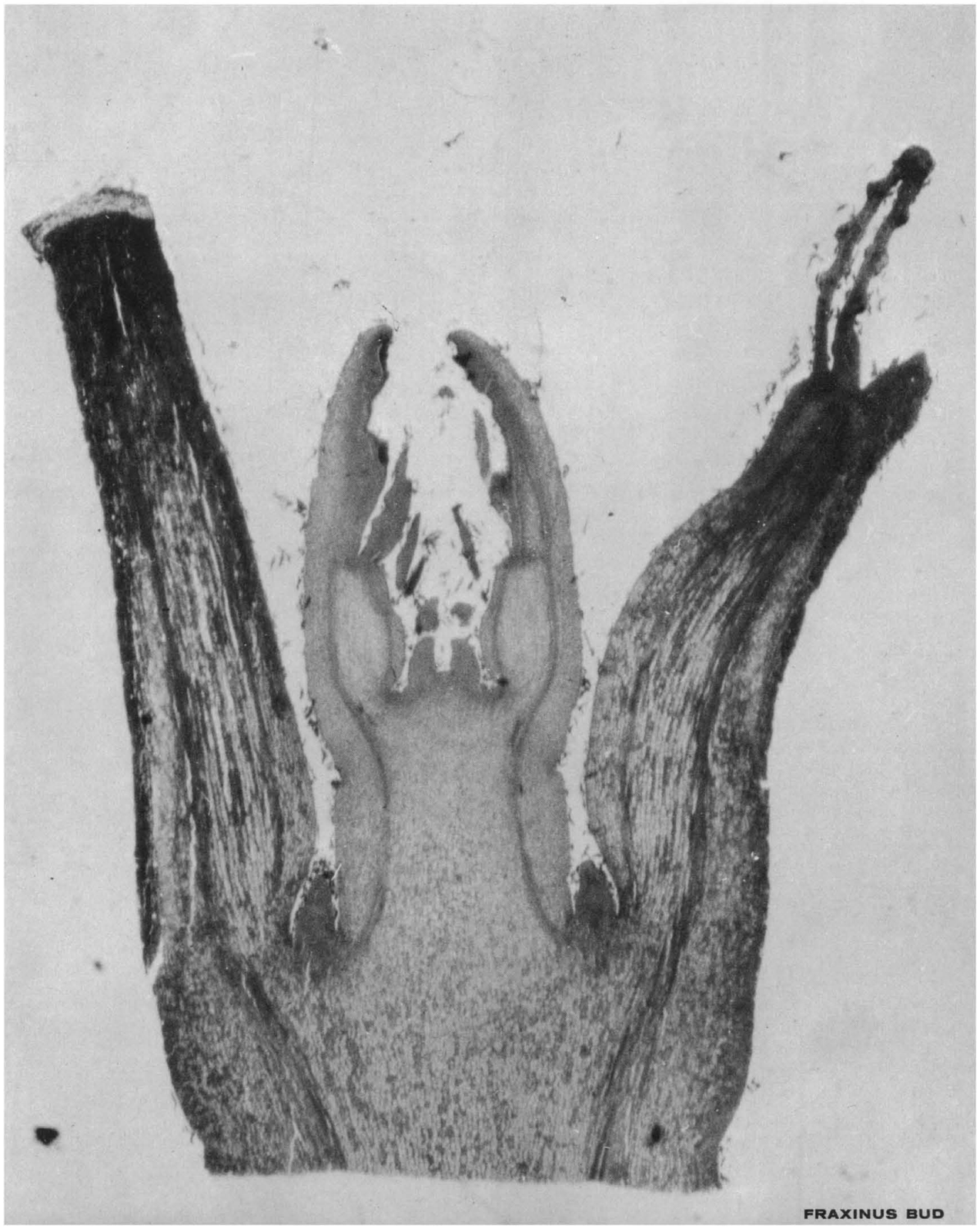
SCIENCE

23 June 1967

Vol. 156, No. 3782

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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The new L2-65B... designed to keep pace with your demands today and tomorrow

Here is the preparative ultracentrifuge of tomorrow —ready for you today. It is years ahead in the work it can do and will give you the same elegant service for still more years ahead.

The new Model L2-65B has a 65,000 rpm drive and solid-state circuitry throughout. Its new infrared radiometric temperature system is so sensitive and reacts so quickly that sample temperature can be controlled more accurately than ever before. For convenience, the new rotor stabilizer is removable. To safeguard against rotor speed accidentally being set too high, the new independent overspeed control is triggered by the rotor itself. And there are rotors galore for the L2-65B —rotors to serve an unprecedented variety of applications—all the standard Beckman fixed angle and swinging bucket rotors, plus the new high performance rotors and new zonal rotors. For more information, write for Data File L2B-5.

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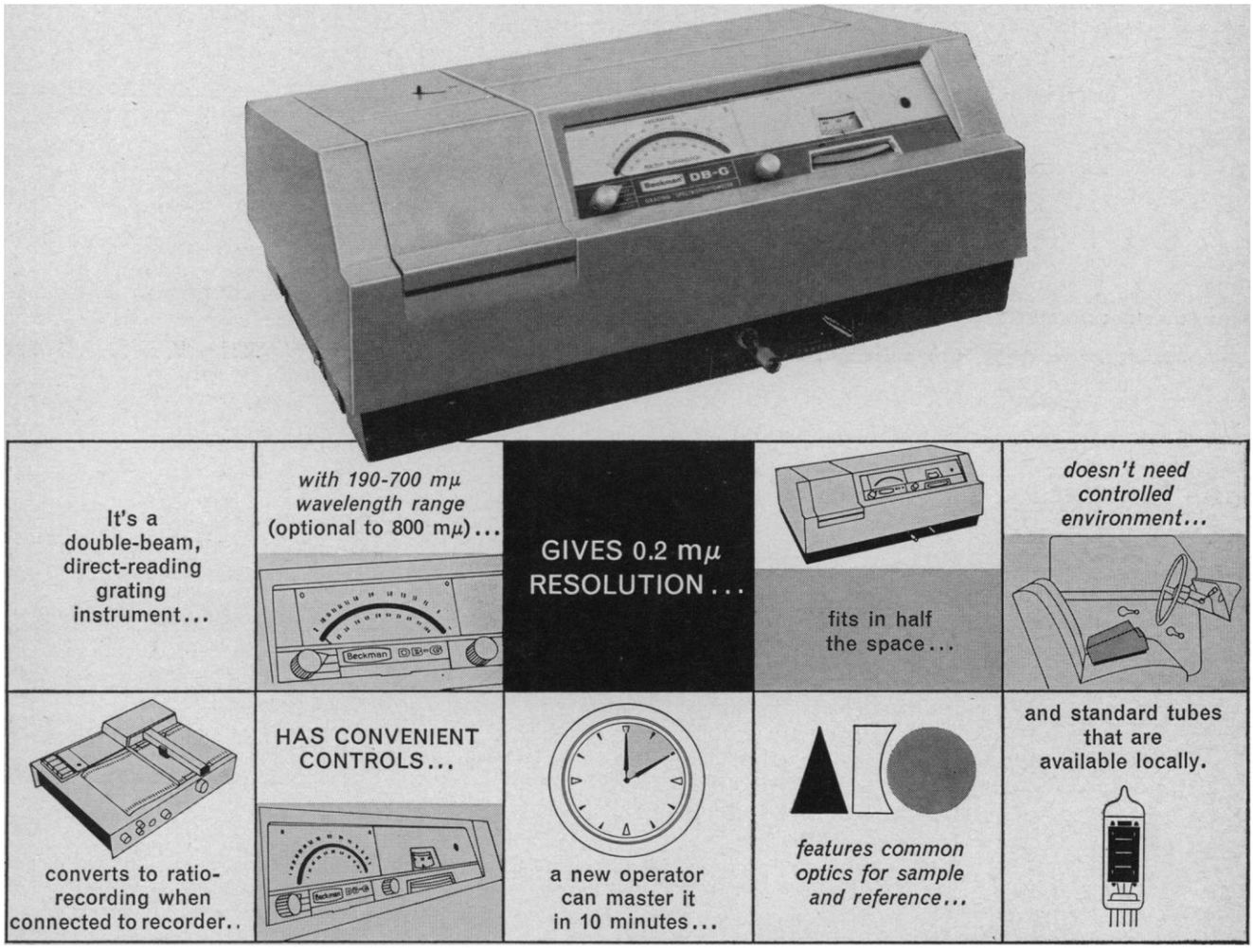
Did the DB®-G become the world's fastest-selling spectrophotometer on its $2595 price alone?



No, but the $1000 saving hasn't hurt.

What would sell *you* on the DB-G? Its simple, 3-step operation that saves 60-80% of time needed for routine single-beam analysis? Its 5-year record of reliability based on over 6,000 prism-type DB models now in the field? (The DB, with prism instead of grating, sells for $225 less.) Or its capability for any routine medical, research, or quality control lab application using a full line of low-cost, precision-matched accessories? Add it all up and small wonder the DB-G is the world's fastest-selling UV spectrophotometer — even without the $1000 price advantage over comparable instruments. Ask your local Beckman salesman for a demonstration*. Or write for Data File LUV-267-3.

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SCIENCE

SCIENCE is published weekly on Friday and on the fourth Tuesday in November by the American Association for the Advancement of Science, 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Now combined with **The Scientific Monthly**®. Second-class postage paid at Washington, D.C. Annual subscriptions $8.50; foreign postage, $1.50; Canadian postage, 75¢; single copies, 50¢ (back issues, $1), except **Guide to Scientific Instruments**, which is $2. School year subscriptions: 9 months, $7, 10 months, $7.50. Provide 4 weeks' notice for change of address, giving new and old address and zip code. Send a recent address label. SCIENCE is indexed in the **Reader's Guide to Periodical Literature**.

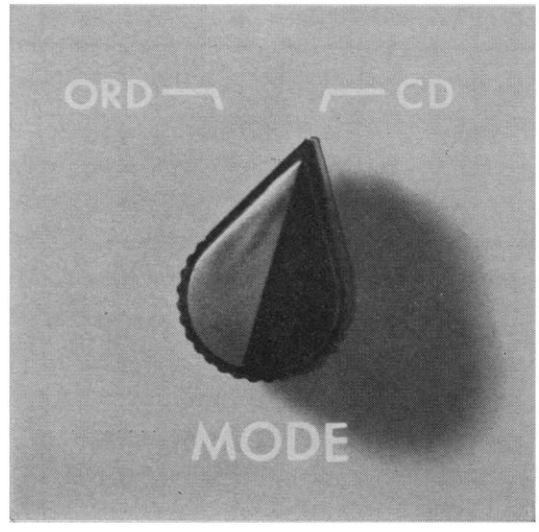
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Sectional view of a newly expanding bud of white ash (*Fraxinus americana* L.). Two bud scales (modified petioles) enclose several pairs of opposite leaf primordia. See page 1635. [Herbert B. Tepper, State University College of Forestry at Syracuse University]

Developing a CD measuring capability for a spectropolarimeter isn't something you rush. At least if you want to do it right. First we had to make certain that circular dichroism was recorded with a performance comparable to our present ORD capabilities – that the CD accessory performed as well as the basic Optical Rotatory Dispersion instrument, with the same minimum detectable optical activity in either mode. And that it was done over a range of 1850 to 6000Å.

Then we considered the chemist himself. Would it be simple for him to use. Problems associated with molecular conformation and stereochemical studies are difficult enough, so we tried to help him get his data as easily as possible. Only two new controls were added, and the CD unit was designed for quick installation. Change-over time, from one mode of operation to the other, is only a matter of minutes. Now all the convenience and versatility of our ORD controls, which allow quick adaptation of instrument parameters to sample requirements, are also available for CD.



Both CD and ORD utilize the same adjustable slit program, for constant energy or resolution; the same strip chart recorder, for maximum flexibility of presentation; the same constant temperature system, for stability; and, the same double monochromator, for providing low stray light and high resolution.

All the controls are grouped together to keep the versatility of the instrument convenient and easy.

Finally, we wanted the CD equipment to adapt easily to CARY 60 Spectropolarimeters in the field. That way a laboratory would have one instrument which was unsurpassed in either its ORD or CD capabilities.

It was worth the wait.

For details, write Cary Instruments, a Varian Subsidiary, 2724 S. Peck Road, Monrovia, California 91016. Ask for Data File E702-67.

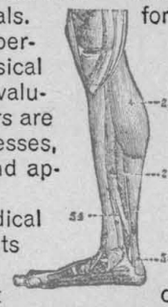
CARY 60
SPECTROPOLARIMETER

Now Cary's Model 60 has CD. Better late.

Instron testers: new tool for biophysical research.

Instron testing equipment is providing medical researchers with a precise new tool for probing the mechanical characteristics of a wide variety of biological materials.

For example, tests with Instron instruments permit establishing accurate profiles of the physical characteristics of tendons. Other stress-strain evaluations of tissue, blood vessels and muscle fibers are furthering knowledge of the healing processes, chronic degeneration and the development and application of prostheses.



Instron equipment is ideally suited for medical research. Exceptionally precise because of its electronic and servomechanism principles, Instron testing instruments can provide insight into tensile, compressive and flow behavior as well as fatigue, resilience, stress-strain energy, hysteresis, and a variety of other physical properties. Full scale recorder deflections — as low as zero to two grams — are ideal for small, low modulus samples. And there is plenty of room for associated test fixtures within the loading frame.

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For copies of these papers, together with a list of other papers of interest to scientists and engineers, why not write today to: Instron Corporation, 2500 Washington Street, Department S-42, Canton, Massachusetts 02021.

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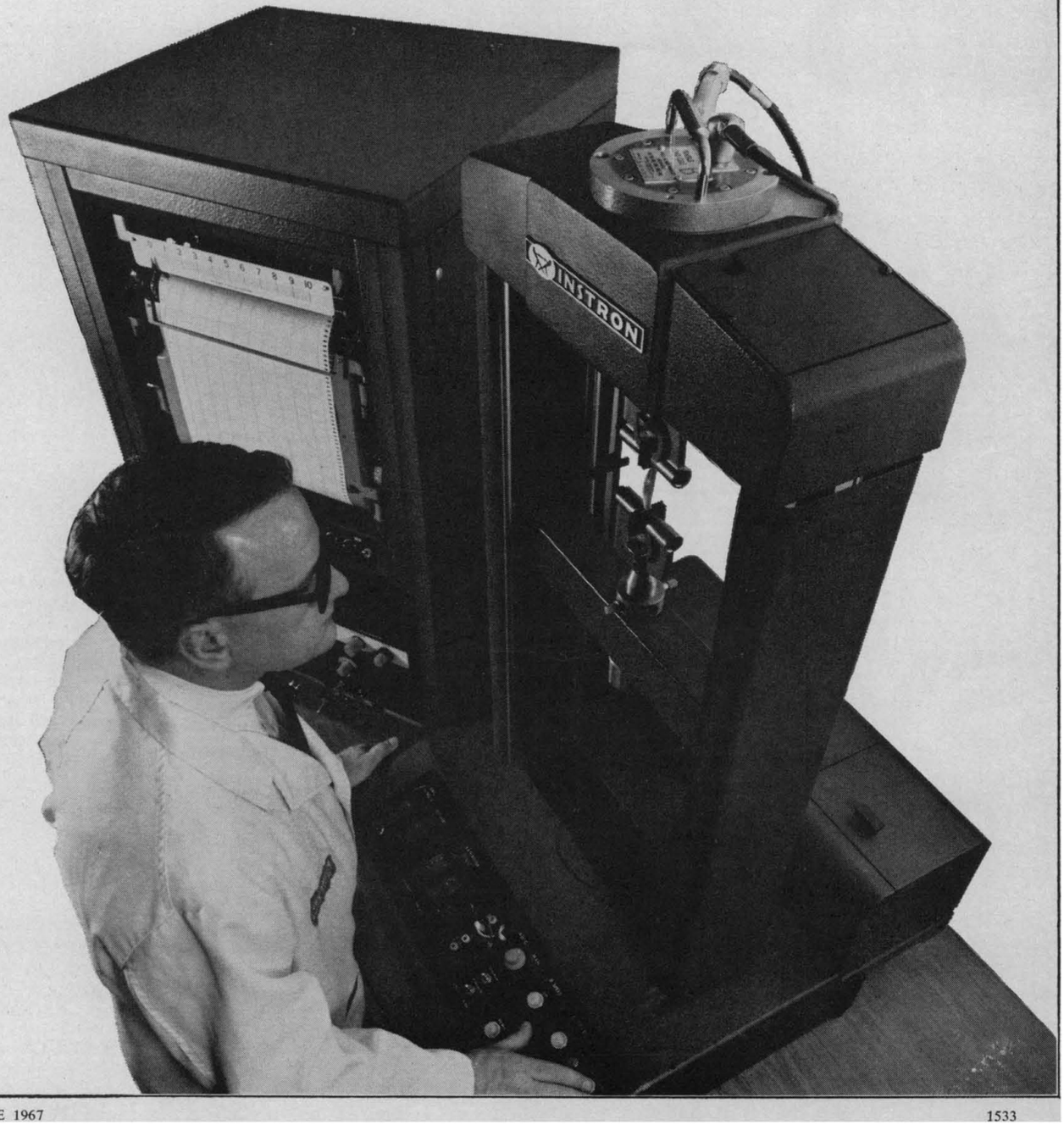

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The EH is just one model in the complete OLYMPUS microscope line, which includes units for a wide variety of scientific and industrial purposes and for the student, all readily available at attractive prices. Information on the complete Olympus line — or on microscopes for your particular application — is yours for the asking.

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Send information on Olympus microscopes. My applications include:

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This is a new automatic pipette.

Among other things, it doesn't touch the liquid it pipettes.

(How's that again?)

When using the BIOPETTE automatic pipette, all of the measured aliquot is held in the disposable plastic tip. The liquid never has to enter the housing of the BIOPETTE itself. Hence, the BIOPETTE stays clean, can't contaminate anything else, and doesn't need washing. And to switch from one liquid to another: just put in a new disposable tip. Period.

Fast? It takes approximately 2 seconds for *both* filling and discharging. Without sacrificing accuracy.

Safe? Safety is inherent in the design. Liquid does not come in contact with operator.

Reproducible delivery volume? Using the same instrument: ±1%.

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Useful? Without doubt. Interesting current animal care applications include, for example, forced feeding, artificial insemination, blood dilutions, and so forth.

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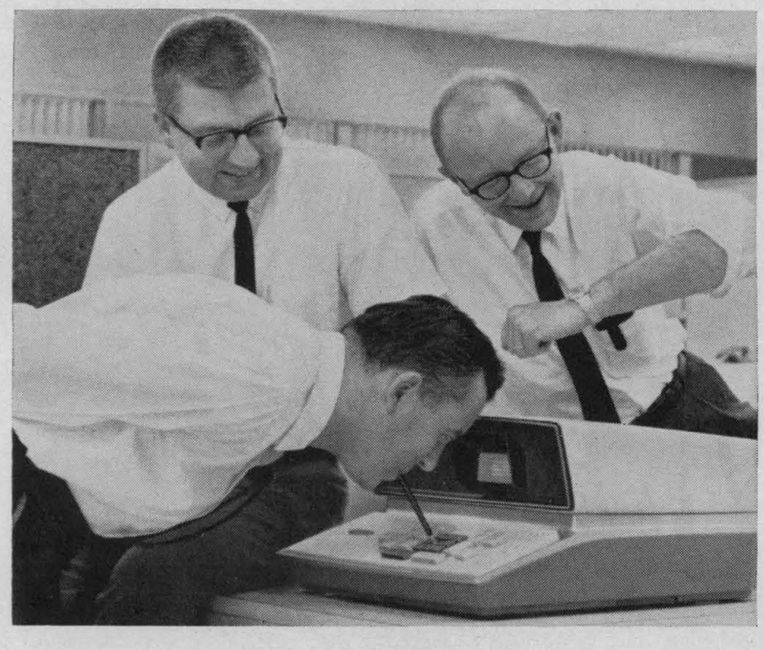
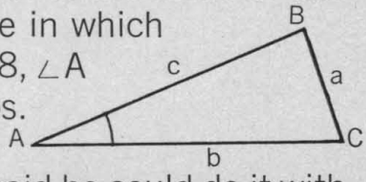
This engineer is winning a $5 bet.



Someone gave him the following problem:

Find the length of side "a" of the illustrated triangle in which b = 12.7, c = 10.8, ∠A = 31° 25′ 10″, Cos. A = .85337.



He laughingly said he could do it with his hands tied behind his back. Someone bet him $5 he couldn't.

He will win the bet in 30 seconds using the new 132 Electronic Calculator by Friden with automatic square root.

The Model 132 stores intermediate answers and displays them on a TV screen in four visible registers. As he works through the problem, these answers drop into the working register automatically.

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Square roots are derived with just a touch of a button. And he can get decimal settings to 13 places.

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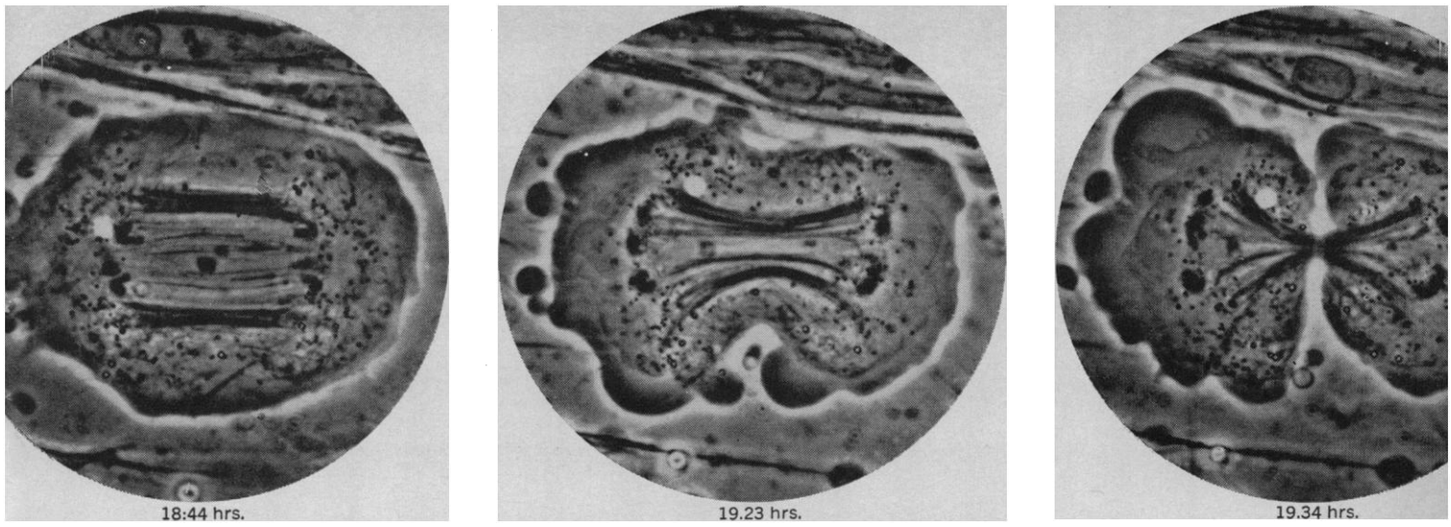

Anaphase: bivalents of homologous chromosome pairs moving to opposite poles during spermatogenesis in Pales ferruginea (Tipulidae).

A faultless sequence

automatically

With the Carl Zeiss Photomicroscope, you can concentrate on the specimen—instead of camera work. That's done automatically by the built-in photographic system. The touch of a button selects the right exposure time, opens and closes the shutter, advances the film, actuates a film counter and re-cocks the shutter. Result: faultless sequences in color or black-and-white. □ This truly universal microscope gives you all the practical versatility you have come to expect of a Zeiss microscope. It can be equipped for transmitted or reflected illumination. There are also various exchangeable stages and optics for bright-field, dark-field, phase-contrast, polarization and transmitted-light interference work. □ The instrument has a built-in, pre-centered 6-volt lamp. But you can also use a 12-volt lamp or high-pressure mercury burner for ultra-violet or fluorescence microscopy. □ The built-in Zeiss OPTOVAR provides three different magnifications for each eyepiece/objective combination—without changing focus. □ For complete information, write Dept. SC, Carl Zeiss, Inc., 444 Fifth Avenue, New York, N. Y. 10018. In Canada: 14 Overlea Blvd., Toronto. COMPLETE SERVICE FACILITIES AVAILABLE.

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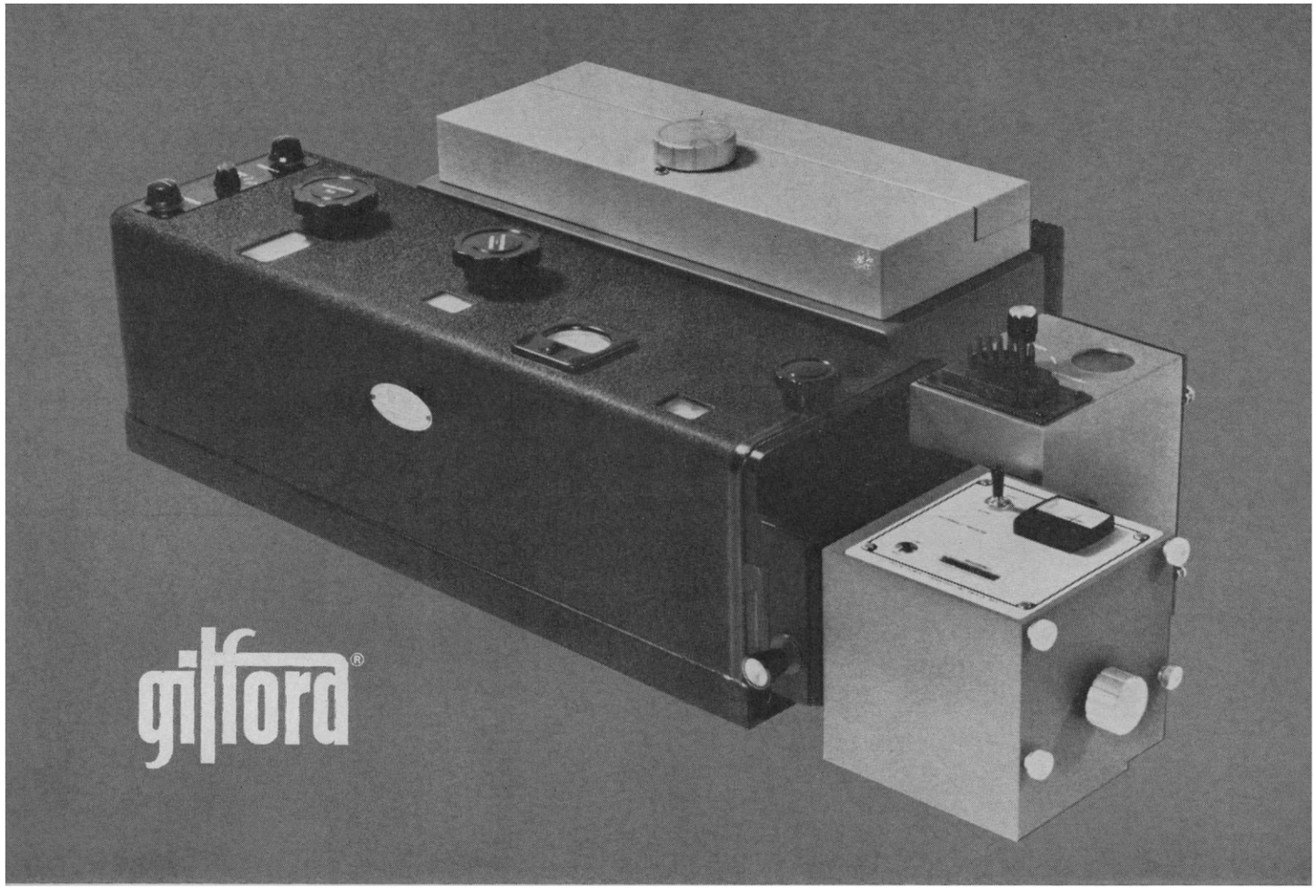

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Many older spectrophotometers have excellent optics, but the usefulness is limited by outmoded surrounding electronics.

Now you can change all that!

The investment made in hundreds of these units has been protected by the Gilford Spectrophotometer Modernization Program. Accuracy has been up-graded, operation made simpler, and chance for error in readings reduced.

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Please send us your full information and estimate of the cost of up-dating this instrument with Gilford 222 equipment.

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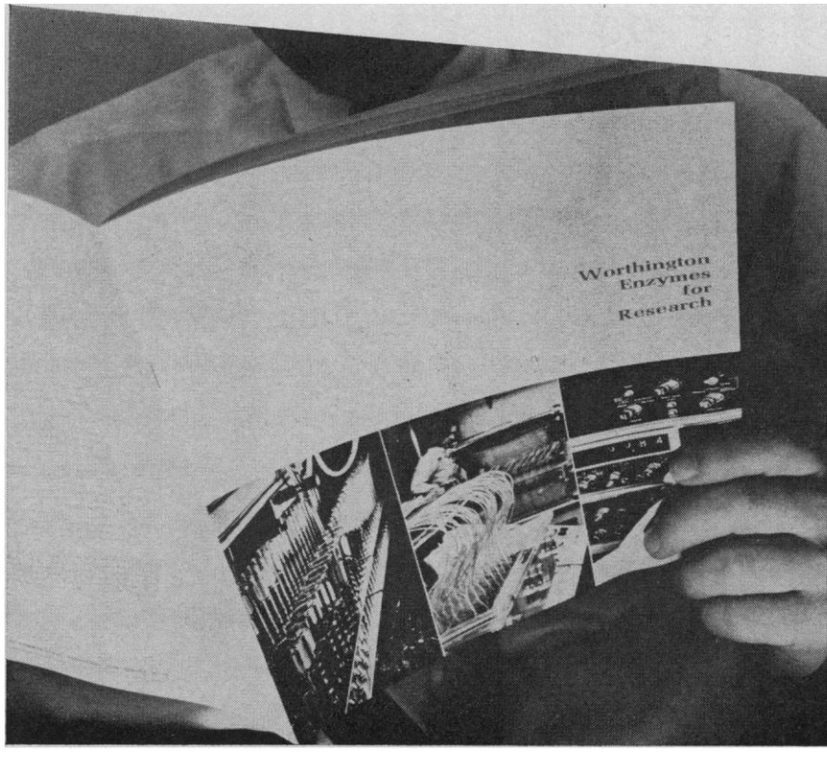
Unlike other suppliers of enzymes who are merely re-sellers, we manufacture virtually all our products, carrying them from raw materials through processing, purification and packaging. This gives you important guarantees of product reliability, integrity and purity. It also gives you direct contact with our personnel directly responsible for preparing any particular batch of material.

Use the attached coupon to request your copy of *Worthington Enzymes for Research* or other literature.



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high-contrast, high-definition electron micrograph enlargements

The S-45EM is a special version of the Durst S-45, a 4x5 enlarger widely used in commercial, industrial and scientific photography. Both share the same quality of performance, the same ruggedness of construction and ease of operation. The S-45EM offers additional features of special advantage in electron photomicrography.

Chief among these is provision for point-source illumination with complete facilities for centering and focusing the lamp. Three types are available: 100-watt and 200-watt mercury arcs and 100-watt tungsten, all interchangeable.

The use of an adjustable, specular light source, in conjunction with clear, striae-free condensers, surface-coated reflex mirror and high-resolution lenses, assures the contrast quality and definition so essential in electron micrographs.

Seven negative carriers are available, all of the glassless type. Four are for plates: 2x10", 6.5x9cm, 3¼x4", 3¼x4¼"; three for film: 35mm with sprocket holes, 35mm without sprocket holes, and 2x10". Other sizes are obtainable on special order. Enlarging lens and condensers can be readily changed to cover the needs of any negative size used.

The quality capabilities of the S-45EM are not limited to micrographic needs alone. They are equally commendable for conventional photographic work, especially where critical sharpness is required.

The EM-45 is not sold through regular photographic outlets but through specially qualified dealers. For the name of the one nearest you, and other information, write:

Durst (USA) Inc., Photo Technical Div.
Garden City, N.Y. 11533.
Subsidiary of Ehrenreich
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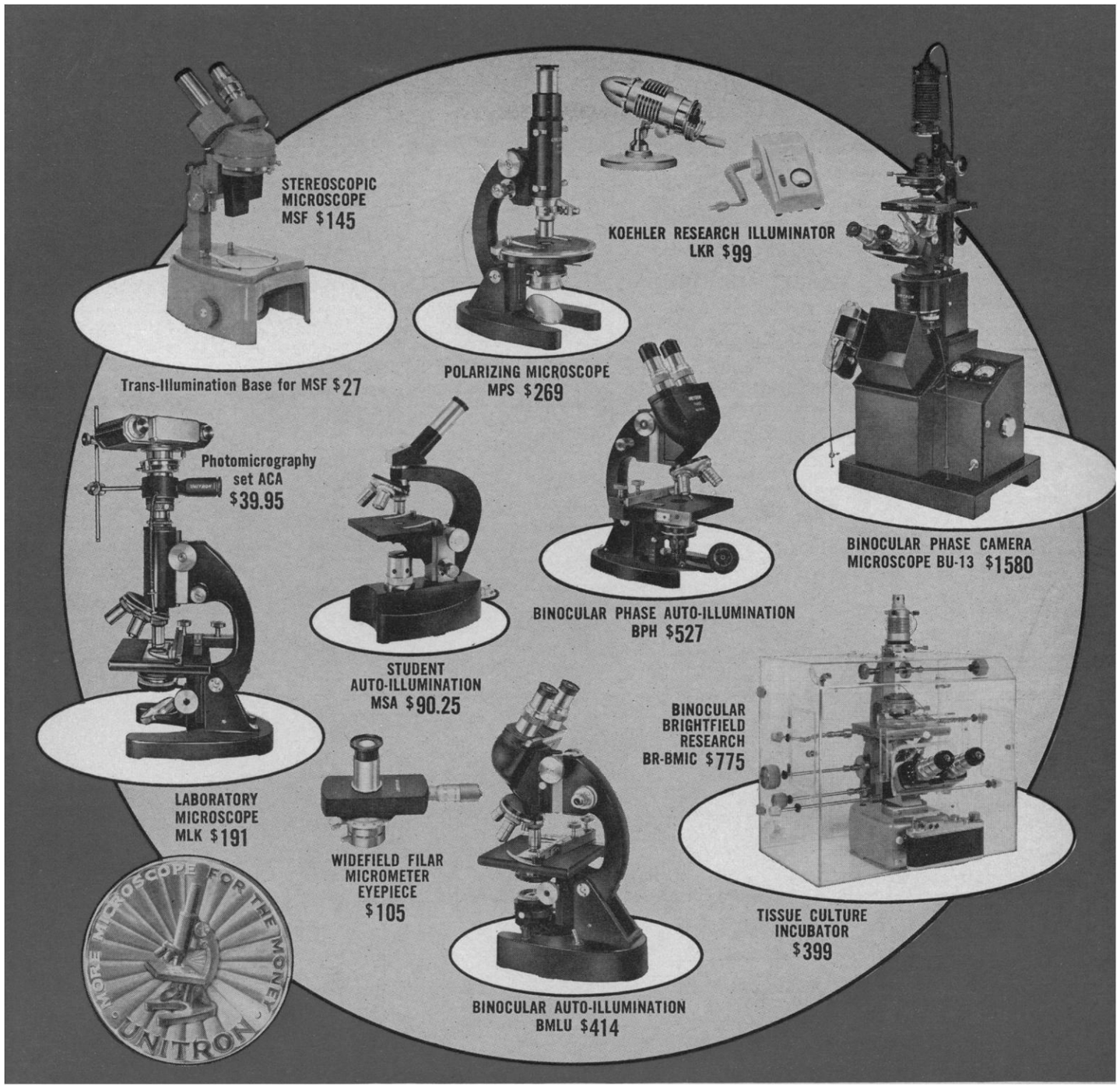
Durst S-45 EM



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

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

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

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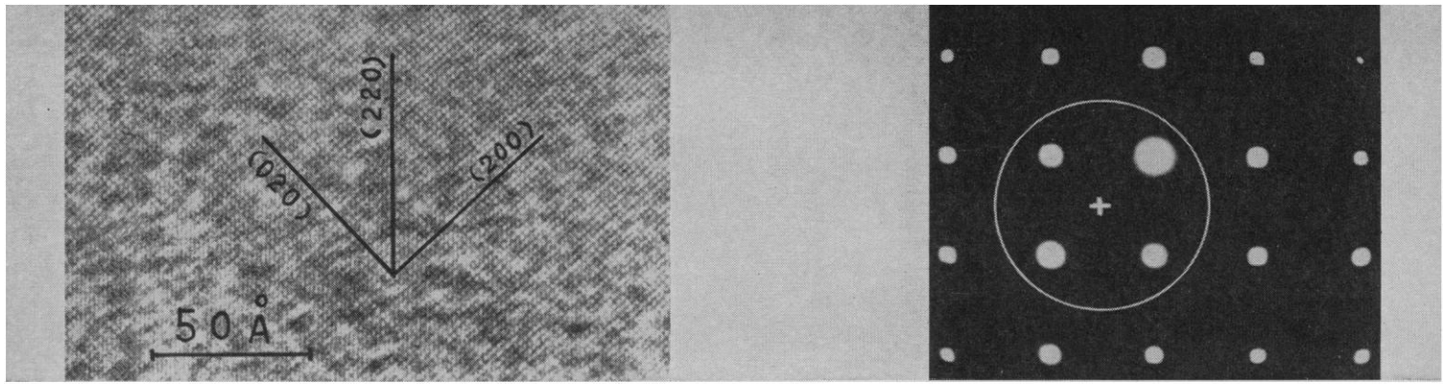

Electron micrograph and diffraction pattern taken on the HU-11C showing the crossed lattice images of the (200) planes of gold. The (020) and (200) planes = 2.04 Angstroms. The (220) plane = 1.44 Angstroms. All important factors such as contamination, stage drift, astigmatism and aberrations must be negligible to achieve this ultra-high resolution. The HU-11C was operated at an accelerating voltage of 100 KV and an electron optical magnification of 270,000 X. The illumination was tilted until the three reflections showed nearly equal intensity in the diffraction pattern; then the micrograph was taken.

FROM HITACHI PERKIN-ELMER

THE HU-11C: LEADER IN A NEW GENERATION OF ELECTRON MICROSCOPES

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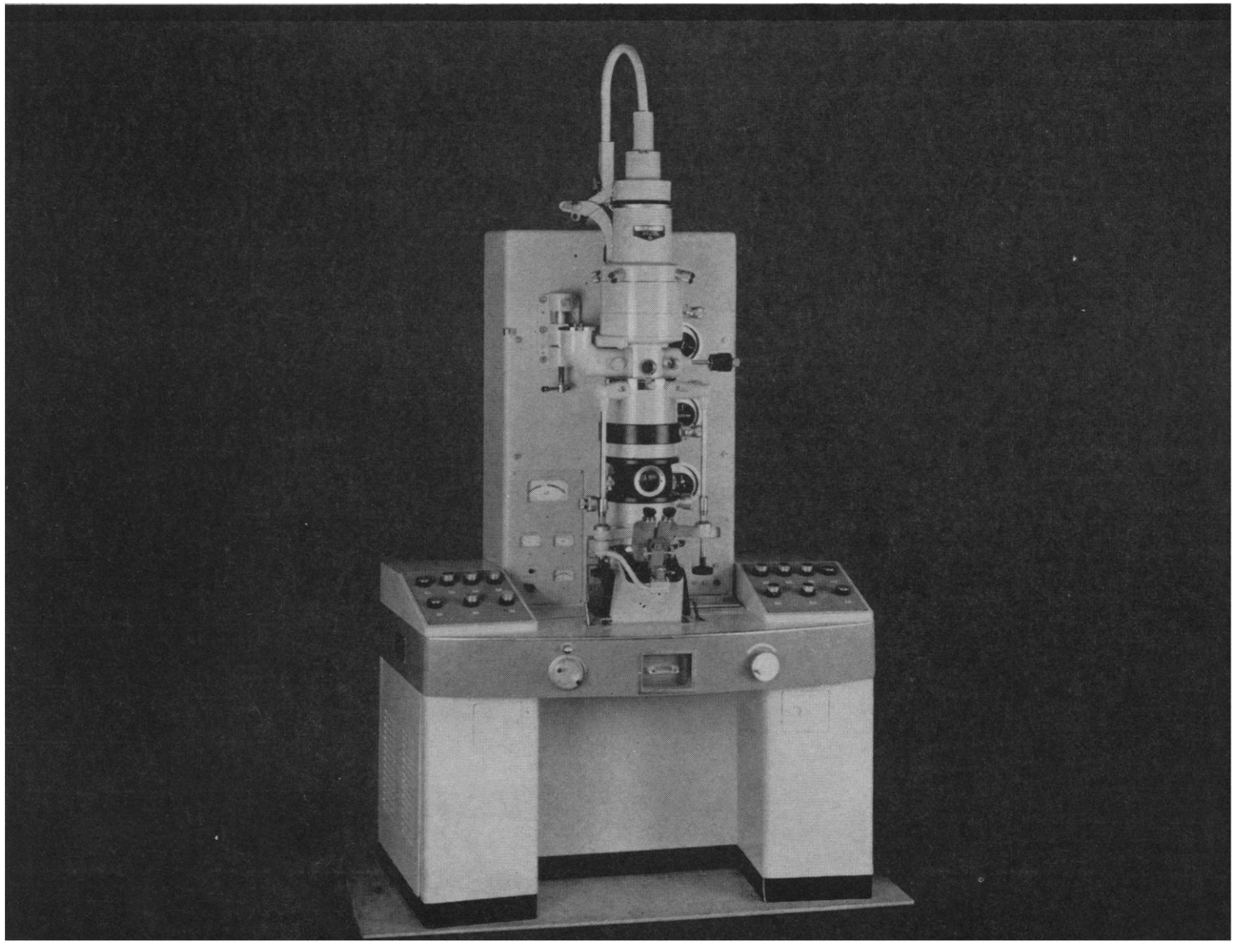


either civil or military, or shall be skilled in aeronautical engineering or its allied sciences." The members elected their own chairman and exercised all the powers mentioned by Walker with regard to the original concept of the National Science Board. . . .

The NACA enjoyed great prestige and authority in all scientific and engineering matters concerning aeronautics. This prestige resulted from the character of its members and the excellence of its staff. There is every reason to suppose that the National Science Foundation would have enjoyed similar prestige in its wider field if Bush's plan had succeeded. It is interesting to note that the NACA also enjoyed excellent relations with the Congress, and generally with the White House under seven presidents. Wilson was originally hostile and the NACA was established only as a rider to a Naval appropriation which he could not very well veto. His attitude changed after entry into World War I. Hoover was also hostile throughout his entire connection with government. Truman was an active supporter of the NACA, which made his veto of the original National Science Foundation bill the more surprising.

Bush served as vice chairman of the NACA in 1938 and as chairman in 1939–40. His knowledge and admiration of this organization is apparent in his attempt to set up the National Science Foundation in the same pattern. It is unfortunate that this successful experiment in governmental organization of scientific research came to an end in 1958 with the National Space Act, and that it has been all but forgotten.

IRA H. ABBOTT

Post Office Box 156,
Moultonboro, New Hampshire 03254

Long-Term Drug Dangers

In addition to those drug catastrophes discussed by Modell ("Mass drug catastrophes and the roles of science and technology," 21 Apr., p. 346), I think we can consider another type of situation. Let us assume that a drug (such as a combination psychic energizer and diuretic) with no known side effects is aggressively promoted and very widely used throughout North America and Europe. Some 16 years after its adoption, the first hints of unexpected side effects begin to appear and several more years are required before they are con-

EMU-4...The "New Look" in Electron Microscopes

Front-loaded magazine holds 6 cassettes

Which plate size is best for electron micrographs?

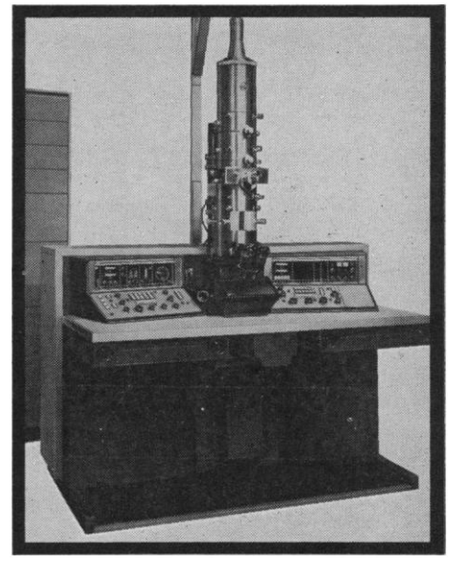
The best plate size is a *standard* size, for only a standard size gives you a selection of emulsion characteristics, is easily and quickly available in local supply and demands no premium in price.

The EMU-4 plate cassette—there are six in a magazine load—is designed with those thoughts in mind: They accommodate—interchangeably—the standard 2" x 10" spectroscopy plate or the standard 3¼" x 4" projector-slide plate or cut film in 4" x 10" pieces (which is precisely one-half of a standard 8" x 10" piece of sheet film).

Since they are universally available, these plates are competitively priced, offer wide choices of emulsion types and are usually stocked at local supply houses.

Using standard-size photo materials is but one of the many features of the new EMU-4. Among the others are: transistorized, modularized electronics; an almost-impossible-to-contaminate objective aperture; a truly universal specimen chamber; a quick-change specimen airlock and many others.

For additional information, write RCA Scientific Instruments, Bldg. 15-5, Camden, N. J. 08102. In Canada: RCA Victor Co., Ltd., Montreal. Overseas: RCA International Division, Clark, N. J. 07066.



Nationwide maintenance service available from RCA Service Company.

The Most Trusted Name in Electronics

firmed. All children born to mothers using this drug during the first 3 months of pregnancy (effective as it is for morning sickness) are found to be sterile. Use of the drug for 20 years has affected the larger portion of an entire generation so that populations of the countries affected drop sharply for several decades and require several additional decades to recover—if given the opportunity.

The effects of thalidomide were relatively easy to discover and limit, but how readily can we detect more subtle side effects in time to prevent the possibility of a history-changing catastrophe? In contrast to such a situation, the individual tragedies attributed to past and present drugs would seem rather tolerable.

HERBERT FRIEDMAN

Department of Psychology, College of William and Mary, Williamsburg, Virginia 23185

When the public is alarmed about the dangerous side effects of many of the products of our modern technology, their fears are not going to be allayed by articles such as Modell's. Instead the effect is to widen the credibility gap between scientists and the general public. Who will believe that "No drug catastrophes of modern times compare even remotely with those of the past. . ."? Who will be reassured by the assertion that in the case of thalidomide " . . . the horror might well have been greater but for modern methods of pharmacologic detection. . ."? These "modern methods" did not even detect trouble until well over 2000 cases of phocomelia had occurred (although the malformation is so bizarre that an adequate detection system should have detected and identified the trouble before more than 25 or 50 malformations had occurred).

In ordinary discourse (as well as in most technical discourse) a "drug catastrophe" refers to the side effects of an agent that is used as a medicine or in the making of a medicine. The term would not be applied to "gin, opium, coca, tobacco . . . [which] were used by ancient man for their pleasurable effects alone." Furthermore most of the above mentioned agents did not become major health hazards until technological "improvements" resulted in a more dangerous product. Tobacco did not become a major health hazard in the remote past; it became a hazard in this century (when the machine-made cigarette replaced pipes and cigars). Again,

it is questionable whether "pesticides, herbicides, gasoline additives," and so on " . . . should count as drug hazards" but in any event they hardly support the contention that modern drug hazards are minor compared to those in the pretechnological era.

The only way to close the credibility gap is for the spokesmen for science to speak plainly, honestly, and bluntly —without minimizing mistakes, evading responsibility, rewriting history, or otherwise trying to cover up unpleasant facts. Language games in technical jargons have long been a favorite academic sport, but this is too dangerous a game to play when human lives and well-being are at stake.

IRWIN D. J. BROSS
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Research in Parasites

The U.S.–Japan Cooperative Medical Science Program was established so that these two nations could cooperate in improvement of health conditions in the underdeveloped countries in Southeast Asia. Two parasitic infections, schistosomiasis and filariasis, are of particular importance in these areas. The U.S. Panel on Parasitic Diseases is attempting to stimulate studies on the physiology and biochemistry of the parasites, the pharmacology of drugs effective against the parasites in their vertebrate hosts, the ecology and physiology of vectors, the mode of action of chemical agents against the vectors, and the immunological mechanisms operating in both invertebrate and vertebrate hosts.

The maintenance of parasite life cycles is a tedious and difficult undertaking, and such projects have received little attention in recent years. In order to make materials available to investigators who would be interested in schistosomes and filariids, the Panel has established sources of supply of three species of human schistosomes, *Schistosoma mansoni*, *S. japonicum*, and *S. haematobium*, either in their invertebrate or vertebrate hosts. At least five different filariid parasites can also be supplied. Individuals interested in work with these parasites may obtain information from the Office of International Research, NIH.

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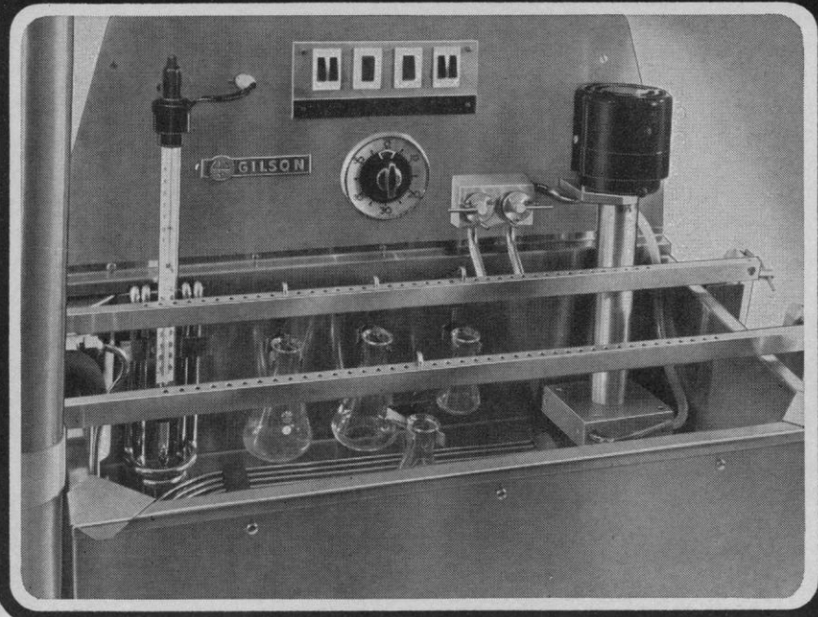

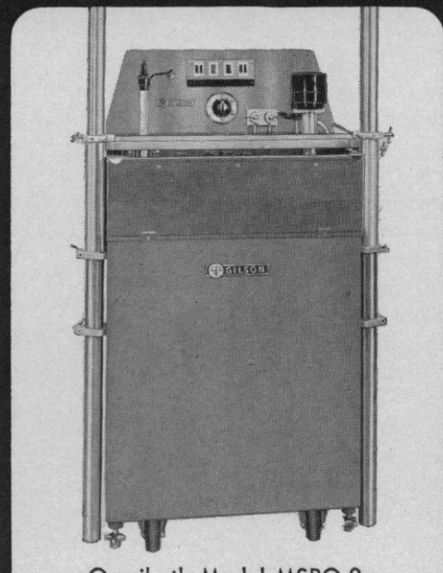

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23 June 1967, Volume 156, Number 3782 **SCIENCE**

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Applied Science

One of the most significant trends of this century is an increasingly close relation among science, technology, and society. Central to this interaction are the big mission-oriented industrial or governmental laboratories. Many of these laboratories conduct excellent basic research while pursuing goals highly relevant to the needs of society. They are able to tackle problems involving physical, biological, and social sciences and complex engineering considerations.

In the mission-oriented laboratories it is feasible to bring together all the needed expertise and to achieve fruitful interaction. This is accomplished through both formal and informal channels, and the latter are often very effective. For example, in the Bell Telephone Laboratories, intercommunication among physicists, who participate widely in interdisciplinary activities, serves to supplement the formal modes of information transfer.

When basic research in the physical sciences is accomplished at the universities, the path to application is a difficult one, with many inherent delays. The communication of ideas by way of the scientific literature to those who might apply them is slow and inefficient. In the mission-oriented laboratories such barriers to application need not exist.

Many scientists are at their best when working with a sense of urgency. A combination of the desire to know and the need to know can provide a double motivating force. Thus, in some laboratories the scientist enjoys the traditional stimulus that the basic researcher feels, including the approval of his peers, while also having the satisfying knowledge that his contribution has been relevant to a great social need.

Recently, the National Academy of Sciences has prepared a report on applied science and technological progress.* An important aspect of the effort is a discussion of the mission-oriented laboratories. The report lists a number of the characteristics of the research environment that facilitate transfer of new scientific results to useful applications.

1) The key individuals in the research organizations are fully aware of and sympathetic to the principal goals of the organization, but at the same time the research mission is defined in broad enough terms so that it retains its validity as circumstances and the state of technology change.

2) People within the organization are willing to move between fundamental research and work more closely concerned with applications, and also are willing to change specialities or scientific disciplines. The artificial barriers that sometimes exist between disciplines and between fundamental work and applications are at a minimum.

3) The organization is quick to recognize new ideas and to fund work based on them, at least up to the point where the feasibility and desirability of a larger commitment can be assessed.

4) At each organizational level the individual has some freedom in redeploying the resources at his disposal without extensive review by higher authority.

5) There is full communication through all stages of the research and development process, from original research to ultimate application.

Because of their great achievements the mission-oriented laboratories are likely to fill expanding roles. Some existing laboratories may be asked to change their emphasis from physical technology to work on social and environmental problems. New establishments may be created to deal with aspects of the many social problems that are facing the nation. Mission-oriented laboratories have made great contributions to the well-being of this country. They represent a successful means of bringing to bear on difficult problems the best of our intellectual resources.—PHILIP H. ABELSON

* *Applied Science and Technological Progress*, a report to the Committee on Science and Astronautics, U.S. House of Representatives, by the National Academy of Sciences.

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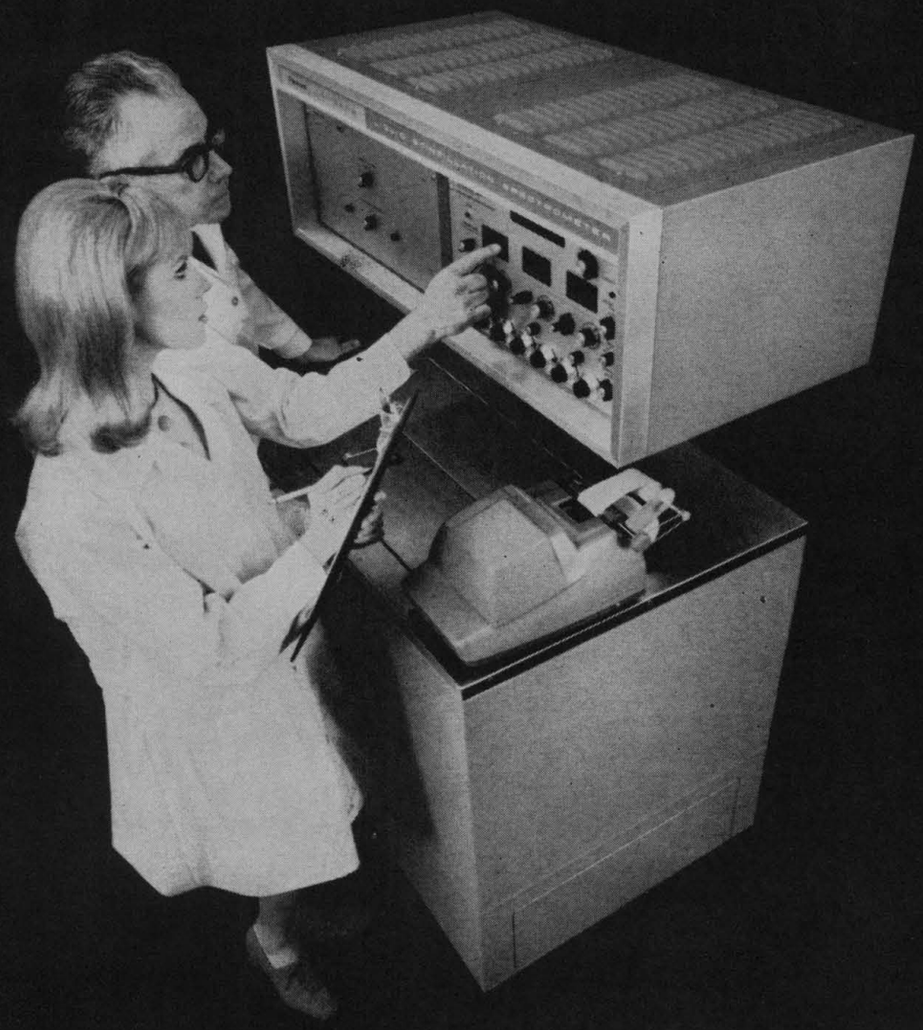

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man (Chicago), the lack of criteria for the pathologic differentiation of a primarily degenerative process from a primarily inflammatory process constitutes one of the greatest obstacles to progress. A disease which at its inception is purely degenerative may, in a matter of a few days, assume the appearance of an inflammatory disease due to the occurrence of natural reparative processes. Conversely, myocarditis (true inflammation) may eventually result in degeneration of muscle fibers. Many observations, concurring with the results of D. Reichenbach and E. P. Benditt (Seattle), show that in a number of cardiomyopathies there is a characteristic morphologic finding of myofibrillar degeneration, or myolysis. This distinct form of degeneration is usually, although not always, accompanied by interstitial mononuclear-cell proliferation, but by little if any polymorphonuclear-cell invasion. Even such a primarily degenerative lesion was repeatedly designated as myocarditis during the conference, as it is customarily done by pathologists elsewhere. It is, of course, very misleading to diagnose an inflammation secondary to myocardial degeneration as myocarditis; this term implies an infectious process to the clinician.

The use of the term myocardial infarction, which is one of the commonest designations entered on death certificates today, also requires reevaluation in the light of recent developments. In accordance with generally accepted views, myocardial infarct applies to an ischemic necrosis of the heart muscle secondary to mechanical obstruction of a coronary artery (thrombosis, formation of atherosclerotic plaques, or stenosis). However, ischemic necroses may develop through a variety of other mechanisms, and the limitations of light and electron microscopy in the study of myocardial ischemia have long been apparent. Furthermore, thrombosis may be, at least theoretically, the consequence rather than the cause of myocardial degeneration. This possibility was emphasized by the observations of G. Baroldi (Milan) on 696 autopsy specimens. No correlation between coronary thrombosis and myocardial degeneration could be found in 90 percent of the cases clinically diagnosed as "acute myocardial infarct"; in 98 percent of the sudden unexpected "coronary death" cases; and in 100 percent of the sudden but not unexpected "coronary death" cases. The use of the term myocardial infarct was ob-

viously incorrect in these cases. There are no currently available methods for determining, in the absence of a recent occlusion, whether coronary atherosclerosis and myocardial degeneration in a particular patient are cause-and-effect related. In fact, investigators are beginning to interpret the pathogenesis of all forms of cardiomyopathies as sequelae of metabolic derangements in the heart muscle influenced by electrolytes, hormones, hypoxia, and other sensitizing and desensitizing factors.

E. BAJUSZ
F. HOMBURGER

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Calendar of Events

Courses

Integrated Circuit Engineering, Univ. of Arizona, 17 July–18 Aug. A 200-hour program which combines theory with the practical considerations required to design a functional integrated circuit. Fee, $500. (R. H. Mattson, Electrical Engineering Dept., Univ. of Arizona, Tucson 85721)

School Librarian Workshop, Drexel Inst. of Technology, 17–28 July (Miss M. Warrington, Graduate School of Library Science, Drexel Inst. of Technology, Philadelphia, Pa. 19104)

Analysis and Design for Automatic Control, Carnegie Inst. of Technology, 18–28 July. Includes 70 hours of classroom work, laboratory projects, and special lectures. Fee, $375. (W. W. Ellis, Post-College Professional Education, Carnegie Univ., Pittsburgh, Pa. 15213)

Non-Equilibrium Processes in Astrophysics, Univ. of Manchester, 24–28 July. Lectures at postgraduate level. (J. Hazlehurst, Astronomy Dept., Univ. of Manchester, Manchester 13, England)

Engineering Summer Conferences, Univ. of Michigan, 31 July–4 Aug. Designed for engineers, scientists, and technical writers in order to increase the clarity of technical communication by intensive training in expression and organization. Registration 1 month before course begins is required. Fee, $175. (Engineering Summer Conf., West Engineering Bldg., Univ. of Michigan, Ann Arbor)

Neutron Activation Analysis, State Univ. at Buffalo, 31 July–11 Aug. No previous experience with nuclear techniques required. The course is applicable to industry, law enforcement, and laboratories. (Office of Continuing Education, State Univ. at Buffalo, 3435 Main St., Buffalo, N.Y. 14214)

Workshop on Microscopy, Chicago, Ill., 11–14 Sept. Sponsored by Paper Physics Committee of Technical Assoc. of Pulp and Paper Industry. Registration limited to first 75 persons who apply. Fee, $100. (T. S. McConnell, TAPPI, 360 Lexington Ave., New York 10017)

National Meetings

July

5–8. National Soc. of **Professional Engineers,** annual mtg., Hartford, Conn. (P. H. Robbins, 2029 K St., NW, Washington, D.C. 20006)

9–13. American **Veterinary** Medical Assoc., 104th annual mtg., Dallas, Tex. (Executive Secretary, 600 S. Michigan Ave., Chicago, Ill. 60605)

10–11. American College of **Laboratory Animal Medicine**, annual mgt., Dallas, Tex. (R. H. Yager, Secretary, ILAR-NRC, 2101 Constitution Ave., NW, Washington, D.C. 20418)

10–12. **Aviation and Space Transportation,** symp., New York, N.Y. (American Soc. of Mechanical Engineers, 345 E. 47 St., New York 10017)

10–14. Nuclear and Space **Radiation Effects**, Columbus, Ohio. (IEEE, Technical Activities Board, 345 E. 47 St., New York 10017)

14–15. Rocky Mountain **Cancer** Conf., 21st, Denver, Colo. (N. P. Isbell, Colorado Medical Soc., 1809 E. 18 Ave., Denver 80218)

17–19. Sixth **Aerospace Reliability and Maintainability** Meeting, Cocoa Beach, Fla. (Meetings Manager, ASME, 345 E. 47 St., New York 10017)

17–21. **Neutron Thermalization and Reactor Spectra**, Ann Arbor, Mich. (J. H. Kane, Intern. Conf. Branch, Technical Information Div., Atomic Energy Commission, Washington, D.C.)

17–21. Third **Propulsion** Joint Specialist Conf., Washington, D.C. (Meetings Dept., American Inst. of Aeronautics and Astronautics, 1290 Sixth Ave., New York 10019)

18–20. **Electromagnetic Compatibility**, 9th symp., Washington, D.C. (F. T. Mitchell, Atlantic Research Corp., Shirley Hwy. and Edsall Rd., Alexandria, Va.)

18–22. American **Medical Technologists,** 29th annual mtg., Washington, D.C. (C. B. Dziekonski, 710 Higgins Rd., Park Ridge, Ill. 60068)

19–21. **Marine Chemists** Assoc., 9th annual mtg., San Francisco, Calif. (K. M. Savage, c/o National Fire Protection Assoc., 60 Batterymarch St., Boston, Mass.)

24–27. American Soc. for **Metals**, W. H. Eisenman Conf. on Metal Ceramics Composites, San Francisco, Calif. (The Society, Metals Park, Ohio 44073)

24–28. Solid **Waste** Research and Development; conf., Milwaukee, Wis. (United Engineering Center, 345 E. 47 St., New York 10017)

24–29. **Fluorine Chemistry**, 4th intern. symp., Estes Park, Colo. (P. Tarrant, Dept. of Chemistry, Univ. of Florida, Gainesville 32601)

27–29. **Linguistic** Soc. of America, annual summer mtg., Ann Arbor, Mich. (A. A. Hill, Box 8120, University Station, Austin, Tex. 78712)

30–3. American Soc. of **Animal Science**, mtg., Reno, Nev. (A. M. Pearson, Dept. of Food Science, Michigan State Univ., East Lansing 48823)

31–2. International Soc. for Human and Animal **Mycology**, 4th conf., New Orleans, La. (R. Baker, Louisiana Univ. School of Medicine, New Orleans)

31–4. **Mammalian Oviduct**, symp., Pullman, Wash. (E. S. E. Hafez, Reproduction Lab., Washington State Univ., Pullman 99163)

31–4. Association for the Advancement of **Medical Instrumentation**, annual mtg., San Francisco, Calif. (J. J. Post, Box 314, Harvard Sq., Cambridge, Mass. 02138)

31–4. **Particulate Matter** Systems, conf., Milwaukee, Wis. (United Engineering Center, 345 E. 47 St., New York 10017)

International and Foreign Meetings

July

1–5. European **Orthodontic** Soc., 43rd annual congr., Bern, Switzerland. (P. Herren, Hirschenger, 6, Bern)

1–9. **Women Engineers and Scientists**, 2nd intern. conf., Cambridge, England. (Mrs. W. D. Gifford, Soc. of Women Engineers, 345 E. 47 St., New York 10017)

2–4. Canadian Soc. of **Clinical Chemists**, annual mtg., Montreal, P.Q. (M. Francoeur, Dept. of Biochemistry, Hotel-Dieu Hospital, 109 Pine Ave. W., Montreal)

2–6. **Forest Products** Research Society, annual mtg., Vancouver, B.C., Canada. (The Society, 417 N. Walnut St., Madison, Wis. 53705)

3–5. British **Orthoptic** Soc., intern. mtg., London, England. (Conference Secretary, Tavistock House North, Tavistock Sq., London, W.C.1)

3–5. **Electron Diffraction**, anniversary mtg., London, England. (Meetings Officer, Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1)

3–7. Instruments and Techniques for Assessment of **Airborne Radioactivity** in Nuclear Operations, Vienna, Austria. (International Atomic Energy Agency, Kartner Ring 11, Vienna 1)

4–7. Federation of **European Biochemical** Societies, 4th mtg., Oslo, Norway. (F. Gran, c/o Inst. for Nutrition Research, Univ. of Oslo, Blindern, Norway)

5–7. **Canadian Federation of Biological Societies** (Canadian Physiological Soc., Pharmacological Soc. of Canada, Canadian Assoc. of Anatomists, Canadian Biochemical Soc., Nutrition Soc. of Canada), 10th annual mtg., Montreal, P. Q. (Honorary Secretary, c/o Faculty of Medicine, University of Western Ontario, London, Ontario)

5–7. Congress of **Medicinal Chemistry**, 3rd intern. mtg., Paris, France. (Société de Chimie Thérapeutique, 2 rue d'Alesia, 75-Paris 14e)

6–14. **British Medical Assoc.**, annual mtg., Bristol, England. (The Secretary, Tavistock Square, London W.C.1, England)

7–13. International **Dental** Federation, 55th annual mtg., and 14th congr., Paris, France. (Secretary General, 35 Devonshire Pl., London, W.1, England)

7–13. Physics of **Electronic and Atomic Collisions**, 5th intern. conf., Leningrad, U.S.S.R. (R. N. Ilin, Ioffe Physioco-Technical Inst., Leningrad K-21)

9–15. American So. for **Horticultural Science**, Tropical Region, 15th annual mtg., Panama. (E. H. Casseres, Calle Londres 40, Mexico 6, D.F., Mexico)

9–15. International Soc. of **Urology**, 14th congr., Munich, Germany. (Secretary

General, 63 Ave. Niel, Paris 7°, France)

10–12. Naturally Occurring **Phosphoric Esters**, intern. symp. Newcastle-upon-Tyne, England. (General Secretary, Chemical Soc., Burlington House, London, W.1, England)

10–15. International **Mining** Congr., 5th, Moscow, U.S.S.R. (A. S. Archangelsky, c/o Ministry of the Coal Industry of the U.S.S.R., B. Kiselny per., 13/15, Moscow K-45)

10–15. Latin American **Soil Biology**, 2nd congr., Santa Maria, Brazil. (Science Dept., British Council, Albion House, 59 New Oxford St., London, W.C.1, England)

11–14. **Magnet Technology**, 2nd intern. conf., Oxford, England. (R. C. Pepperell, Rutherford High Energy Laboratory, Chilton, Didcot, Berkshire, England)

11–14. International Union of **School and University Health Medicine**, 5th congr., Prague, Czechoslovakia. (The Union, Centre International de l'Enfance, Château de Longchamp, Bois de Boulogne, Paris 16°, France)

12–14. International Soc. for **Clinical and Experimental Hypnosis**, 5th congr., Kyoto, Japan. (Y. Ikemi, c/o Dept. of Psychosomatic Medicine, Kyushu Univ., School of Medicine, Fukuoka City, Japan)

14–28. **Plant Pathology**, 1st intern. congr., London, England. (R. K. S. Wood, Imperial College, London, S.W.1)

15–18. **Electrical Contact Phenomena**, intern. research symp., Swansea, Wales. (Meetings Officer, Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

16–22. Organic **Photochemistry**, intern. symp. (IUPAC), Enschede, Netherlands. (W. G. Dauben, c/o Dept. of Chemistry, Univ. of California, Berkeley 94720)

17–19. **Organic Chemistry**, symp., (IUPAC), Nottingham, England. (A. W. Johnson, Dept. of Chemistry, Univ. of Nottingham, Nottingham)

17–21. **Solar-Terrestrial Relationships** during Solar Minimum Conditions, symp., London, England. (G. de Q. Robin, c/o Scott Polar Research Inst., Univ. of Cambridge, Cambridge, England)

17–22. World **Veterinary** Assoc., 18th intern. congr., Paris, France. (R. Vuillaume, 27, rue des Petits-Hôtels, Paris 10°)

18–23. **Laser Applications**, 1st intern. congr., Paris, France. (The Congress, 14, rue de Buffon, Paris 5°)

19–22. Ibero-Latin American Congr. of **Dermatology**, Barcelona, Spain. (J. Pinol-Aguade, c/o Facultad de Medicina, Univ. de Barcelona, Spain)

21–31. **Space** Science, 8th intern. symp., London, England. (M. J. Gazin, Committee on Space Research, 55, Boul. Malesherbes, Paris 8°, France)

23–26. Society of **Naval Architects and Marine Engineers**, spring mtg., Montreal, Canada. (M. H. Gluntz, The Society, 74 Trinity Pl., New York 10006)

23–28. International Soc. for **Neurochemistry**, 1st intern. mtg., Strasbourg, France. (J. Folch-Pi, McLean Hospital, Belmont, Mass.)

23–28. International **Psychoanalytical** Assoc., 25th congr., Copenhagen, Denmark. (M. M. Montessori, Psycho-Analytical, 63 New Cavendish St., London, W.1, England)

BOOKS RECEIVED

(Continued from page 1589)

Behavior: An Introduction to Comparative Psychology. John B. Watson. Holt, Rinehart and Winston, New York, 1967. 477 pp. Illus. $7.95. Reprint, 1914 edition. Henry Holt Editions in Psychology Series.

The Biochemistry of Animal Development. vol 2, *Biochemical Control Mechanisms and Adaptations in Development.* Rudolf Weber, Ed. Academic Press, New York, 1967. 495 pp. Illus. $21. Nine papers.

Biochimie et Biologie Moléculaire. Marcel Florkin and Ernest Schoffeniels. Desoer, Liege, Belgium, 1966. 588 pp. Illus.

Book of ASTM Standards: With Related Material. Pt. 7, *Nonferrous Metals and Alloys (Including Corrosion Tests); Electrodeposited Metallic Coatings; Metal Powders; Nonferrous Filler Metal; Nonferrous Surgical Implant Materials* (956 pp. $16); pt. 11, *Bituminous Materials for Highway Construction, Waterproofing, and Roofing; Soils; Skid Resistance* (908 pp. $14); pt. 12, *Chemical-Resistant Nonmetallic Materials; Clay and Concrete Pipe and Tile; Masonry Mortars and Units; Asbestos-Cement Products; Natural Building Stones* (498 pp. $8); pt. 13, *Refractories, Glass, and Other Ceramic Materials; Manufactured Carbon and Graphite Products* (672 pp. $10); pt. 17, *Petroleum Products—Fuels; Solvents; Burner Fuel Oils; Lubricating Oils; Cutting Oils; Lubricating Greases; Hydraulic Fluids* (1152 pp. $20); pt. 18, *Petroleum Products—Measurement and Sampling; Liquefied Petroleum Gases; Light Hydrocarbons; Plant Spray Oils; Aerospace Materials; Sulfonates; Crude Petroleum; Petrolatum; Wax; Graphite* (914 pp. $16); pt. 19, *Gaseous Fuels; Coal and Coke* (500 pp. $8); pt. 20, *Paint, Varnish, Lacquer, and Related Products—Materials Specifications and Tests; Naval Stores; Industrial Aromatic Hydrocarbons* (1232 pp. $20); pt. 21, *Paint, Varnish, Lacquer, and Related Products—Tests for Formulated Products and Applied Coatings* (658 pp. $10); pt. 22, *Sorptive Mineral Materials; Soap; Engine Antifreeze; Wax Polishes; Halogenated Organic Solvents; Activated Carbon; Industrial Chemicals* (670 pp. $10); pt. 29; *Electrical Insulating Materials* (1256 pp. $22). American Soc. for Testing and Materials, Philadelphia, 1967. Illus.

The Cell and Environmental Temperature. Proceedings of the international symposium on cytoecology (Leningrad), May–June 1963. A. S. Troshin, Ed. Translated from the Russian (1964). C. L. Prosser, Ed. Pergamon, New York, 1967. 472 pp. Illus. $21.50. Fifty-nine papers. International Series of Monographs in Pure and Applied Biology.

The Chemistry of the Ether Linkage. Saul Patai, Ed. Interscience (Wiley), New York, 1967. 795 pp. Illus. $29.50. Sixteen papers.

Chromatography. Erich Heftmann. Reinhold, New York, ed. 2, 1967. 893 pp. Illus. $27.50.

The City. Robert E. Park, Ernest W. Burgess, and Roderick D. McKenzie. Univ. of Chicago Press, Chicago, 1967. 249 pp. $5. Reprint, 1925 editon.

Clinical Judgment. Alvan R. Feinstein. Williams and Wilkins, Baltimore, 1967. 422 pp. Illus. $9.50.

Coden for Periodical Titles. vols. 1 and 2. Prepared by Wyandotte–ASTM Punched Card Project. L. E. Kuentzel, Ed. American Soc. for Testing and Materials, Philadelphia, ed. 2, 1966. vol. 1, 523 pp.; vol. 2, 591 pp. $85 per set.

Cold Spring Harbor Symposia on Quantitative Biology. vol. 31, *The Genetic Code.* Cold Spring Harbor Laboratory of Quantitative Biology, Cold Spring Harbor, N.Y., 1966. 784 pp. Illus. $15. Eighty-eight papers.

College Physics. Franklin Miller, Jr. Harcourt, Brace, and World, New York, ed. 2, 1967. 735 pp. Illus. $10.50.

The Comparative Anatomy and Histology of the Cerebellum from Myxinoids through Birds. Olof Larsell. Univ. of Minnesota Press, Minneapolis, 1967. 301 pp. Illus. $14.

Composite Materials. Lectures delivered at the Institution's refresher course, November 1965. A. Kelly, G. C. Smith, P. J. E. Forsyth, and A. J. Kennedy. Published for The Institution of Metallurgists. Iliffe, London; Elsevier, New York, 1967. 154 pp. Illus. $7.50. Four papers.

The Control of Nuclear Activity. A symposium (Woods Hole, Mass.), August–September 1966. Sponsored by The Society of General Physiologists. Lester Goldstein, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1967. 508 pp. Illus. $7.50.

Cross Electrophoresis: Its Principle and Applications. Shojiro Nakamura. Shoin, Tokyo, 1966; Elsevier, New York, 1967. 204 pp. Illus. $17.

Cytogenetics. Carl P. Swanson, Timothy Merz, and William J. Young. Prentice-Hall, Engelwood Cliffs, N.J., 1967. 206 pp. Illus. Paper, $3.75; cloth, $5.95. Foundations of Modern Genetics Series.

Desalination and Its Role in Water Supply. British Information Services, New York, 1967. 103 pp. Illus.

Diagnostic des Maladies à Virus. R. Sohier. Éditions Médicales Flammarion, Paris, ed. 2, 1967. 971 pp. Illus. $32.

Diagnostic Procedures in Veterinary Bacteriology and Mycology. G. R. Carter. Thomas, Springfield, Ill., 1967. 298 pp. Illus. $14.

Differential Geometry. Louis Auslander. Harper and Row, New York, 1967. 285 pp. Illus. $12.50. Harper's Series in Modern Mathematics.

Digital Computer Programming. Peter A. Stark. Macmillan, New York, 1967. 541 pp. Illus. $9.95.

Drugs Affecting the Peripheral Nervous System. Alfred Burger, Ed. Dekker, New York, 1967. 644 pp. Illus. $27.50. Ten papers. Medicinal Research: A Series of Monographs, vol. 1.

The Ecology of Animals. Charles Elton. Methuen, London; Barnes and Noble, New York, 1967. 107 pp. Paper, $1.75; cloth, $3.25. Reprint, edition 3 (1950).

Economic Organizations and Social Systems. Robert A. Solo. Bobbs-Merrill, New York, 1967. 519 pp. Illus. $8.75.

Eden Was No Garden: An Inquiry into the Environment of Man. Nigel Calder. Holt, Rinehart, and Winston, New York, 1967. 240 pp. $4.95.

Electrical Properties of Rocks. E. I.

Parkhomenko. Translated from the Russian edition by George V. Keller. Plenum Press, New York, 1967. 328 pp. Illus. $19.50. Monographs in Geoscience.

Elementary Genetics. W. Ralph Singleton. Van Nostrand, Princeton, N.J., ed. 2, 1967. 588 pp. Illus. $9.50.

Elements of Real Analysis. Sze-Tsen Hu. Holden-Day, San Francisco, 1967. 379 pp. Illus. $10.95.

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