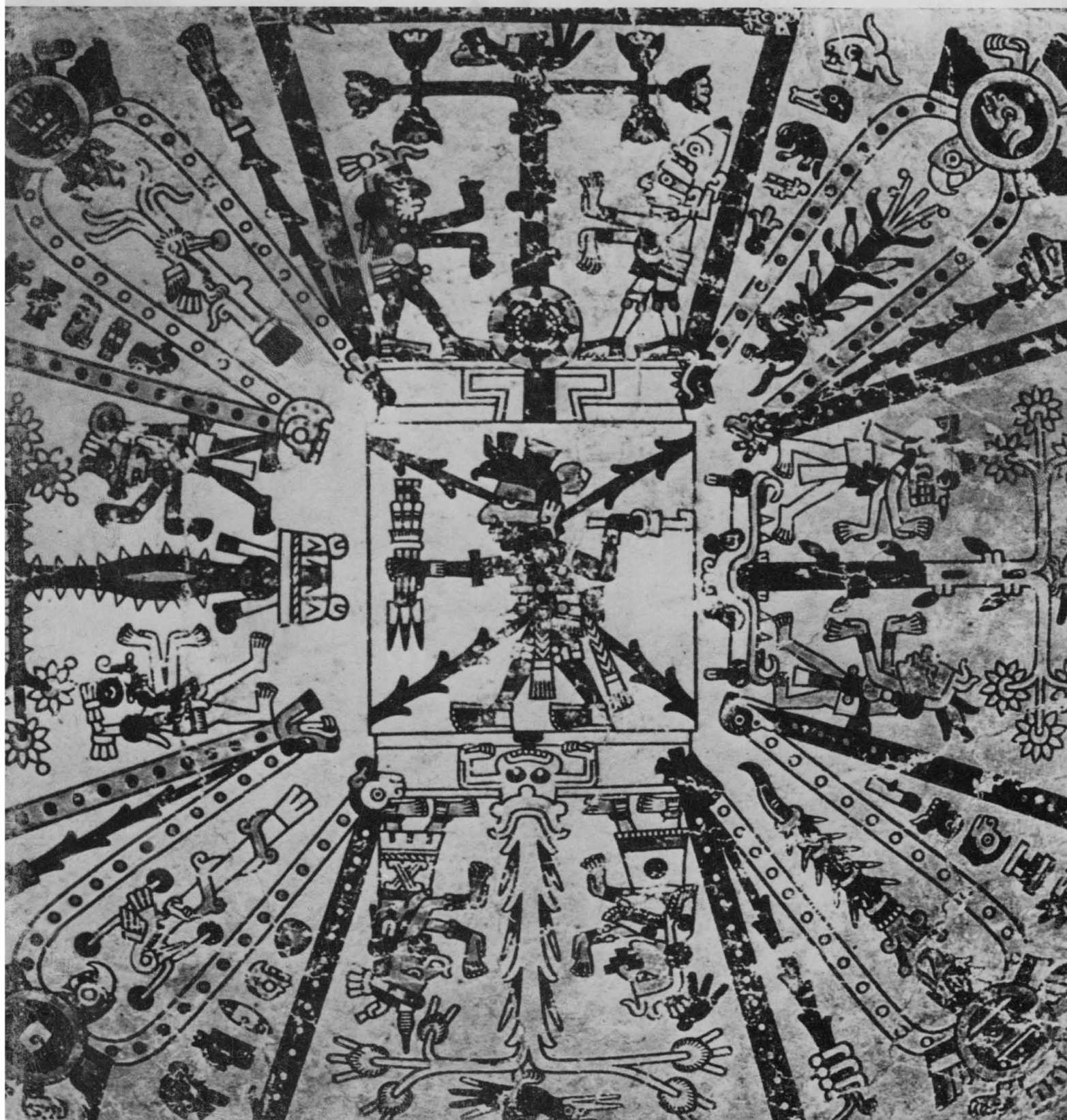


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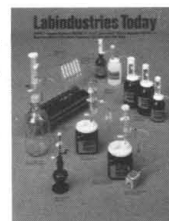


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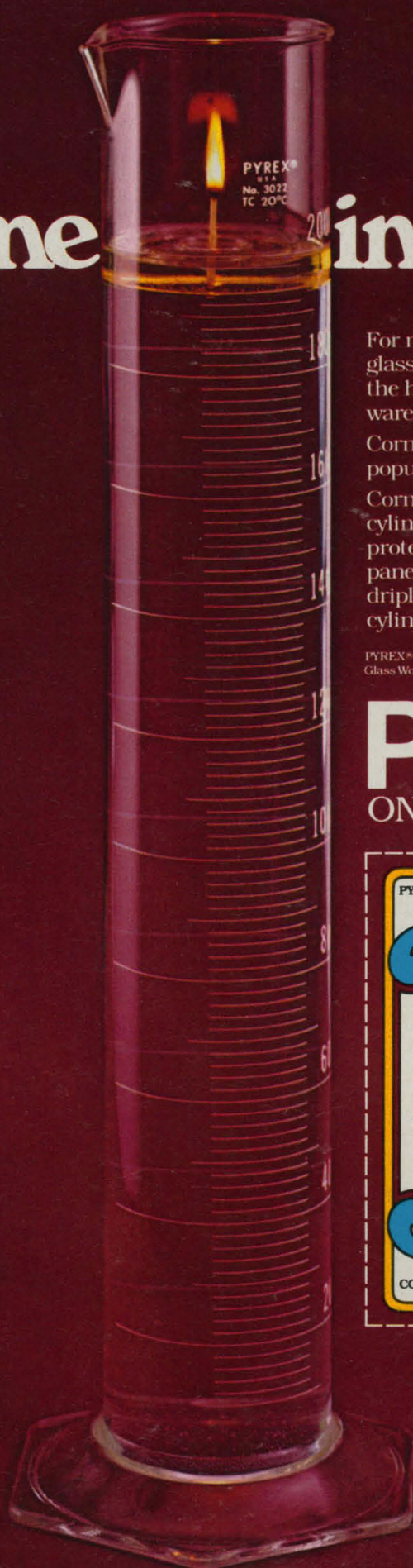
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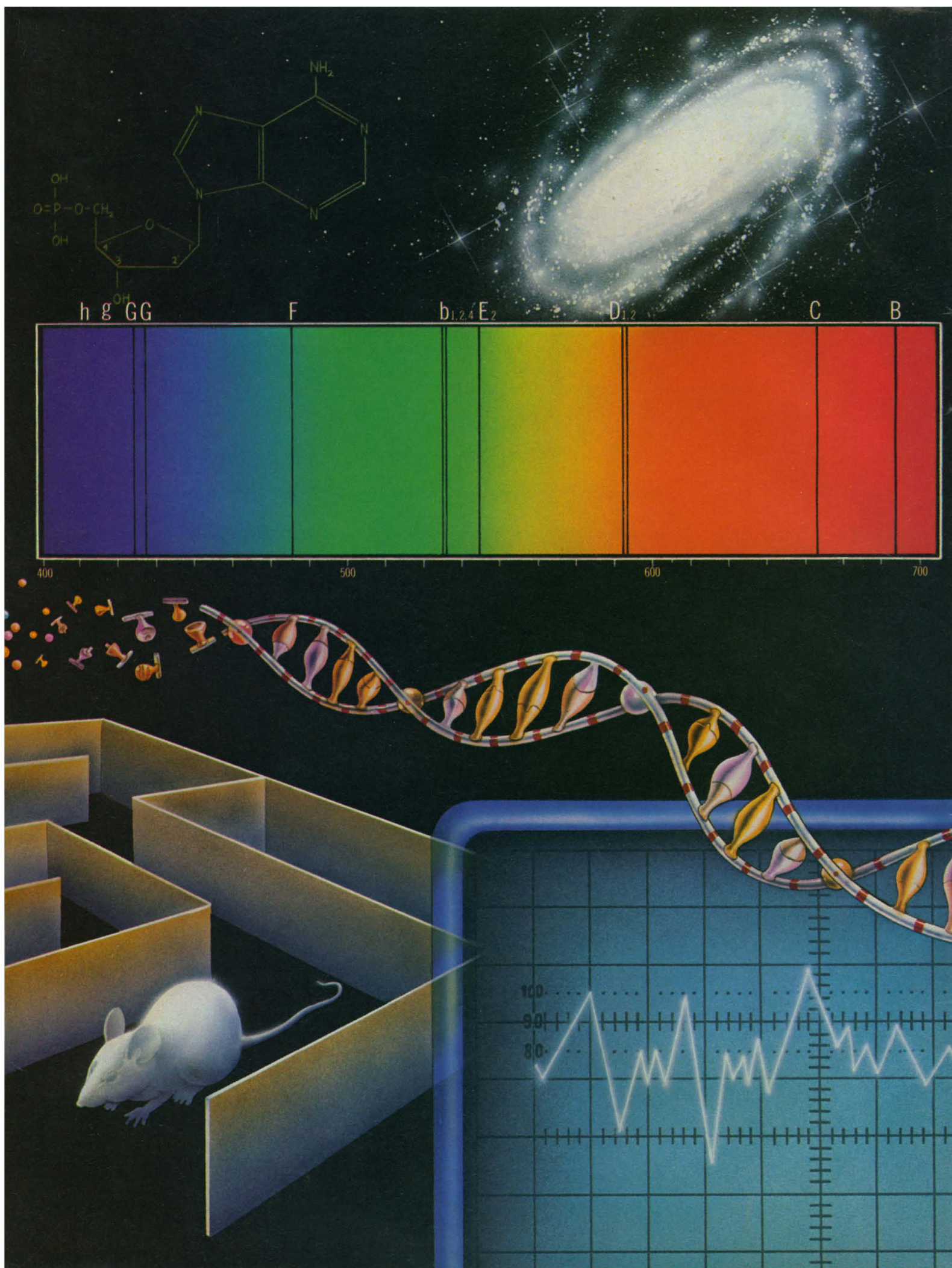
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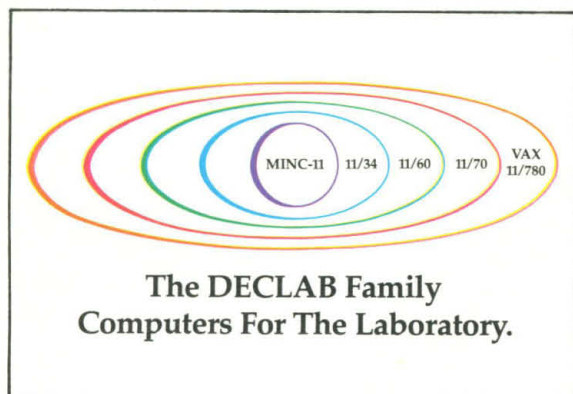
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Pre-Columbian world diagram and calendar from a picture book, the Puebla-Tlaxcala region of Central Mexico, about 15th century. The diagram illustrates the fusion of time and space in ancient Mesoamerican cosmological thought. Various symbols (including regional gods, birds, colors, even parts of the body associated with the four cardinal directions) are embodied within flaps of a Maltese Cross, each flap representing one of the directions. The 260-day calendar is tallied by dots on the horizon forming the periphery of the cross, while the 20-day name symbols are divided, five to each quadrant. See page 267 [Codex Fejervary-Mayer, *Codices Selecti* (volume 26), Akademische Druck-u Verlag, Graz, Austria, 1971]]



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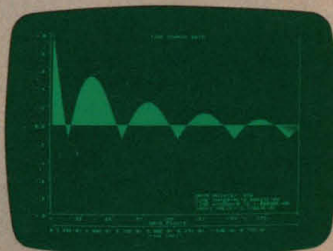
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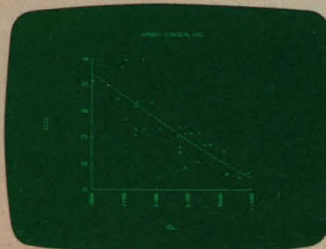
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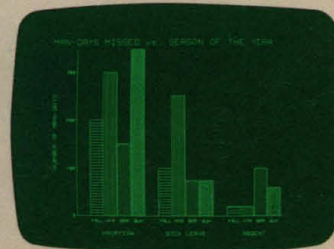
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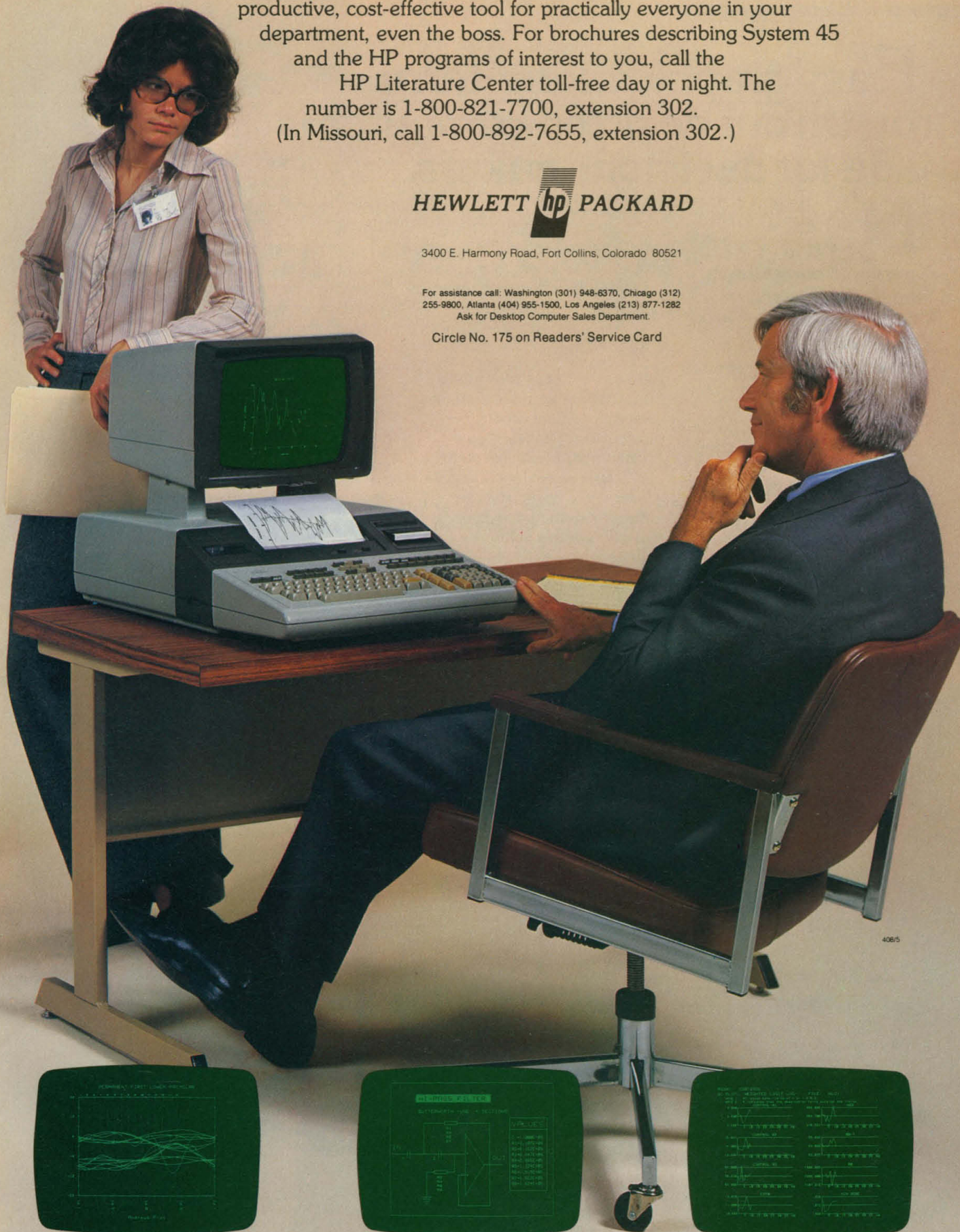
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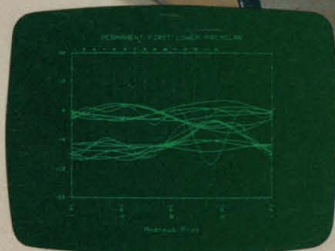
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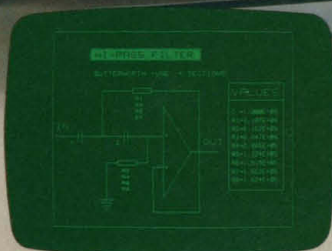
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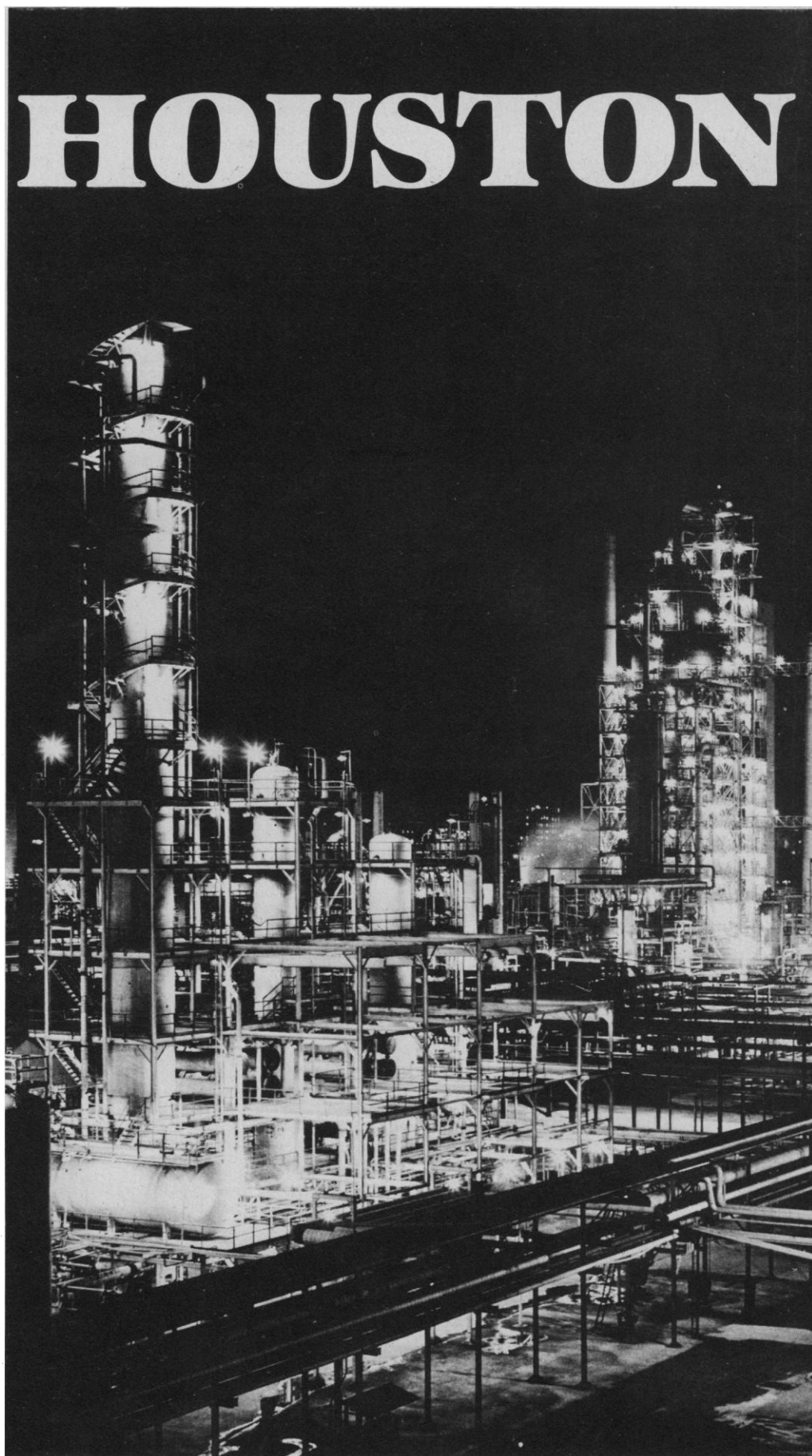


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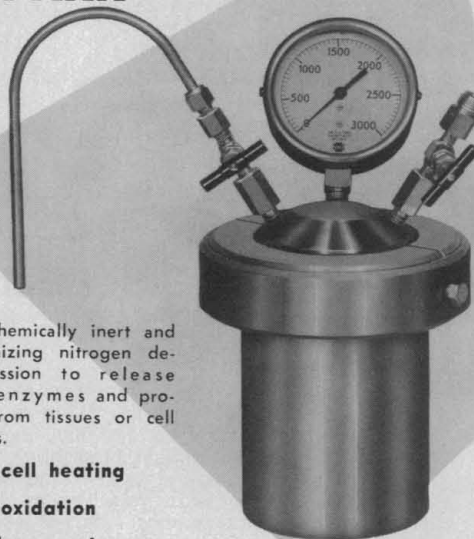
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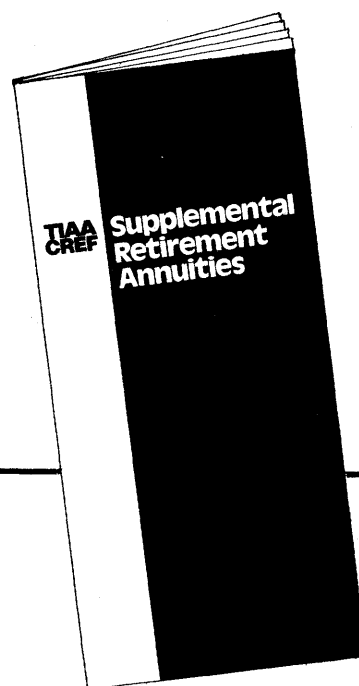
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Disease Prevention: Asking the Right Questions

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In public health, the best question is one that can be answered and whose answer can promptly be applied to the reduction of disease. The greater the impact on health, the better the question. Yet, we often focus attention on the uncommon or exotic disease rather than on the more commonly encountered malady. As a case in point, a conference on the issue of vinyl chloride carcinogenesis is likely to get more participation than one on tobacco carcinogenesis. In tumor promotion, more individuals are concerned with phorbol esters than with studying the effect of alcohol, an established tumor promoter in humans. The rare disorder may illuminate the common one, but in the public health context it is not a major end in itself.

Why is it, we should ask, that cardiovascular disease, most cancers, and most chronic diseases occur with such varying incidence in different populations, and why does the incidence tend to change as individuals move from a low- to a high-risk area? The observation pinpoints a role for environmental factors. A number of relatively easily assessed hypotheses emerge, and at the same time practical questions present themselves for answers. For instance, since smoking is so needless a cause of disease, what better techniques are at hand to dissuade children from beginning to smoke? How can we get adults to break their habit? And can we produce less harmful cigarettes? In relation to alcoholism, what can we learn from countries whose public health efforts have reduced alcoholism? In terms of cardiovascular disease, what is an optimal blood lipid level, and what is an optimal intake of fat? What are the roles of nicotine and carbon monoxide in the etiology of myocardial infarction? Would a low-fat diet reduce the risk of breast or colon cancer? Would a dietary intake of less than 5 grams of sodium chloride per day help prevent hypertension and its sequelae? What type of diet allows for optimal physical and mental development of humans without increasing their risk of overnutrition-related diseases? How can we induce people to alter their life-styles in the direction of risk factor reduction and, it is hoped, of improved health and well-being? Clearly, there are many important questions still to be asked, but the ones raised above are among those of special importance to the public health-oriented investigator principally concerned with prevention.

Most scientists prefer to conduct their investigations with a minimal amount of government control or direction. It is commonly suggested that each scientist should be permitted to determine what type of question to ask. But it is necessary to strike a balance, in a society with limited resources, between the academic or mechanistic question and the question immediately relevant to preventive or therapeutic practice.

We suggest that investigators, especially those interested in disease prevention, satisfy themselves that their question is likely to lead to disease reduction. Society continues to suffer from too many diseases that are potentially sensitive to preventive measures. If we are going to overcome such diseases, it is time that, both as individual investigators and as citizens, we ask the right questions. Makers of national science policies should first identify the major questions that could lead to reduction of disease. Such inquiry should then be followed by discussions of how, by whom, and by what mechanisms such questions can be answered.

The answers to one good question usually generate further questions and hypotheses of both pragmatic and theoretical content. Many such cycles are likely before chronic disease morbidity and mortality will be reduced; indeed, the number may be vast. But if we in preventive medicine concentrate on asking the right questions and finding the right answers, we can hope for a stage when the need for further practical answers will be reduced or abolished.—ERNST L. WYNDER, *President, American Health Foundation, New York 10017*

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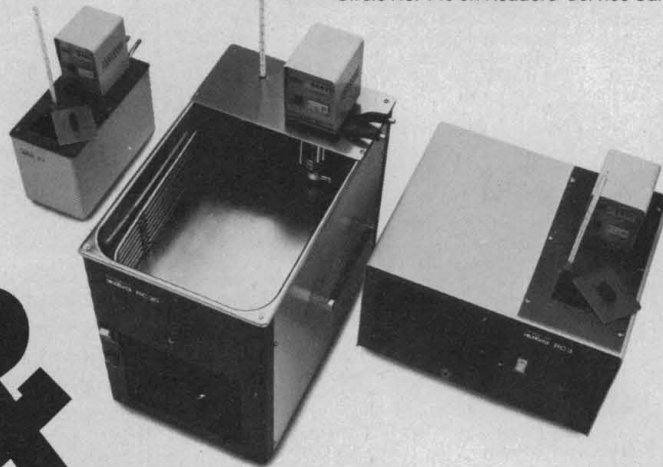
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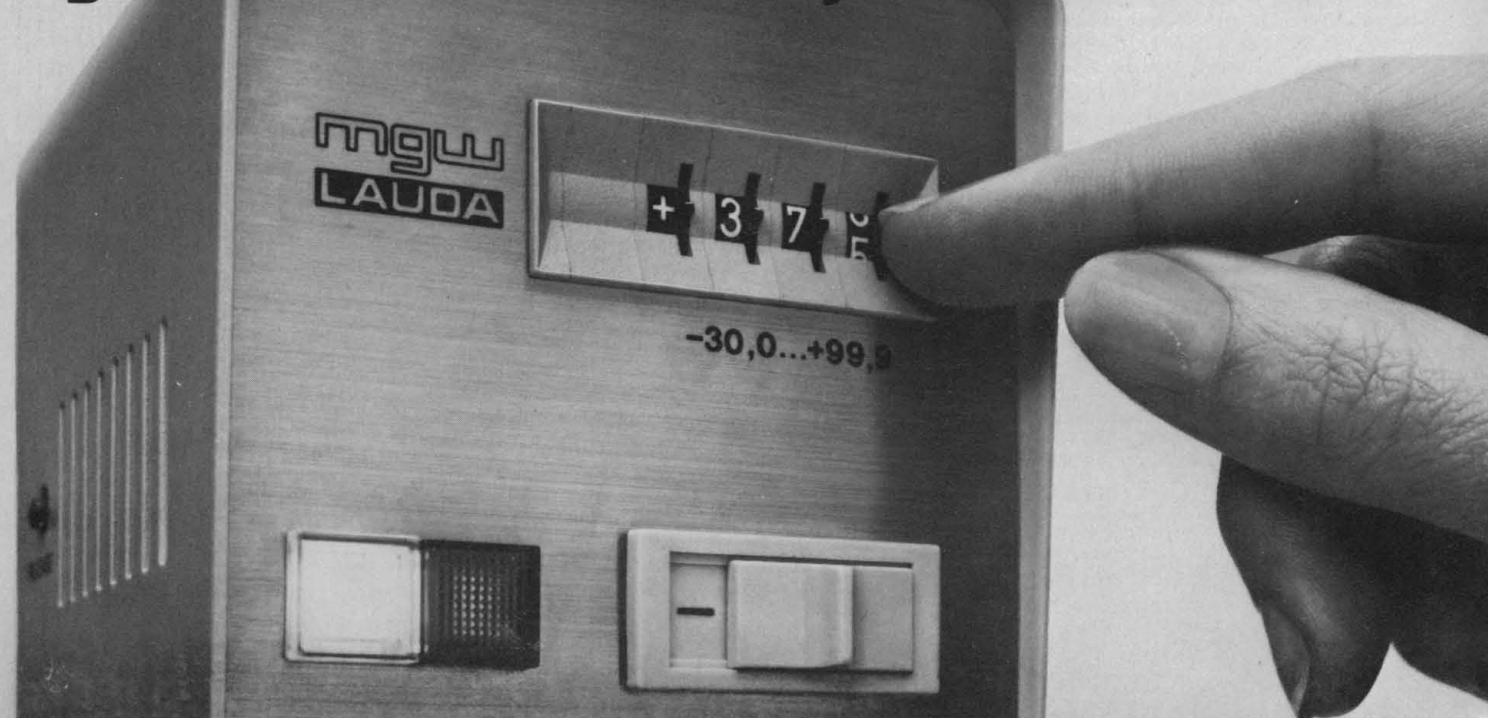
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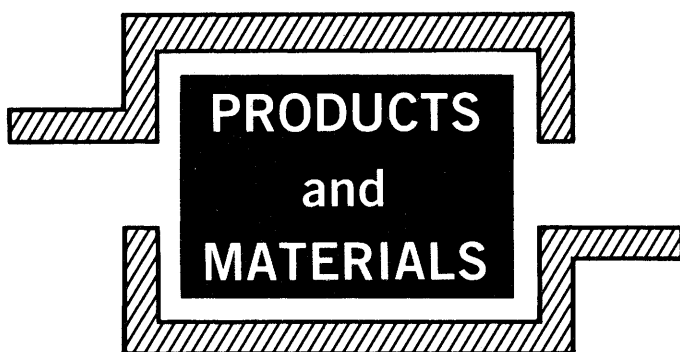
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Freeze Dryer

The Freeze Dryer-8 is an intermediate-sized lyophilizer with an 8-liter capacity. It may be coupled with a variety of drying chambers, tray dryers, or a 24-port manifold. Features include electronic maintenance and readout of temperature and vacuum, an effluent drain, and a sight glass to monitor oil supply in the vacuum pump. The condenser column is stainless steel and is visible so that ice buildup may be monitored. The standard refrigeration unit quickly cools the condenser to -54°C and the device may be ordered with an ultralow cascade refrigeration system for lyophilization of materials with low eutectic points. Labconco. Circle 712.

Spectrofluorometer

The Ratio II spectrofluorometer is used for fluorescence analysis and measurements of short-lived phosphorescence and of fast kinetic reactions. The operator selects the measurement parameters, places the sample cuvette in the appropriate compartment, and starts the instrument. Decreases in the output of the xenon source are automatically compensated and source fluctuations are automatically accounted for in any measurement. American Instrument. Circle 710.

Color Measurement

The SP8-100 ultraviolet spectrophotometer has a diffuse reflectance sphere which holds the sample within its sample cell. The design ensures against a direct

optical path between any patch of specularly reflected light and the photomultiplier. This feature improves the accuracy of measurement. This device is suitable for analyses of color in powders or samples of larger size up to 170 by 160 millimeters. Several types of data analyzers are compatible with this instrument including printer or teletype serializers or programmable calculators. Philips Electronic Instruments. Circle 711.

Peristaltic Pump

Model IP-4 is a compact unit that features independent multichannel capacity. A planetary drive rotates the rollers and thus increases tubing life. The four channels each have their own snap-in cartridges to allow the operator to change tubing without stopping the pump or disrupting other cartridges. It also enables the operator to use different sizes of tubing from 0.5- to 3.0-millimeter inside diameter. Individual tension adjustment is also possible. A variable-speed potentiometer is coupled to an electronic feedback system to improve accuracy of flow rates from 0.008 to 10 milliliters per minute at any of several operating speeds. Brinkmann Instruments. Circle 713.

Color Television for Microscopy

Model 45-01 system consists of a camera head with a C-mount, a camera control unit, a 150-watt quartz-halogen light source, a power supply for the light source, and a base plate for the microscope. Options with the 45 series include a picture monitor, a videotape recorder, a beam splitter, and other accessories. The series provides pictures sharp and accurate enough to permit diagnosis from the screen. When magnification is changed a neutral density wedge mounted between the light source and the microscope compensates for changes in effective available light to preserve colorimetry. Syn-Optics. Circle 714.

Composition Analyzer

Model 6350 consists of a monochromatic light source, detectors, and analyzers plus a computer with a central processor, display unit, and storage unit, which may be interfaced to printers, plotters, or recorders. Reflectance or transmittance of wavelengths from the visible to the near infrared may be analyzed. The spectral source is obtained through a double holographic monochromator that enhances the incident beam. Ten scans are made per second and multiple scan-averaging is used. Neotec. Circle 709.

Constant Temperature Apparatus

A new line of apparatus includes incubators, mechanical and gravity-convection ovens, and dual- and single-chamber water baths. Gravity incubators feature adjustable expanded metal shelves and quick temperature recovery. Water-jacketed incubators allow users to perform separate experiments simultaneously. There are also reach-in, forced air/carbon dioxide, low-temperature, and gravity-convection incubators. Ovens include sterilizer, vacuum, glassware, drying, utility, resin-curing, soil sample preparation, and semiconductor-aging models. Four stainless steel water-bath models feature warm-air jacketing and are manufactured of stainless steel. Beckman Instruments. Circle 715.

Literature

Balances features electronic balances and peripherals such as a weight-count converter, a calculating printer, and a digital comparator. Mettler Instrument. Circle 716.

Plastics for the Laboratory describes a complete line of containers, fittings, dispensers, and other apparatus. Bolab. Circle 719.

Minicomputer Accessories is devoted to supplies and equipment for users of small computers. Minicomputer Accessories. Circle 720.

Electrophoresis Cell describes the model 1415 horizontal cell for electrofocusing, immunoelectrophoresis, and DNA electrophoresis. Bio-Rad Laboratories. Circle 721.

Double Beam Atomic Absorption Spectrophotometer introduces the AA-775 model that measures absorbance, concentration, emission, peak height, and peak area and uses an 8-bit microprocessor to analyze the data acquired. Varian Instrument Division. Circle 722.

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Annual Reports on NMR Spectroscopy. E. F. Mooney, Ed. Vol. 6C, NMR Data on Organic-Metal Carbonyl Complexes (1965-1971). P. W. Hickmott, Michael Cais, and A. Modiano. Academic Press, New York, 1977. xiv, 658 pp., illus. \$65.50.

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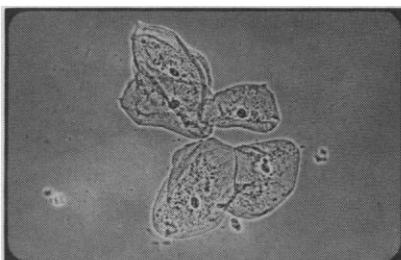
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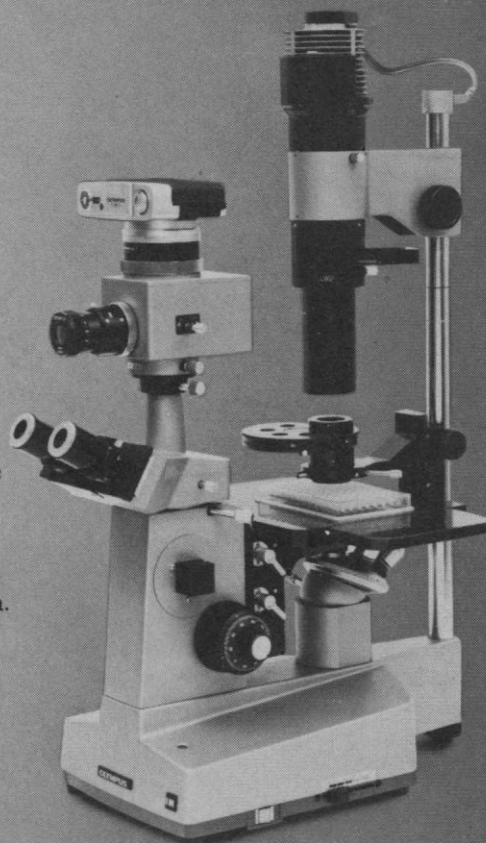
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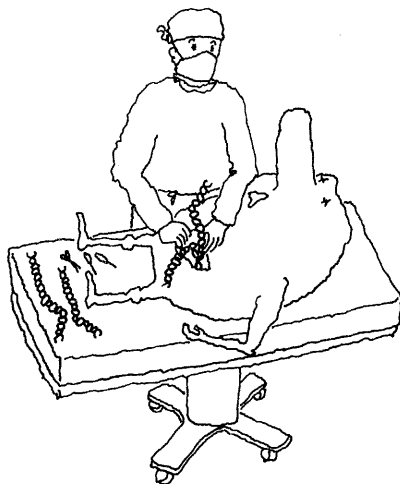
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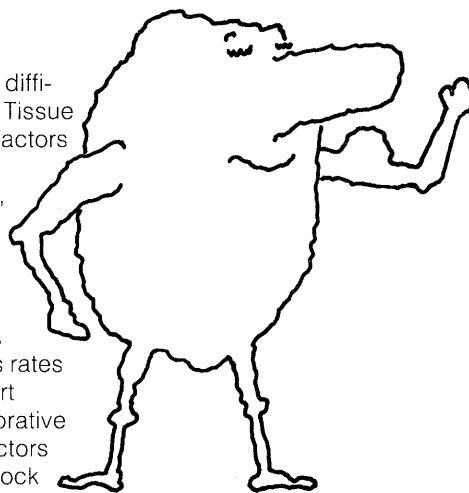
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