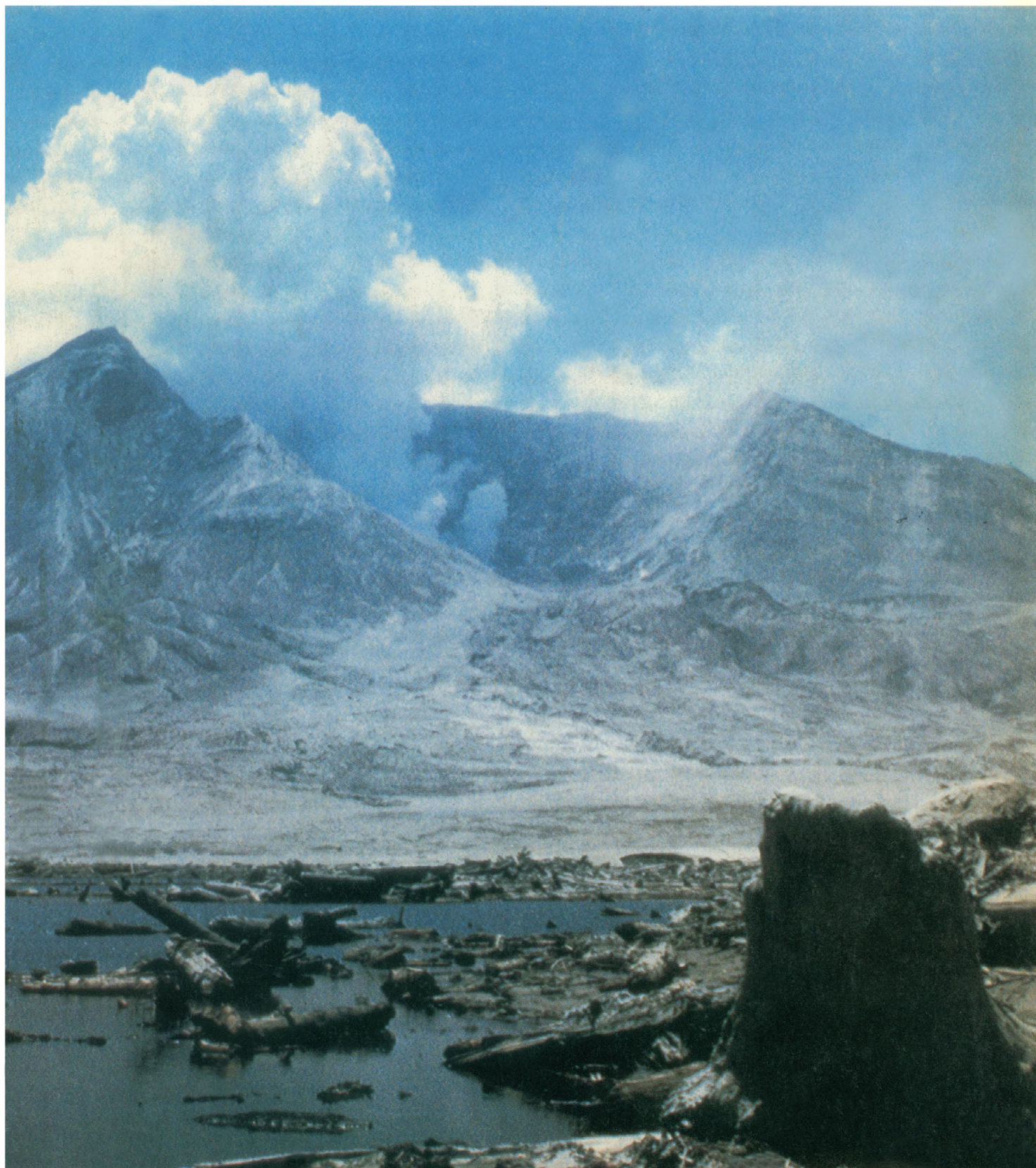


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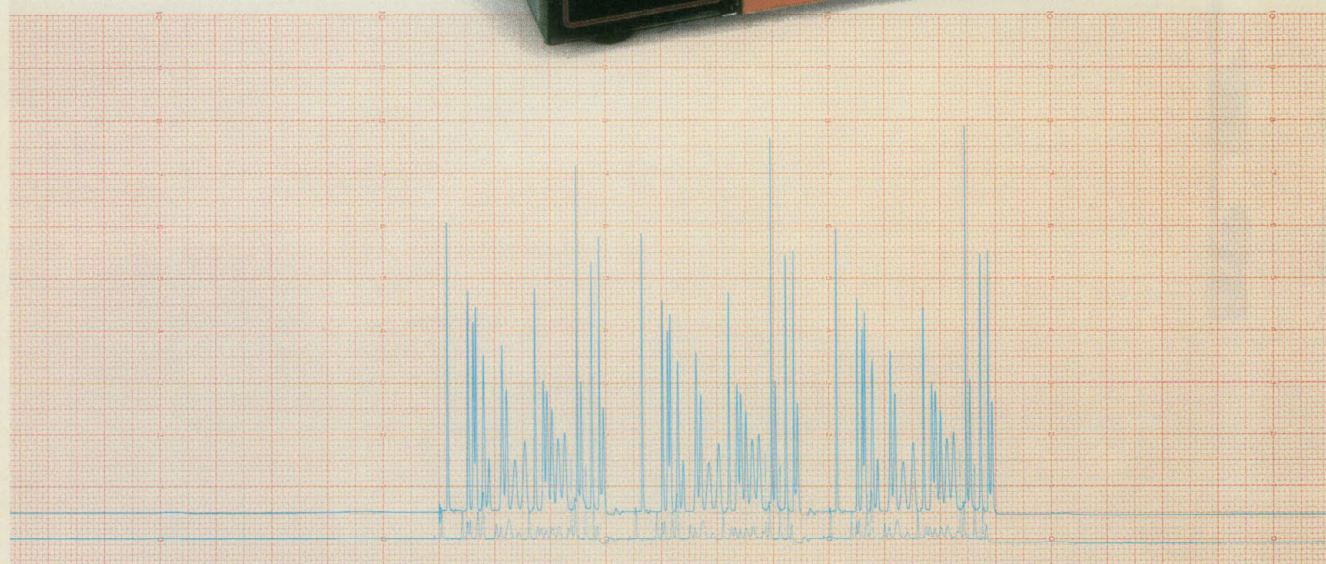
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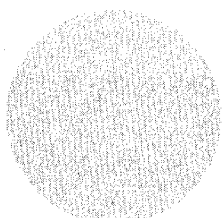
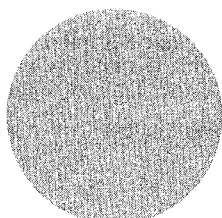
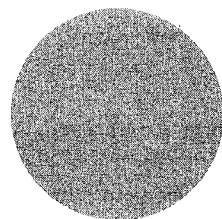
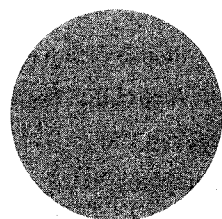
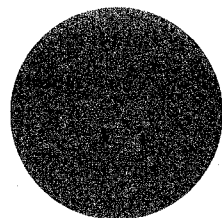
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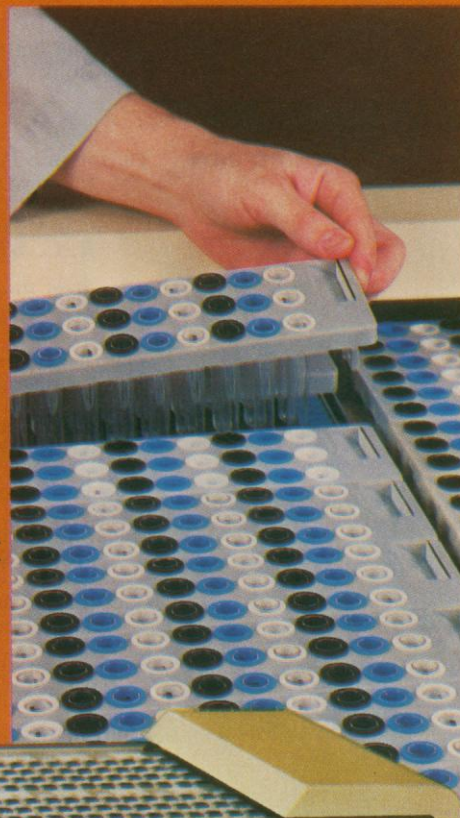
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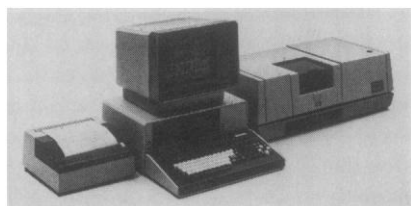
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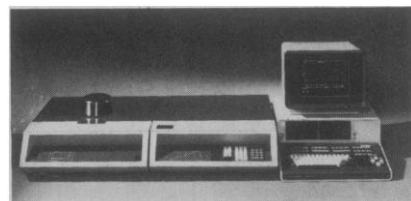
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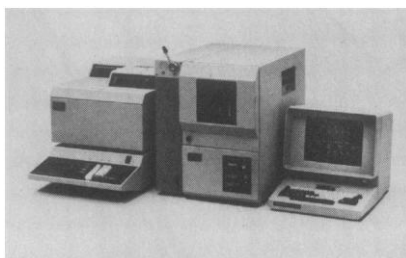
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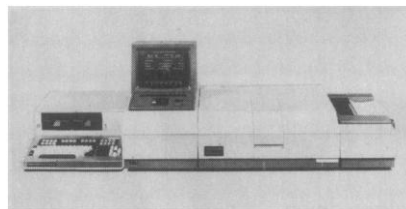
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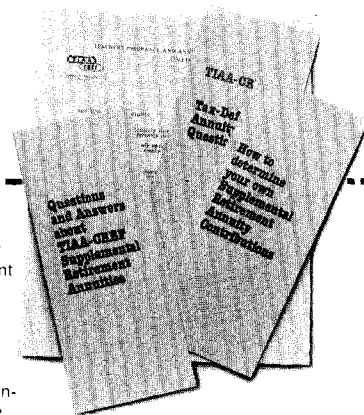
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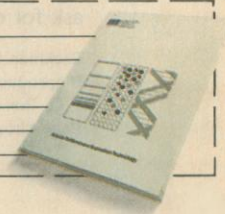
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Autofocus, the world's most advanced single-lens reflex camera. 2) Time-Zero SX-70 Film, Type 778, a professional version of the world's fastest developing integral color film. 3) And, at the heart of the system, a highly sophisticated electronic microscope adapter.

### Automatically simple.

The adapter's main feature is automatic exposure control. It automatically measures the light

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Exposures between 1/10 and 12-1/2 seconds are handled automatically. If there's too little or too much illumination, warning lights alert you and the exposure will be prevented. Exposures longer than 12-1/2 seconds can be done manually.

### Almost any microscope will do.

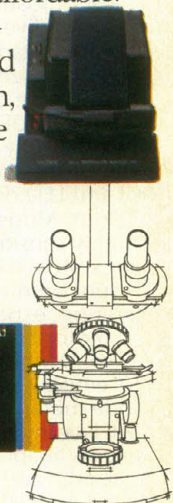
You need no special equipment or photographic knowledge. You only need a microscope with an eyepiece tube between 24 and 40mm in diameter. Superb color documentation develops right in your hand in seconds. So you know immediately if you have the precise record you need.

### Highly useful, low priced.

Your instant documentation can be used for publication, reports, or records. And you can use the camera alone for pictures from 1/2:1 to infinity, in the field, or to document other laboratory work such as experimental setups.

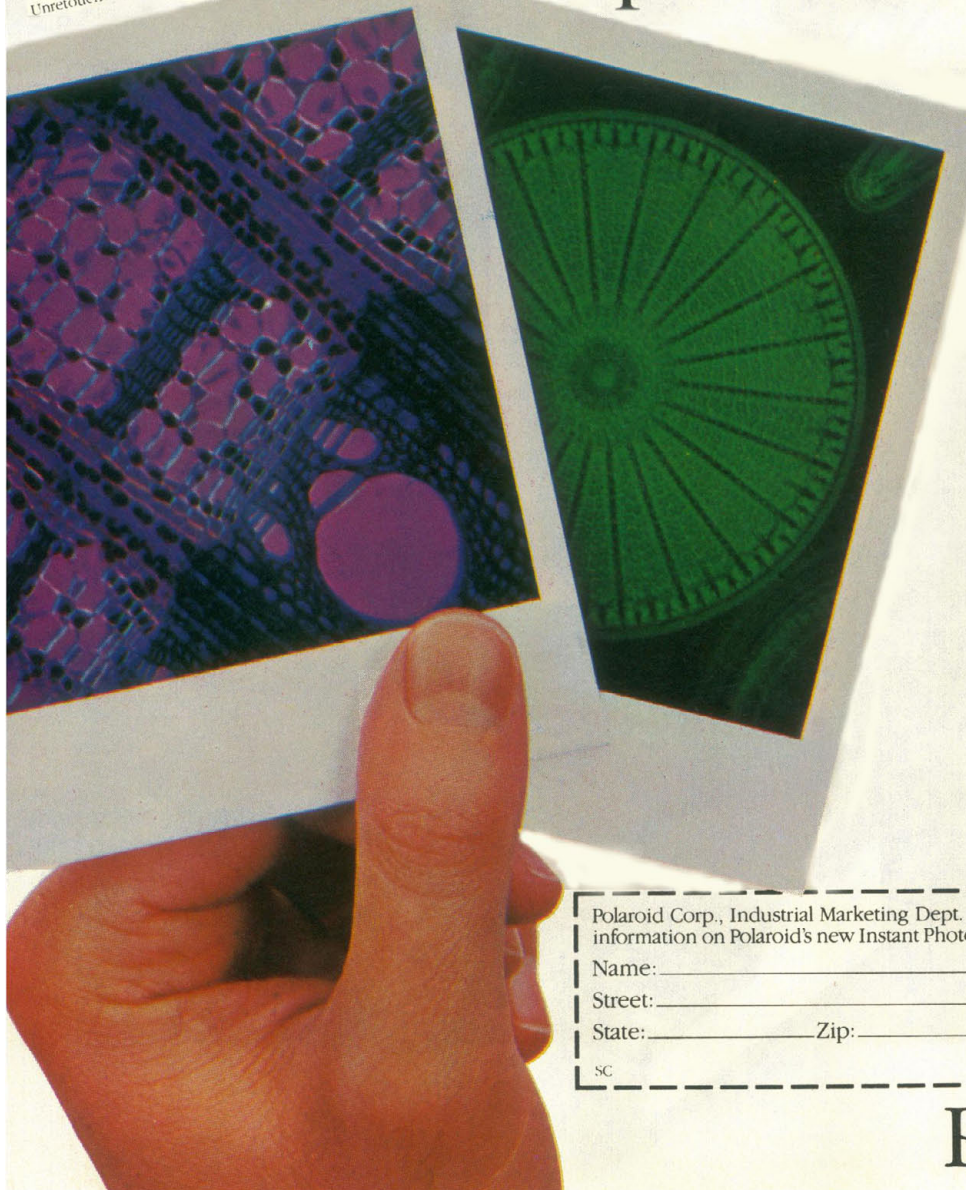
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## NIKON REVOLUTIONIZES OPTICAL PERFORMANCE WITH THE FX PHOTOMICROGRAPHY SYSTEMS.

LED readout of precise, fully automatic, microprocessor-determined exposure from the UFX system control unit.

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# INTRODUCING A STARTLING NEW DEVELOPMENT IN LSC.

## The RSP- $\beta$ 400™ Radioactive Sample Processor

Radiomatic Instruments proudly announces a breakthrough in liquid scintillation counting — the RSP- $\beta$ 400 Sample Processor.

This new instrument automatically prepares the liquid scintillation counting sample (by measuring, combining and mixing the sample with counting solution), and transfers it into one of two available counting chambers (no vials are needed). After preset count time, the radioactive waste is collected in a waste container, and the system is washed, ready for the next cycle.

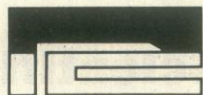
Not only is the number of samples processed increased over ordinary LSC's (the two detectors

double the throughput), but the cost per sample is reduced to one third.

But why the rooster? Just for size. The RSP- $\beta$ 400 Radioactive Sample Processor is far smaller than any liquid scintillation counter available today: 41" wide, 23" deep, and just 23" high. It is an instrument that will change the course of traditional LSC technology for years to come because it is not only small, but incredibly efficient.

Programming the RSP- $\beta$ 400 Sample Processor is through a full alphanumeric keyboard with display and prompting on an 8" x 8" CRT. Hard copy data is presented on the built-in printer. This instrument measures isotopes on two preset or adjustable channels; calculates cpm or dpm, and is capable of presenting data in user-defined units.

There's no LSC on the market today that does so much — yet it costs less! Make history with us at Radiomatic Instruments. Send for a comprehensive brochure on the RSP- $\beta$ 400 Radioactive Sample Processor; see it at the 1982 FASEB Meeting in New Orleans; use it in your lab.



**Radiomatic Instruments & Chemical Co., Inc.**

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Model 3029 Countertop Incubator

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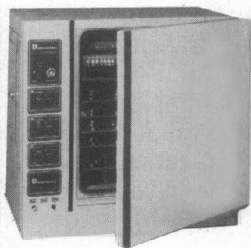
Model 3638 Undercounter Refrigerated Incubator

Model 3916 Reach-In Incubator

Model 3956 Reach-In Incubator

Model 4862 Cell Roll System

Model 4678 Add-On Deck

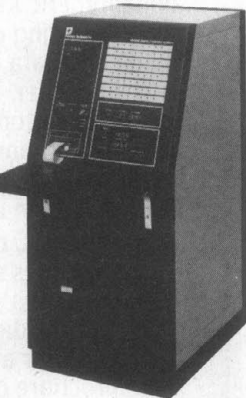


## HOTLINE SYSTEM 55 Modular Furniture (20% off)

- Flexible, modular design for laboratory, classroom, office or any work area
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- Easy assembly needs no special tools, no special personnel; system expands with your needs

## HOTLINE Central Alarm / Monitor System

- Provides 24-hour monitoring of up to 64 units from one central location
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- Maintains a permanent record of all monitored units
- Currently in use in FDA licensed blood banks, helping them meet requirements outlined by FDA Regulation 21CFR606



## HOTLINE Blood Bank Equipment

- Equipment for all phases of blood component processing and storage
- Manufactured in accordance with AABB and American National Red Cross requirements and standards
- Extra protection from Forma's temperature deviation safety alarm system, standard on blood bank equipment

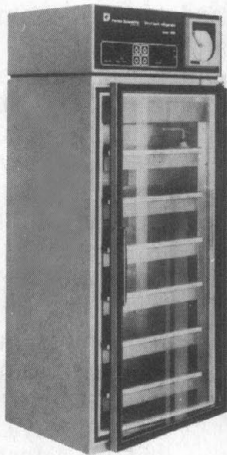
Model 3880 Blood Refrigerator

Model 3882 Blood Refrigerator

Model 8070 Undercounter Plasma Freezer

Model 8096 Upright Plasma Freezer

- Model 8260 Upright Red Cell Freezer
- Model 8190 Red Cell Freezer
- Model 2031 Thawing Bath
- Model 2386 Cryoprecipitate Bath
- Model 3614 Red Cell Warmer
- Model 4716 Elliptical Platelet Rotator
- Model 3894 Giant Capacity Blood Refrigerator



## HOTLINE Ultra-Low Temperature Freezers

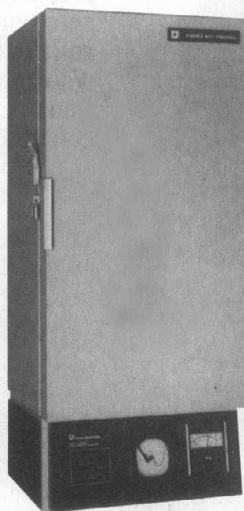
- Only Forma guarantees operation to -75°C (-103°F) and -85°C (-121°F), even in a +90°F ambient
- Performance and reliability — integral design features of all Forma Scientific freezers
- Strict ultra-low temperature maintenance provided by superior cascade refrigeration systems and a minimum of five inches foamed-in-place insulation
- Ultra-low temperature freezers include alarm test system; check the alarm function at the touch of a button entirely outside the freezer

Model 8181 Undercounter Utility Freezer

Model 8332 3 cu. ft. Chest Freezer (-77°C)

Model 8200 13 cu. ft. Upright Freezer (-75°C)

- Model 8107 6.7 cu. ft. Chest Freezer (-85°C)
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- Model 8138 12.7 cu. ft. Chest Freezer (-85°C)
- Model 8158 20 cu. ft. Chest Freezer (-85°C)
- Model 8225 13 cu. ft. Upright Freezer (-85°C)
- Model 8242 13 cu. ft. Upright Freezer (-40°C)

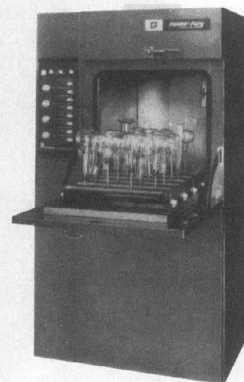


## HOTLINE Fury Labware Washers/Dryers

- Fury's program processor lets you tailor washer operations to your exact cleaning needs
- 18" and 26" load capacities
- Fold-down doors
- All stainless steel construction
- Spindle header capabilities; to deliver Fury cleaning action inside labware
- Large capacity and countertop dryers complete cleaning cycle



- Model 8877 18" steam heated
- Model 8888 26" electric heated
- Model 6097 Dryer/Sterilizer
- Model 6150 Dryer/Sterilizer
- Model 8878 18" electric heated
- Model 8879 18" electric heated
- Model 8887 26" steam heated



## HOTLINE Power Package Labware Washing System

- Complete labware cleaning in a compact undercounter design
- Washer/Dryer offers optional spindle header capabilities
- Companion units include Dryer, Booster Heater and De-Ionizer
- All units constructed of stainless steel.

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Model 8735 De-Ionizer

Model 8738 Booster Heater

Model 6034 Dryer

Model 8714 Free-standing Washer/Dryer

Model 8717 Portable Washer/Dryer

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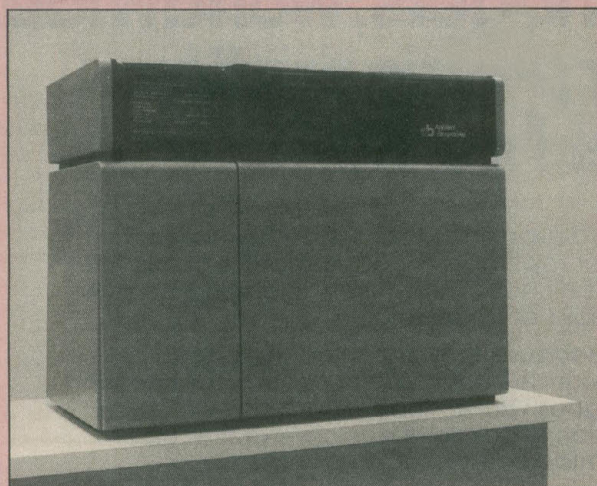


# BIOSYSTEMS UPDATE

## A Preview of Product Developments

**A New Gas-Phase Protein Sequencer** based on research at a major California university has been developed at Applied Biosystems. An extensive program of testing and evaluation has begun at a number of laboratories throughout the United States to insure that field performance of the instrument matches that already obtained in Applied Biosystems' laboratories. The sequencer will be announced for commercial distribution following successful completion of these tests.

The technologically advanced protein sequencer allows researchers to address many new areas of application. Its sensitivity will be orders of magnitude higher than that currently attainable. It even permits sequencing of samples obtained after electroelution from SDS gels.

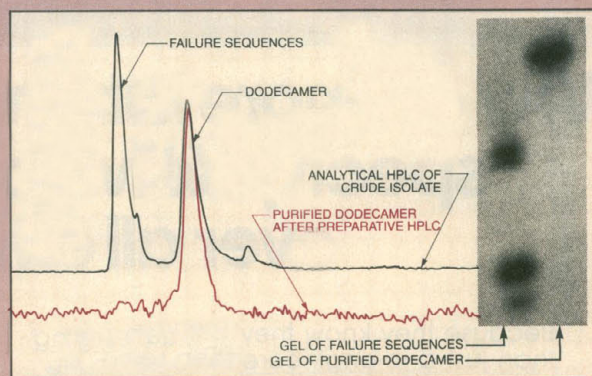


Where sensitivity is not needed and samples are available in nanomole or tens of nanomole quantities, larger numbers of residues can be sequenced than with conventional instruments.

The Applied Biosystems Protein Sequencer will be economical to operate, as its reagent consumption is considerably less than that of

conventional instruments. The company will also supply the ultra-pure solvents which are required for optimal performance. Circle #389.

**High Quality Custom Oligodeoxynucleotides** are now available in limited quantities from Applied Biosystems. These ultrapure oligonucleotides are synthesized using recently reported phosphoramidite nucleoside chemistry which is inherently free from undesirable side reactions. Mixed sequence hybridization probes, polynucleotides and duplexes are also available. Purification is by reverse phase HPLC or by sizing gel electrophoresis if specified. For price and delivery information Circle #390.



**A new Automated DNA Synthesizer** based on proprietary phosphoramidite chemistry has been developed. It enables molecular biologists to synthesize, quickly and reliably, large numbers of custom oligodeoxynucleotides in their own laboratories. The stability and high efficiency of this chemistry as implemented by Applied Biosystems allows synthesis of relatively large DNA fragments using very small amounts of starting material. Circle #391.

**Applied Biosystems** will exhibit at FASEB 82. Please visit Booth E-65 to see us and discuss your needs.



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Because they've learned they don't have to worry about reagents, tissue samples, and flammables being warm when they should be cool.

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**524K** byte board.

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## High Performance Water Jacketed CO<sub>2</sub> Incubators


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Uniformity of  $\pm 0.25^{\circ}\text{C}$  at  $37^{\circ}\text{C}$  is achieved using a solid state direct set point digital display controller. This precise control is assured where you need it most, around your samples, by the placement of a sensor in the chamber and a backup safety sensor in the water jacket.

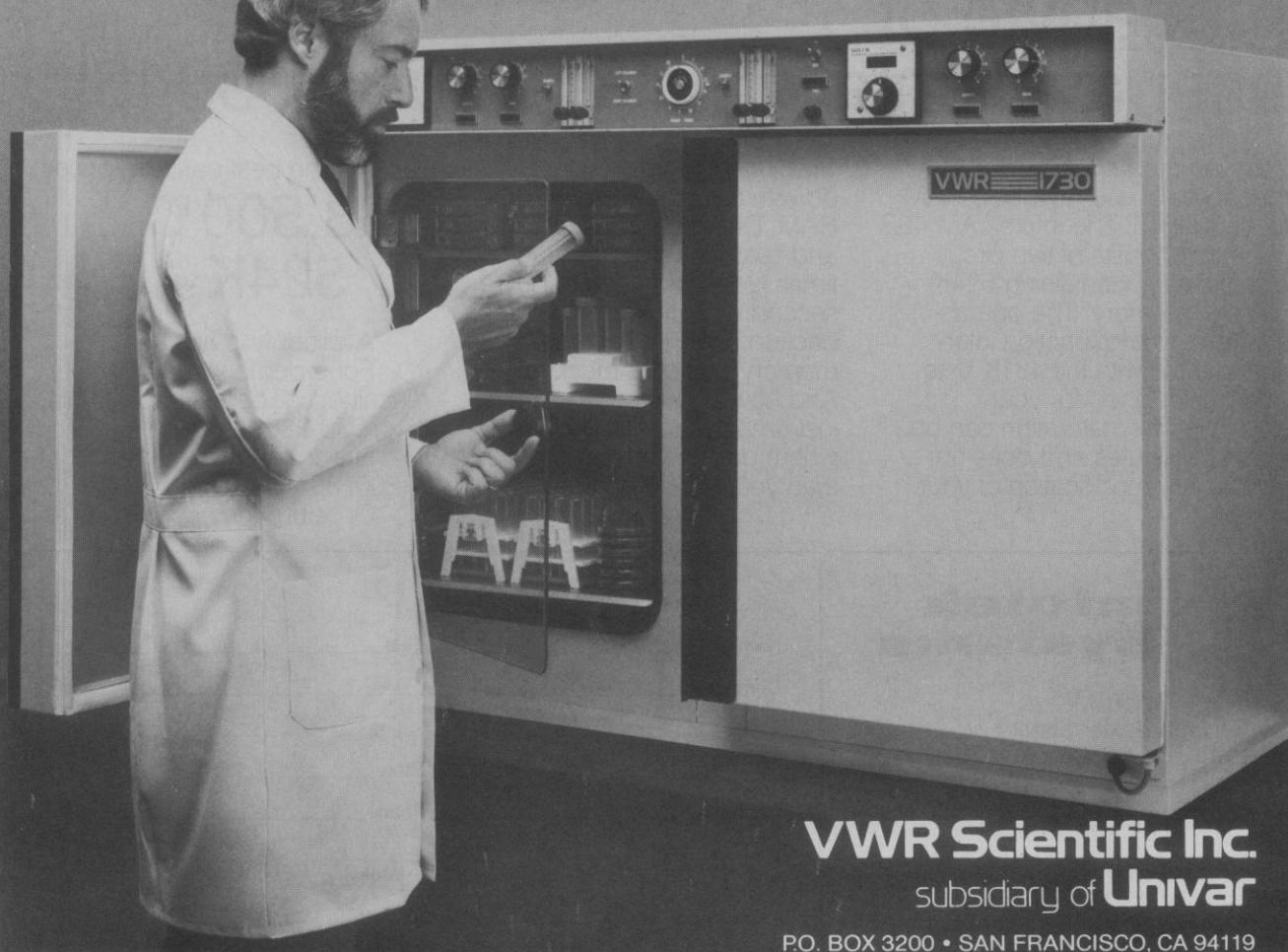
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Each model is backed by VWR's extensive sales and services with 32 office and warehouse locations nationwide.

 Call or write your nearest VWR office for more information on VWR Incubators.

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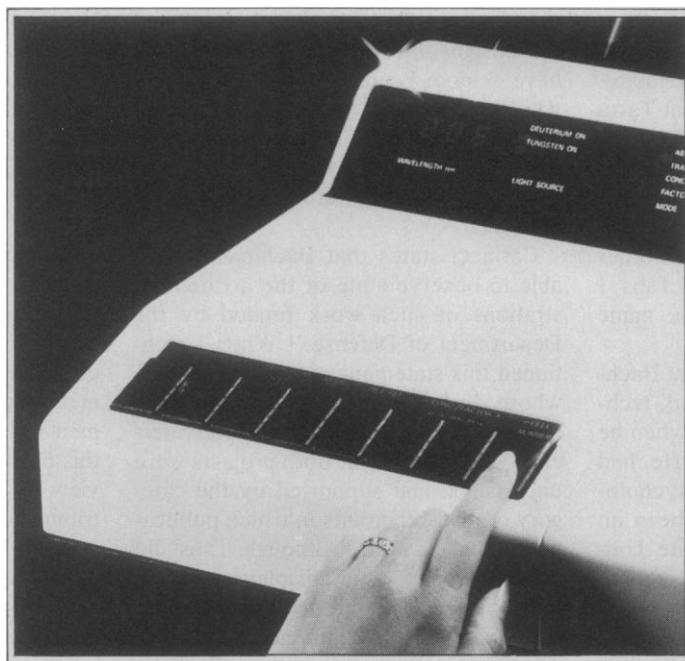


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# The new generation of spectrophotometers from LKB



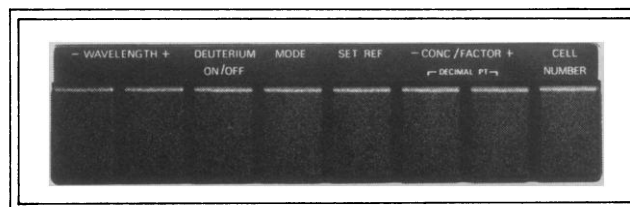
## Ultrospec<sup>®</sup> Spectrophotometry of the future. Today.

**Ultrospec 4050 and 4051** are the world's first single beam UV and Visible spectrophotometers using microprocessor control to give increased instrument accuracy combined with simplified operation. By fully utilising microprocessor technology, this completely new design incorporates many unique features, along with facilities that are regarded as accessories on conventional instruments.

**Unique microprocessor based optical system simplifies operation:** Automatic wavelength check and calibration; Automatic dark current compensation;

No lamp changes needed: in the 4050 both deuterium and tungsten halogen lamps in a unique optical system; No detector changes: single solid-state detector eliminates errors. Incorporates high performance 1200 lines/mm grating monochromator.

**Fingertip control:** no knobs, no complicated controls. Just 8 smooth keys in logical sequence, easily operated to give consistently accurate results.



**Compact, durable design:** requires a minimum of bench space. Sophisticated construction with a high quality finish.

**More features than any other in its price range:** finest after-sales service too.

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### GRADUATE SCHOOL OF PUBLIC HEALTH ANNOUNCES

#### THEODORE F. HATCH SYMPOSIUM ON RECENT ADVANCES IN OCCUPATIONAL HEALTH

A two-day symposium and testimonial banquet  
 honoring Professor T. F. Hatch for his pioneering  
 contributions to the occupational health field will  
 be held at the University of Pittsburgh on  
 September 10-11, 1982. Following a testimonial by  
 N. Nelson-NYU and a keynote address by  
 A. Baetjer-JHU, topics to be presented are:

Pulmonary Deposition: M. Lippmann-NYU  
 Pulmonary Clearance: P. Morrow-U. of ROCHESTER  
 Inhalation Toxicology: Y. Alarie-PITT  
 Occupational Cancer: M. Kuschner-SUNY  
 Occupational Medicine: B. Dinman-ALCOA  
 Occupational Health Risk Assessment:  
 N. Esmen-PITT  
 Ergonomics: E. Kamon-PSU  
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 Aerosol Measurement: K. Willeke-U. of CINCINNATI  
 Industry-wide Occupational Health Studies:  
 R. Harris, Jr.-UNC

Due to limited accommodations, early registration  
 is encouraged. Symposium Registration - \$75  
 Banquet - \$25

(Make check payable to the University of Pittsburgh.)  
 Direct inquiries for symposium registration to:  
 E. England, University of Pittsburgh, Graduate School  
 of Public Health, 130 DeSoto Street, Pittsburgh, PA  
 15261; phone: (412) 624-3038.



#### THEODORE F. HATCH FELLOWSHIP IN INDUSTRIAL ENVIRONMENTAL HEALTH SCIENCES

University of Pittsburgh Graduate School of  
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 contributions. Engineers, physicists, chemists,  
 and biologists are invited to apply for the  
 fellowship, which is for graduate study in  
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 fellowship is competitive and the recipient will be  
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Direct fellowship inquiries to:  
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 Graduate School of Public Health, 130 DeSoto Street,  
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## Support of Graduate Education

Some 23 years ago, in the wake of Sputnik and at President Eisenhower's request, Congress enacted the National Defense Education Act. In doing so, it said that "the security of the nation requires the fullest development of the mental resources and technical skills of its young men and women. . . . We must increase our efforts to identify and educate more of the talent of our nation. This requires programs that will give assurance that no student of ability will be denied an opportunity for higher education because of financial need."

Since that time, broad bipartisan support in both Congress and the White House has continued to reaffirm the importance of federal support for successive generations of students.

Now a president committed to enhancing our military preparedness and to strengthening the economy has embarked, in his 1983 budget proposals, on a course that would place these goals in jeopardy. In reversing the bipartisan developments of more than two decades, these budget proposals would eliminate federal support of certain grant programs; eliminate support of the loan program begun by the National Defense Education Act, now called the NDSL Program; and reduce both eligibility for and federal support of the Guaranteed Student Loan Program.

While these proposals are all hurtful, severely affecting both undergraduates and graduate students, perhaps the most serious is the elimination of graduate student eligibility for the Guaranteed Student Loan Program.

In the past, graduate students have been able to borrow up to \$5000 per year under the program. This year, about half the country's graduate students are using guaranteed student loans to help defray their costs of education. The Administration has proposed that graduate students now use instead a variation of the federal PLUS program, designed for parents of undergraduate students. Yet all indications are that these loans simply will not be made available to graduate students who, with only their future careers to offer as collateral, will not be regarded as suitable risks by lenders. Even if such loans were to become available, the program's terms, requiring immediate repayment or accrual of 14 percent interest while the student is still in school, would make PLUS loans an intolerable burden.

If this proposal is accepted by Congress, the effect on graduate and professional education could be devastating. Many students planning on graduate study will be discouraged, and many now in the midst of their studies will be unable, financially, to complete their programs. Inevitably, social and economic diversity in enrollments will narrow, as educational opportunity will be tied more closely to economic status. In the long run, declines in the quality or quantity of graduate enrollments will impair the ability of the research universities to conduct basic research. The most likely result will be a reduction in our nation's capacity to innovate, to lead in science and technology, to compete successfully in international markets, and to secure our defenses.

The Guaranteed Student Loan Program should not be closed to graduate students. Rather, Congress should establish reasonable financial criteria for student eligibility, as some urged before the Middle Income Student Assistance Act of 1978 made all students eligible without regard to need. Other equitable ways of reducing the cost to the government should be considered as well. But the in-school interest subsidy and the federal guarantee to lenders, which are essential components of the program, should be retained.

Excellence in graduate education and in basic and applied research requires the continued engagement of the ablest and brightest young women and men. This objective—manifestly in the broadest national interest—requires continued ready access to loan funds, access provided by the Guaranteed Student Loan Program.—PAUL E. GRAY, *President, Massachusetts Institute of Technology, Cambridge 02139*



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