Equipment

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Science *does not assume responsibility for the accuracy of the information. A coupon for use in making inquiries concerning the items listed appears on page 54.*

■ ROLLER-TUBE APPARATUS for growing tissue cultures or viruses comprises a base-mounted motor driving a three-plate aluminum drum for rotating the culture tubes. A model with a drum 14 in. in diameter accommodates 164 tubes 16 mm or smaller. Over-all dimensions of this model are 16½ by 14 by 10½ in. Rotation rate is 1/5 rev/min. (New Brunswick Scientific Co., Dept. 549)

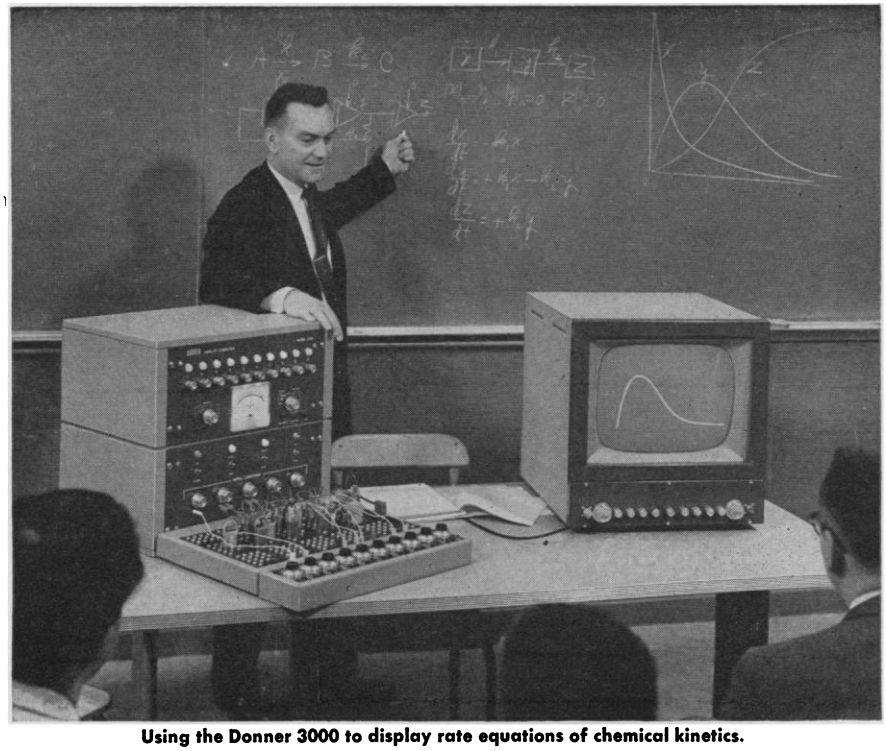
■ AIR SAMPLER operates from a 6-v battery to collect samples of dusts and radioactive aerosols. Air is sampled at a rate of 1 ft^3/min through a high-efficiency filter. Flow rate is indicated by a flowmeter that is part of the sampler. (Gelman Instrument Co., Dept. 550)

■ VARIABLE DIFFERENTIAL TRANSFORMER provides output response linear within ±1 percent over a 2-in. displacement range. Maximum displacement output is 5.0 v into a 5500-ohm load for a nominal 6.3-v, 400-cy/sec input. Residual voltage at null position is less than 1.0 percent of maximum output. Nominal primary resistance is 260 ohms, and secondary resistance is 1500 ohms. Temperature range is −65° to +450°F. (Schaevitz Engineering, Dept. 555)

■ MODULATION METER measures percentage modulation of either a voltage or a frequency. A switch selects either function. The instrument is designed for a basic carrier of 400 cy/sec and has a modulation range 0 to 2 percent. Accuracy is ±5 percent of full scale, corresponding to 0.1 percent modulation. Modulation frequency response is 1 to 75 cy/sec. Cross-product effects are small. Other carrier frequencies can be provided. (Voltron Products, Dept. 557)

■ ULTRAVIOLET MICROSCOPE ILLUMINATOR provides radiation in the range 3600 to 4000 A, with high intensity at 3650 to 3660 A. The source uses a General Electric sealed-beam, reflector-type, high-pressure mercury spotlight. A filter removes more than 90 percent of the visible light. The illuminator is provided with a transformer and is mounted on the microscope. (Burton Manufacturing Co., Dept. 559)

■ INFRARED SPECTROPHOTOMETER uses a potassium bromide prism for dispersion to cover the 12.5- to 25-μ region. The instrument incorporates design and operating features of previous models with



Using the Donner 3000 to display rate equations of chemical kinetics.

On the right hand side of the blackboard are simultaneous equations representing typical consecutive reactions in the complex parent-daughter relationships of radiochemistry. Set up according to the corresponding computer programming schematics on the left, the Donner 3000 solves the equations for arbitrary choice of parameters, and displays the results graphically on an oscilloscope or recorder. An important example of this three-component problem is the decay of Zirconium^{95} and its daughter Columbium^{95} to Molybdenum^{95} as the stable end product..

NaCl prisms except for new wavelength and slit cams and a new monochromator window that serves also as a scattered-light filter. Scanning time is 6.5 min. Abscissa accuracy is ±1 percent. Scattered light is less than 5 percent at 24.5 μ, decreasing to less than 1 percent for shorter wavelengths. (Perkin-Elmer Corporation, Dept. 561)

■ DIELECTRIC MEASURING LINE permits direct measurement of dielectric constant and dissipation factor, in the 200 to 5000 Mcy/sec range, of low-loss solid insulating materials. The instrument is a slotted line designed to accommodate cylindrical samples up to 45 cm long. Measurements of dielectric constant between 1 and 10 and of dissipation factor between 0.0001 and 0.05 can be made with accuracies of ±2 percent and ±5 percent +0.0001, respectively, over the range cited. (General Radio Co., Dept. 564)

■ TEFLON DISPERSIONS for coating application can be cured at temperature of 300°F or less. The dispersion is mixed with a binder for application with a spray gun. A dispersion in a phenolic binder cures in 1 hour at 300°F. An air-drying dispersion is available for more heat-sensitive substrates. (Acheson Colloids Co., Dept. 565)

■ PLANT-GROWTH CHAMBERS are available in two sizes: 50 by 26 by 38 in. and 86 by 50 by 54 in. Temperature is regulated by adjustable day and night thermostats selected by a photoperiod time clock. Maximum light intensity is 2000 ft-ca. Temperature range is 50° to 100°F with lights on and 48° to 100°F with lights off in 90°F ambient air. The plant bed is raised and lowered by cables and winch. (National Appliance Co., Dept. 562)

■ SAMPLING SWITCH is comprised of three poles with 30 contacts per pole operating at 5 rev/sec. Two of the poles are designed to scan differential-thermocouple and strain-gage signals, while the third pole provides the timing function. Noise levels are in the order of 20 to 30 μv throughout the 1000-hr operating life. (Instrument Development Laboratories, Dept. 574)

JOSHUA STERN
National Bureau of Standards

PERSONNEL PLACEMENT

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Botanist-Plant Physiologist, strong horticultural experience, available summer 1959. Cornell Ph.D., publications, research-administrative experience, age 40. Box 1, SCIENCE. 1/16

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Scientist, B.S. in agriculture; interested in assignment involving product or quality control; 11 years on staff of major pharmaceutical company, 4 years, supervisor penicillin extraction, 6 years, bacteriology and quality control. Medical Bureau, Burneice Larson, Director, 900 North Michigan, Chicago. X

Technical Librarian-Information Specialist. Ph.D. biological sciences, M.A. library science; 3 years experience, head department of large university library, head divisional library of large well-known industrial firm. Box 4, SCIENCE. X

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AUSTRALIA—UNIVERSITY OF MELBOURNE
SENIOR LECTURER or LECTURER IN ZOOLOGY

Applications are invited for the above position.

Applicants should be physiologists with special interests in either general or cellular physiology.

The salary ranges are £A2100 to £2500 per annum for senior lecturers and £A1450 to £2100 per annum for lecturers. Initial salary will be determined according to qualifications and experience. Superannuation similar to F.S.S.U. in Great Britain will be provided.

Conditions of appointment may be obtained from the Secretary, Association of universities of the British Commonwealth, 36 Gordon Square, London, W.C.1.

Applications close, in Melbourne and London, on **31 January 1959.** X

Biologists, Ph.D.'s, new state college, southern California. Prefer background in physiology, genetics, embryology, microbiology, or botany. Please send full résumé to Ralph Prator, President, San Fernando Valley State College, Northridge, California. 1/9, 16, 23

Immunochemist, or Biochemist interested in field of infectious diseases. Activities include studies on immune mechanisms and on the biochemistry of virus infections. Full-time research position. Salary open; minimal $8000. Apply H. A. Wenner, M.D., Section for Virus Research, University of Kansas School of Medicine, Kansas City, Kansas. 1/2

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University of Notre Dame

Letters of application are invited for positions on long range research projects at Lobund. Research laboratories within the Institute, which conducts a variety of programs with germ-free animals, include bacteriology, biochemistry, serology, physiology, virology, oncology, and immunology. Opportunities are available immediately due to expanding operations on three levels:

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Senior Technician
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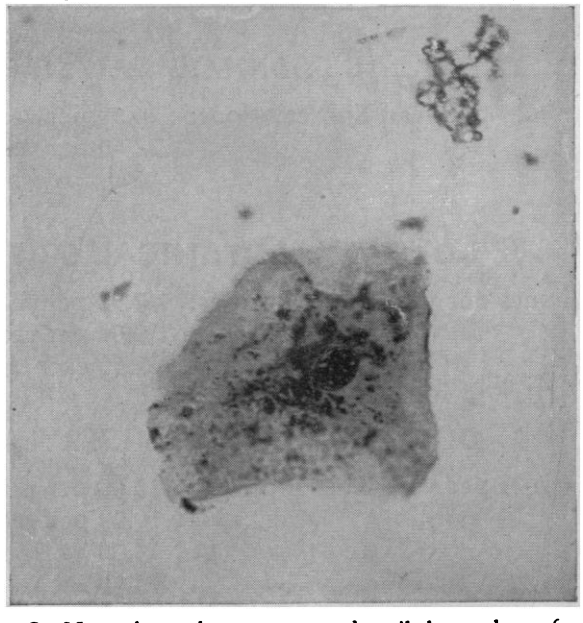
Here's how you can
MEASURE OPTICAL PATH DIFFERENCE
with the AO-Baker Interference Microscope

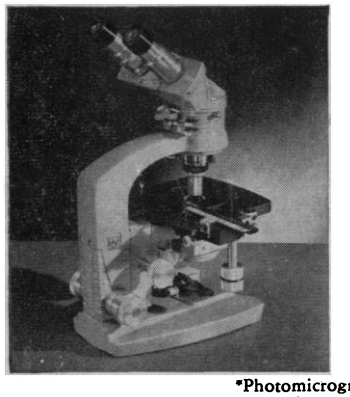
1. First, as shown in the photomicrograph* above, the microscope analyzer was rotated until the background was brought to extinction. Readings were taken directly from the analyzer scale. Averaged settings resulted in reading of 70.4°.



2. Next, the analyzer was rotated until the nucleus of the cell was brought to extinction. Averaged settings resulted in reading of 138.2°.

3. The Optical Path Difference, in degrees, is *twice* the difference between the two readings:

$$OPD = 2\,(138.2° - 70.4°) = 135.6°, \text{ or } OPD = \left(\frac{135.6°}{360°}\right).546 = .206 \text{ Microns.}$$



Optical path difference measurements can be made to an optimum accuracy of 1/300 wavelength. This unique ability to measure optical path thicknesses is in itself of great importance. But even more important, these measurements can be converted into a variety of quantitative information of great potential value. Water and protein content of a cell, for example, may be measured. Materials such as glass, plastics, emulsions, textiles can be examined.

While the AO-Baker Interference Microscope is primarily a quantitative instrument, it also offers unique advantages for qualitative observations through variable intensity contrast and dramatically effective variable color contrast.

*Photomicrographs taken by Mr. Lynn C. Wall, Medical Division, Eastman Kodak Co. Data: Epithelial Cell. AO-Baker Interference Microscope, 40X Shearing objective, 10X eyepieces. Corning filter CS4-120 with AO Model 630 Pulsarc Illuminator to transmit monochromatic light at .546 microns.

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Dept. M-1

Please Send me your NEW COLOR BROCHURE SB7 on the AO-BAKER INTERFERENCE MICROSCOPE.

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