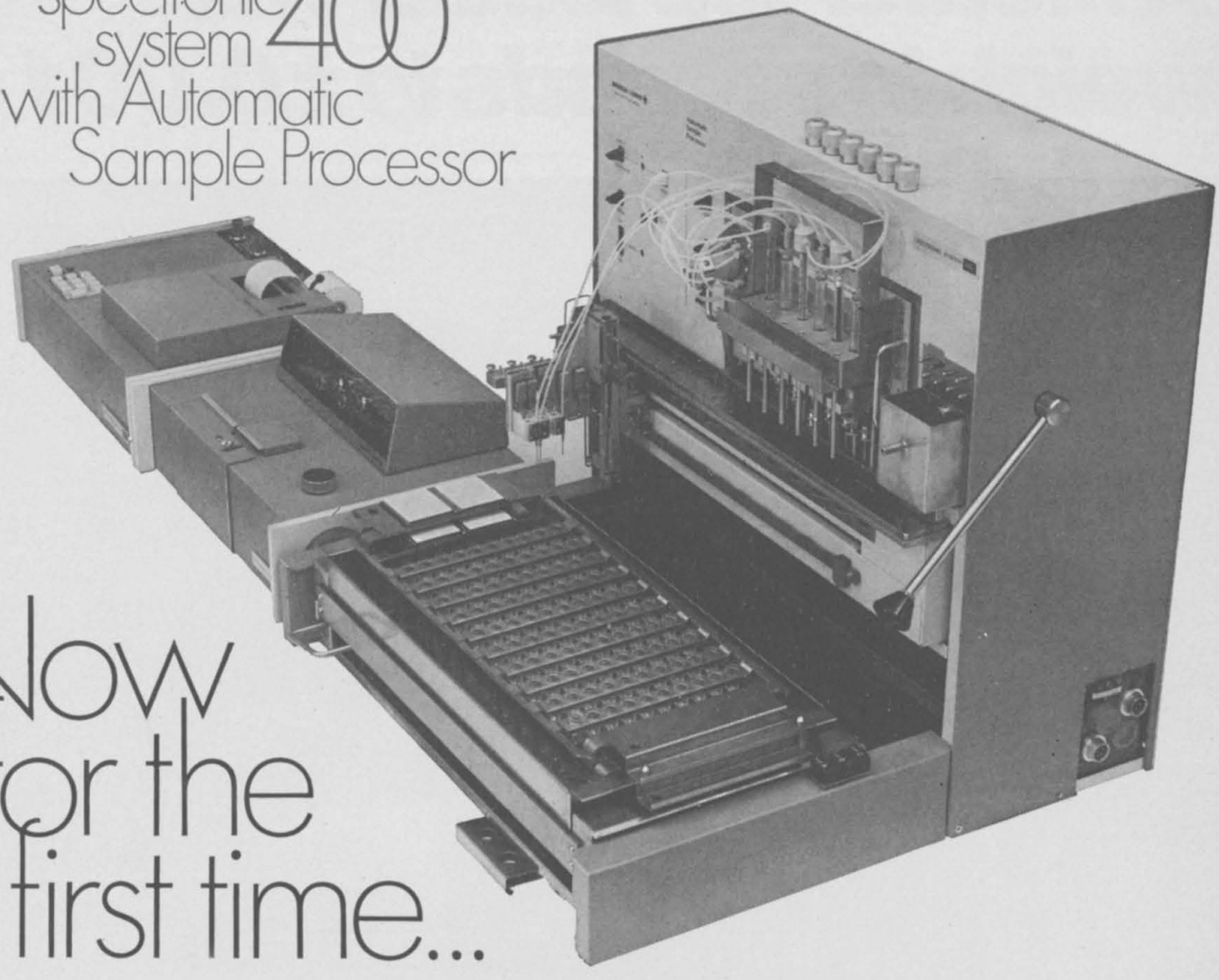
BAUSCH & LOMB

ANALYTICAL SYSTEMS DIVISION

New! spectronic® 400 system with Automatic Sample Processor



Now for the first time...

A completely automatic Spectrophotometric System with full testing freedom

Sample-and reagent mixing, measurement and printout is fully automatic. Yet *you* program the wet chemistry technique *you* prefer. Change from one test to another in a minute. Accuracy and repeatability of results can't be equalled by systems costing several times as much.

Features

- The System can prepare two different samples—sequentially or simultaneously, process samples for deproteinization and clarification, and perform kinetic analyses, including variable time delay.
- 335-925nm continuous wavelength range.
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- Processing of 1 to 100 samples.
- Negligible sample carryover—guarantees high repeatability.
- FAST—just 12 seconds/sample.
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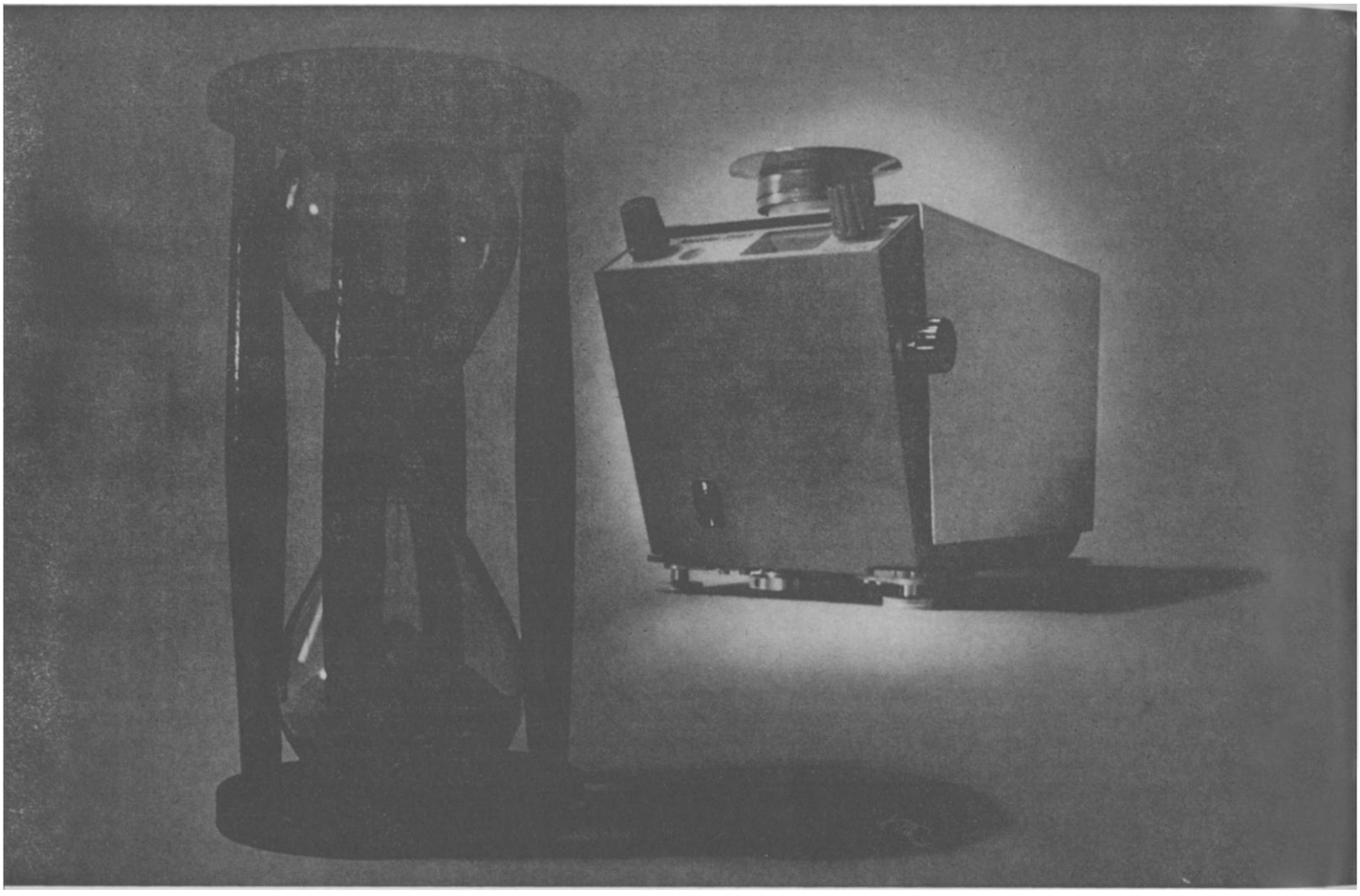
- Completely thermostable reaction environment—dual temperature control.
- Single-position sample racks assure *positive sample identification.*
- Specially designed centrifuge (optional) accepts fully loaded sample racks without loss of sample identification.
- Uses field-proven Spectronic® System 400.

Write for our Catalog 39-6023, Analytical Systems Division, Bausch & Lomb, 50 Linden Ave., Rochester, New York 14625.

Circle #17 for literature

Circle #18 for demonstration

When time is in the balance... A Mettler top loader will weigh in seconds to ±0.001 g



But there is more in the balance than time. If you need accuracy, reproducibility, and application flexibility, no other balance, at any price, gives you as much.

In the R & D lab, quality control lab, or classroom, weigh unknowns, checkweigh, weigh-in, batch weigh, weigh below the balance. All high speed. And make other physical measurements by gravimetry—thickness, volume, area, surface tension.

And accurately. Throughout the Mettler line of 18 models, you'll find a high load-to-precision ratio. From the 11,000-g capacity instrument with ±0.05 g precision to the 170-g balance with ±0.001 g precision. Precision to one part in several hundred thousand. Big, bright, highly visible readouts...depending on model, your choice of digital or analog. Available in metric or other calibrations.

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Smooth, quiet operation . . . the culmination of years of experience, thoughtful design, superb craftsmanship. You get it all with our General Purpose centrifuges. There are two for the table-top, two for the floor—to cover every clinical centrifuging requirement. And our exclusive use of universal heads and unique multi-tube carrier system eliminates the cost of a multitude of accessories.

Turn them on in *your* lab. They'll cast a long shadow for years of efficient service. Ask for our Catalog GPC-6-71. (If you're interested in refrigerated or high speed models ask your VWR Scientific dealer or write us.) VWR Scientific, Box 981, Rochester, New York 14603.

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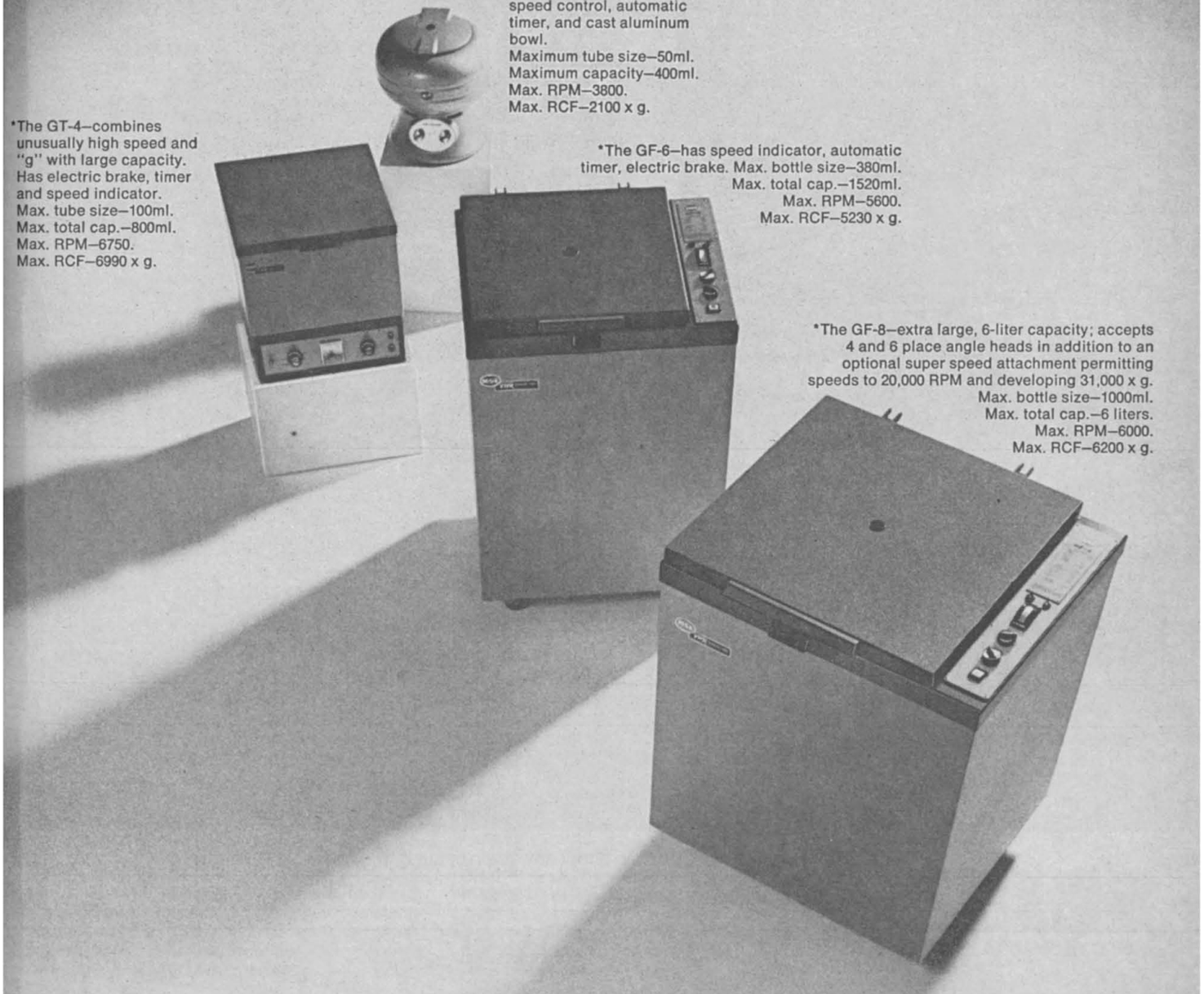
Maximum tube size—50ml.
Maximum capacity—400ml.
Max. RPM—3800.
Max. RCF—2100 x g.

*The GT-4—combines unusually high speed and "g" with large capacity. Has electric brake, timer and speed indicator.
Max. tube size—100ml.
Max. total cap.—800ml.
Max. RPM—6750.
Max. RCF—6990 x g.

*The GF-6—has speed indicator, automatic timer, electric brake. Max. bottle size—380ml.
Max. total cap.—1520ml.
Max. RPM—5600.
Max. RCF—5230 x g.

*The GF-8—extra large, 6-liter capacity; accepts 4 and 6 place angle heads in addition to an optional super speed attachment permitting speeds to 20,000 RPM and developing 31,000 x g.
Max. bottle size—1000ml.
Max. total cap.—6 liters.
Max. RPM—6000.
Max. RCF—6200 x g.



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VWR Scientific VWR UNITED

What would you ask for in a complete Photomicrographic and Photomacrographic Lab?

1. The first thing you'd ask for would be an easily operated 4 x 5 camera system. You'd want it to be completely automatic—exposure, film counting, frame-imprinting, everything—so that all you have to do to take a picture is focus and push a button. You might need, too, a fully automatic 35mm camera that's easily and rapidly interchangeable. You'd definitely want utmost stability—the kind that the Zeiss Ultraphot III, with its sliding mirror system (rather than bulky bellows) and its strong shock mounting, gives you. You'd want to use Polaroid® and have a projection head available, and, for metallographic work, special disks for grain size determinations. You might also need a Micro-Hardness Tester and a movie camera. So you'd make sure there was provision for all these.

2. You'd insist on the highest quality optics—in other words, Zeiss optics. And you'd want them to be *completely* interchangeable with those on any other Zeiss microscope you may have or plan to add. So you'd have available to you the world's widest line of Planapochromats, Planachromats, Plan-Neofluars, Neofluars, Ultrafluars, Achromats, Epi-plans, and Pol objectives for transmitted and reflected light—not to mention the unequaled Luminars and Epi-Luminars for photomacrography. You'd want, in short, capability for 4 x 5 and 35mm photography at continuous magnifications from 2.5X to the limits of light microscopy, through the finest flat-field optics ever made.

3. You'd require a choice of light sources—CSI, Mercury, Xenon, Quartz Iodide, and Tungsten. And you'd find it very convenient that the Ultraphot holds three at the same time so you can switch from one to the other, or combine Mercury and Tungsten for phase-fluorescence, all by a simple flip of a lever.

4. You'd expect it to be a simple matter to exchange stages so that you can switch from reflected to transmitted light, or vice-versa, in a matter of seconds. You'd want the same easy exchangeability, too, of eyepieces and condensers.

5. You'd want a specially designed instrument table, with ample working space, drawers with fittings for all accessories, and a built-in power supply.

6. You'd make sure everything was built into a sturdy and compact stand. And "everything" means "everything": filters, ASA selector for speeds from 2.5 to 8,000, exposure readout window, push-button for exposure, photo-multiplier, beam splitter (so that the light can be directed 100% to the camera, or 100% to the eyepieces, or ⅓ to the eyepieces and ⅔ to the 4 x 5 camera, or 100% to the 35mm camera with its own focusing eyepiece.)

You'd ask for Ultraphot III.

That's what Zeiss calls it, and it does everything but develop the film. And, if you use Polaroid® film, it does that too. For all light-microscope techniques—brightfield, darkfield, fluorescence, polarization, phase contrast, Nomarski interference contrast and quantitative interference microscopy (Jamin—Lebedeff)—in both reflected and transmitted light—photomicrography and photomacrography—the Ultraphot III is the supreme instrument. Write Carl Zeiss, Inc., 444 Fifth Avenue, New York, New York 10018.

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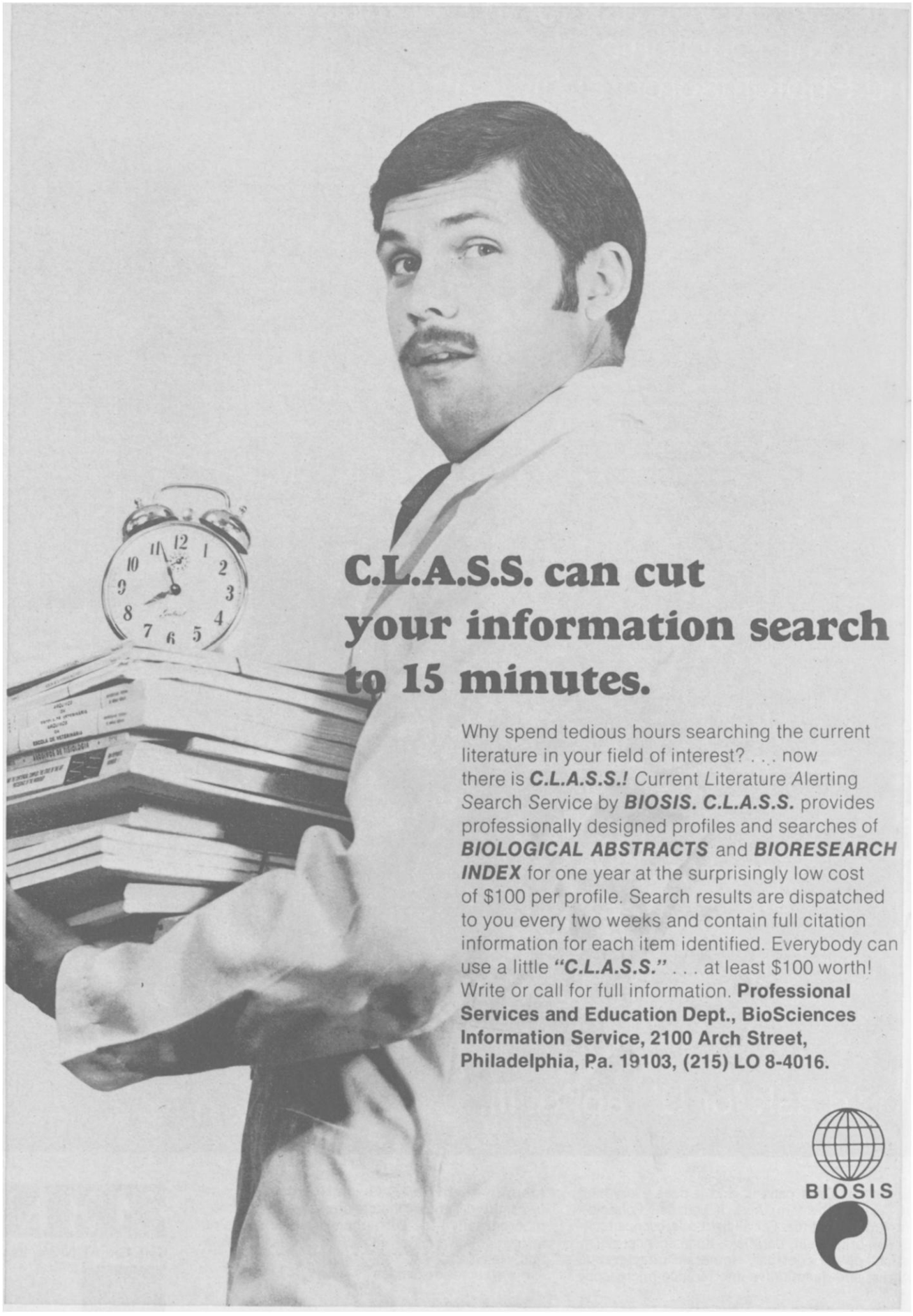

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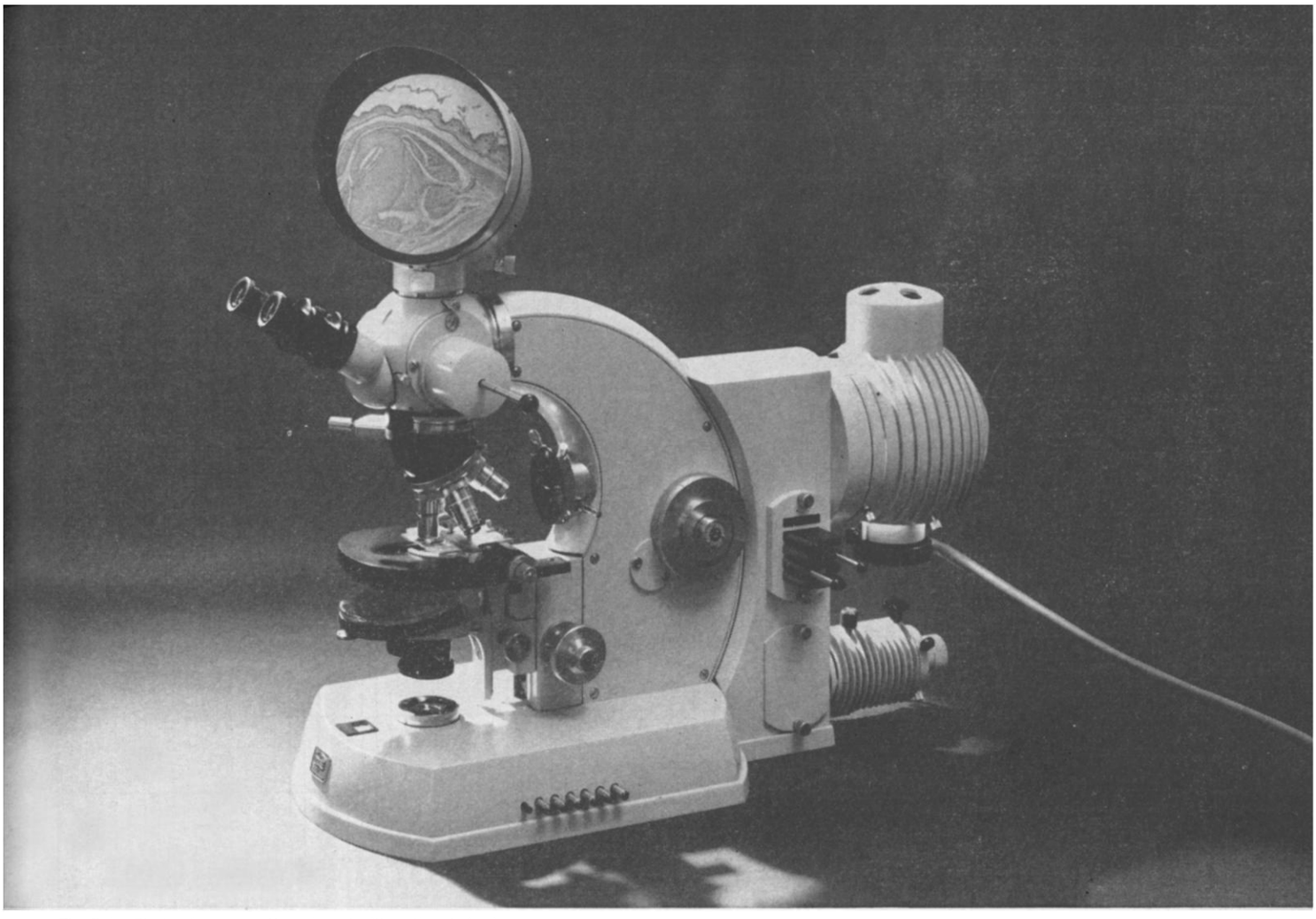

The Zeiss Photomicroscope II equipped with optional viewing screen.

The Zeiss Photomicroscope in NASA's lunar histology lab was set up like this.

A Zeiss Photomicroscope, equipped with Planapochromat and Neofluar objectives and a projection screen (one of the many optional attachments), was used at the Lunar Receiving Laboratory for the first histological studies on the mice and Japanese quail that had been injected with moon dust. This time-critical operation had to be completed before the end of the quarantine period. Never before had the classic techniques been applied to such an exotic end.

The optical quality and the automatic photographic capability of the Photomicroscope insured the reliability and time-saving the circumstances dictated. And the operator's colleagues could observe everything simultaneously on the large, bright viewing screen.

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And, of course, with the Photomicroscope, all light-microscope techniques are possible and convenient to employ: brightfield, darkfield, fluorescence, polarization, phase contrast, and Nomarski interference contrast—for both reflected and transmitted light.

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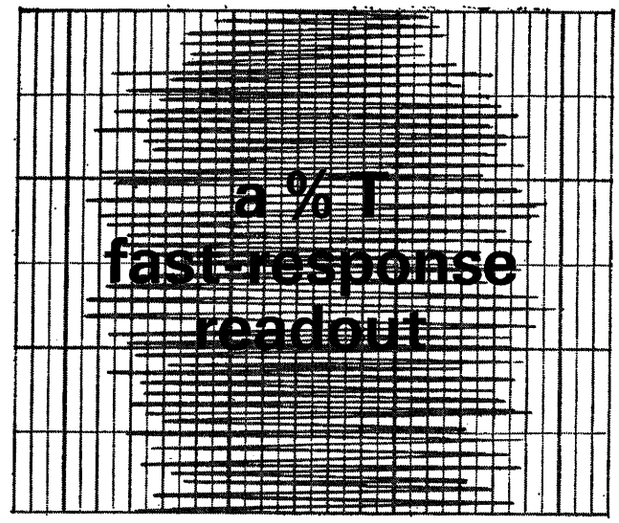
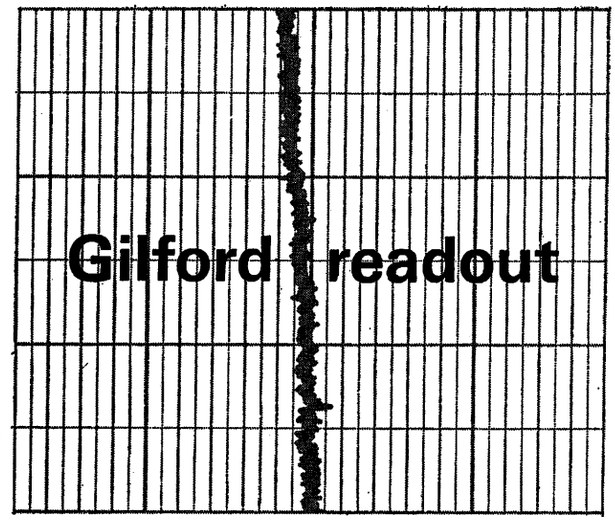
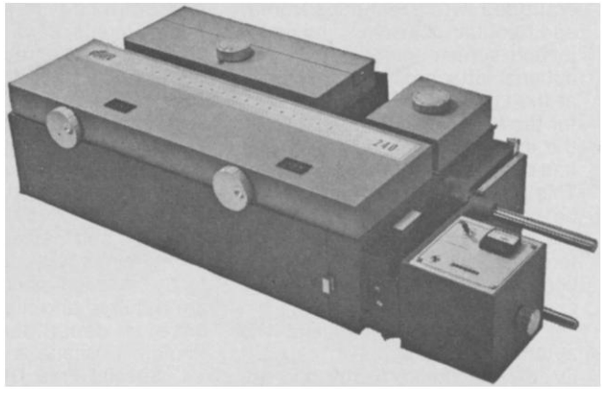


is not the same as a





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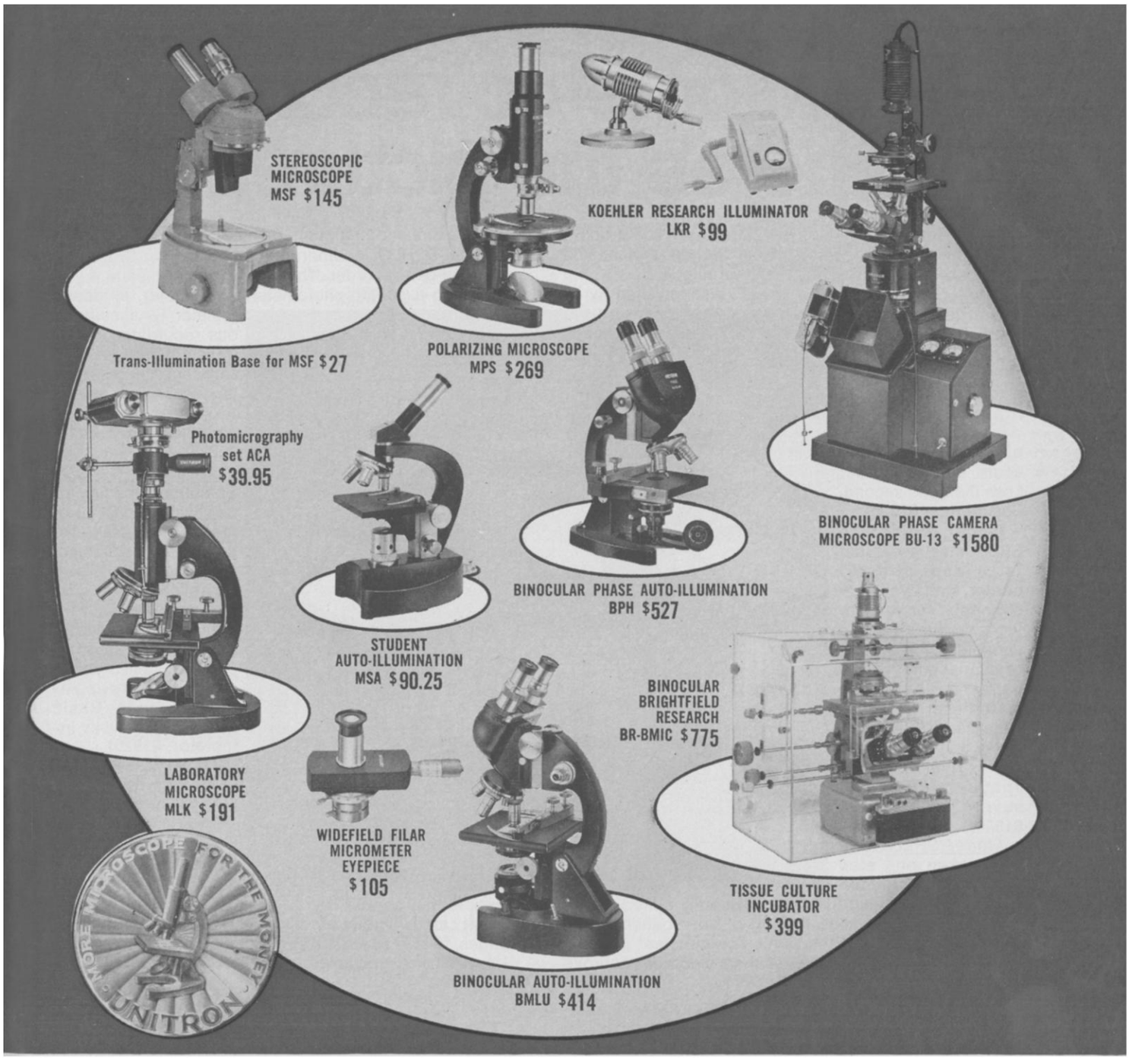

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Potentiometric recorders: here's the picture.

Shown here, a portrait of all there is to know about potentiometric recorders. All from Sargent-Welch. And each deserves its own personality profile:

Model SRG: The basic recorder, distinguished by its advanced performance. Seven pre-calibrated spans. Three chart speeds. Guarded circuits and filtered inputs. Accuracy: ±0.25%. Reproducibility: ±0.1%. Full-scale pen response: Less than one second. Basic price: $1025.

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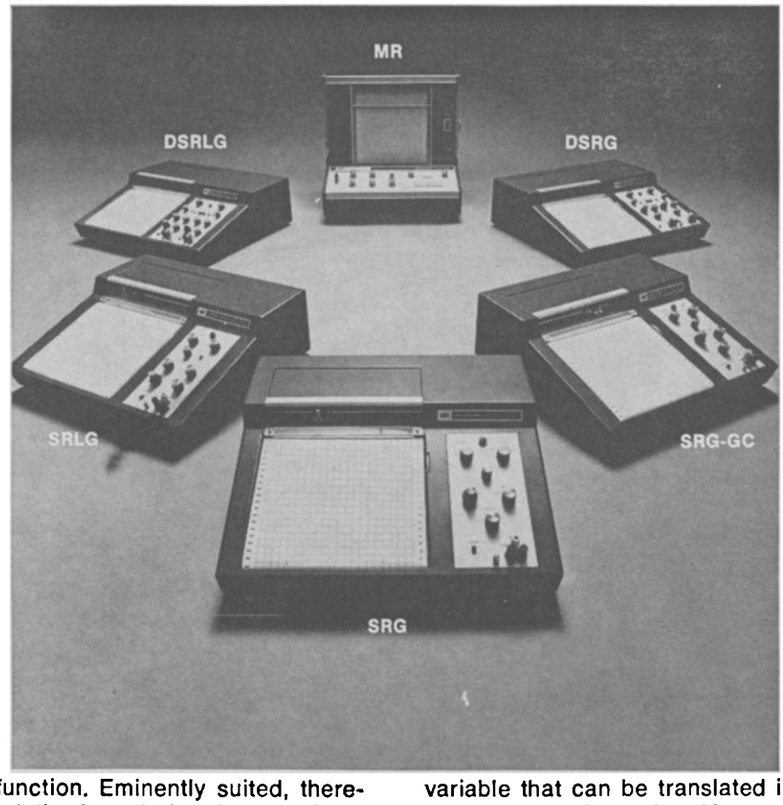

Model DSRLG: Another logical move. Two SRLG's in one dual-pen recorder. Think of what that means if you work with a spectrophotometer, photometer, or densitometer — simultaneous recording of both transmittance *and* absorbance. Or linear/log recording of any two time-synchronized variables. Basic price: $2225.

Model SRG-GC: Something special, for use with a gas chromatograph. Fast response, high AC rejection, floating input, three chart speeds, and continuously variable wide-range spans. Optional integrator for precise measurement of areas under recorded curve. Basic price: $1025 (with integrator, $1820).

Model MR: The ultimate recorder? Perhaps. Few can match it for precision, speed, sensitivity, and versatility. Measures and records (vs. time) any variable that can be translated into voltage or current, *or* that can be time-related by synchronous drive. Twelve ranges, twelve speeds. Basic price: $2850.

As we said, a complete picture of a complete line.

Now read the book.

0-214

Still, in all fairness, one picture and these few words don't do justice to our complete line of recorders. So we've prepared a fully illustrated, 30-page catalog. It's yours, without obligation, for returning the coupon. Do it now.

I'd like a copy of your recorder catalog. I'm especially interested in:

- ☐ Model SRG Recorder
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Here's a way to deliver precise samples time after time... at the push of a button. Our PB600 discharges 1/50th of the syringe capacity every time you push the button. And you can select syringes from 10 cc down to 0.25 cc. It's ideal for microtitrations, dye dilution tests, standard solutions and dilutions, and thin-layer chromatography. We also have a model that allows you to rapidly dispense antigen for VDRL tests. □ If you need to dispense small liquid volumes... just push our button. Our Repeating Dispenser is described in our catalog... let us send you a copy. Write to Hamilton Company, Post Office Box 307, Whittier, California 90608.
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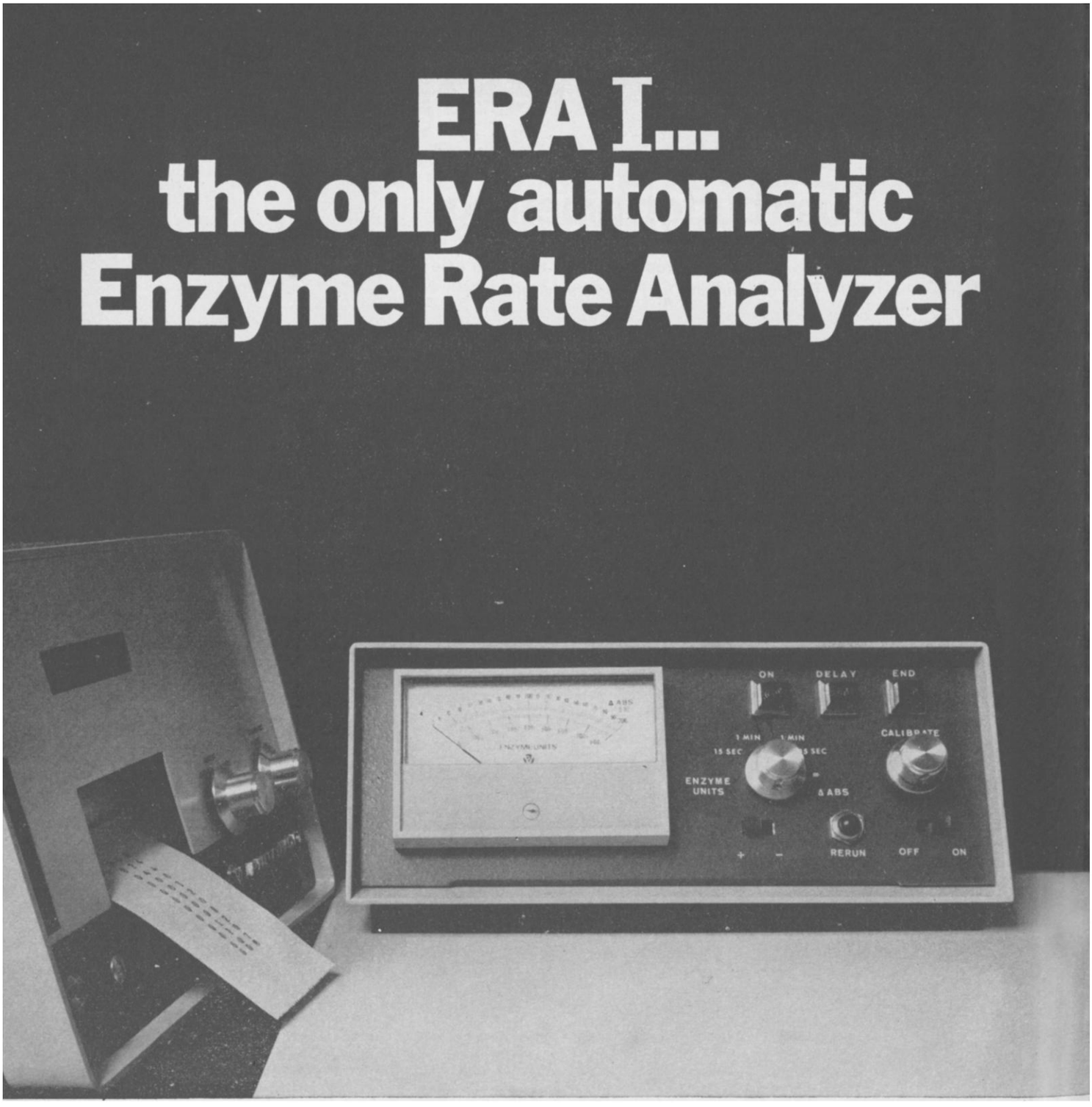
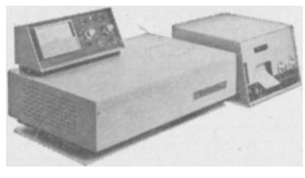
ERA I... the only automatic Enzyme Rate Analyzer



with direct read-out in Enzyme Units

Simply insert a cuvette containing the sample and reagents . . . close the cover . . . timing and computation of activity are automatic . . . read out directly in enzyme units.

Successive readings are instantly available at your command to check linearity.



ERA I operates in the absorbance mode at 340 nm and is capable of detecting 0.0001 absorbance change. With this sensitivity, readings are available in 15 seconds, rather than minutes.

Useable with any protocol or reagent. Ask for literature or demonstration.

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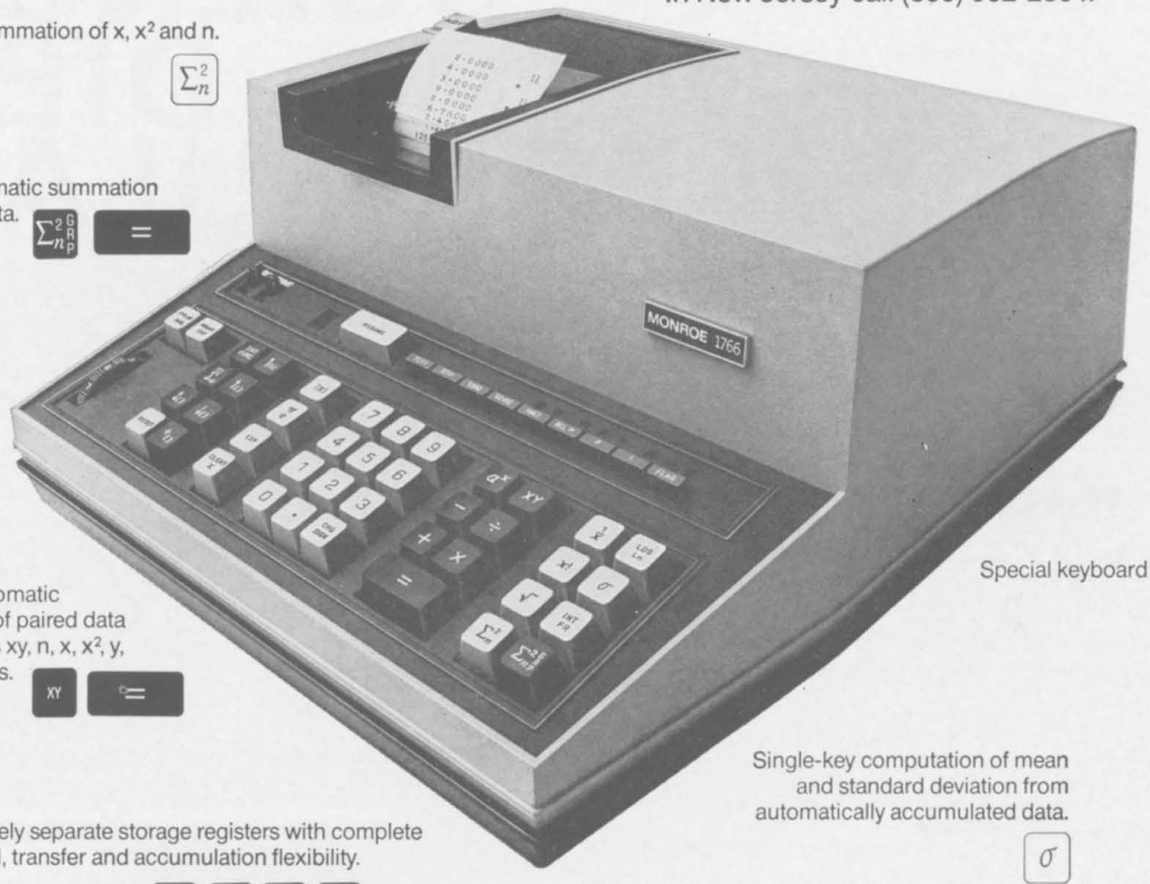
Single key summation of x, x^2 and n.

Σ_n^2

Two-key automatic summation of grouped data.

$\Sigma_{n_P}^{2\,G}$ =



Two-key automatic summation of paired data accumulates xy, n, x, x^2, y, and y^2 factors.

XY =

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$\sqrt{}$ | $\frac{\pi}{e}$

a^x | x!

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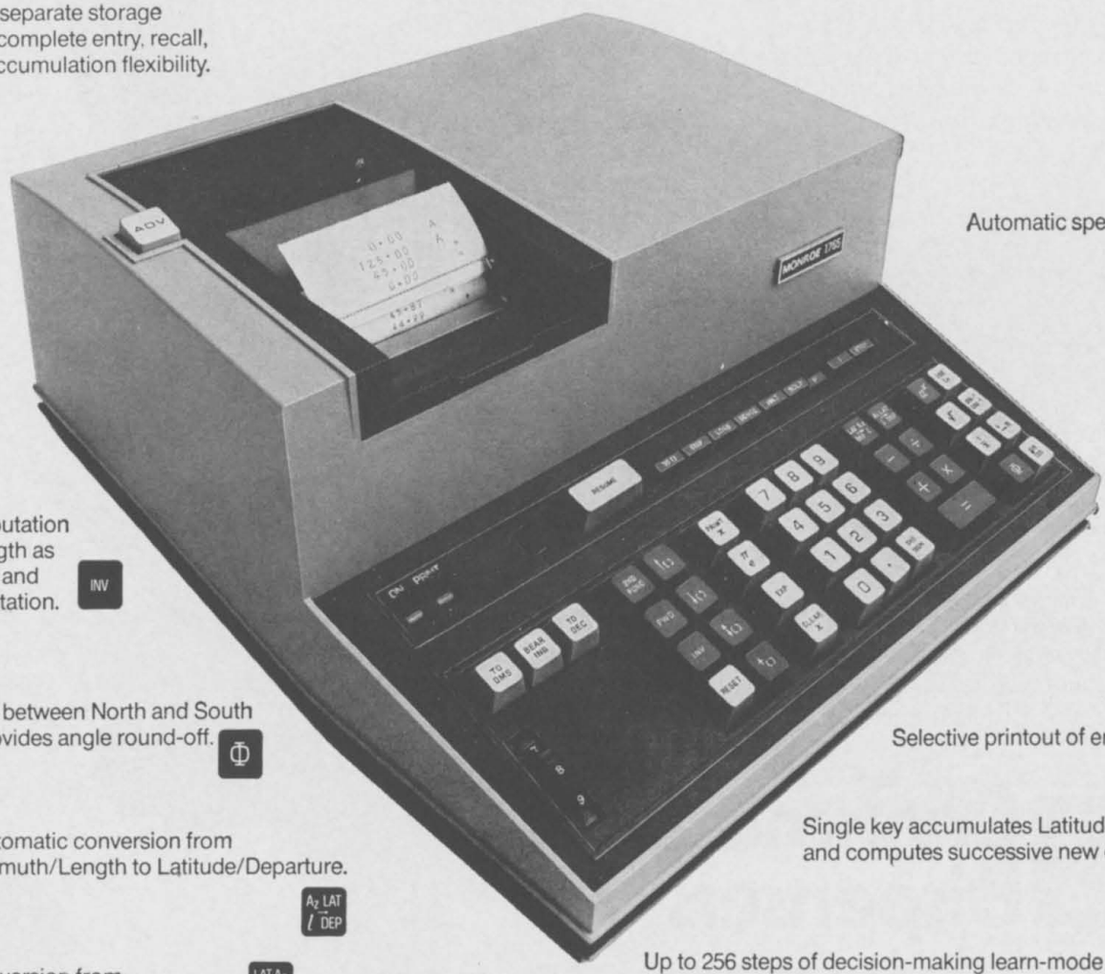

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SIN^{-1} COS^{-1} | $\rightarrow$ R
$\frac{\pi}{e}$ | a^x
$\frac{1}{x}$ | $\sqrt{}$

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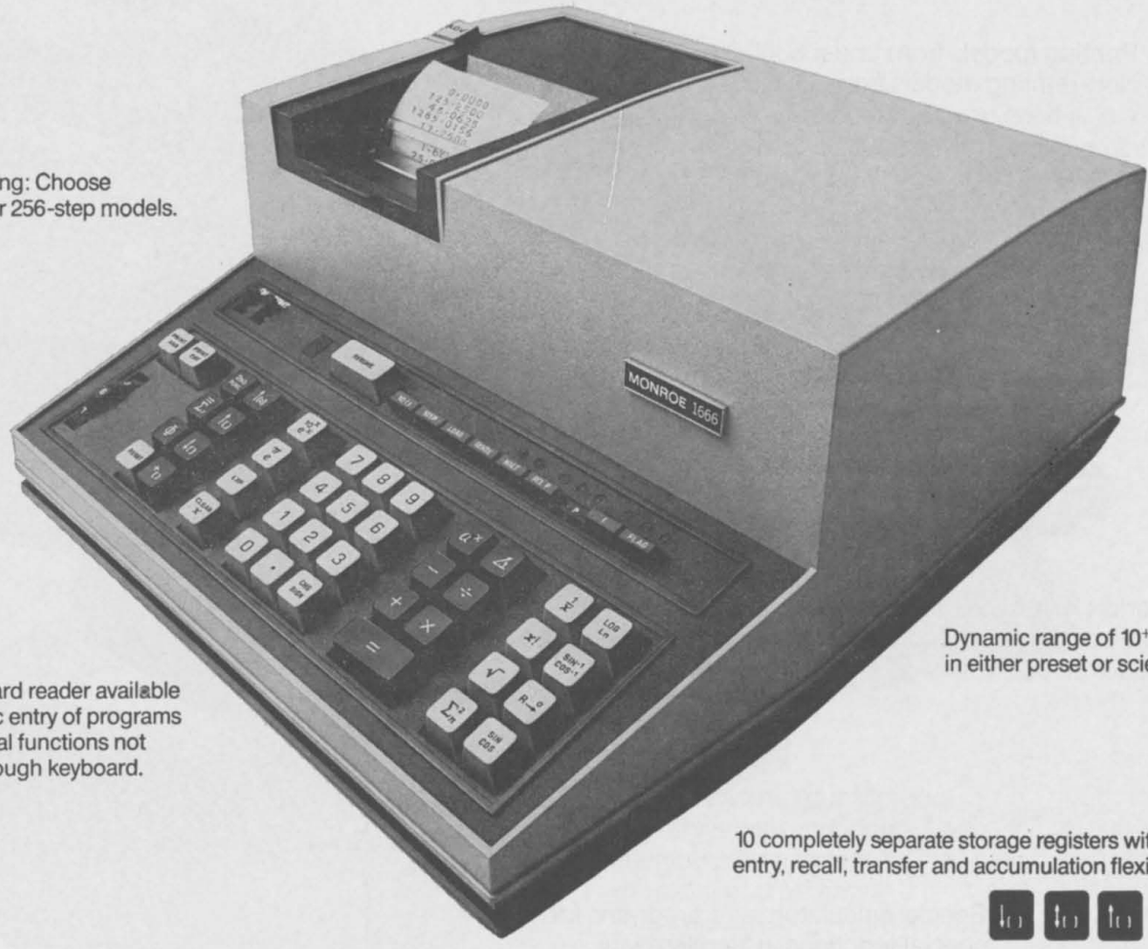

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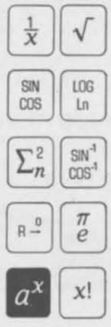

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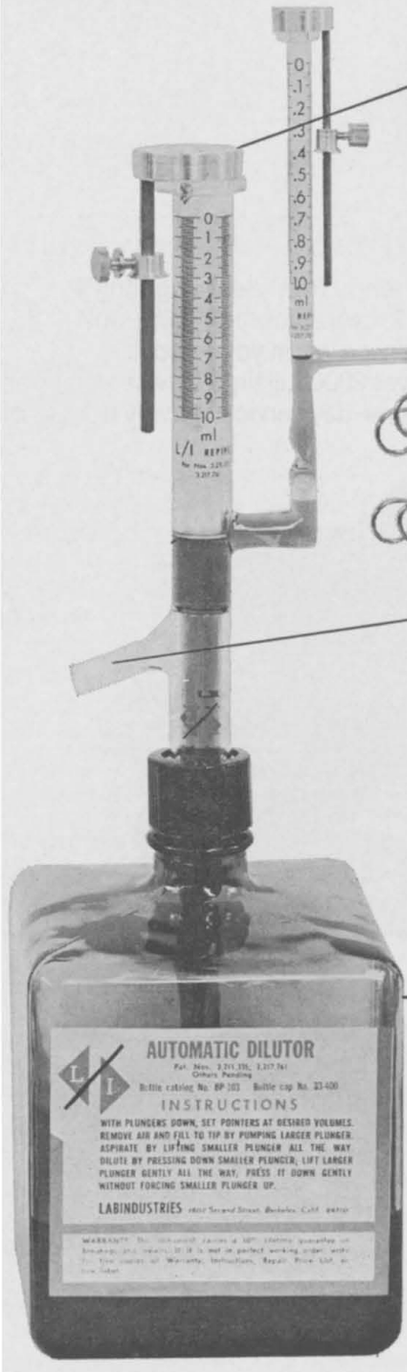

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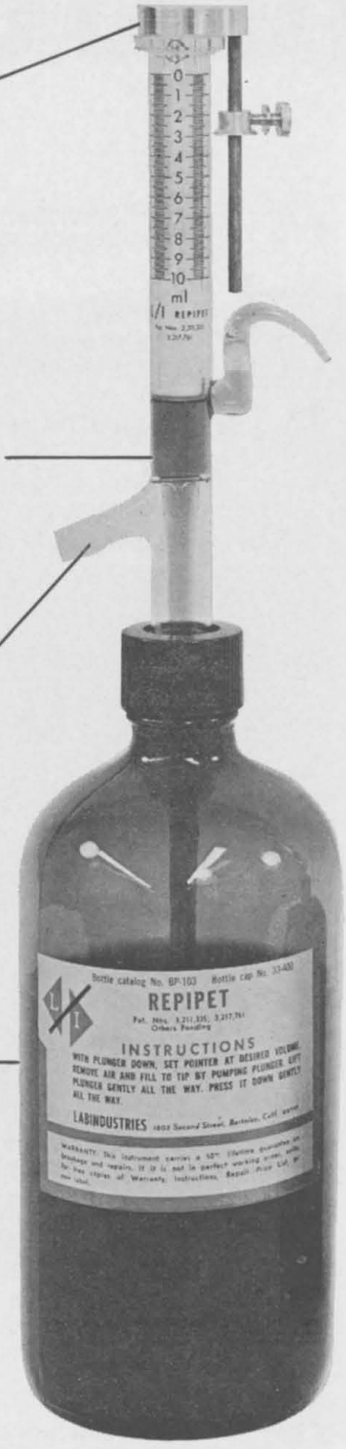

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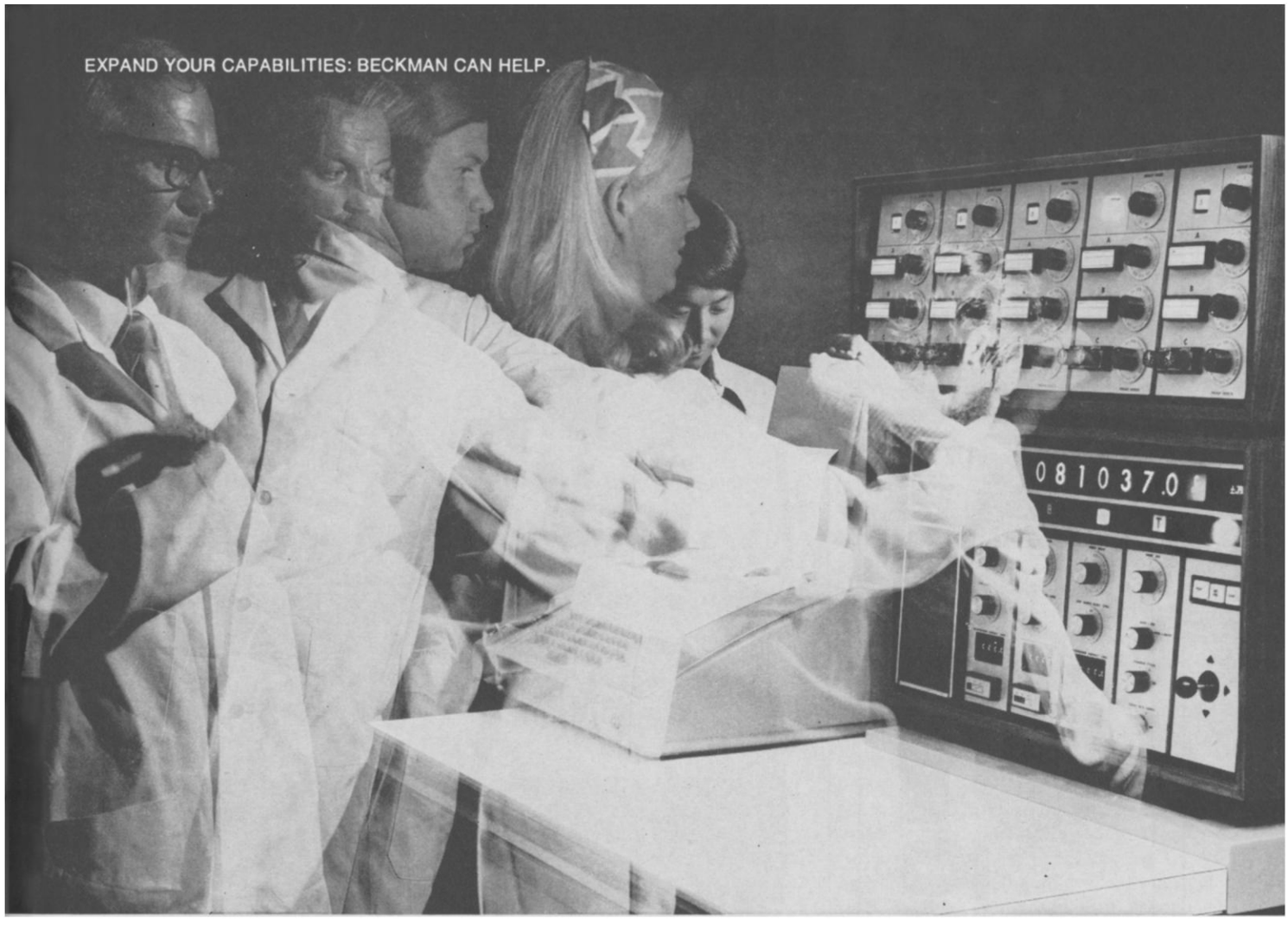

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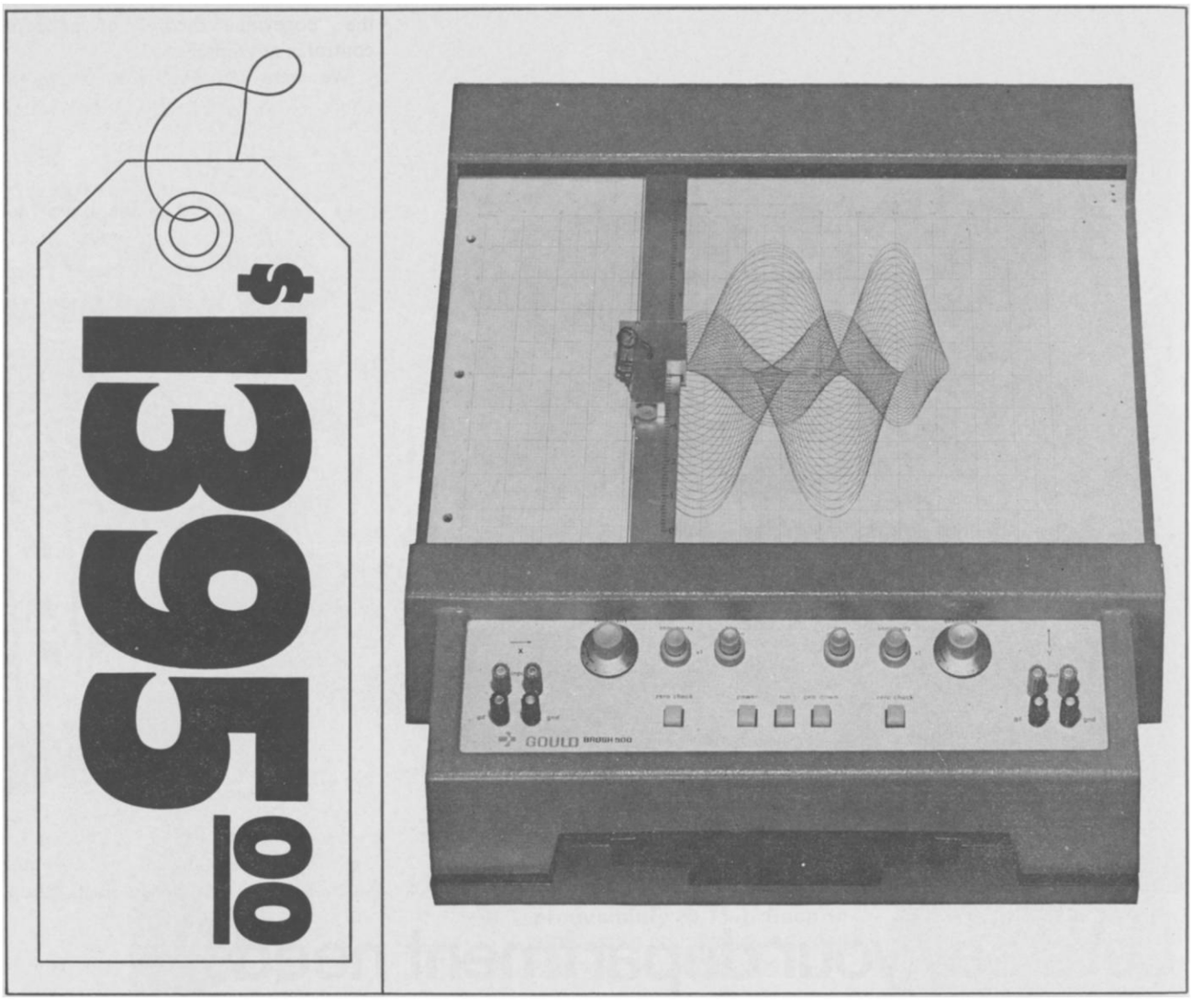

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low-sulfur fuel toward the smaller low-level sources. The best short-run strategy for reducing community exposure to episodic or localized occurrences of high SO_2 levels seems to be still an open question.

If our conclusions were misapplied by a utility or by anyone else, we are sorry. Facts can be misused. To their chagrin, scientists have had ample opportunity to learn this in the last few years.

T. R. MONGAN
Sydney Area Transportation Study,
7 West Street, North Sydney,
New South Wales, Australia

J. GOLDEN
7716 Iroquois Court,
Falls Church, Virginia 22043

Alas

Hamlet spoke of a single skull. McMahon was referring to a single scull (see 23 July, p. 350, table 1).

ANNE SYMINGTON
745 Cella Road,
St. Louis, Missouri 63124

Climate Change

The report by Rasool and Schneider (9 July, p. 138) presents quantitative relationships between atmospheric carbon dioxide and aerosol concentrations which may be useful. However, two of their conclusions with respect to the effects of aerosols may be misleading.

Their statement that "the surface temperature falls precipitously with increasing opacity" is a consequence of the use of a logarithmic scale in presentation of the results. A replot of their figure 2b, using linear scales, indicates that the decline in surface temperature is linear with optical thickness and hence with aerosol concentration, at least to the accuracy with which I was able to read their curves.

In the projection of possible future events, they appear to neglect the effect of naturally produced aerosols. The authors of the SCEP report (*1*), which Rasool and Schneider cite as their first reference, concluded that, at present, the man-made tropospheric particulate component averaged over the globe amounts to about one part in five by weight and by number. Thus, the projected increase in the next 50

years would amount to a factor closer to 2 than to 4 and a temperature change more like 1°K than 3.5°K. When combined with the effects of carbon dioxide, the net change would be less than 1°K.

Increased particulate production rates are not an inescapable consequence of increased energy production even from fossil fuels, since emission cleanups are within the range of known technology and probably also within the range of costs which could be accepted by the economies of those highly developed countries which are the major power producers.

PAUL F. GAST
Argonne National Laboratory, Argonne, Illinois 60439

Reference

1. Report of the Study of Critical Environmental Problems (SCEP), *Man's Impact on the Global Environment* (M.I.T. Press, Cambridge, Mass., 1970).

The report by Rasool and Schneider (9 July, p. 138) on potential climatic effects of atmospheric particulate matter was of great interest to me but has also caused me considerable distress. I have studied this same problem, using a somewhat different mathematical model, and have obtained results which are in good agreement with those of Rasool and Schneider; I find that the present particulate loading would have to be increased by a factor of 5 to produce a 3°C drop in mean planetary surface temperature. This work was done in November and December of 1969 and was presented before the International Solar Energy Society in Melbourne, Australia, on 4 March 1970. At the request of the editor of that society's journal, *Solar Energy*, the paper was submitted for publication and accepted, with minor revisions, in September 1970. However, because of unexpected delays, it will not appear until later this year.

A partial publication of my results appears in a Department of Commerce publication (*1*).

EARL W. BARRETT
Atmospheric Physics and Chemistry Laboratory, Environmental Research Laboratories, National Oceanic and Atmospheric Administration, Boulder, Colorado 80302

Reference

1. E. W. Barrett, R. F. Pueschel, H. K. Weickmann, P. M. Kuhn, *Inadvertent Modification of Weather and Climate by Atmospheric Pollutants* (Technical Report ERL 185 APCL-15, Environmental Science Services Administration, Research Laboratories, Government Printing Office, Washington, D.C., 1970), pp. 30–35.

10 September 1971, Volume 173, Number 4001

SCIENCE

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The Topsy-turvy World of Health-Care Delivery

In a recent speech Senator J. Glenn Beall, Jr. (R–Md.), called for the establishment of a National Institute of Health-Care Delivery.* In so doing, he has focused attention on a national problem of broad scale and transcendent urgency.

Over the years the American people have prided themselves on being the best clothed, best fed, best housed, best educated, and healthiest people in the world. But recent health statistics give cause for concern. Across the board, we are not the healthiest people in the world, in spite of a number of impressive facts. The nation has spent some $20 billion on biomedical research since the late 1940's. We now have more physicians and hospitals than ever before. And currently we spend for health services more—and the rate of expenditure is escalating more rapidly—than we have ever done before. In the last decade alone, physicians' fees have risen twice as rapidly and hospital charges four times as fast as other items in the Consumer Price Index.

The situation is a complex one. Certainly, the balance among the diseases has shifted toward the degenerative disorders. But, in addition, there are striking geographic variations in the availability of health resources. There are marked differences in availability for urban and rural populations and for the poor and the more affluent. Most insurance coverage is inadequate in that it excludes outpatient and preventive services and only partially accommodates catastrophic incidents. And, generally, resources, particularly those for unusual treatment, are poorly utilized everywhere. (If, for example, the utilization of health-care resources were improved by only 10 percent, the saving would be $5 billion. But, with a high proportion of third-party payments, there is little incentive for efficiency. Instead, the trend is to use the higher-cost facilities and services and to make as many of these available as possible.)

The essential ingredients of the Beall proposal merit serious examination. By 1970, health-care delivery had become the nation's second largest industry. But last year only $18 million was spent on research in this area. No other industry can make such a claim. The National Institutes of Health are charged with the technical aspects of prevention and treatment. The Health Services and Mental Health Administration is concerned with health-care delivery, but it has other responsibilities as well. A major tour de force is needed now—an administrative mandate backed by appropriate funding—to dramatize the importance of rational organization and planning of services, even though such action would add yet another agency to the welter already existing in the health field. Future legislation would do well to direct its sole attention to the social sciences, both basic and applied, which underlie effective organization and management. Furthermore, the importance of testing and evaluation should receive significant consideration. Already, a number of alternative systems—for instance, group practice, private prepaid care, a variety of community health-care schemes, and health maintenance organizations—are in various stages of design and development, and a nation with an established scientific tradition must certainly recognize the importance of pilot projects.

If the magnificent benefits of American medical research are meant for all of our people, then an effective science of health-care delivery is as important as the medical research itself.—WILLIAM BEVAN

* J. Glenn Beall, Jr., "A proposed institute of health-care delivery," *Congr. Rec.*, 15 June 1971, p. S 9086.

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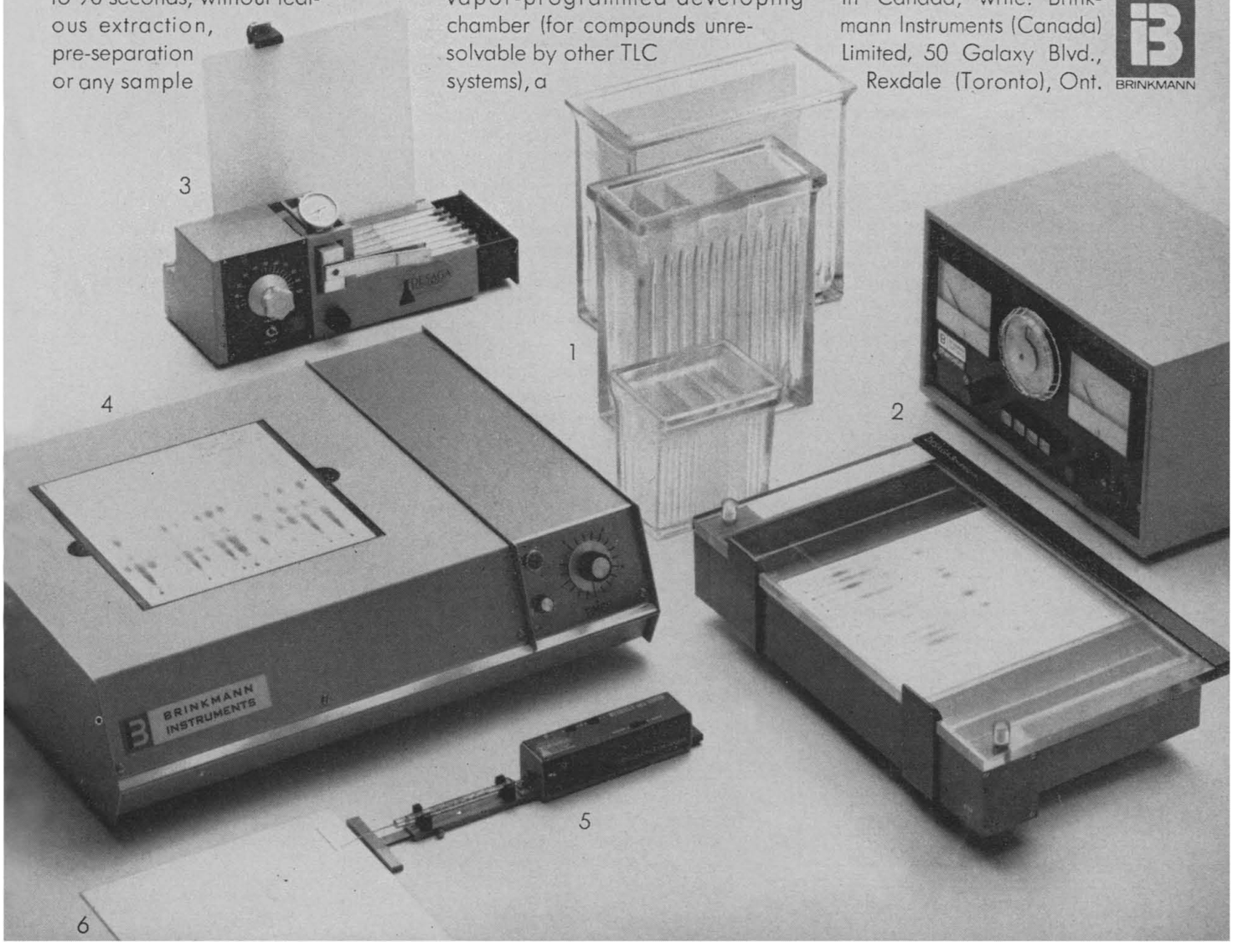

crossover from singlet to triplet state had occurred. This leads to a spin correlation time in this system of $\sim 10^{-8}$ second. A. Rassat discussed the ESR spectrum of bis-nitroxides in which the singlet-triplet energy separation varied between the extremes of much less and much greater than the electron-nuclear (nitrogen) hyperfine interaction. When the dipolar electron-electron coupling is small, solution ESR spectra can be observed for those molecules with population in the triplet state. In the solid state, measurement of the D and E dipolar splittings can be used to assign molecular geometry to the bis-nitroxide or to a diketone precursor. I. Moritani, head of the Japanese participants, described the stereospecific *cis* addition of di- or tri-benzocycloheptatrienylcarbene to the 2-butenes. Evidence was presented that the carbene existed in the triplet state. It was concluded that a stereospecific *cis* addition is not a diagnostic evidence for the ground state structure of a carbene. Closs emphasized that the rate of singlet-triplet intersystem crossing and the relative rates of singlet and triplet addition to the double bond must be considered carefully.

The decomposition of acyl and aroyl peroxide was considered by J. C. Martin (University of Illinois), K. Tokumaru (University of Tokyo), and M. Kobayashi (Tokyo Metropolitan University). Martin showed by ^{18}O labeling that the thermal decomposition of acetyl peroxide involves a caged pair of radicals in which statistical scrambling of the oxygen atoms occurs. Concerted 1,3 or 3,3 sigmatropic rearrangements were excluded unequivocally. Tokumaru demonstrated that benzophenone-sensitized photodecomposition of benzoyl peroxide gave a triplet caged radical pair which diffused apart with $k_d \sim 10^{10}$ sec^{-1}. Since the lifetime of the cage is much less than the time needed for spin correlation ($k \sim 10^8$ sec^{-1}), and since chemical reaction (bond breaking or formation) cannot occur with a change in multiplicity (singlet $\rightleftarrows$ triplet), geminate cage recombination to give phenyl benzoate is eliminated. Kobayashi discussed aromatic phenylation with the phenyl radical generated from a variety of sources including benzoyl peroxide, *N*-nitrosoacetanilide, phenyldiazonium hydroxide and tosylate, phenylazotriphenylmethane, and the novel system of phenyldiazonium salt plus sodium nitrite in dimethyl sulfoxide solution at 20°C. The reaction

may proceed via the diazonium nitrite, $C_6H_5N{=}NONO$.

Photochemical generation of radicals from hydrated vicinal triketones was discussed by Y. Otsuji (Osaka Prefectural University). Alloxan or triketo dihydrophenalene gave products suggestive of loss of the hydroxy radical from the photoexcited state.

G. A. RUSSELL
Department of Chemistry,
Iowa State University of
Science and Technology, Ames 50010

Forthcoming Events

October

1–2. Wisconsin Acad. of **Sciences, Arts and Letters**, Baraboo. (J. R. Batt, 5001 University Ave., Madison, Wis.)

1–5. American College of **Apothecaries**, Baltimore, Md. (R. A. Benedict, ACA, 7758 Wisconsin Ave., Washington, D.C. 20014)

3–6. American **Ceramic** Soc., Electronics Div., Kiamesha Lake, N.Y. (L. C. Hoffman, E. I. du Pont de Nemours & Co., Inc., Bldg. 336, Experimental Sta., Wilmington, Del. 19898)

3–6. American **Oil Chemists'** Soc., Atlantic City, N.J. (J. C. Lyon, 508 S. 6 St., Champaign, Ill. 61820)

3–8. **Electrochemical** Soc., Cleveland, Ohio. (E. G. Enck, ES, P.O. Box 2071, Princeton, N.J. 08540)

3–8. **Water Pollution Control** Federation, 44th annual, San Francisco, Calif. (WPCF, 3900 Wisconsin Ave., Washington, D.C. 20016)

4–6. **Turbulence in Liquids**, Rolla, Mo. (G. K. Patterson, Dept. of Chemical Engineering, Univ. of Missouri, Rolla 65401)

4–7. **Instrument** Soc. of America, 26th annual, Chicago, Ill. (ISA, 530 William Penn Pl., Pittsburgh, Pa. 15219)

4–8. American **Dietetic** Assoc., 54th annual, Philadelphia, Pa. (R. M. Yakel, 620 N. Michigan Ave., Chicago, Ill. 60611)

5–8. **Optical** Soc. of America, Ottawa, Ont., Canada. (J. W. Quinn, OSA, 2100 Pennsylvania Ave., NW, Washington, D.C.

5–12. International Bureau of **Weights and Measures**, 14th general assembly, Paris, France. (J. Terrien, Pavillon de Breteuil, 92 Sevres, France)

8–10. Joint Conf. on **Sensing of Environmental Pollutants** (AIAA, ISA, ACS, IEEE, NASA, and NOAA), Palo Alto, Calif. (Instrument Soc. of America, 400 Stanwix St., Pittsburgh, Pa.)

9. **Paleontological Research** Institution, Ithaca, N.Y. (Mrs. K. V. W. Palmer, PRI, 1259 Trumansburg Rd., Ithaca, N.Y. 14850)

9–10. American College of **Dentists**, Atlantic City, N.J. (R. J. Nelsen, ACD, 7316 Wisconsin Ave., Bethesda, Md. 20014)

10–14. American Assoc. of **Cereal Chemists**, Dallas, Tex. (R. Tarleton, AACC, 1821 University Ave., St. Paul, Minn. 55104)

10–14. **Rare Earth** Research, 9th conf., Blacksburg, Va. (L. T. Taylor, Dept. of Chemistry, Virginia Polytechnic Inst. and State University, Blacksburg 24061)

10–15. Latin-American **Cancer** Congr., 5th, Caracas, Venezuela. (CILAC, Aptdo 1126, Caracas)

10–15. American **Chemical** Soc., intern. rubber conf., Cleveland, Ohio. (Rubber Div., ACS, 1155 16th St., NW, Washington, D.C. 20036)

11–13. **Electron Devices,** Institute of Electrical and Electronics Engineers, Inc., Washington, D.C. (H. D. Toombs, Texas Instruments, Inc., P.O. Box 5012, MS 922, Dallas, Tex. 75222)

11–13. Society for **Industrial and Applied Mathematics,** Madison, Wis. (SIAM, 33 S. 17 St., Philadelphia, Pa. 19103)

11–14. Association of **Official Analytical Chemists,** 85th annual, Washington, D. C. (L. G. Ensminger, AOAC, Box 540, Benjamin Franklin Sta., Washington, D.C. 20044)

11–15. National Bureau of Standards Inst. on **Materials Research,** Boston, Mass. (T. E. Madey, Surface Chemistry Section, Natl. Bureau of Standards, Washington, D.C. 20234)

11–15. American **Public Health** Assoc., Minneapolis, Minn. (J. R. Kimmey, 1740 Broadway, New York 10019)

11–15. American Assoc. for **Laboratory Animal Science,** New York, N.Y. (J. J. Garvey, AALAS, Central Office, Box 10, Joliet, Ill. 60434)

11–15. American **Vacuum** Soc., Boston, Mass. (Mrs. D. M. Hoffman, RCA Laboratories, Princeton, N.J. 08540)

12–13. **Industrial Health** Foundation, 36th annual, Pittsburgh, Pa. (R. T. P. deTreville, 5231 Center Ave., Pittsburgh)

12–13. **Methods for Predicting the Future,** Pomona, Calif. (Center for Executive Development, 1044 Concord St., Costa Mesa, Calif. 92626)

12–14. **Luminescence Dosimetry,** 3rd intern. conf., Riso, Denmark. (V. Majdahl, Atomic Energy Research Establishment, Riso)

12–15. Canadian **Chemical Engineering** Conf., 21st, Montreal, P.Q. (Chemical Inst. of Canada, Suite 906, 151 Slater St., Ottawa 4, Ont.)

12–15. **Neurological Surgeons,** Bal Harbor, Fla. (B. S. Patrick, University Medical Center, 2500 N. State St., Jackson, Miss. 39216)

13–16. National Assoc. of **Biology Teachers,** Chicago, Ill. (J. P. Lightner, NABT, 1420 N St., NW, Washington, D.C. 20005)

13–17. **Medical Soc. of the United States and Mexico,** 19th annual, Scottsdale, Ariz. (Mrs. V. E. Bryant, Executive Secretary, 333 W. Thomas Road, Phoenix)

14. **Fibrous Structures in Biomedical Applications,** Fiber Soc., Princeton, N.J. (L. Rebenfeld, P.O. Box 625, Princeton 08540)

15. **Medical Correctional** Assoc., New York, N.Y. (M. O. Tuchler, 4426 N. 36 St., Phoenix, Ariz. 85018)

16–17. **Groundwater Pollution** Conf., St. Louis, Mo. (W. Cate, Underwater Research Inst., 3411 Hampton Ave., St. Louis 63139)

16–20. National **Environmental Sanita-**

tion and Maintenance Management Conf., Los Angeles, Calif. (Inst. of Sanitation Management, 1710 Drew St., Clearwater, Fla. 33515)

16–21. American Acad. of **Pediatrics**, 40th annual, Chicago, Ill. (R. G. Frazier, 1801 Hinman Ave., Evanston Ill. 60201)

17–21. American **Nuclear** Soc., Miami Beach, Fla. (O. J. Du Temple, ANS, 244 E. Ogden Ave., Hinsdale, Ill. 60521)

17–25. World Congr. on **Fertility and Sterility**, 7th, Tokyo and Kyoto, Japan. (M. Hayashi, Dept. of Obsteterics and Gynecology, Toho Univ., XI-I West 6, Omori, Otaku, Tokyo)

18–20. **Chemistry and Spectroscopy**, 10th Pacific congr., Anaheim, Calif. (sponsored by Society of Applied Spectroscopy and American Chemical Soc.) (A. Abu-Shumays, Cary Instruments, 2724 S. Peck Rd., Monrovia, Calif. 91016)

18–20. **Soil Microcommunities** Conf., Syracuse, N.Y. (D. L. Dindal, State University College of Forestry, Syracuse 13210)

18–21. American Soc. for **Metals**, Detroit, Mich. (A. R. Putnam, ASM, Metals Park, Ohio 44073)

18–21. **Technology for Productivity**, Detroit, Mich. (R. J. Seman, American Soc. for Metals, Metals Park, Ohio 44073)

18–22. **Microdosimetry**, 2nd symp., Stresa, Italy. (H. G. Ebert, Direction Générale, Centre Commun de Recherche, C.C.E., rue de la Loi, 200, 1040 Bruxelles, Belgique)

18–21. International Federation for **Hygiene, Preventive Medicine, and Social Medicine** Congr., Madrid, Spain. [Secretriat, Escuela Nacional de Sanidad, Facultad de Medicina (Pabellon No. 1), Ciudad Universitaria, Madrid-3]

18–22. Society for **Applitd Spectroscopy**, St. Louis, Mo. (Miss J. E. Westmeyer, Titanium Pigment Div., National Lead Co., Carondelet Sta., St. Louis 63111)

18–22. **EUROCON 71**, Inst. of Electrical and Electronics Engineers, Inc., Lausanne, Switzerland. (A. Rannestad, Chairman, Technical Programme Committee, N.D.R.E., P.O. Box 25, N-2007 Kjeller, Norway)

18–22. American College of **Surgeons**, 57th annual clinical congr., Atlantic City, N.J. (T. E. McGinnis, ACS, 55 E. Erie St., Chicago, Ill. 60611)

19–21. **Antimicrobial Agents and Chemotherapy**, 11th interscience congr., Atlantic City, N.J. (R. W. Sarber, American Soc. for Microbiology, 1913 Eye St., NW, Washington, D.C. 20006)

19–22. **Acoustical** Soc. of America, Denver, Colo. (Miss B. H. Goodfriend, ASA, 335 E. 45 St., New York 10017)

19–22. Society for **Experimental Stress Analysis**, Milwaukee, Wis. (B. E. Rossi, SESA, 21 Bridge Sq., Westport, Conn.)

19–22. American Soc. for **Microbiology**, Atlantic City, N.J. (R. W. Sarber, ASM, 1913 Eye St., NW, Washington, D.C. 20006)

20–21. **Chemurgic** Council, 33rd annual, Washington, D.C. (J. W. Ticknor, CC, 350 Fifth Ave., New York 10001)

20–22. **Transplutonium** Symp., 3rd. Argonne, Ill. (D. C. Stewart, Chemistry Div., Argonne National Lab., 9700 Cass Ave., Argonne 60439)

21–23. American Soc. for **Aesthetics**, Los Angeles, Calif. (J. R. Johnson, Cleveland Museum of Art, Cleveland, Ohio 44106)

21–23. American Acad. of **Clinical Toxicology**, Philadelphia, Pa. (E. G. Comstock, P.O. Box 2565, Houston, Tex. 77001)

21–23. **Unconventional Photographic Systems**, Washington, D.C. (Soc. of Photographic Scientists and Engineers, 1330 Massachusetts Ave., NW, Washington, D.C. 20005)

21–24. Society for **Psychophysiological Research**, Clayton, Mo. (K. M. Kleinman, Dept. of Psychology, Southern Illinois Univ., Edwardsville 62025)

22–27. American Soc. for **Information Science**, Washington, D.C. (ASIS, Suite 804, 1140 Connecticut Ave., NW, Washington, D.C. 20036)

23–26. American Inst. of **Biological Sciences**, 2nd natl., Miami Beach, Fla. (Miss A. Barker, National Biological Congr., 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

25–27. Symposium on **Insulin Action**, Toronto, Ont., Canada. (I. B. Fritz, Univ. of Toronto, 112 College St., Toronto 101)

25–27. Canadian **Manufacturers of Chemical Specialties** Assoc., 14th annual, Toronto, Ont. (J. Chevalier, CMCSA, Suite 1004, Cominion Sq. Bldg., 1010 Ste. Catherine St. W, Montreal 2, P.Q.)

25–27. **Implementing Nuclear Safeguards**, Manhattan, Kan. (R. B. Leachman, Diversion Safeguard Program, Cardwell Hall, Kansas State University, Manhattan 66502)

25–29. **Water Resources** Conf., 7th, Washington, D.C. (S. C. Csallany, American Water Resources Assoc., Illinois State Water Survey, Univ. of Illinois, Urbana 61801)

27–30. **Gerontological** Soc., Houston, Tex. (GS, 1913 S. Signal Hills, Kirkwood, Mo. 63122)

27–30. Society for **Neuroscience**, Washington, D.C. (Miss M. G. Wilson, SN, 2101 Constitution Ave., NW, Washington, D.C. 20418)

29–30. **Theoretical Physics** Conf., Schenectady, N.Y. (J. B. Comly, General Electric Research & Development Center, P.O. Box 8, Schenectady)

29–1. Association of American **Medical Colleges**, 82nd annual, Washington, D.C. (J. B. Erdmann, 1 Dupont Circle, NW, Washington, D.C. 20036)

30–5. American **Concrete** Inst., Buffalo, N.Y. (ACI, Box 4754, Redford Station, 22400 W. Seven Mile Rd., Detroit, Mich. 48219)

31–3. Academy of **Psychosomatic Medicine**, Sarasota, Fla. (A. J. Krakowski, 202A Cornelia St., Plattsburgh, N.Y. 12901)

November

1–3. **Electrical Insulation and Dielectric Phenomena** Conf., National Acad. of Sciences–National Research Council, Williamsburg, Va. (R. A. Cliffe, National Acad. of Sciences, 2101 Constitution Ave., NW, Washington, D.C. 20418)

1–3. **Geological** Soc. of America (with Paleontological Soc., Mineralogical Soc.

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of America, Soc. of Economic Geologists, Soc. of Vertebrate Paleontology, Geochemical Soc., National Assoc. of Geology Teachers, and Geoscience Information Soc.), Washington, D.C. (W. L. Newman, Nontechnical Reports, U.S. Geological Survey, Washington, D.C. 20242, or W. Cochran, Managing Editor, *Geotimes*, 2201 M St., NW, Washington, D.C. 20037)

3–5. Pittsburgh **Diffraction** Conf., 29th annual, Pittsburgh, Pa. (J. E. Gragg, Dept. of Metallurgy and Materials Science, Carnegie-Mellon Univ., Schenley Park, Pittsburgh 15213)

3–5. **Nuclear Science** Symp. (IEEE Nuclear Science Group, AEC, and NASA), San Francisco, Calif. (K. A. More, Bendix Corp., Aerospace Systems Div., 3300 Plymouth Rd., Ann Arbor, Mich. 48107)

3–6. American Soc. of **Cytology**, 19th annual scientific mtg., Washington, D.C. (W. R. Lang, ASC, 7112 Lincoln Dr., Philadelphia, Pa. 19119)

3–7. American Soc. of **Criminology**, San Juan, Puerto Rico. (Miss C. G. Schultz, Dept. of Sociology, Ohio State Univ., Columbus 43210)

4–5. **Energy** Conf., Albany, N.Y. (R. I. Brown, Environmental Studies, ULB 35, State Univ. of New York at Albany, 1400 Washington Ave., Albany)

4–6. **Nuclear Physics**, American Physical Soc., Tucson, Ariz. (W. W. Havens, Jr., APS, 335 E. 45 St., New York 10017)

6. **Earth Science Education** Symp., 2nd annual, La Salle, Ill. (T. Brehman, Maine Township High School North, Des Plaines, Ill.)

7–10. American Assoc. for **Clinical Immunology and Allergy**, New Orleans, La. (S. H. Jaros, P.O. Box 965, D.T.S., Omaha, Nebr. 68101)

7–11. **Exploration Today—Energy Tomorrow**, Soc. of Exploration Geophysicists, 41st annual intern. mtg., Houston, Tex. (SEG, P.O. Box 3098, Tulsa, Okla. 74101)

7–11. American Soc. for **Information Science**, 34th annual, Denver, Colo. (Miss S. Wormley, Suite 804, ASIS, 1140 Connecticut Ave., NW, Washington, D.C. 20036)

8. **Conversion of Wastes to Profit** Symp., Toronto, Ont., Canada. (R. G. W. Laughlin, Canadian Soc. for Chemical Engineering, 151 Slater St., Ottawa 4)

8–10. **Biochemistry of Complex Carbohydrate Polymers**, an Integrated View, International Union of Biochemistry, Barlioche, Argentina. (H. G. Pontis, Casilla de Correo 138, San Carlos de Variloche, Province de Rio Negro, Argentina)

8–10. International Soc. for the **Study of Biological Rhythms**, Little Rock, Ark. (J. E. Pauly or L. E. Scheving, Dept. of Anatomy, Univ. of Arkansas Medical Center, Little Rock 72201)

9–16. American **Heart** Assoc., Anaheim, Calif. (J. M. Hundley, AHA, 44 E. 23 St., New York 10010)

10–12. Eastern **Analytical** Symp. (American Chemical Soc., Soc. for Applied Spectroscopy, and American Microchemical Soc.), New York, N.Y. (I. L. Simmons, M&T Chemicals, Inc., P.O. Box 1104, Rahway, N.J. 07605)

11–12. **Endocrine and Nonendocrine Hormone Producing Tumors**, 16th annual clinical conf., Houston, Tex. (Mrs. J. Brandenberger, Information Coordinator, Univ. of Texas M.D. Anderson Hospital and Tumor Inst., Texas Medical Center, Houston 77025)

12–14. Association of **Clinical Scientists**, 40th mtg., Washington, D.C. (F. W. Sunderman, Hahnemann Medical College and Hospital, 230 N. Broad St., Philadelphia, Pa. 19102)

12–16. **Atomic Industrial** Forum, American Nuclear Soc., Washington, D.C. (ANS, 850 Third Ave., New York 10022)

14–15. **Cerebral Function** Symp. on Hemisphere Disconnection and Cerebral Function, Coronado, Calif. (W. L. Smith, Cortical Function Lab., Porter Memorial Hospital, 2525 S. Downing, Denver, Colo. 80210)

15–17. American **Petroleum** Inst., San Francisco, Calif. (API, 1271 Ave. of the Americas, New York 10020)

15–18. Joint **Computer** Conf., Las Vegas, Nev. (American Federation of Information Processing Societies, 210 Summit Ave., Montvale, N.J. 07645)

15–19. **Clinical Uses of Radionuclides:** Critical Comparison with Other Techniques, 13th symp., Oak Ridge, Tenn. (E. C. Rosenow, American College of Psysicians, 4200 Pine St., Philadelphia, Pa. 19104)

16–18. Conference on the **Quality of the Environment**, Columbus, Ohio. (R. A. Tybout, Ohio State Univ., 166 Denny Hall, 164 W. 17 Ave., Columbus 43210)

16–19. **Magnetism and Magnetic Mate-**

rials, 17th annual conf., Chicago, Ill. (H. C. Wolfe, American Inst. of Physics, 335 E. 45 St., New York 10017)

18–19. **Sickle Cell Disease** Symp., New York, N.Y. (H. Abramson, National Foundation, 315 Park Ave. South, New York 10010)

18–20. **School Science and Mathematics** Assoc., Detroit, Mich. (D. R. Winslow, P.O. Box 246, Bloomington, Ind. 47401)

18–21. American **Anthropological** Assoc., New York, N.Y. (E. J. Lehman, 1703 New Hampshire Ave., NW, Washington, D.C. 20009)

20. **Resources of the World's Oceans** Symp., New York, N.Y. (H. R. Frey, New York Inst. of Ocean Resources, Inc., South Street Seaport Museum, 16 Fulton St., New York 10038)

24–26. World Federation for **Mental Health**, Hong Kong. (C. L. Wong, Hong Kong Assoc. for Mental Health, Hong Kong)

25–27. Central Assoc. of **Science and Mathematics Teachers**, Detroit, Mich. (D. R. Winslow, P.O. Box 246, Bloomington, Ind. 47401)

28–1. American **Medical** Assoc., clinical conv., New Orleans, La. (E. B. Howard, AMA, 535 N. Dearborn St., Chicago, Ill. 60610)

28–2. American Inst. of **Chemical Engineers**, San Francisco, Calif. (F. J. Van Antwerpen, AICE, 345 E. 47 St., New York 10017)

28–2. American History of **Mechanical Engineers**, 92nd annual, Washington, D.C. (M. Jones, Information Services, ASME, 345 E. 47 St., New York 10017)

28–3. **Radiological** Soc. of North America, Chicago, Ill. (M. D. Frazer, RSNA, 713 E. Genesee St., Syracuse, N.Y. 13210)

28–4. World Congr. of **Psychiatry**, 5th, Mexico City, Mexico. (Secretariado del "V" Congreso Mundial de Psiquiatría, Apartado Postal No. 20-123/24, Mexico D.F., Mexico)

29–2. **Entomological** Soc. of America, Los Angeles, Calif. (W. P. Murdoch, ESA, 4603 Calvert Rd., College Park, Md. 20740)

29–3. Symposium on **Analytical Methods in the Nuclear Fuel Cycle**, International Atomic Energy Agency, Vienna, Austria. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

29–4. International College of **Surgeons**, 4th Western Hemisphere congr., Panama City, Panama. (Office of the President, ICS, 1516 N. Lake Shore Dr., Chicago, Ill. 60610)

30. **Nutritional Requirements of Vitamin K**, Assoc. of Vitamin Chemists, Rosemont, Ill. (J. McGillivrey, International Minerals and Chemicals, Route 45 and Winchester Rd., Libertyville, Ill. 60048)

30–3. American Soc. of **Tropical Medicine and Hygiene**, Boston, Mass. (G. R. Healy, P.O. Box 15208, Emory Univ. Branch, Atlanta, Ga. 30333)

December

1–3. **Electron and Atomic Physics**, American Physical Soc., Atlanta, Ga. (W. W. Havens, Jr., APS, 335 E. 45 St., New York 10017)

BOOKS RECEIVED

(*Continued from page 1015*)

Crystallography and Crystal Defects. A. Kelly and G. W. Groves. Addison-Wesley, Reading Mass., 1971. xii, 428 pp. + plates. $15.

Defect Electronics in Semiconductors. Herbert F. Mataré. Wiley-Interscience, New York, 1971. xii, 640 pp., illus. $24.95.

Design of Solid-State Power Supplies. Eugene R. Hnatek. Van Nostrand Reinhold, New York, 1971. xvi, 444 pp., illus. $19.75.

Experimental Studies on the Nature of Species. Vol. 5, Biosystematics, Genetics, and Physiological Ecology of the Erythranthe Section of Mimulus. William M. Hiesey, Malcolm A. Nobs, and Olle Bjorkman. Carnegie Institution of Washington, Washington, D.C., 1971. vi, 214 pp., illus. Cloth, $7.90; Paper, $6.75. Carnegie Institution of Washington Publication 628.

Finite Mathematics and Calculus. Mathematics for the Social and Management Sciences. Guillermo Owen and M. Evans Munroe. Saunders, Philadelphia, 1971. x, 598 pp., illus. $10.50.

Goals and Means in the Conquest of Space. R. G. Perel'man. Translation of the Russian edition (Moscow, 1967). National Aeronautics and Space Administration, Washington, D.C., 1971 (available as NASA TT F-595 from the National Technical Information Center, Springfield, Va.). vi, 178 pp., illus. Paper, $3.

Handbook of Laboratory Unit Operations for Chemists and Chemical Engineers. Jan Pinkava. Translated from the Czech by J. Bryant. Gordon and Breach, New York, 1971. xvi, 470 pp., illus. $29.50.

Hippocrates. Edwin Burton Levine. Twayne, New York, 1971. ii, 172 pp. $5.50

In Vitro Methods in Reproductive Cell Biology. Transactions of a symposium, Geneva, January 1971. E. Diczfalusy and A. Diczfalusy, Eds. Reproductive Endocrinology Research Unit, Karolinska Institute, Stockholm, 1971. 358 pp., illus. Karolinska Symposia on Research Methods in Reproductive Endocrinology. Also published as *Acta Endocrinologica* Suppl. No. 53.

The Kidney. Morphology, Biochemistry, Physiology. Vol. 4. Charles Rouiller and Alex F. Muller, Eds. Academic Press, New York, 1971. xiv, 430 pp., illus. $25.

Large Sparse Sets of Linear Equations. Proceedings of a conference, Oxford, April 1970. J. K. Reid, Ed. Academic Press, New York, 1971. x, 284 pp., illus. $16.

Mezquites y Huizaches. Algunos aspectos de la economia, ecologia y taxonomia de los generos, *Prosopis* y *Acacia* en Mexico. Federico Gómez Lorence, Jacqueline Signoret Poillon, and Maris del Carlmen Abúin Moreiras. Instituto Mexicana de Recursos Naturales Renovables, Mexico City, 1970. x, 194 pp., illus. Paper.

Modern Physics and Quantum Mechanics. Elmer E. Anderson. Saunders, Philadelphia, 1971. xii, 430 pp., illus. $14.50.

Monographs and Papers in Maya Archaeology. William R. Bullard, Jr., Ed.

Peabody Museum of Archaeology and Ethnology, Cambridge, Mass., 1970. x, 502 pp., illus. $13.50. Papers of the Peabody Museum, vol. 61.

Morphological and Functional Aspects of Immunity. Proceedings of a conference, Uppsala, Sweden, September 1970. Kerstin Lindahl-Kiessling, G. Alm, and M. G. Hanna, Jr., Eds. Plenum, New York, 1971. xxviii, 694 pp., illus. $28. Advances in Experimental Medicine and Biology, vol. 12.

The Neolithic Revolution. Sonia Cole. British Museum (Natural History), London, ed. 5, 1970. xii, 72 pp. + plates. Paper.

Neuroscience. A Laboratory Manual. James E. Skinner. Saunders, Philadelphia, 1971. x, 244 pp., illus. Paper, $6.95.

The Numerical Performance of Variational Methods. S. G. Mikhlin. Translated from the Russian by R. S. Anderssen. Wolters-Noordhoff, Groningen, Netherlands, 1971. xxiv, 374 pp.

Of Microbes and Life. Jacques Monod and Ernest Borek, Eds. Columbia University Press, New York, 1971. xx, 312 pp., illus. $12.50.

On Relief. The Economics of Poverty and Public Welfare. Bruno Stein. Basic Books, New York, 1971. xii, 212 pp. $6.95.

Physical Measurements and the International (SI) System of Units. Robert A. Ackley. Technical Publications, San Diego, Calif., ed. 3, 1971. viii, 88 pp., illus. Paper, $1.75.

Physics in India. Challenges and Opportunities. Proceedings of a conference, Srinagar, June 1970. National Council for Science Education, New Delhi, 1971. xiv, 324 pp. Paper, $4.

Physics of Thin Films. Advances in Research and Development. Vol. 6. Maurice H. Francombe and Richard W. Hoffman, Eds. Academic Press, New York, 1971. xiv, 370 pp., illus. $19.50.

The Physiology of Hostility. K. E. Moyer. Markham, Chicago, 1971. x, 194 pp., illus. $7.50.

The Pineal Gland. A Ciba Foundation symposium, London, June 1970. G. E. W. Wolstenholme and Julie Knight, Eds. Churchill Livingstone, Edinburgh, 1971 (U.S. distributor, Williams and Wilkins, Baltimore, Md.). xii, 402 pp., illus. $14.50.

The Place of Value in a World of Facts. Proceedings of the Fourteenth Nobel Symposium, Stockholm, September 1969. Arne Tiselius and Sam Nilsson, Eds. Almqvist and Wiksell, Stockholm, and Wiley Interscience, New York, 1971. 496 pp., illus. $14.95.

Planetary Atmospheres. International Astronomical Union Symposium No. 40, Marfa, Tex., October 1969. Carl Sagan, Tobias C. Owen, and Harlan J. Smith, Eds. Published for the International Astronomical Union by Reidel, Dordrecht, Netherlands, and Springer-Verlag, New York, 1971. xviii, 408 pp., illus. $25.

Politics and the Stages of Growth. W. W. Rostow. Cambridge University Press, New York, 1971. xiv, 410 pp. Cloth, $9.50; paper, $3.95.

The Politics of Ecosuicide. Leslie L. Roos, Jr., Ed. Holt, Rinehart and Winston, New York, 1971. viii, 404 pp., illus. Paper, $5.

Prehistoric Agriculture. Stuart Struever, Ed. Published for the American Museum of Natural History by the Natural History Press, Garden City, N.Y., 1971. x, 735 pp. Cloth, $9.95; paper, $4.95. American Museum Sourcebooks in Anthropology.

Principles of Activation Analysis. Paul Kruger. Wiley-Interscience, New York, 1971. xii, 522 pp., illus. $25.

Principles of Astronomy. Stanley P. Wyatt. Allyn and Bacon, Boston, ed. 2, 1971. xvi, 686 pp. + plates. $14.95.

Probes of Structure and Function of Macromolecules and Membranes. Vol. 1, Probes and Membrane Function. Proceedings of a colloquium, Philadelphia, April 1969. Britton Chance, Chuan-pu Lee, and J. Kent Blasie, Eds. Academic Press, New York, 1971. xxx, 552 pp., illus. $13.50. Johnson Research Foundation Colloquia.

Probes of Structure and Function of Macromolecules and Membranes. Vol. 2, Probes of Enzymes and Hemoproteins. Proceedings of a colloquium, Philadelphia, April 1969. Britton Chance, Takashi, Yonetani, and Albert S. Mildvan, Eds. Academic Press, New York, 1971. xxviii, 626 pp., illus. $14. Johnson Research Foundation Colloquia.

Probit Analysis. D. J. Finney. Cambridge University Press, New York, ed. 3, 1971. xvi, 334 pp., illus., + foldout chart. $18.50.

Proceedings of the North American Paleontological Convention. Chicago, September 1969. Ellis L. Yochelson, Ed. Part G, Ultra Microplankton, ii + pp. 703–1010, $15; part H, Evolution of Higher Categories, ii + pp. 1011–1152, $5.75; part I, Extraordinary Fossils, ii + pp. 1153–1270, $5; part J, Reef Organisms Through Time, ii + pp. 1271–1482, $11; part K, Phosphate in Fossils, ii + pp. 1483–1562, $3.50; part L, Cretaceous Biogeography, ii + pp. 1563–1674, $5. Allen, Lawrence, Kan., 1971. Illus. Paper. Bound volume, parts G–L, $45.

The Professions. Roles and Rules. Wilbert E. Moore, in collaboration with Gerald W. Rosenblum. Russell Sage Foundation, New York, 1971. xiv, 316 pp. $8.95.

Progress in Physical Organic Chemistry. Vol. 8. Andrew Streitwieser, Jr., and Robert W. Taft, Eds. Wiley-Interscience, New York, 1971. viii, 360 pp., illus. $22.50.

The Psychology of Commitment. Experiments Linking Behavior to Belief. Charles A. Kiesler. Academic Press, New York, 1971. xiv, 190 pp., illus. $9.95. Social Psychology Series.

Quasars and Pulsars. Dewey B. Larson. North Pacific, Portland, Ore., 1971. xii, 180 pp., illus. $6.50. Reprint of the 1959 edition.

The Radio Universe. J. S. Hey. Pergamon, New York, 1971. viii, 248 pp., illus. $6.75.

Reactions under Plasma Conditions. M. Venugopalan, Ed. Wiley-Interscience, New York, 1971. Vol. 1, xiv, 600 pp., illus.; vol. 2, xiv, 608 pp., illus. $29.95 each volume.

Readings in Evaluation Research. Francis G. Caro, Ed. Russell Sage Foundation, New York, 1971. xiv, 418 pp., illus. $12.50.

Relativistic Astrophysics. Vol. 1, Stars and Relativity. Ya. B. Zeldovich and I. D. Novikov. Translated from the Russian by Eli Arlock Kip S. Thorne and W. David Arnett, Transl. Eds. University of Chicago

Press, Chicago, 1971. xviii, 522 pp., illus. $24.

Religion, Politics, and History in India. Collected Papers in Indian Sociology. Louis Dumont. Mouton, Paris, 1971. x, 166 pp. 33 F. Le Monde d'Outre-Mer Passé et Présent, No. 34.

Requiem for Democracy? Lewis M. Andrews and Marvin Karlins. Holt, Rinehart and Winston, New York, 1971. xii, 148 pp. + plates. Paper, $4.

The Role of Science and Technology in Developing Countries. Graham Jones. Published for the International Council of Scientific Unions by Oxford University Press, New York, 1971. xiv, 174 pp. Cloth, $5.75; paper, $2.50.

Science in America. Historical Selections. John C. Burnham, Ed. Holt, Rinehart and Winston, New York, 1971. xii, 496 pp. Paper, $6.

Some Aspects of the Aetiology and Biochemistry of Prostatic Cancer. Proceedings of a workshop. K. Griffiths and C. G. Pierrepoint, Eds. Published for Tenovus Workshop Publication by Alpha Omega Alpha, Cardiff, United Kingdom, 1970. vi, 170 pp., illus.

Southern Arabia. Brian Doe. McGraw-Hill, New York, 1971. 268 pp. + plates. $12.95. New Aspects of Antiquity Series.

Spectrométrie d'Absorption Atomique. Maurice Pinta. Vol. 1, Problèmes Généraux, vi + pp. 1–286, illus. + index, 110 F; vol. 2, Application à l'Analyse Chimique, iv + pp. 287–794, illus. + index, 185 F. Masson and O.R.S.T.O.M., Paris, 1971.

Statistical Methods in Medical Research. P. Armitage. Wiley, New York, 1971. xvi, 504 pp., illus. $16.

Systems Analysis and Simulation in Ecology. Vol. 1. Bernard C. Patten, Ed. Academic Press, New York, 1971. xvi, 608 pp., illus. $27.50.

Systems Analysis for Engineers and Managers. Richard de Neufville and Joseph H. Stafford. McGraw-Hill, New York, 1971. xiv, 354 pp., illus. $14.95.

Tables of Spectral Lines. A. N. Zaidel', V. K. Prokof'ev, S. M. Raiskii, V. A. Slavnyi, and E. Ya Shreider. Translated from the Russian edition (Moscow, 1969). IFI/Plenum, New York, 1970. 782 pp. $45.

The Theory. Peter B. Horsley. Vantage, New York, 1971. 218 pp., illus. $4.95.

Theory of Intermolecular Forces. H. Margenau and N. R. Kestner. Pergamon, New York, ed. 2, 1971. xii, 400 pp., illus. $18.75. International Series of Monographs in Natural Philosophy.

The Theory of Linear Systems. J. E. Rubio. Academic Press, New York, 1971. xii, 332 pp. $14. Electrical Science Series.

Thermal Conductivity. Metallic Elements and Alloys. Y. S. Touloukian, R. W. Powell, C. Y. Ho, and P. G. Klemens. IFI/Plenum, New York, 1970. xxviii, 1516 pp., illus. $95. Thermophysical Properties of Matter, vol. 1. The TPRC Data Series.

Thermal Conductivity. Nonmetallic Solids. Y. S. Touloukian, R. W. Powell, C. Y. Ho, and P. G. Klemens. IFI/Plenum, New York, 1970. xxx, 1218 pp., illus. $85. Thermophysical Properties of Matter, vol. 2. The TPRC Data Series.

Thrombosis and Embolism. A symposium, Fredensborg, Denmark, October 1969. Huber, Bern, 1971. 114 pp., illus. DM 39.

Personnel Placement

POSITIONS WANTED

Biochemist, 11 years of experience in research, teaching, and so forth. Good references. Publications. Returning from a tour abroad. Seeking position. Box 314, SCIENCE. X

Biochemist, recent Ph.D. postdoctoral position wanted relative to nucleic acid participation in transcriptive or translational processes. Publications. Box 324, SCIENCE. X

Entomologist, Toxicologist, Human Physiologist, Ph.D., 12 years' experience as livestock entomologist, research representative for chemical company, and teaching. Publications and some administrative experience. Seeking academic, industry, or environmental position. Box 325, SCIENCE. X

Physiologist-Pharmacologist: Ph.D., 20 years' experience. Desires only teaching and (or) administration. Only ethical employers need reply. Box 317, SCIENCE. X

Zoologist, Embryologist, and Anatomist, Ph.D. Active basic research program in normal and pathological fine structure, cell ultrastructure, human and comparative histology, comparative light and electron microscopy. Numerous publications. Considerable experience in both transmission and scanning microscopy (training, laboratory design, direction, and research). Desires senior level academic teaching and research position. Box 326, SCIENCE. X

POSITIONS OPEN

MEDICAL RESEARCH

Major cardiovascular instrument manufacturer is looking for an M.D. or Ph.D. interested in research in blood disease. Salary commensurate with background. Complete benefit package. Reply **Technical Coordinator, P.O. Box 428, Buena Vista Station, Miami, Florida 33137.**

RESEARCH SCIENTISTS

Canadian Forestry Service
Department of Environment
Fredericton, N.B.

Salary up to $22,111

SILVICULTURIST—To undertake research into the ecology and potential productivity of forest land in western Nova Scotia. The objective is to devise silvicultural prescriptions to arrest forest degeneration after harvesting and to rehabilitate presently unproductive land.

Reference 71-100-K

MENSURATIONIST—To undertake research in and advise on mensurational aspects of forest land management and silvicultural programs in the Maritime Provinces.

Reference 71-100-L

QUALIFICATIONS: University graduation preferably at the Doctorate level with experience in a related field.

Applications or résumés with list of publications and names of three referees should be forwarded immediately to the:

Public Service of Canada

BIO-PHYSICAL SCIENCES PROGRAM, PUBLIC SERVICE COMMISSION OF CANADA, OTTAWA, ONTARIO. K1A 0M7

Please quote appropriate reference number in all correspondence.

Canadian citizens have statutory preference for appointment.