SCIENCE

14 January 1972

Vol. 175, No. 4018

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

How to choose the right preparative ultracentrifuge

If you need maximum centrifugal forces, select the Beckman L2-75B: 75,000 rpm, 500,000 g's, superb temperature control over the range of 0 to 40 C. The finest preparative ultracentrifuge in the world.

If you don't need the extra force and wider temperature range, choose the L2-65B: 65,000 rpm, forces to 400,000 g. The largest selling model in the world. You can also update it later to the capabilities of the L2-75B.

For intermediate speeds and forces, the choice is L3-50: 50,000 rpm, forces to 300,000 g. It gets to speed rapidly, has precise temperature control for density gradient separations—an outstanding combination of performance and price.

For routine preparative work at speeds to 40,000 rpm and forces in the 200,000 g range, select the economically priced L3-40. It can be updated at any time to the status of a Model L3-50.

What else does Beckman offer? The longest line of rotors and accessories; the most experience; direct sales and service throughout the United States, Canada, and around the world; applications and technical support.

Write for Data File UCF-4 to Spinco Division, Beckman Instruments, Inc., 1117 California Avenue, Palo Alto, California 94304

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INSTRUMENTS, INC.

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Helping science and industry improve the quality of life.

Pick-up on these miniature inert valves

If you handle ultra-pure or corrosive fluids . . . let us help give you a hand. We have a complete line of small valves for a large number of applications, in panel mounts, table mounts or free standing systems. Our miniature valve has porting holes of .060" and uses luer tapered fittings. (It's also available with a spring-loaded Teflon* plug.) Our big valve is just an inch high at the base. Its Teflon body has threaded holes to accept a variety of fittings. □ If you work with small fluid volumes and need small, inert valves . . . give us a try. Our valves are described in our catalog . . . let us send you a copy. Write to Hamilton Company, Post Office Box 307, Whittier, California 90608.

HAMILTON

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*DuPont registered trademark

14 January 1972

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SCIENCE

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Bumblebees regulate their thoracic temperature when foraging for nectar. At ambient temperatures below 24°C the thoracic temperature is maintained at 32° to 33°C; at ambient temperatures above 24°C the thoracic temperature rises. See page 185. [Photo courtesy of U.S. Department of Agriculture, Washington, D.C.]

The reason most companies can't give you is because they're small

We make and market more kinds of computers than any other computer company in the world.

Big computers. Middle size computers. And small computers.

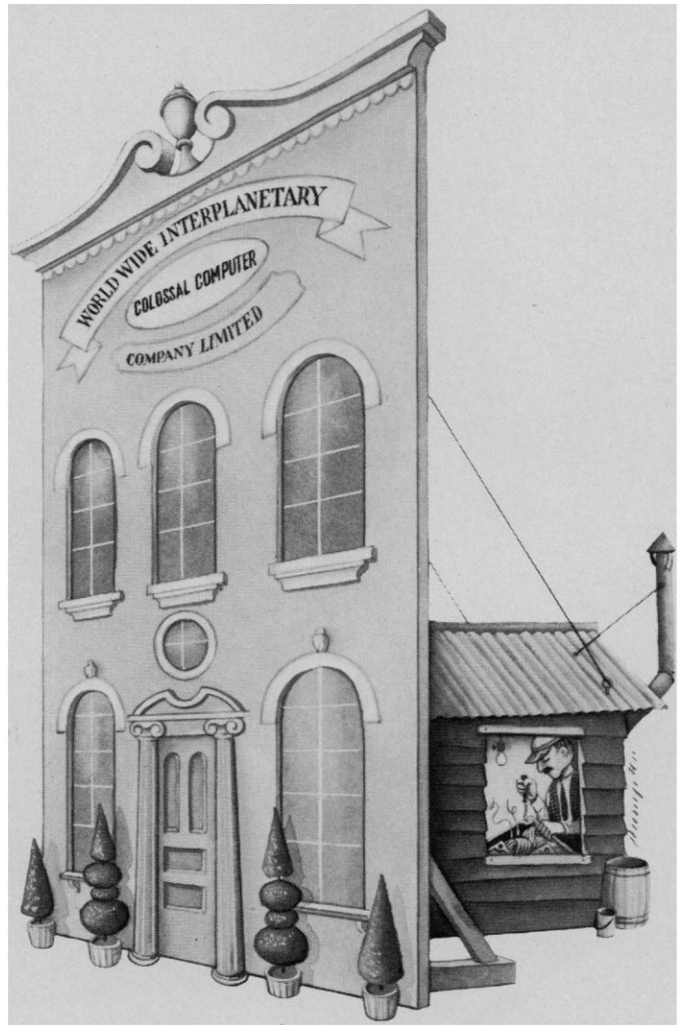
And our Logic Products Group can hook them up to anything you want them hooked up to (in the trade we call it "interfacing"), to do whatever job you want them to do.

Because we make all the parts and pieces it takes to do it ourselves.

Like genuine Digital Equipment Corporation modules (including special modules) plus labs, wire wrap service, engineers, designers, logic people, seminars we set up for you and your people in your area, cabinets, cables, hardware, assembled logic arrays, terminals, etc.

The reason most small computer companies can't give you big

small computer big computer support computer companies.



We'd be happier if everybody in the world bought all their computers from us.

But, if you don't and you don't know how to hook their's up when it does finally arrive, and they don't have anybody to run over and help you, we do.

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digital

computer support is because they're small computer companies.

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Accept

No Substitutes!

The New HP Series 9800 is the best programmable calculator system now—and in the foreseeable future. Price. Performance. Simplicity of operation. No matter what criterion you use, there is absolutely no other system on the market that can match the Series 9800.

Only HP Offers You All This For The Low Price Of $2975

To build your personal desk-top computing system, start with the Series 9800/Model 10 Programmable Calculator. Your basic Model 10 comes with standard equipment that is either not available, or available only as an extra-cost option, on other machines.

If bad experiences have taught you that basic is synonymous with stripped—have no fear. The *basic* Model 10 can perform a complete regression analysis, or solve a system of 10 simultaneous equations.

Only HP Offers You A Fully Modular Calculator

The unique, modular/plug-in architecture of the Model 10 lets you "design" your own problem-solving system. You can expand the memory, add peripherals, or change the keyboard of your existing Model 10, at any time.

Only HP Gives You A Fully Expandable Dual Memory

The Model 10 has a unique dual memory system —one memory for programs and one for data. You can expand from the basic 500 program steps *and* 51 data registers to 2036 program steps *and* 111 data registers.

Beware of simple number comparisons with other calculators. The refinements in the memory design and the keyboard make the Model 10 so efficient that in most cases it requires *fewer steps to execute a given problem.*

Only HP Lets You Design Your Own Keyboard

Interchangeable keyboard plug-in blocks give you a choice of powerful *Statistics* or *Mathematics* functions, complete with their own memories, under single keystroke command. Another option, the *User Definable Function* plug-in, lets *you* customize individual keys with operations uniquely important to *you.*

Only HP Offers An Alphanumeric Printer

By simply inserting the *exclusive HP Alphanumeric Printer Plug-in,* you can automatically generate labels, program instructions, or messages—in English—right on the printer tape.

Only HP Gives You A Wide Choice of Sophisticated Peripherals

The I/O bus of the Model 10 lets you plug-in a Marked Card Reader, Paper Tape Reader, Digitizer, Typewriter, Tape Cassette, or the *exclusive* X-Y Plotter that plots linear, log-log, semi-log, or polar plots, and writes alphanumerics.

Only HP Offers You A Totally New System

The Series 9800 is no paper tiger. It's available now to free you from the drudgery of problem-solving so you can get on with your job of innovative thinking and designing. For more information or a "hands-on demonstration" at your desk, write: Hewlett-Packard, P.O. Box 301, Loveland, Colorado 80537. In Europe: 1217 Meyrin-Geneva Switzerland.

CO91/5

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CALCULATOR PRODUCTS

From Brinkmann... several ingenious ways to improve the versatility of your present TLC system.

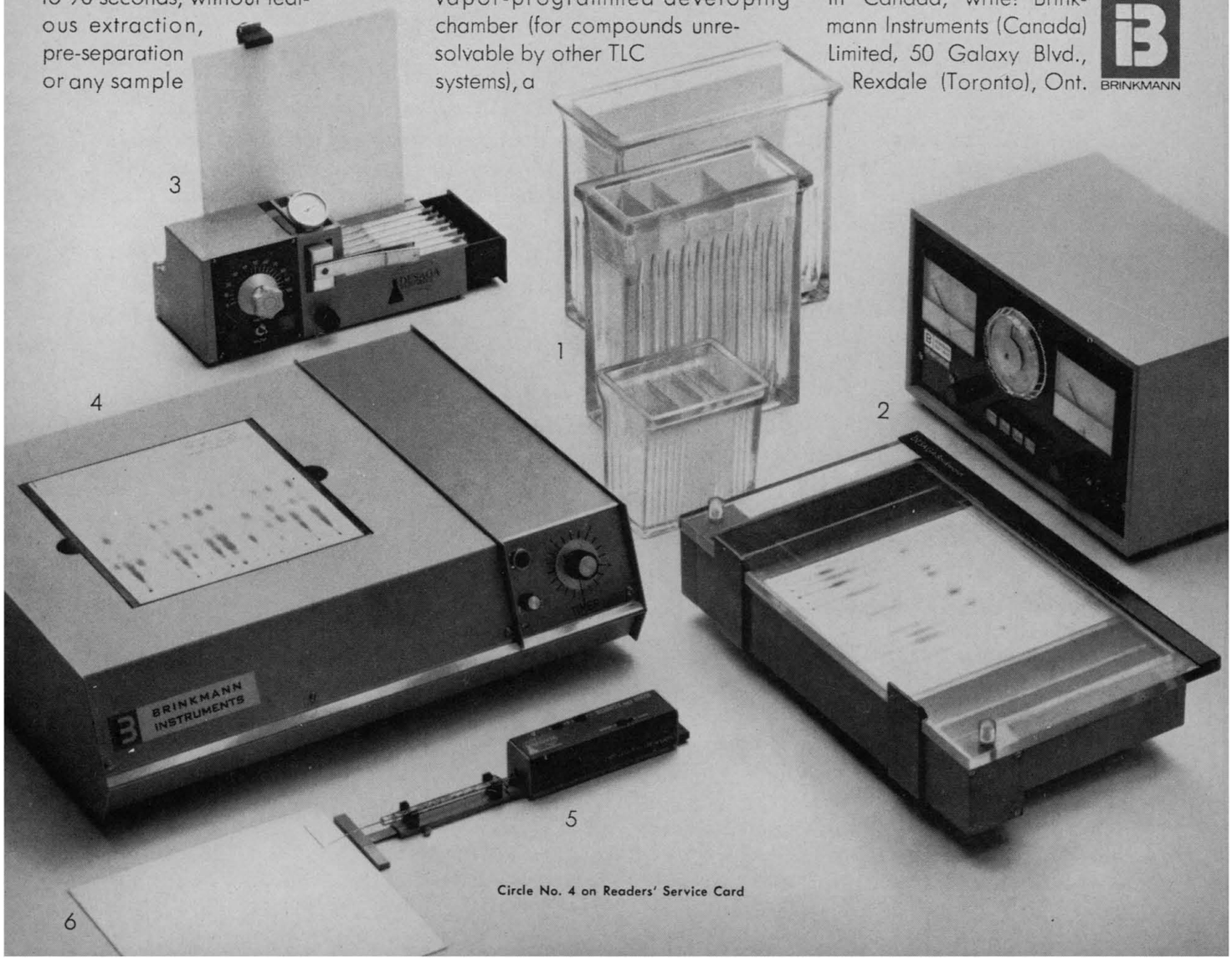
Doing thin-layer chromatography? Imagine how much more versatile and efficient your present system could be with these outstanding Brinkmann TLC accessories.

For example, our glass Multiplate Tanks (1) let you develop several 5x10, 5x20 or 20x20 cm TLC plates simultaneously. Our Migration Chamber (2) utilizes sorbent layers for superior electrophoretic separations. Our TAS Oven (3) will extract and spot volatile substances in just 15 to 90 seconds, without tedious extraction, pre-separation or any sample transfer. Our Photocopier (4) duplicates TLC chromatograms by a dry process with better contrast and at less cost than electrostatic or photographic methods. Our Microdoser (5) with 2-speed, battery-powered motor is ideal for sample streaking of TLC plates. And speaking of plates, our pre-coated TLC plates (6) are famous for their exceptionally smooth, abrasion-resistant coatings and are guaranteed against flaking.

What else? We have a new vapor-programmed developing chamber (for compounds unresolvable by other TLC systems), a new multi-solvent evaluation chamber (for fast-testing of different solvent systems), new self-filling microliter capillaries (to facilitate spotting TLC samples), new clinical TLC analysis kits (for drug abuse, amino acid and many other determinations), and apparatus for quantitative and particle-free elutions from TLC layers.

For descriptive literature on any of these TLC accessories, just write: Brinkmann Instruments, Cantiague Road, Westbury, New York 11590. In Canada, write: Brinkmann Instruments (Canada) Limited, 50 Galaxy Blvd., Rexdale (Toronto), Ont.

BRINKMANN



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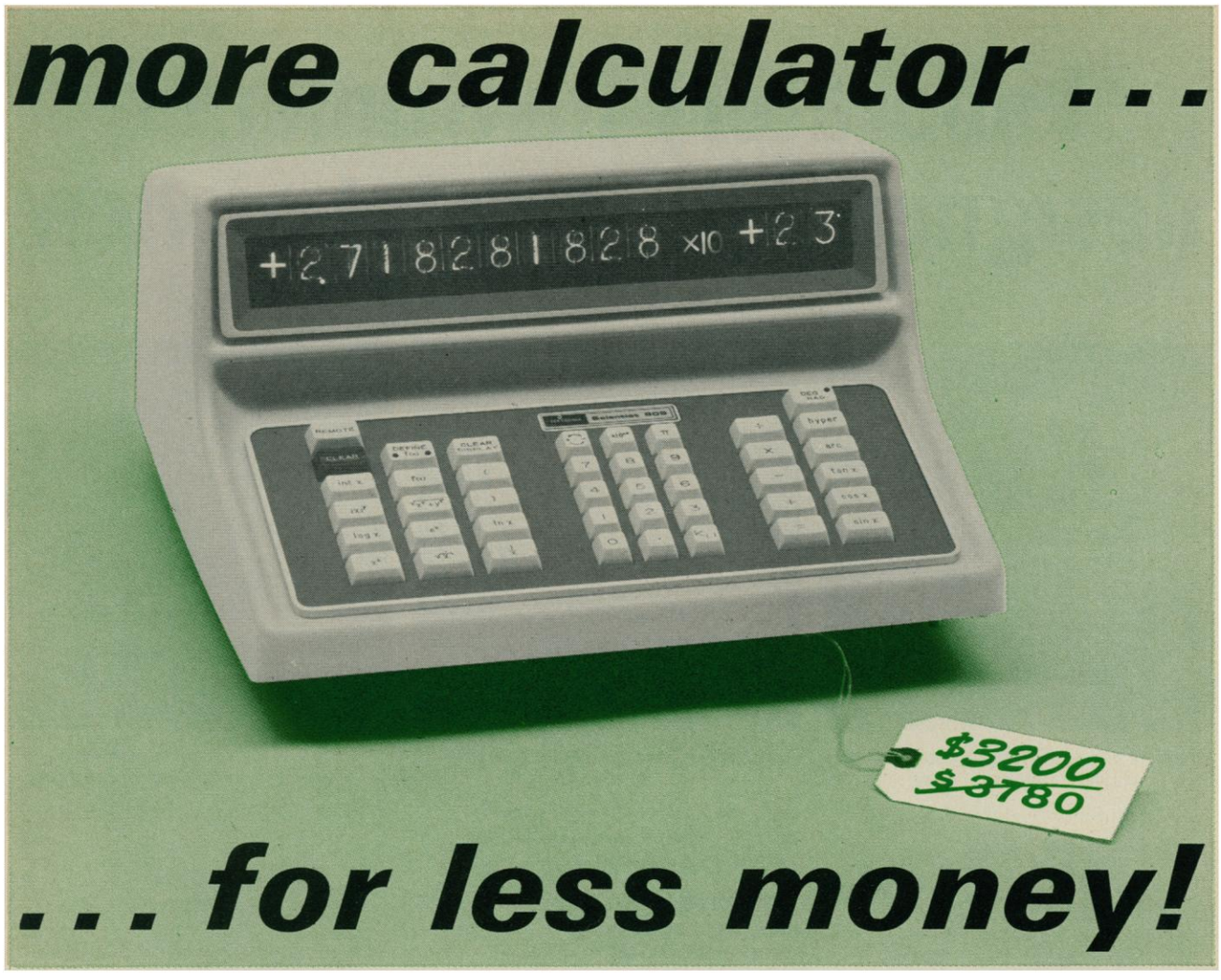
more calculator . . .



. . . for less money!

-TEKTRONIX Programmable Calculators-

Most programmable calculators will do your computations for you.

And each calculator has its own unique feature which lets you quickly solve certain problems.

If there's so much that's common, then what do you really look for in a calculator?

Here are some things you'll want to consider:

Will it solve *my* problems?
Are *all* of the keys programmable?
Does it observe mathematical hierarchy?
Is the ratio between program steps and storage registers optimized?
Is it easy to use?
Is it easy to understand?
Can I operate it without learning a machine language?
Will it solve directly expressions such as
((a + b) − c ÷ d) X (f − g) = y
Is it easy to program?
Does it have keyboard access to a wide range of peripherals?

TEKTRONIX Calculators answer all of these questions and more with a positive ***yes!***

Here's an example. To use it, all you need to know is mathematics. You program the Scientist and Statistician using a universal language—mathematics. There are no machine languages to learn, remember and recall. Just program it the way you intend to use it. Mathematically.

Another example is the optional programmer. The Programmer 926 organizes and stores programs utilizing the capabilities of the TEKTRONIX Calculators. It adds the capability of looping, branching, program editing and subroutining and stores up to 5120 steps.

There are other good reasons why Tektronix, Inc. provides more Calculator at new, lower prices. We would like to show them to you during a demonstration. For complete information and to arrange a demonstration, contact any TEKTRONIX Field Office. Or write Tektronix, Inc., P.O. Box 500, Beaverton, Oregon 97005.

Scientist 909 Calculator $3200
Statistician 911 Calculator $3200

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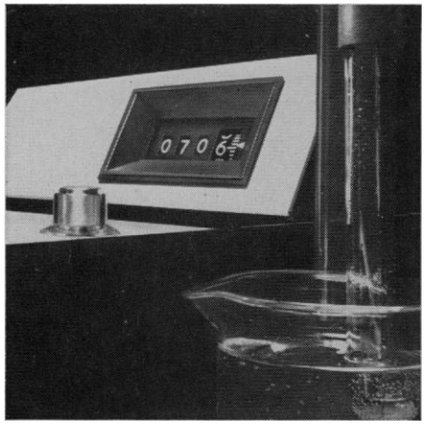
Laboratory Instruments designed with a point of view



pH meters with digital readout give faster, more accurate readings regardless of operator fatigue.

Digital pH meter

Expanded-scale precision

Readable to 0.001 pH

Well worth the price: $600.

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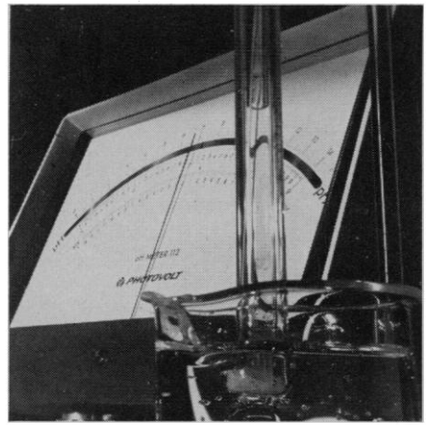

No need to be without an expanded scale pH meter —it's only $425.

Expand 4 pH units to full scale.

Read and reproduce to ± 0.005 pH.

Accurate to within 0.01 pH.

Expand 140 mv to full scale.

You need an expanded scale pH meter.

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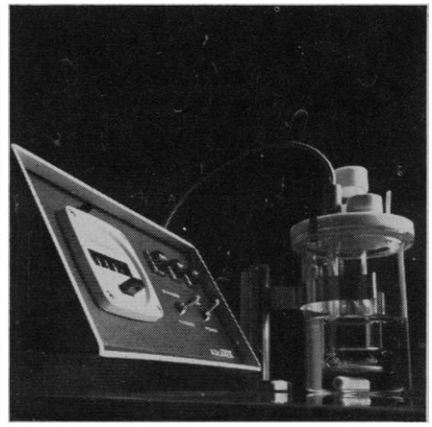

Now here is the improved Aquatest II —the only truly automatic Karl Fischer titrator.

Now measure water content of solids or liquids with ease.
Sensitivity is ±10 micrograms of water.
Just inject sample... flip switch... step back... read answer!
Digital readout!

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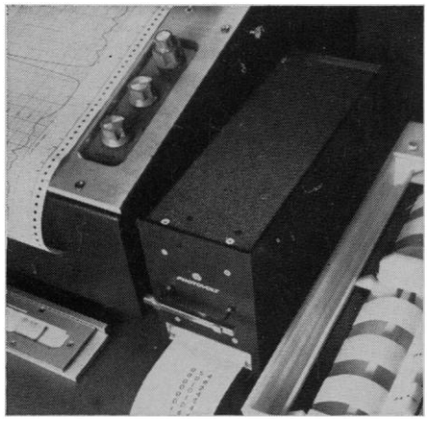

Digital printout simplifies electrophoresis.

Electrophoresis densitometer

Printout automates separations and eliminates tedious counting.

No floppy strips, pipetting or variable operations.

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Other Photovolt Instruments and Accessories

Linear/Log Laboratory Recorder, Varicord 43

Super-sensitive Laboratory Recorder, Microcord 44

Thin Layer Densitometer

Complete line of pH Meters and Electrodes

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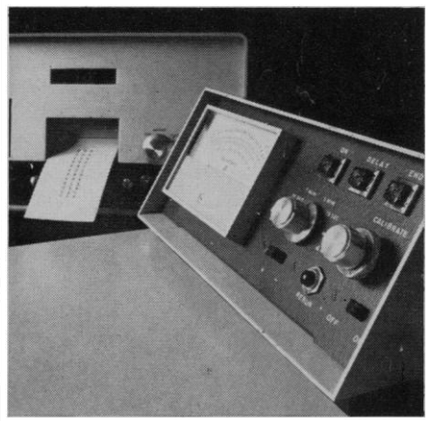

Automatic Enzyme Rate Analyzer with direct read-out in Enzyme Units.

Simple to use.
Starts, times, computes enzyme activity completely, automatically.
Detects 0.0001 △A at 340 nm.
Readings in 15 seconds. Reruns instantly.
Use with any protocol or reagent.

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PHOTOVOLT CORPORATION 1115 Broadway, New York, N.Y. 10010 · (212) 989-2900

See Photovolt at Booth 256, the American Society of Clinical Pathologists Convention

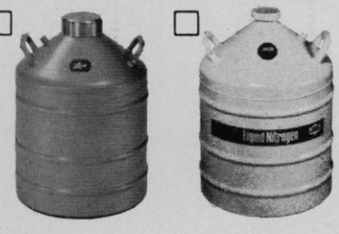
The Portable Cryogenic Container you need is here.

Check appropriate ☐ for more information.

LABORATORY DEWARS:
two complete lines
from Union Carbide.

One line provides a considerably lower evaporation rate than the other. Select the one that's best for your lab job; they're priced accordingly. Rugged, lightweight, made to quality specifications.

☐ ☐



Evaporation rate (liters per day)	0.42	1.24
Capacity (liters)		
	Circle No. 19	Circle No. 20

CRYOGENIC REFRIGERATORS:
for dependable storage

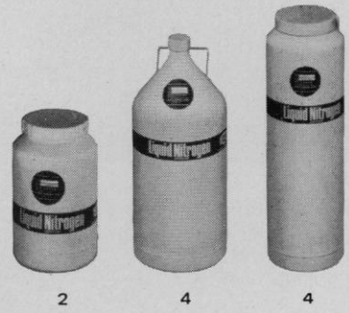
There are LINDE refrigerators for every need, including portable ones ranging in size from 10 to 50 liters. Specimens can be refrigerated up to 60 days without a liquid nitrogen refill. Also available: larger stationary units for immersion storage or vapor-phase refrigeration. ☐

Circle No. 21 on Readers' Service Card

HEAVY DUTY LABORATORY VACUUM VESSELS:
won't break or explode

These ruggedly constructed, metal-walled vessels are ideal for handling small quantities of liquid nitrogen in the lab. Unlike glass-walled dewars, they cannot explode during use. No need to wrap them with cloth to protect against flying glass. Cost? No more than comparable glass dewars.

☐



Capacity (liters)	2	4	4

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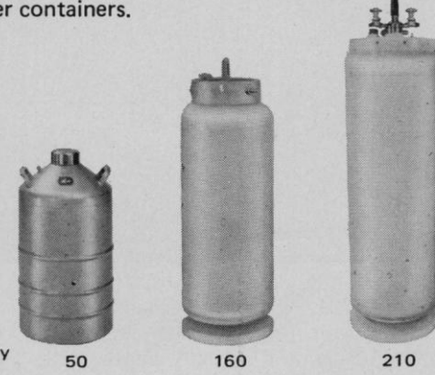
STORAGE AND TRANSFER CONTAINERS:
large, portable

Available in three convenient sizes for storing, transporting, refilling, or dispensing liquid nitrogen. All can be easily moved by one person with dolly or cylinder truck. Two larger containers equipped for withdrawal of LN_2; withdrawal accessories available for smaller containers.

☐



Capacity (liters)	50	160	210
Filled Weight (pounds)	130	503	625

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Check boxes for more information and mail this page to:

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LINDE DIVISION
DEPT. SM-1, P.O. BOX 766
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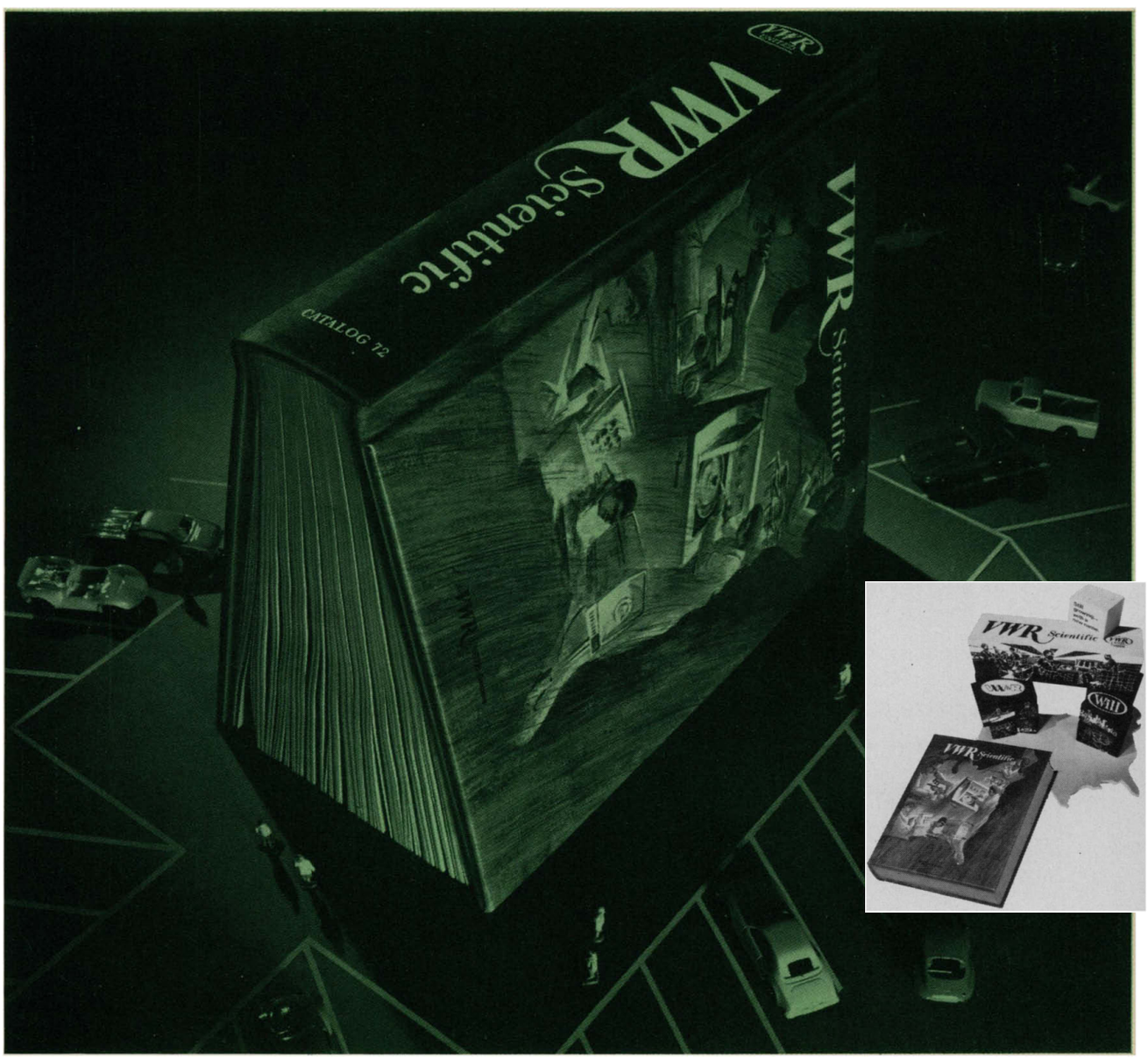
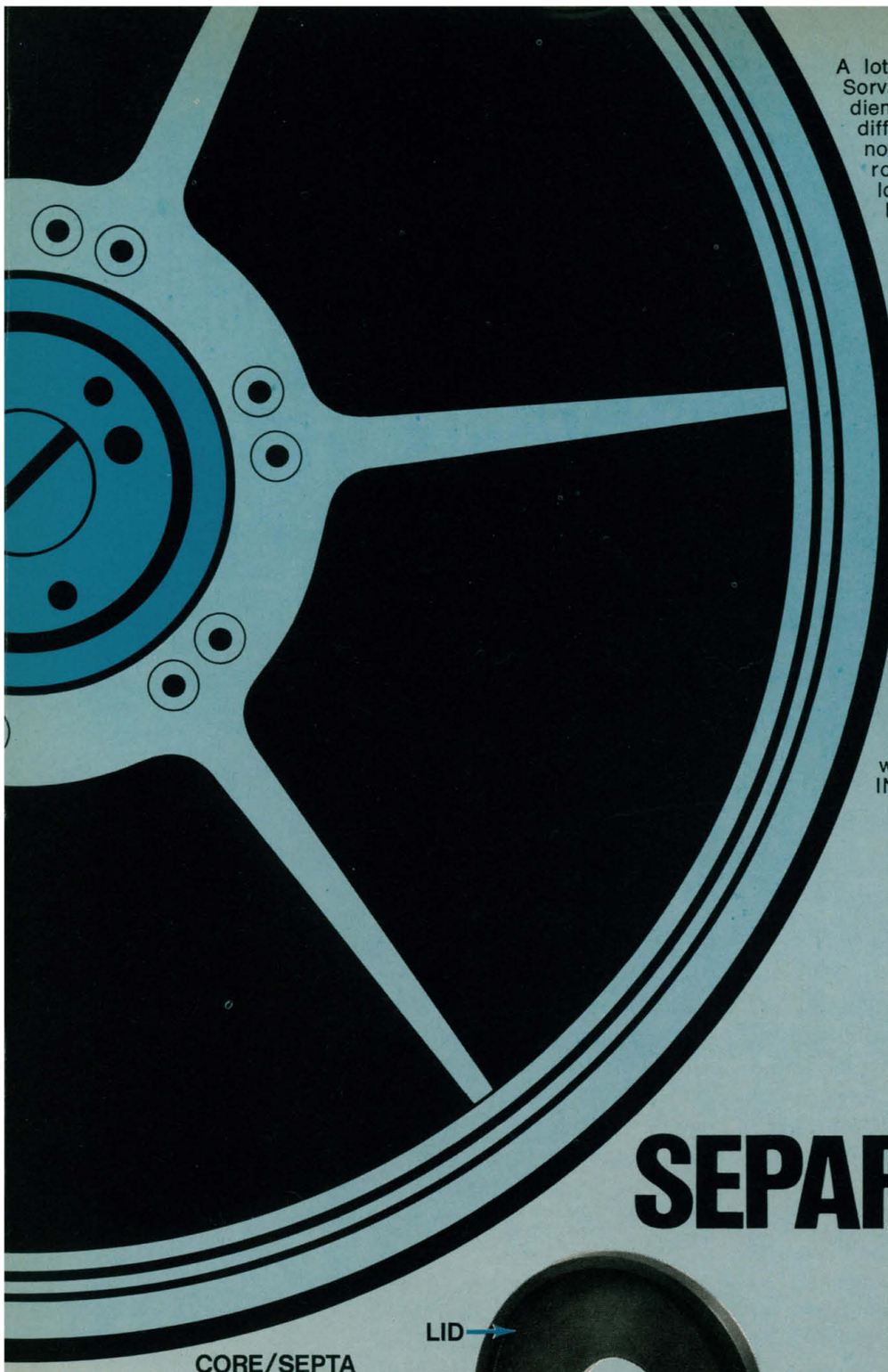
CRYOGENIC PRODUCTS


VWR Scientific
CATALOG 72
VWR Scientific



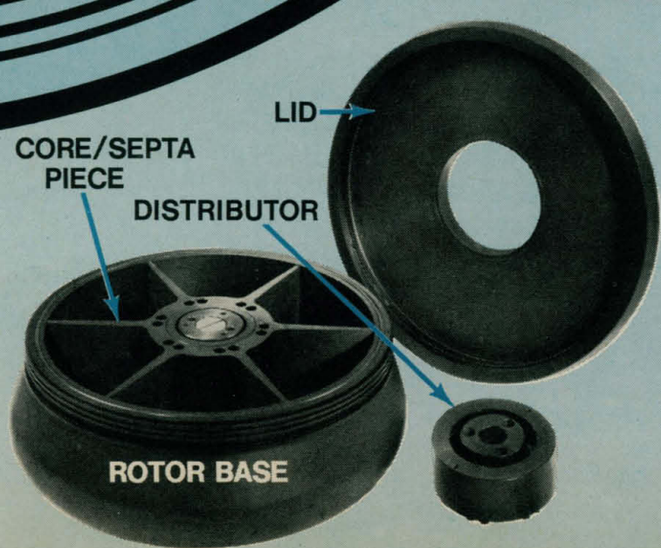
A lot easier — if you're using the new Sorvall SZ-14 Reorienting Density Gradient Zonal Rotor. The Sorvall SZ-14 is different from all other zonal rotors now available. It doesn't require a rotating-seal assembly. It can be loaded and unloaded *at rest.* Result? It's much simpler to operate. And more economical to maintain. The advantages don't stop there. With the SZ-14, you can perform zonal centrifugation at a fraction — literally—of yesterday's cost. The SZ-14 *and* a Sorvall RC2-B Automatic Superspeed Refrigerated Centrifuge together *cost little more than other zonal rotors alone.* If you already have a Sorvall RC2-B, RC-2, SS-3 or SS-4 Superspeed Centrifuge, (or an RC-3* General-Purpose Centrifuge) you can begin zonal centrifugation with the SZ-14 for about $2,000. A figure worth comparing. The performance is worth comparing, too. The SZ-14 accommodates up to 1,350 ml. Operates at speeds up to 19,500 RPM (40,500 x G). Lets you sediment most subcellular particles, larger particles and whole cells. Prevents particle sedimentation during unloading. And doesn't require any overlay solutions. Get the whole story. Write to: IVAN SORVALL, INC., Norwalk, Conn. 06856, U.S.A.

*RC-3 requires slight modification in drive.

SORVALL®

Ask for Bulletin SC-1SZ14

ZONAL SEPARATIONS CAN BE EASIER THAN YOU THINK



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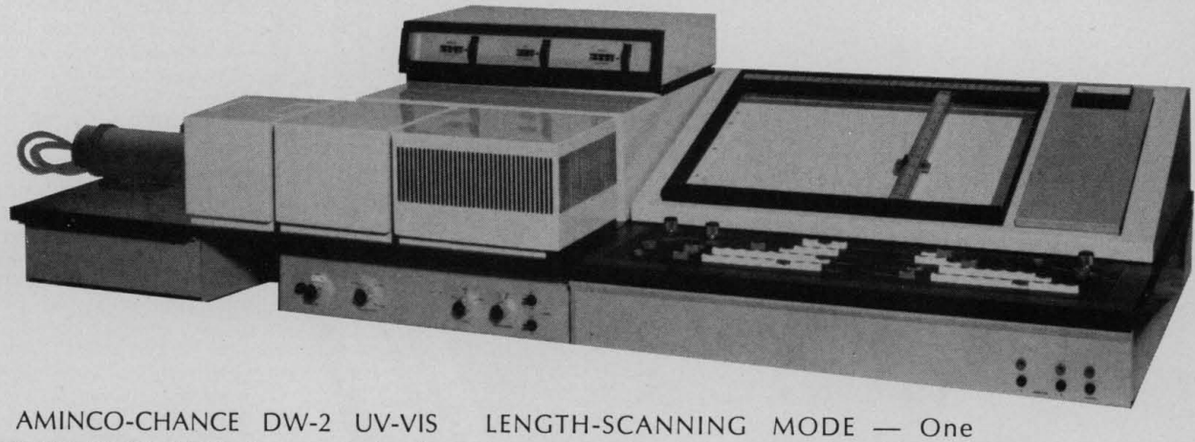
AMINCO'S NEW

UV-VIS SPECTROPHOTOMETER PROVIDES UNEQUALLED VERSATILITY



The AMINCO-CHANCE DW-2 UV-VIS SPECTROPHOTOMETER is a completely new instrument providing total sample handling capability with unparalleled flexibility of operation.

TOTAL SAMPLE HANDLING CAPABILITY: Flexibility built into the cell compartment permits optimum positioning of turbid samples or solutions and allows easy insertion of the Diffuse Reflectance Attachment for opaque or solid samples.

SIX MODES OF OPERATION: SPLIT BEAM MODE — A single monochromator is used to scan entire usable range (200 to 850 nm) or as little as a 75-nm increment of that range. The beam is time-shared through a reference and sample cell. DUAL WAVELENGTH MODE — One monochromator is set at reference wavelength (isosbestic point), the other at a nearby absorption peak. The reference and sample beams are time-shared through a single cell. DUAL WAVELENGTH-SCANNING MODE — One monochromator is set at a reference wavelength, the other scans a preselected wavelength increment. Beams are time-shared through a single cell. DERIVATIVE MODE — The two monochromators are locked together at slightly different wavelengths and scanned. Beams are time-shared through a single cell. RAPID KINETICS MODE — High speed chopper allows use of the Aminco-Morrow Stopped-Flow Apparatus to monitor rapid reactions in the single beam or dual wavelength mode. SINGLE BEAM MODE — Operates in energy mode.

ALSO FEATURES: ORDINATE EXPANSION to 0.005 Absorbance full scale ☐ RESOLUTION Better than 0.3 nm ☐ BASELINE COMPENSATION via 11 or 31 potentiometers ☐ BUILT-IN REPETITIVE SCAN ☐ TEMPERATURE CONTROL of sample is possible in all modes. ☐ DIGITAL READOUT ☐ PUSHBUTTON CONTROLS

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DIVISION OF TRAVENOL LABORATORIES, INC.
8030 Georgia Avenue, Silver Spring, Maryland 20910

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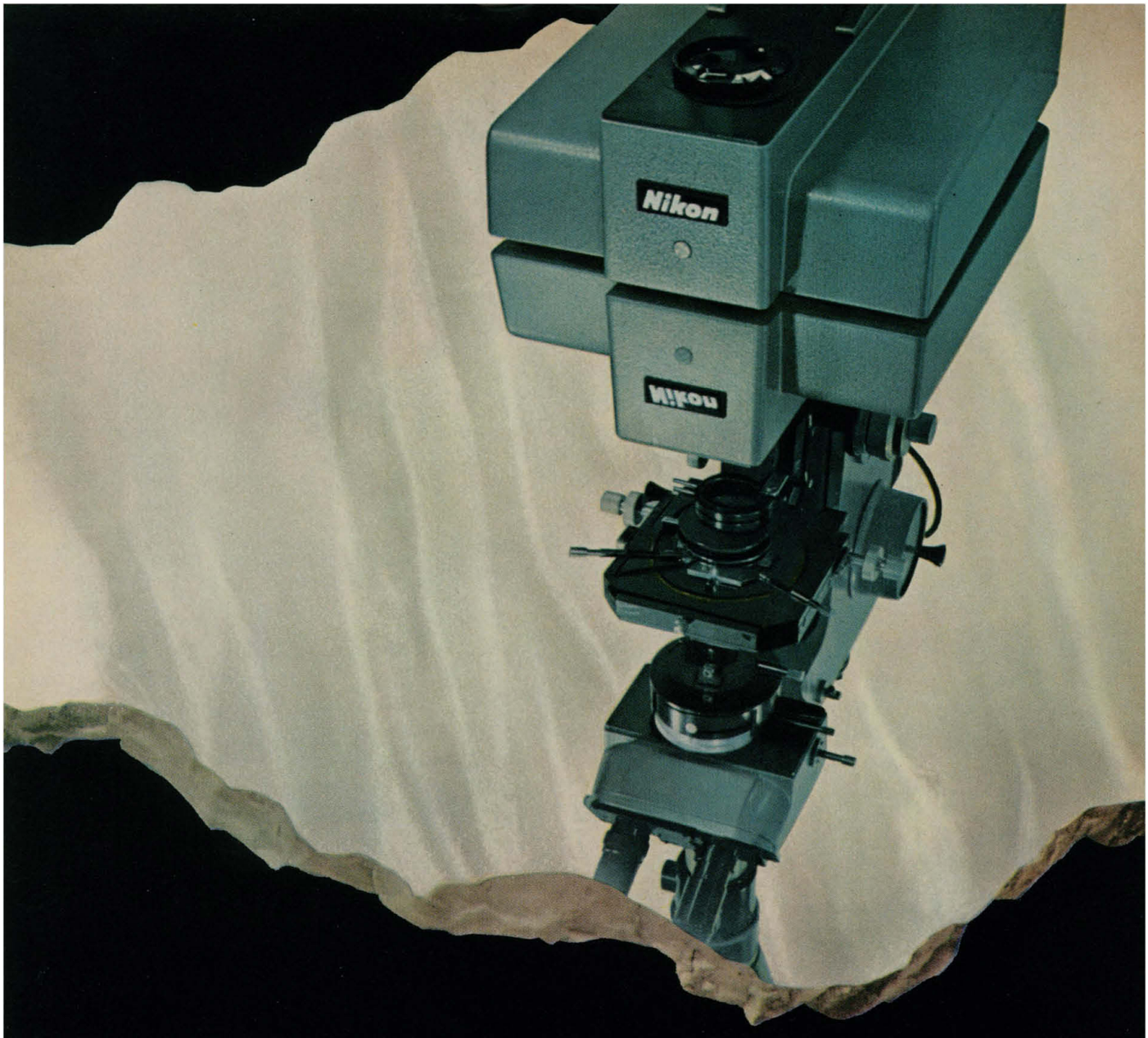


Think of it as a vertical optical bench

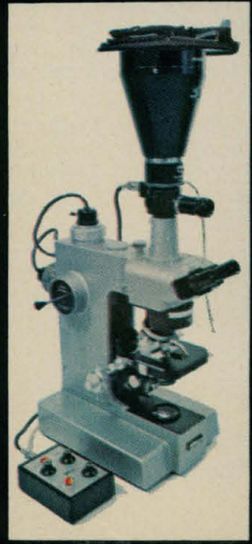
The research microscopist who uses the new Nikon Apophot has a very steady job indeed. Every part of this superb new instrument is designed for rock-solid, vibration-free performance with great convenience.

The massive base and vertical column hold dual light sources and their optics in precise alignment. You can equip Apophot with tungsten, high pressure mercury arc, xenon arc, quartz halogen and/or CSI and use reflected and transmitted light simultaneously when you need to. Zoom-Koehler systems for both diascopic and episcopic illumination have pancratic collectors which automatically adjust the image of the light source to the numerical aperture of the objective in use.

The objective turret can be fitted with an optional 1x, 1.25x and 1.5x magnification changer. A focusable Bertrand lens is standard equipment with the Apophot.

The built-in trinocular eyepiece tube permits simultaneous observation and photography. The vertical photo tube is coupled to the interpupillary adjustment to provide automatic tube length compensation. The standard stage measures 76x25mm and has coaxial controls on both sides. The condensers are quickly and securely positioned on the stage with centerable dovetail sliders.

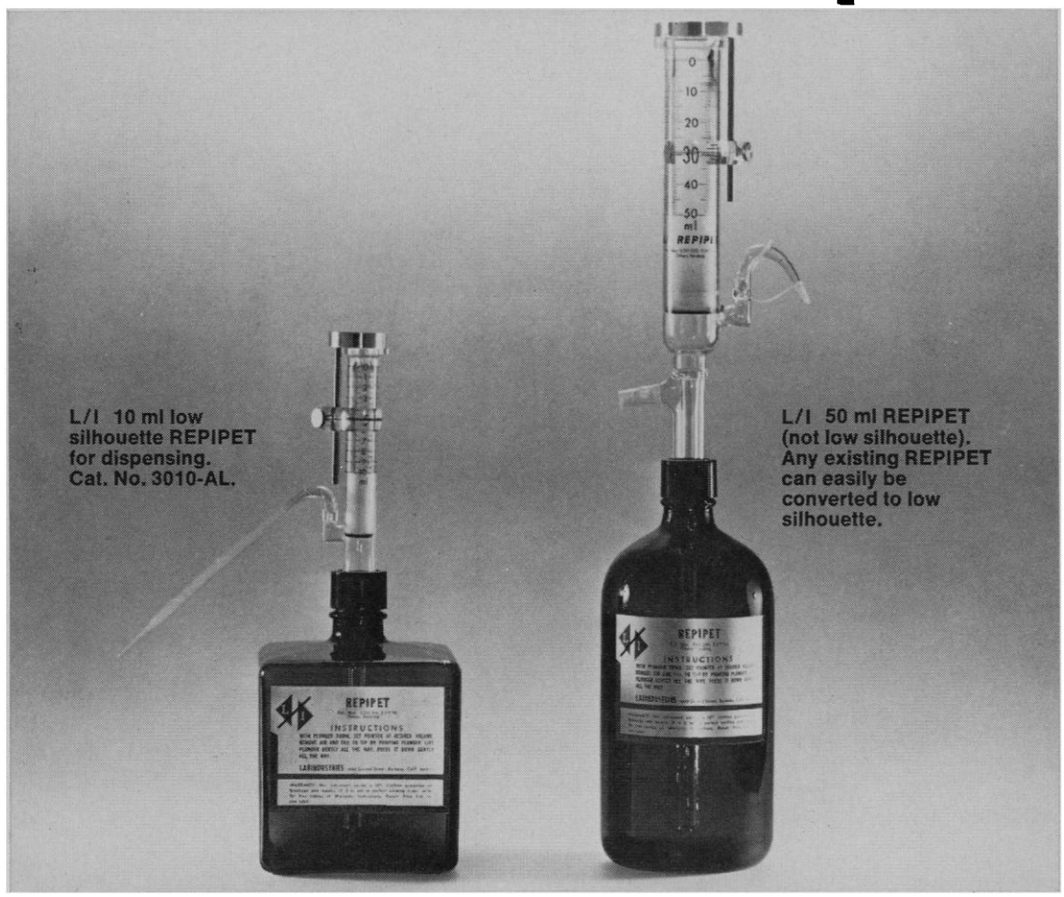
As you might expect, the Apophot accepts a full range of Nikon accessories; phase contrast, interference phase, differential interference, polarizing, fluorescence and others. If you'd like more information on the new Nikon Apophot, write for a free brochure, It's the easiest research you'll ever have to do.



EPI Nikon Inc., Instrument Division, Subsidiary of Ehrenreich Photo-Optical Industries, Inc.
Garden City, New York 11530. (In Canada: Anglophoto Ltd., Ont.) Or phone (516) 248-5200.

New Nikon Apophot Research Microscope

it's short. it's stable. it's precise.



L/I's low silhouette REPIPET®

Did you know that the handy Labindustries' REPIPET dispenser can be ordered (at no extra cost) in this space-saving low silhouette version? And in all sizes, too—1, 5, 10. 20 and 50 ml.

What turns people on about the low silhouette REPIPET?

It fits easily in the refrigerator.
It requires minimum shelf space.
It gets solid support from its 1,000 ml square bottle, reducing the chances of damage.

The low silhouette REPIPET also offers all of these advantages for rapid, dependable dispensing:

Accuracy 1%. **Reproducibility** 0.1%. **ALL PYREX® instrument** dispenses **any** reagent, including concentrated acids, concentrated alkalies, and chlorinated hydrocarbons. REPIPETS have **no** plastic parts which can leak, slip, corrode or break. (Yes, plastic parts can break, too.)

Simple, one-step operation. What could be easier than lifting and depressing a plunger to deliver precise volumes time after time? It takes all of 1 second. Prices of REPIPETS start at $55 including square bottle, Teflon® tip, and 50% lifetime guarantee against breakage. Magnifying indicators start at $10. Other REPIPETS stocked by Labindustries fit any container from 1 oz. to 5 gallons. See catalog for details.

Order from Labindustries or your distributor. Major national distributors: Curtin Scientific, Fisher Scientific, Matheson Scientific, Packard Instruments, Scientific Products, VWR Scientific. Names of your regional distributors on request.

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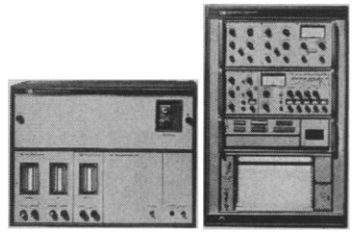

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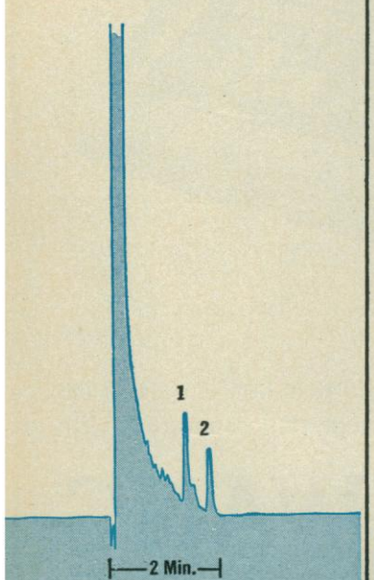

25 nanograms each of (1) amphetamine and (2) methamphetamine.

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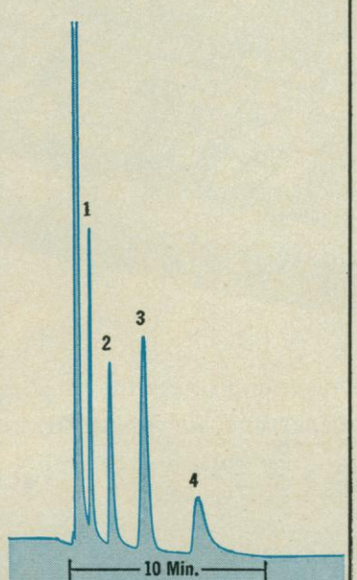

800 nanograms each of (1) barbital (2) pentobarbital (3) glutethimide (4) phenobarbital.

Flame ionization det. at 1000X1 sensitivity, with 4-foot glass column, 2% OV-17 on 80/100 High-Perf. Chromosorb W.

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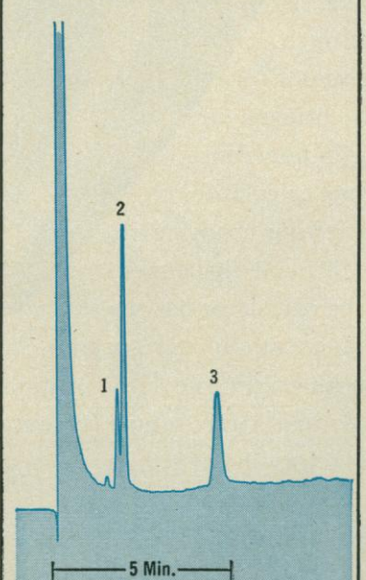

500 picograms each of (1) malathion (2) parathion (3) ethion.

Phosphorus det. at 100X16 sensitivity, with 4-foot glass column, 3.8% UC-W982 Silicone Gum Rubber on 80/100 High-Perf. Chromosorb W.

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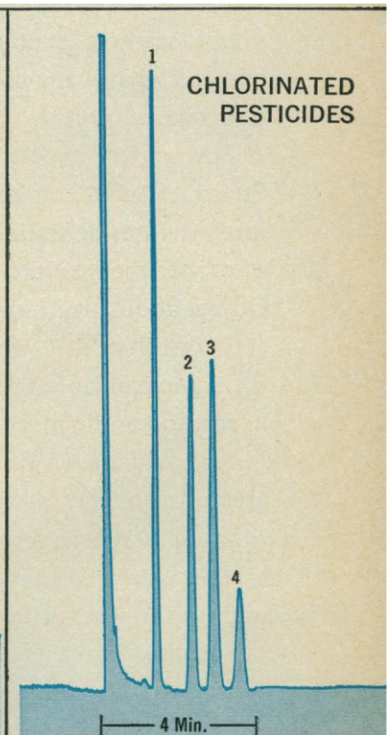

100, 86, 96 and 42 picograms of (1) lindane (2) heptachlor (3) aldrin (4) heptachlor epoxide.

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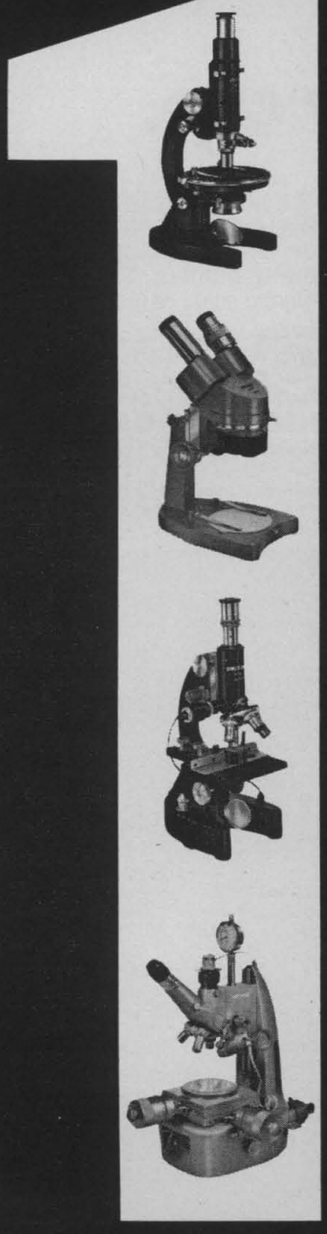

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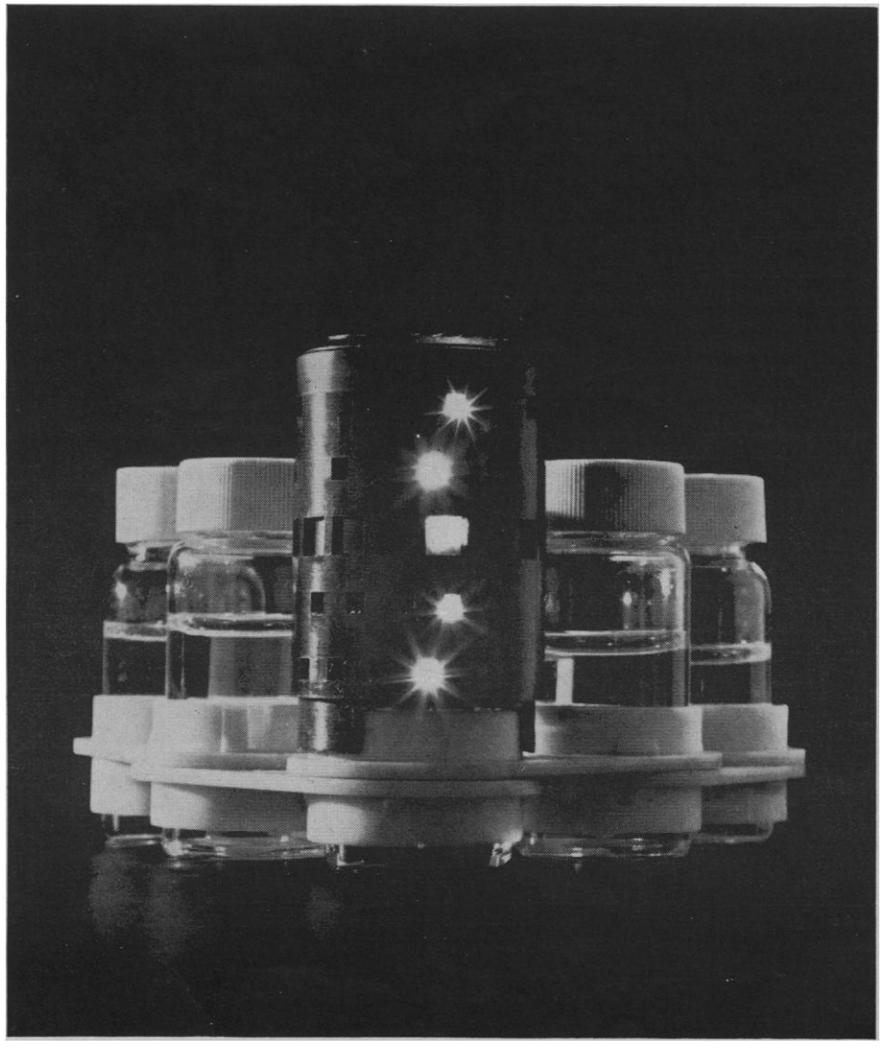

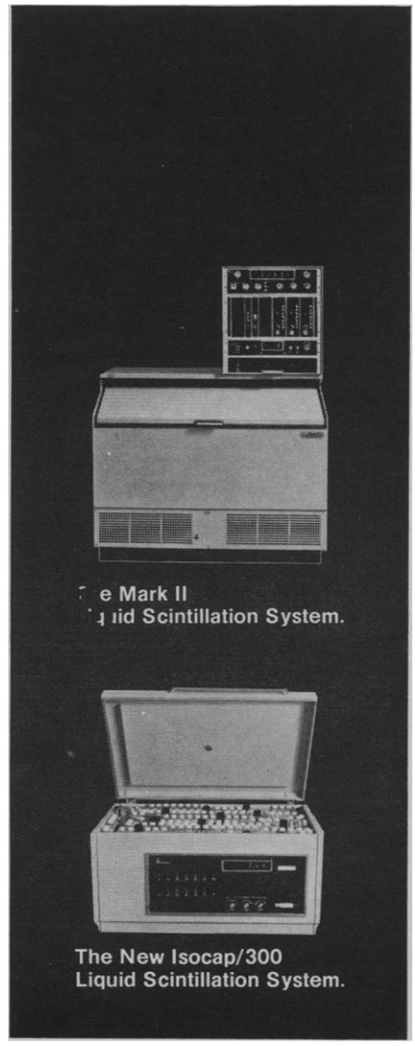

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before committees at all levels of government. Mrs. Benson serves on a number of national committees and has testified before many congressional committees. Mrs. Benson and the League of Women Voters have been honored by the President of the United States.

If all the members of the State Department's committee are as unaware as the one who referred to Mrs. Benson, then the committee is in trouble. But there is still a ray of hope—one of its members is Lucy Benson.

KORENE HAUSMAN
253 South Kellner Road,
Columbus, Ohio 43209

The critical reference to Mrs. Benson was an erroneous statement, corrected in the following issue of Science *(5 Nov., p. 576).*—EDITOR

Acknowledgment

Since a recently published review in *Science* was highly flattering to my book *Science in American Society: A Social History* (Knopf, 1971), I owe it to readers to make the following facts known. It has, within the past few days, come to my attention that in many cases where I indicated in footnotes that a particular section was "based on" another work, far too many of the words, as well as the ideas, of the cited author were used. In one case, there are as many as 55 consecutive words; in others there are sentences, parts of sentences, or key phrases that are actually the same as those used by the author cited. The cases I have found of direct quotation and of paraphrase that I consider close enough to be a violation of professional standards come to a total of just over eight pages in my book. . . .

To first cite as a major source the author of a still current book, who, in many cases, would be a likely reviewer of my book, and then to deliberately steal from him, would require a degree of naiveté much greater than mine. . . . After searching my files and the books cited, I have reconstructed what happened. In each case, the sequence of events was the same. I had read the work previously as part of my general reading, without taking notes. After writing a draft of the relevant chapter, I decided that it would be strengthened by the addition of a more detailed account of some portion of what I had read in that work. I then went back

and reread the section very carefully, took a few notes on it, and then from my notes at once proceeded to write my own section. In most cases, I had already gone to most of the sources cited and already had them incorporated in my draft. This will be evident to one who will compare my account (p. 312) of H. Edwin Mitchell's 1918 report with that of Lawrence A. Cremin in *The Transformation of the School* (p. 195), for I give certain details that are not found in Cremin.

When I wrote my own section, far from simply reporting on Cremin's work, and that of the others, as I thought I had been doing, I was actually reproducing parts with the help of brief notes and the fresh reading. I have certainly been aware that I had an extraordinary ability to remember material when I wanted to, but I have never before realized that I did it unconsciously. While it may appear incredible—and I confess it appears so to me—that an experienced researcher could be so completely unaware of his own thinking processes, I can only say that the occasion to find out about myself has never arisen before, for none of my other work has been based to any extent on secondary sources.

Naturally, I was filled with consternation and regret when I discovered what I had done. I would like to express once again my indebtedness to these scholars, not only for the material cited but for the value in general that their work has had for me (numbers in parentheses refer to the pages in my book where the material was used):

Lawrence A. Cremin, *The Transformation of the School* (Vintage Books, 1964), pp. 185–86, 195–96 (310–13); A. Hunter Dupree, *Science in the Federal Government: A History of Policies and Activities to 1940* (Harper Torchbooks, 1964), pp. 151 (269), 135 (267–68); William H. Goetzmann, *Army Exploration in the American West, 1803–1863* (Yale University Press, 1959), pp. 320 (183–84), 308 (185); Brooke Hindle, *The Pursuit of Science in Revolutionary America, 1735–1789* (University of North Carolina Press, 1956), pp. 250–51 (127–28); Robert G. McCloskey, *American Conservatism in the Age of Enterprise* (Harvard University Press, 1951), pp. 26–28 (259–61).

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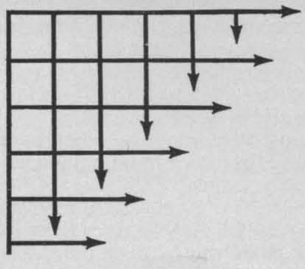

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14 January 1972, Volume 175, Number 4018

SCIENCE

Women in Academia

During the past several years higher education has experienced a series of crises. The newest, and in the long term perhaps the most significant, development is the issue of discrimination against women. Militant women's groups have been organized, and they have brought charges against various institutions. The federal government has provided a powerful tool for such groups in the form of a 1968 Executive Order that forbids discrimination by federal contractors on the grounds of sex. Using provisions of this order, individuals and women's groups have filed more than 350 formal charges against some of the greatest of our universities and state systems, and they are winning.

Male chauvinists would like to think that the current uproar is the work of a few militant troublemakers. They may hope that, if they are cautious and patient, the storm can be counted on to dissipate. The odds are, however, that we are witnessing a major movement that will persist until it has brought forth substantial changes, not only in the universities, but also in the professions.

In part the movement will persist because substantial injustices have been perpetrated. There has been massive discrimination against women in academia. In part the movement will persist because woman's role in the world is in the process of change. If society frowns on childbearing, how are women to occupy themselves constructively? What can they do to lead significant and interesting lives? Increasingly women are turning to employment of some kind.

Today women make up about 37 percent of the labor force. But women hold only a small portion of the desirable positions. For example, in the United States, only 2 percent of dentists and 7 percent of physicians are women. In contrast, in Denmark, 70 percent of dentists are women, while in Germany 20 percent of physicians are women. The limited presence (about 2 percent) of women as full professors in our major universities is particularly striking. This compares with an annual doctorate production of about 12 percent women.

In 1930, some 28 percent of doctorates were won by women, and at many institutions the proportion of women faculty members was higher than today. These were times of a comparatively low birthrate. Later, after World War II, having babies became the thing for young women to do. Correspondingly, women's participation in graduate training dropped.

At present, although a larger proportion of girls than boys complete high school, only about 50 percent of girls go to college as against 80 percent of boys. Between 75 and 90 percent of the well-qualified students who do not go on to higher education are women. This represents a large loss of talent for the nation and often leads to personal dissatisfactions that occur when intelligent people must work at unchallenging jobs.

With universities as dependent as they are on government contracts, and with the government determined to enforce legal constraints against discrimination, university administrations must make some major changes in their personnel and admissions policies. But there is more behind the current drive than law or militant women's groups. Transition from a time in which babies were the thing to an era of zero population growth must have profound consequences on the relations between men and women and on the structure of society. We have only begun to see some of the effects.—PHILIP H. ABELSON

The statistics in this editorial are taken from a speech given by Alan Pifer, president, Carnegie Corporation of New York, to the Southern Association of Colleges and Schools, Miami, Florida, 29 November 1971.

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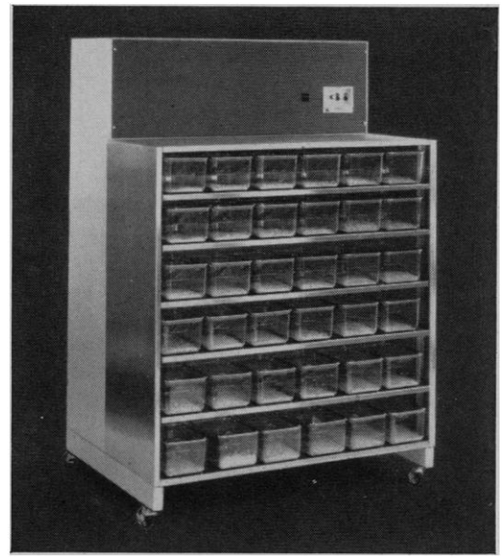

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tion quenching stability problem as applied to interstellar masers that must operate without a cavity.

Alex Smith (University of Florida) reported on VLB observations of the radio bursts from Jupiter which are still unresolved at less than 0.1 second of arc; the longest baseline observations so far used were between Bowling Green, Florida, and Maipu, Chile. He noted that so far the model of the short-burst emission from Jupiter (the Lynden-Bell and Bardeen model suggests that radiation arises from the plasma wake effects of Jupiter's moon Io) is consistent with observations. The source size implied from the burst duration is 3 kilometers or 0.001 second of arc. This is probably not resolvable with VLBI owing to interplanetary scintillations.

Following is a list of the members of the three groups cited by the Rumford Committee for work in the field of long-baseline interferometry. The Canadian group consisted of Norman W. Broten, R. M. Chisholm,* John A. Galt, Herbert P. Gush, Thomas H. Legg, Jack L. Locke, Charles W. McLeish, Roger S. Richards, and Jui Lin Yen. The M.I.T. group consisted of John A. Ball, Alan H. Barrett, Bernard F. Burke, Joseph C. Carter, Patricia P. Crowther, James M. Moran, Jr., and Alan E. E. Rogers. The National Radio Astronomy Observatory–Cornell group consisted of Claude C. Bare,* Barry G. Clark, Marshall H. Cohen, David L. Jauncey, and Kenneth I. Kellermann.

ALAN E. E. ROGERS
Haystack Observatory,
Massachusetts Institute of Technology,
Cambridge

PHILIP MORRISON
Department of Physics,
Massachusetts Institute of Technology

* Deceased.

Subacute Sclerosing Panencephalitis Treatment

There is great need for a treatment for subacute sclerosing panencephalitis. Chronic measles infection has been demonstrated in the brain tissues of patients with this disease. Still, we are struggling for a clear understanding of the mechanism of pathogenesis.

A conference on approaches to treatment of subacute sclerosing panencephalitis was held in Bethesda, Maryland, on 21 May 1971, under the sponsorship of the National Institute of Neurological Diseases and Stroke (NINDS). Warren Huber of NINDS opened the session. Participants reported on various studies of therapy. Chemotherapy—including treatment with amantadine hydrochloride, cytoxan, methotrexate, 5-iodo-2-deoxyuridine, and azoguanine—measles vaccines, and interferon stimulation have been for the most part unsuccessful. Similarly, chemical treatment with ether and the use of radiation have not been shown to be of value. Immunological treatments with HL-A–matched lymphocytes and transfer factor are under study, but sufficient time has not elapsed to determine the efficacy of these methods of therapy. Several investigators described research on drugs in tissue cultures. Others discussed the limited cellular immune responses to measles in monkeys and antibody studies; also discussed were attempts to document (i) cell-mediated immunity to measles by the use of skin tests and studies of lymphocyte proliferation in vitro in the presence of measles antigen and (ii) lymphocyte toxicity for radioactive chromium–labeled cultures infected with measles virus. The chairman of the morning session was Edwin Lennette (State of California Virus and Rickettsial Disease Laboratory), and the chairman of the afternoon session was Richard Johnson (Johns Hopkins Hospital).

In summarizing the meeting, Samuel Katz (Duke University Medical School) stated: "At present, it is clearly difficult to consider a logical approach to this disease. We need a greater understanding of the mechanisms which are involved in the disease process and must have techniques to study these mechanisms." The measles virus, which is chronically active and yet partially suppressed in this disease, must be studied to determine how this state of activity is retained as well as the defects that are responsible for its continued persistence. The virus must be examined in this state to determine if it is unusual in any way. The members of the conference recommended that fresh isolates of brain tissues from patients be obtained and maintained in a central registry so that better sharing and collaborative examination of these specimens that are difficult to obtain can be accomplished. Support is needed to provide highly specialized reagents for attempts at eliciting delayed hypersensitivity reactions in vivo and in vitro and for sensitizing adult donors

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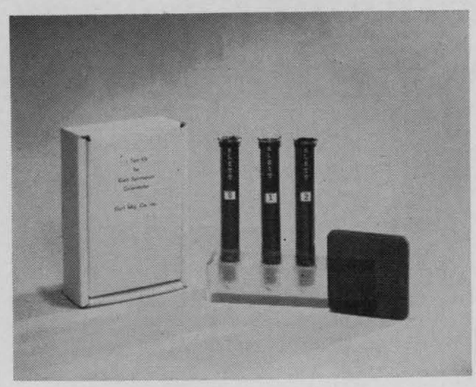

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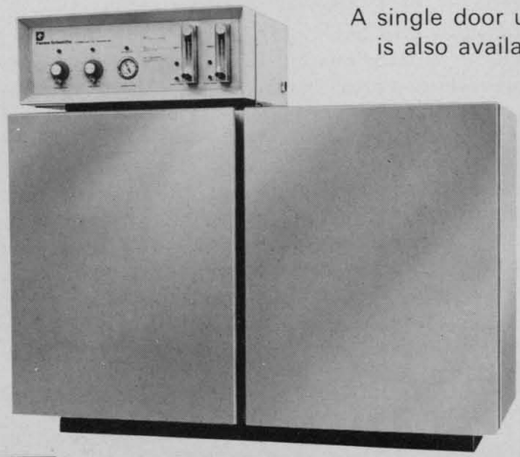

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This conference should stimulate interest and focus attention on the need for increased research, not only on subacute sclerosing panencephalitis but also on chronic progressive diseases of the central nervous system.

JOHN L. SEVER
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Forthcoming Events

16–18. **Solid-State Circuits** Conf., Philadelphia, Pa. (Inst. of Electrical and Electronics Engineers, Inc., 345 E. 47 St., New York 10017)

18–19. Symposium on **Regulation of Catecholamine Metabolism in the Sympathetic Nervous System**, New York, N.Y. (I. Saulpaugh, New York Heart Assoc., 2 E. 64 St., New York 10021)

20–23. American Inst. of **Chemical Engineers**, Dallas, Tex. (F. J. Antwerpen, AICE, 345 E. 47 St., New York 10017)

20–24. American Inst. of **Mining, Metallurgical and Petroleum Engineers**, San Francisco, Calif. (J. B. Alford, AIMMPE, 345 E. 47 St., New York 10017)

21–22. **Coastal Zone Pollution Management** Symp., Charleston, S.C. (B. L. Edge, Rhodes Engineering Research Center, Clemson Univ., Clemson, S.C. 29631)

23. Applications of **Auger Spectroscopy**, London, England. (Meetings Officer, Inst. of Physics, 47 Belgrave Sq., London SW1X 8QX)

23–25. Society of **Professors of Education**, Chicago, Ill. (Miss R. Bayles, Atlanta Univ., Atlanta, Ga.)

23–25. **Research and Training Reactor Utilization**, American Nuclear Soc., College Station, Tex. (J. D. Randall, Nuclear Science Center, Texas A&M Univ., College Station 77843)

26. Oregon **Acad. of Science**, Portland. (C. L. Smith, Dept. of Anthropology, Oregon State Univ., Corvallis 97331)

27–2. American Soc. of **Sugar Beet Technologists**, Phoenix, Ariz. (J. H. Fischer, ASSBY, P.O. Box 538, Fort Collins, Colo. 80521)

28–3. **Medical Data Processing** Symp., Toulouse-Pyrenees, France. (E. E. Van Brunt, Permenente Medical Group, Medical Methods Research, 3779 Piedmont Ave., Oakland, Calif. 94611)

March

1–4. American Acad. of **Forensic Sciences**, Atlanta, Ga. (J. T. Weston, 44 Medical Dr., Salt Lake City, Utah 84113)

1–5. American College of **Cardiology**, Chicago, Ill. (W. D. Nelligan, ACC, 9650 Rockville Pike, Bethesda, Md. 20014)

2–3. American Astronomical Soc., Div. on **Dynamical Astronomy**, College Park, Md. (J. D. Mulholland, Dept. of Astronomy, Univ. of Texas, Austin 78712)

2–4. Diagnosis of the **Functions in Endocrinology—Methods and Interpretations**, 18th symp., German Soc. of Endocrinology, Hannover. (J. Kracht, Pathologisches Institut, Klinikstrasse 32 g, 63 Giessen, Germany)

3–5. **American College of Apothecaries**, Chicago, Ill. (D. C. Huffman, Univ. of Tennessee, College of Pharmacy, Memphis 38103)

4–10. American **Concrete** Inst., Dallas, Tex. (ACI, Box 4754 Redford Sta., 22400 W. Seven Mile Rd., Detroit, Mich. 48219)

5–9. Society of **Toxicology**, Williamsburg, Va. (R. Scala, Esso & Engineering Co., Linden, N.J. 97036)

6–8. National Federation of **Science Abstracting and Indexing Services**, New York, N.Y. (Miss S. Keenan, NFSAIS, 2102 Arch St., Philadelphia, Pa. 19103)

6–10. **Analytical Chemistry and Applied Spectroscopy**, 23rd Pittsburgh conf., Cleveland, Ohio. (H. W. Fracek, Fisher Scientific Co., 585 Alpha Dr., Pittsburgh, Pa. 15238)

6–10. **Neutron Inelastic Scattering**, 5th symp., Intern. Atomic Energy Agency, Grenoble, France. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

9–10. Advanced **Analytical Methods for the Clinical Laboratory**, Oak Ridge, Tenn. (C. D. Scott, Oak Ridge National Lab., P.O. Box X, Oak Ridge 37830)

9–10. American Soc. for **Clinical Pharmacology and Therapeutics**, Houston, Tex. (R. T. Smith, 1718 Gallagher Rd., Norristown, Pa. 19401)

9–11. **Geological** Soc. of America, Northeast Section, annual mtg., Buffalo, N.Y. (E J. Buehler, Dept. of Geological Sciences, State Univ. of New York at Buffalo, Buffalo, 14207)

10–12. National **Wildlife** Federation, Mexico City, Mexico. (T. L. Kimball, NWF, 1412 16th St., NW Washington, D.C. 20036)

11–14. American Assoc. of **Pathologists and Bacteriologists**, 68th annual, Cincinnati, Ohio. (Miss J. Graves, Intersociety Committee on Pathology Information, Inc., 9650 Rockville Pike, Bethesda, Md. 20014)

11–18. American Assoc. of **Pathologists and Bacteriologists**, American Assoc. of **Neuropathologists**, and **Pediatric Pathology** Club (joint), Cincinnati, Ohio. (A. J. French, 1335 E. Catherine St., Ann Arbor, Mich. 48104)

12–17. American Soc. of **Photogrammetry**, Washington, D.C. (L. P. Jacobs, 105 N. Virginia Ave., Falls Church, Va. 20046)

13–17. International Union against **Cancer** Conf. (melanoma and skin cancer, leukemia). Sydney, Australia. (Intern. Cancer Conf., GPO Box 475, Sydney, NSW)

13–17. California **Membrane** Conf., Squaw Valley. (C. F. Fox, Dept. of Bacteriology, Univ. of California, Los Angeles 90024)

14. **Acoustic Emission**, London, England. (Meetings Officer, Inst. of Physics, 47 Belgrave Sq., London SW1X 8QX)

14–16. **Mineral Waste Utilization**, 3rd symp., U.S. Bureau of Mines and IIT Research Inst., Chicago, Ill. (M. A. Schwartz, IIT Research Inst., 10 W. 35 St., Chicago 60616)

14–18. International Acad. of **Pathology**, 61st annual, Cincinnati, Ohio. (Miss J. Graves, Intersociety Committee on Pathology Information, Inc., 9650 Rockville Pike, Bethesda, Md. 20014)

19–22. American Soc. of **Limnology and Oceanography**, Tallahassee, Fla. (G. W. Saunders, Jr., Dept. of Zoology, Univ. of Michigan, Ann Arbor 48104)

19–25. Council for **Exceptional Children**, 50th annual intern. conv., Washington, D.C. (W. C. Geer, CEC, Suite 900, Jefferson Plaza, 1411 S. Jefferson Davis Highway, Arlington, Va. 22202)

20–22. **Physical Electronics** Conf., 32nd annual, Albuquerque, N.M. (R. L. Schwoebel, Dept. 5330, Sandia Labs., Albuquerque 87115)

20–23. American Assoc. of **Dental Schools**, Las Vegas, Nev. (B. F. Miller, 211 E. Chicago Ave., Chicago, Ill. 60611)

20–23. Institute of **Electrical and Electronics Engineers**, New York, N.Y. (D. G. Fink. IEEE, 345 E. 47 St., New York 10017)

20–23. American Soc. of **Neurochemistry**, 3rd natl., Seattle, Wash. (W. L. Stahl, Dept. of Medicine (Neurology), School of Medicine, Univ. of Washington, Seattle 98105

20–24. Use of **Isotopes in Studies on the Physiology of Domestic Animals** with Special Reference to Hot Climates, Intern. Atomic Energy Agency, Athens, Greece. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

21–23. **Control of Hazardous Material Spills** Conf., Houston, Tex. (H. N. Myrick, Univ. of Houston, 3801 Cullen Blvd., Houston 77004)

23–25. **Quality of Life**, American Medical Assoc., Chicago, Ill. (E. O. Ellis, AMA, 535 N. Dearborn St., Chicago 60610)

23–25. American **Philosophical** Assoc., San Francisco, Calif. (A. Pasch, APA, 117 Lehigh Road, College Park, Md. 20742)

23–25. **Seismological** Soc. of America, Honolulu, Hawaii. (D. Tocher, P.O. Box 826, Berkeley, Calif. 94701)

23–26. International Assoc. for **Dental Research**, North American Div., Las Vegas, Nev. (A. R. Frechette, IADR, 211 E. Chicago Ave., Chicago, Ill. 60611)

26–29. **Environmental Mutagen** Soc., Cherry Hill, N.J. (W. W. Nichols, Inst. for Medical Research, Copewood St., Camden, N.J. 08103)

27–30. **Meteorological Observations and Instrumentation**, 3rd symp., Air Force Cambridge Research Labs., San Diego, Calif. (A. S. Carten, Jr., AFCRL (LX/1124), L. G. Hanscom Field, Bedford, Mass.)

April

3–6. National Assoc. for **Research in Science Teaching**, Chicago, Ill. (R. W. Lefler, Dept. of Physics, Purdue Univ., Lafayette, Ind. 47907)

3–7. American **Educational Research** Assoc., Chicago, Ill. (R. A. Dershimer,

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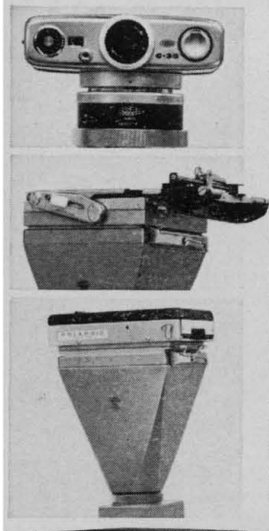

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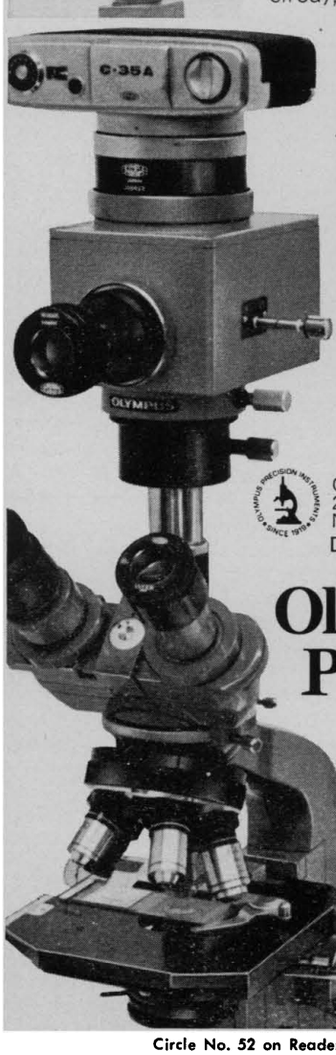

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Ref.: 1) Burger & Noonan, Nature **228**, 512 (1970).
2) Markowitz, et al, Science, **163**, 476 (1969)
3) Goldstein, et al, Arch. Biochem. Biophys., **121**, 88 (1967).
4) Goldstein & Iyer, Biochim. Biophys. Acta, **121**, 197 (1966).

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3–8. American College of **Radiology**, Bal Harbour, Fla. (W. C. Tronach, ACR, 20 N. Wacher Dr., Chicago, Ill. 60606)

4–6. Symposium on **Computer-Communications Networks and Teletraffic**, 22nd annual intern. symp., New York, N.Y. (J. Fox, Polytechnic Inst. of Brooklyn, MRI Symp. Committee, 333 Jay St., Brooklyn, N.Y. 11201)

4–7. American Assoc. of **Anatomists**, Dallas, Tex. (R. T. Woodburne, Dept. of Anatomy, Univ. of Michigan, 4643 Medical Science II, Ann Arbor 48104)

4–8. Institute of **Management Sciences**, Houston, Tex. (Mrs. M. R. DeMelim, IMS, 146 Westminster St., Providence, R.I.)

5–7. **Reliability Physics** Symp., 10th annual, Inst. of Electrical and Electronics Engineers, Las Vegas, Nev. (H. Lauffenburger, IITRI, 10 W. 35 St., Chicago, Ill. 60616)

5–7. **Phase Analysis: Identification and Quantitative Determination**, Hull, England. (Meetings Officer, Inst. of Physics, 47 Belgrave Sq., London SW1X 8QX)

5–8. American **Orthopsychiatric** Assoc., 49th annual, Detroit, Mich. (Miss M. F. Langer, AOA, 1790 Broadway, New York 10019)

5–9. **Learning and Culture**, Soc. for Applied Anthropology, American Ethnological Soc., and Council on Anthropology and Education (joint), Montreal, Canada. (Miss N. Gonzalez, Dept. of Anthropology, Univ. of Iowa, Iowa City)

6–8. Florida **Acad. of Sciences**, Winter Park. (R. W. Long, Dept. of Biology, Univ. of South Florida, Tampa 33620)

6–8. Association of Southeastern **Biologists**, Mobile, Ala. (Miss M. L. Gilbert, Biology Dept., Florida Southern College, Lakeland 33802)

7–8. **Two-Year College Chemistry** Conf., 12th annual natl., Boston, Mass. (W. T. Mooney, Jr., Dept. of Chemistry, El Camino College, Calif. 90506)

7–11. National **Science Teachers** Assoc., New York, N.Y. (R. H. Carleton, NSTA, 1201 16th St., Washington, D.C. 20036)

9–14. American Soc. of **Biological Chemists**, Atlantic City, N.J. (R. A. Harte, ASBC, 9650 Rockville Pike, Bethesda, Md. 20014)

9–14. American **Chemical** Soc., Boston, Mass. (F. T. Wall, ACS, 1155 16th St., NW, Washington, D.C. 20036)

9–14. Federation of American Societies for **Experimental Biology**, Atlantic City, N.J. (Miss A. Nixon, FASEB, 9650 Rockville Pike, Bethesda, Md. 20014)

9–14. American Soc. for **Experimental Pathology**, Atlantic City, N.J. (R. E. Knutti, ASEP, 9650 Rockville Pike, Bethesda, Md. 20014)

9–14. American Soc. of **Pharmacology and Experimental Therapeutics**, Atlantic City, N.J. (E. B. Cook, ASPET, 9640 Rockville Pike, Bethesda, Md. 20014)

10–12. **Acoustical Holography**, 4th intern. symp., Inst. of Electrical and Electronics Engineers, Inc., Santa Barbara, Calif. (Meetings Officer, IEEE, 345 E. 47 St., New York 10017)