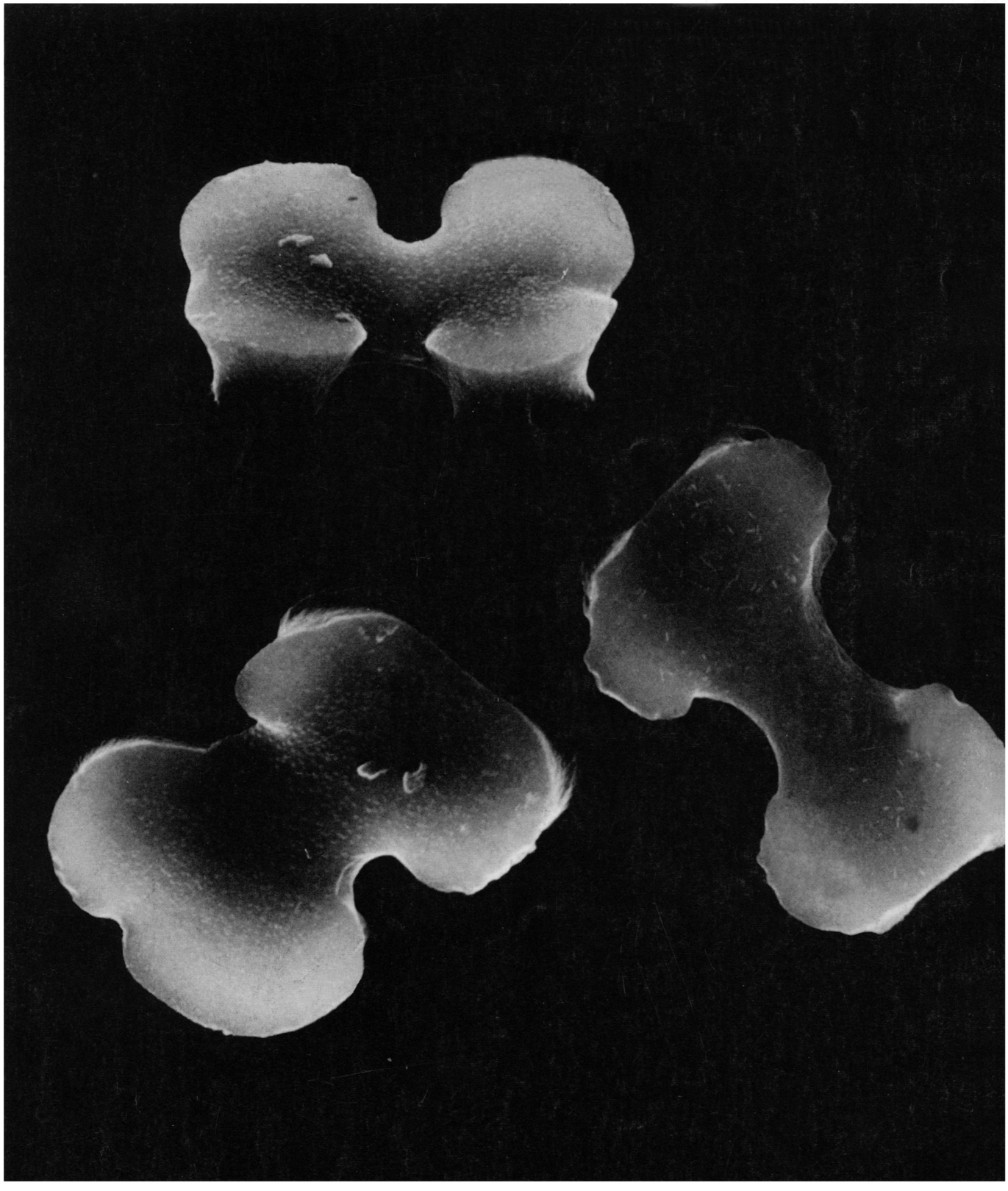
SCIENCE

23 August 1974

Vol. 185, No. 4152

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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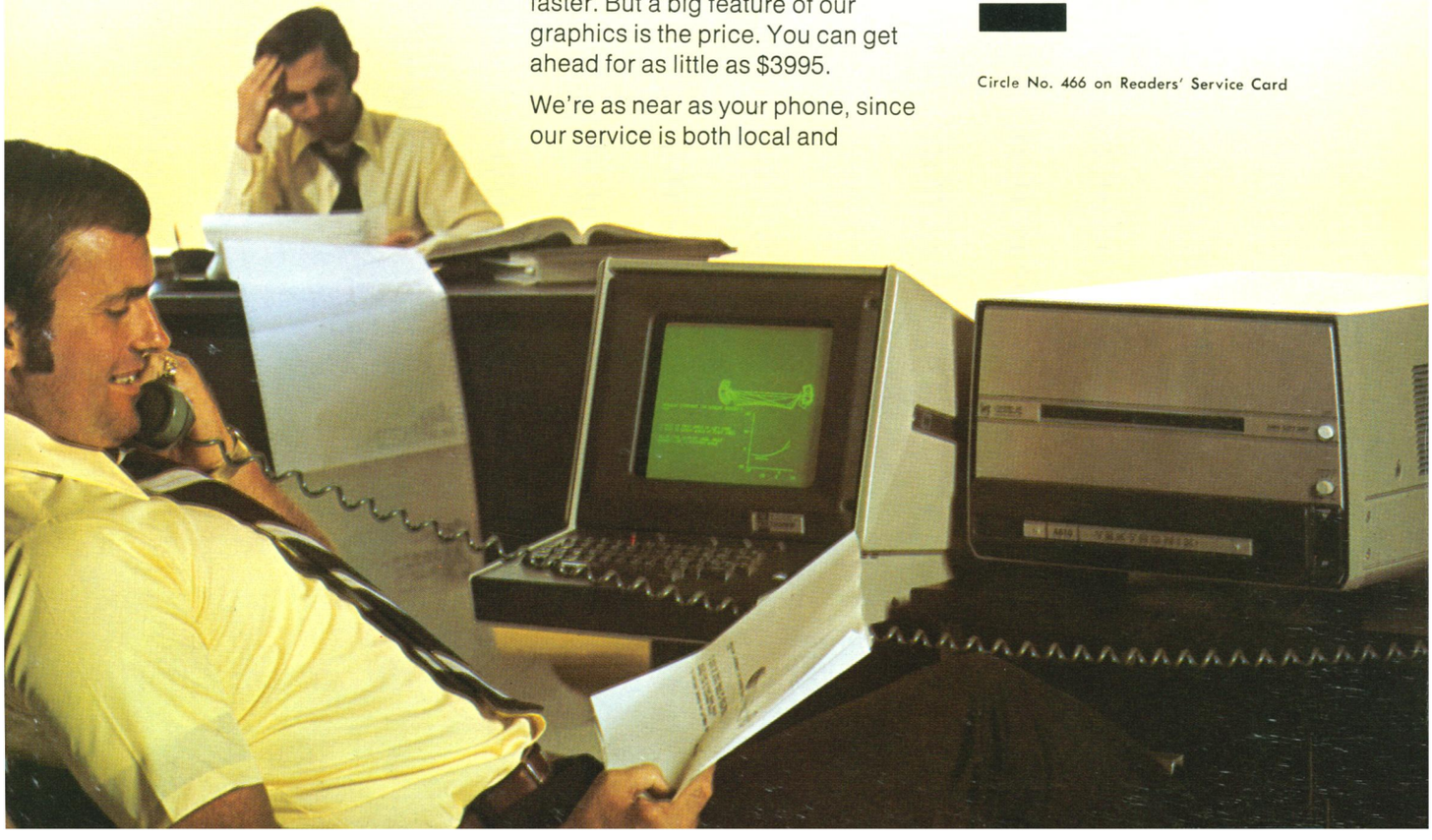

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SCIENCE

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COVER

Panicoid phytoliths (about 20 microns long) in deep sea sediments of the eastern Atlantic Ocean, transported by the trade winds from equatorial Africa during a cool, arid period about 140,000 years ago. See page 695. [V. Peters, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts, and J. Comeau, U.S. Geological Survey, Woods Hole]

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The Concentration of Macromolecules

Current Applications

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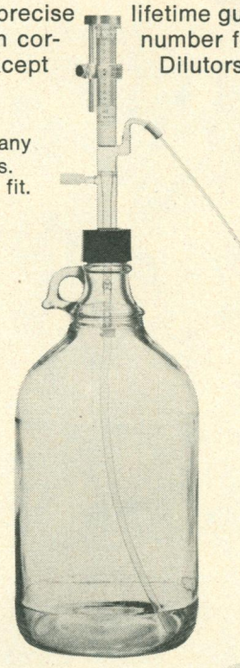

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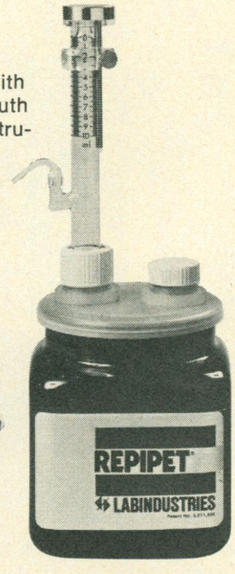

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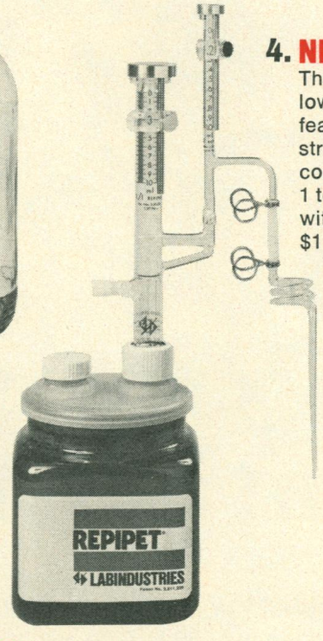

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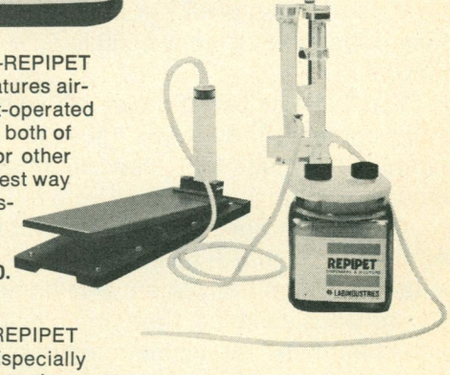

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0.5	5	44.5	42.9	44.5
1.0	9	40.5	37.1	39.5
1.5	13	37.5	35.6	36.6
2.5	20	35.0	34.1	32.9
3.5	26	31.0	31.3	32.3
5.0	33	29.8	19.9	28.2
7.5	43	24.1	10.7	22.4
10.0	50	20.7	9.8	19.6

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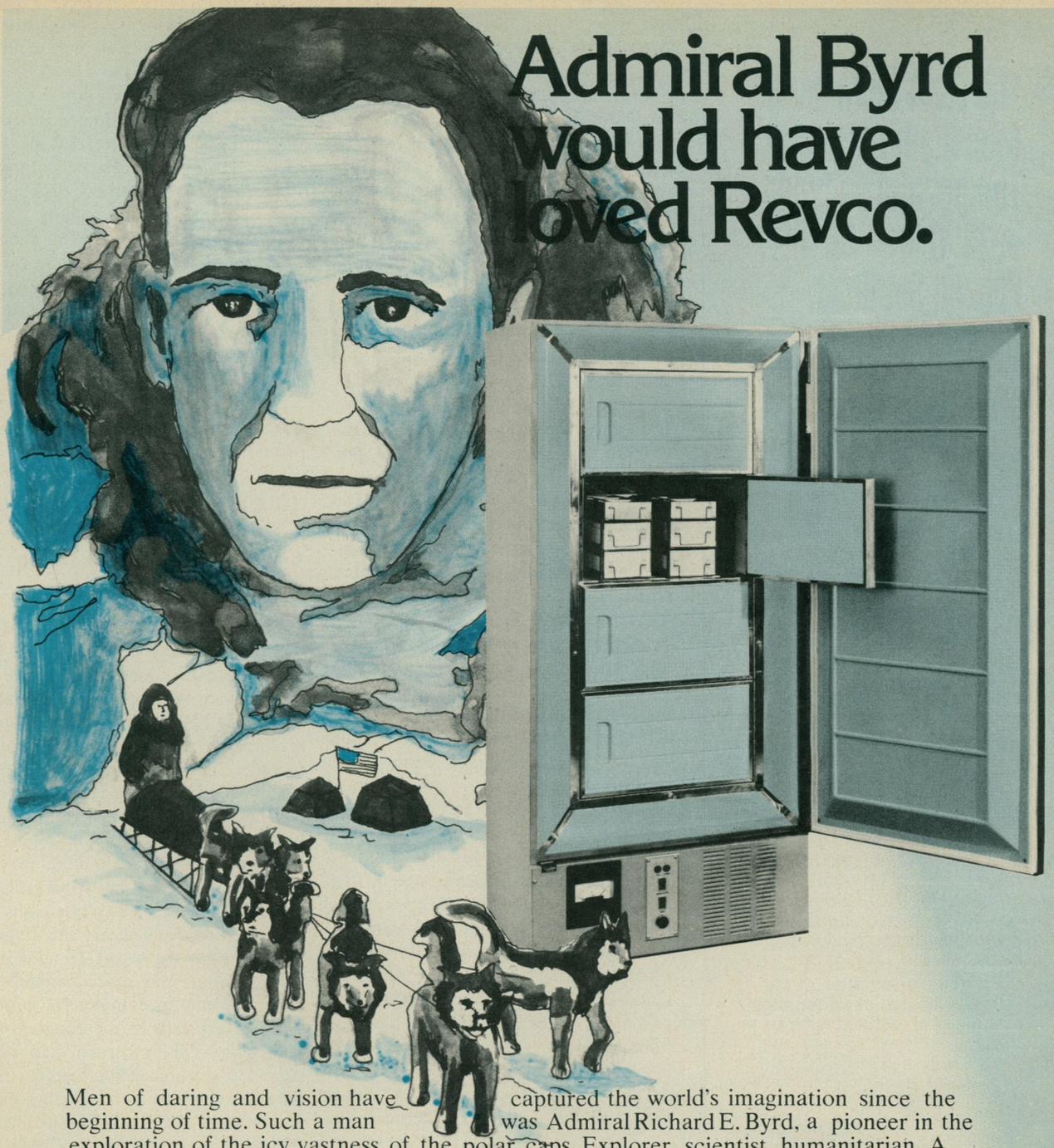

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LETTERS

Metrication: Historical Perspective

The tone of A. Hunter Dupree's letter, "Metrication as cultural adaptation" (19 July, p. 208), is exemplary, but regrettably his arguments are not. Like the English, who "could have profited from our . . . experience when they came to decimalize their coinage," Dupree does not appear to benefit from history.

If we consider that the greater part of the world uses the metric system, there is surely no shortage of examples of how countries with varying social and technological characters originally managed their "cultural adaptations." Investigation reveals that the general concern was not to look back to preserve a marginal and relatively unimportant aspect of heritage, but to effect a practical reform for future generations in a world where intercommunication was increasing. But perhaps after all it is this looking backward that makes our case unique: carpenters in France are presumably able to repair buildings somewhat older than those in Providence, Rhode Island, without calling for a return to the toise.

To write that wholesale metrication involves "destroying one culture and substituting another" is to give an exaggerated importance to quantitative measurement in the cultural life of a nation. Whether it was the Romans giving the British a metric system two millenia ago, or the French giving it to the world in the last century, no cultural dark ages appear to have followed the rapid withering of old measuring systems. No doubt some mourned the passing of miles and leagues, as today some mourn the passing of the steam locomotive. But we don't need to be the first country genuinely at home using both diesel and steam locomotives.

P. A. MOHR
Astrophysical Observatory,
Smithsonian Institution,
Cambridge, Massachusetts 02138

Dupree speaks of making "the United States . . . at home using two or more measuring languages." He seems to be overlooking the fact that we are at present using four systems of measurement: metric, engineer's, machinist's, and English (and a fifth if you include horse racing). All of this is patently ridiculous; engineers measure in tenths of a foot while machinists measure in tenths of an inch, with no common ground anywhere.

Dupree's point about carpenters working on old buildings is also badly taken. Lumber sizes in use today are not the same as those used 200 years ago, so it does not matter in the least whether old construction members are measured in cubits, inches, or centimeters when being replaced or repaired.

Speaking of carpenters, it might be nice to have a bit of honesty brought into our lumber sizing. Why should a piece of lumber measuring 1⅝ by 3⅝ inches be called a two-by-four? Calling it a four fifteen-by-nine twenty-five (its actual size in centimeters) would be honest and descriptively straightforward.

JAMES FANNING
Byram Lake Road, Route 2,
Mount Kisco, New York 10549

Cancer Research in the Wrong Direction?

Bandwagons have always existed and there will always be those who jump onto one. Sometimes it is creative and useful to do so, but usually it involves a sacrifice of original ideas. To survive in research, unfortunately, people are forced to do such things.

Cancer research has become a booming business for some groups in the past few years because the people and the government want a cure for cancer. Tissue culture has emerged as a respected science of tremendous importance. But business and industry have crept in there too. In addition to culture dishes and media, animal cells have become a commercial product. One can buy cells by the kilogram from a supplier. This is certainly an advantage, and since cancer researchers have started using commercial cells, mostly of two kinds (3T3 and WI38), considerable amounts of information have been accumulated about the biology of these cells.

What have we found and what does it mean? We have learned that viruses and chemicals can transform 3T3 cells to a neoplastic state and that these cells can produce tumors when inoculated in suitable hosts. But the tumors produced by these cells are sarcomas (derived from fibroblasts), which are very rare in human beings; 90 percent of human tumors are carcinomas, which are derived from epithelial cells. So what do we gain from growing sarcoma-producing cells in tissue culture except publishing papers and doing research to

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stay in research? Epithelial cells and fibroblasts have little in common except that they are both animal cells; they are derived from two embryonic sources with different functions, and the tumors they produce are also different. Also, 3T3 is a cell line associated with abnormal chromosomal conditions, which makes it even less desirable for cancer research.

Why can't people at least try to reproduce the disease that is occurring in the human body? Conversely, if they want to cure a disease occurring in the human body, they must be able to create an analogous condition in tissue culture. So, why can't carcinomas be induced in tissue culture? The simple reason is that it is very difficult to obtain and culture pure epithelial cells. They can not be manufactured commercially. The investigator has to spend time and energy to generate epithelial cells. This problem has been recognized by all tissue culture scientists. On the contrary, cells like 3T3 grow wild in bottles and are available in plenty. This is simply closing one's eyes to a challenging problem and doing something that is not useful in terms of the long-range goal of curing cancer.

B. K. NAIR
Department of Community and Environmental Medicine, University of California, Irvine 92664

International Agricultural Education

We agree with Albert V. Baez (Editorial, 26 Apr., p. 417) that the effectiveness of foreign assistance can be enhanced by transferring the art of teaching science to the scientifically trained foreign graduate students returning to their homelands from U.S. institutions. We at Prairie View, with the assistance of a grant from the Agency for International Development, are committed to the premise that agricultural technology can be accepted and utilized by the grassroot farmers of developing countries through appropriate educational methodology taught to young scientists. We are presently developing a proposal for researching a delivery system for the transfer of agricultural technology to the rural poor. One phase of this system includes the education and training of our graduate students, who, in addition to their technical courses, are required to pursue a minimum of 9 credits in education of the 36 required for a master's degree in soil sciences.

Some foreign students will continue their education at other institutions. They may not have the opportunity or inclination to continue their studies in education. However, during their training at Prairie View, they are encouraged to develop instructional modules which include autotutorial lessons, workbooks, visual and audio aids, and evaluation criteria specifically designed (in terms of language, customs, and relevant problems) for use in their country. The student is also encouraged to consider our institution as a link for the exchange of information during his professional career.

Many of our staff have served in technical assistance programs and are aware of the special skills and personal attributes needed to successfully transfer knowledge (considering the different mores and environments) in developing countries. This experience is utilized in modifying courses to meet the needs of our foreign students.

Baez's proposal has our full endorsement, and we suggest that AAAS members at each university involved in international work meet annually to exchange ideas regarding the preparation of foreign students as teachers of science in their homelands.

EUGENE A. BRAMS
JAMES I. KIRKWOOD
Department of Plant and Soil Sciences, Prairie View A & M University, Prairie View, Texas 77445

Wisdom Shortage

Comparisons are invidious. The truth of this is admirably illustrated by Philip Abelson's editorial "Media coverage of substantive issues" (31 May, p. 941). Relieved of its self-congratulatory, rather narcissistic praise for *Science* and its strictures against less exalted media, the editorial makes a number of good points. Both their import and their importance are lost, however, in the irritation engendered when one learns that *Science* is "designed to inform rather than to excite," that *Science* "can [if it wishes] produce a more rounded, complete, balanced, and scholarly story" than, presumably, the daily press.

Science should show a decent reluctance to claim a monopoly on wisdom, if for no other reason than that it is in critically short supply.

DANIEL S. GILLMOR
70 Perry Street, New York 10014

23 August 1974, Volume 185, Number 4152 **SCIENCE**

Mr. Ford and Science Policy

With the sudden change in the Presidency, the spotlight has fallen on Mr. Ford. Can a politician whose base was a conservative Middle West constituency be responsive to a broader cross section? Can a friendly man whose rise to power came through political skills make the tough decisions required of a good administrator? One of the queries of special interest to the readers of *Science* is, "Will Mr. Ford find better ways of utilizing this nation's great scientific and technical potential in meeting national problems?" Only the passage of time will bring the answers to these questions, but indications are that Mr. Ford brings a different attitude toward science and technology than that of his two immediate predecessors.

Last January, Mr. Ford accepted an invitation to lunch with a group of presidents of scientific societies. Wonder of wonders in Washington, he appeared—and essentially on time. During the hour and a half of the occasion, Mr. Ford was attentive and responsive. He went as far as he could under the circumstances to indicate that the nation's science advisory apparatus should be improved. During the past 2 years, Mr. Ford has met with a number of other individuals and groups to consider science policy. These talks were off the record, and participants did not feel fully free to reveal to me details of the conversations. However, enough has been forthcoming to provide a basis for hope that the science advisory process will be improved.

In January 1972, Mr. Ford (then a congressman) responded to a letter from one of his constituents, Professor Vernon Ehlers of Calvin College. Ehlers had suggested that Mr. Ford meet with a local committee of scientists to discuss national issues involving science and technology. Mr. Ford subsequently met with the group on about six occasions. Ehlers reports that Mr. Ford was a good listener, open to suggestions, and quick to grasp significant arguments. When he disagreed with the proffered advice, he gave his reasons. Mr. Ford continued to meet with the group until becoming Vice President.

In the period since October 1973, Mr. Ford's contacts with science and technology have been broader in scope. On two occasions he met with James Killian, a former presidential adviser. At one of these meetings, Philip Handler, president of the National Academy of Sciences, was a participant. The purpose of the meeting was to discuss the Academy's report on *Science and Technology in Presidential Policy-making*, which recommended a Council for Science and Technology. A copy of the document was sent ahead of the meeting, and in the discussion it was clear that Mr. Ford had read and understood the contents.

On another occasion, Mr. Ford met with Edward David, a former presidential science adviser. Details are not available, but again a major topic was a better advisory apparatus for science and technology. Some hint of the content of the talk may be obtained from David's recent congressional testimony, in which he suggested creation of an Office of Research and Engineering Management.

On still another occasion, Mr. Ford met with congressmen Rhodes, Mosher, and McCormack and Mr. Sawhill, head of the Federal Energy Administration, in a meeting arranged by Mosher (R–Ohio) to discuss a proposal advanced by McCormack (D–Wash.), who is the leading scientist in Congress. Again, McCormack's ideas differ from those advanced by Killian and David. My information is that McCormack advocates a cabinet post for science, technology, energy, and materials.

What will come of these various conversations is not clear, but at least it appears that Mr. Ford has been listening.—PHILIP H. ABELSON

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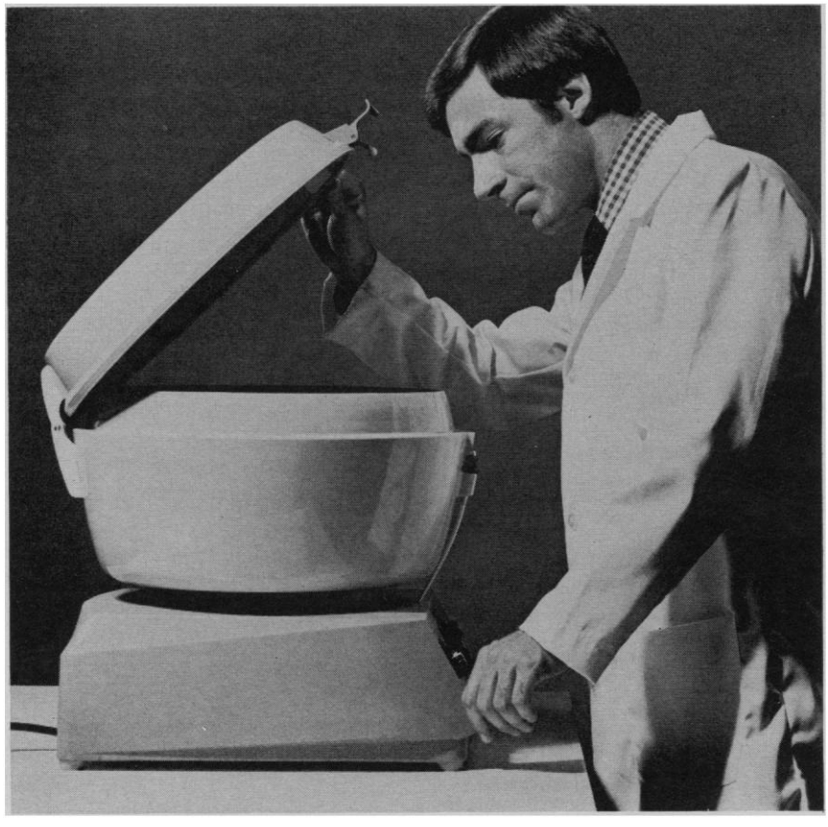

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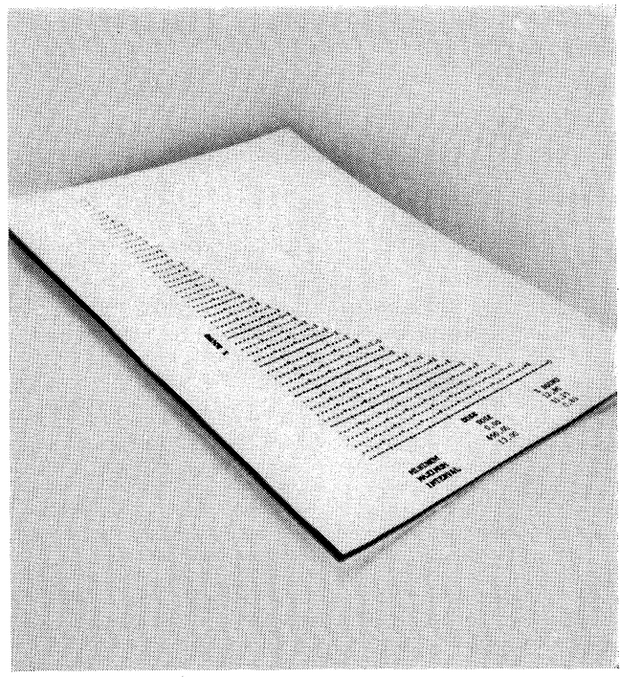

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PRODUCTS and MATERIALS

Thyroid Stimulating Hormone Assay

The Phadebas radioimmunoassay for thyroid stimulating hormone eliminates cross-reaction with human chorionic gonadotropin, follicle stimulating hormone, and luteinizing hormone. Antibodies are bound to the Sephadex polymer as the solid phase. Each kit includes five lyophilized standards, lyophilized Sephadex-antibody complex, lyophilized hormone labeled with iodine-125, buffer, tween solution, and diluent. Each kit is sufficient for 50 tests and if stored at 2° to 8°C has a shelf life of 10 weeks. Results are available in 48 hours. The standard curve covers the range between 1.5 and 50 microunits of hormone per milliliter. Pharmacia Laboratories, Incorporated. Circle No. 929 on Readers' Service Card.

Thyroid Evaluation

The $StaT_4$ diagnostic reagent system (Fig. 1) is a companion test set to the $StaT_3$ system. The kit includes reagents, test units, controls, hand-operated pipets, and dispensing instruments. The test requires 40 minutes and involves three pipetting steps and one count per sample. There is no solvent drying step and no correction for time or temperature during incubation. The liquid phase is counted in a disposable transportable test unit. The $StaT_4$ system is available in units of 30 and 100 tests. The $StaT_3$ system is available in units of 10, 30, or 100 tests. Oxford Laboratories. Circle No. 920 on Readers' Service Card.

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Readers' Service Card (see pages 650A and 714C) and placing it in the mailbox. Postage is free.—RICHARD G. SOMMER

Tissue Culture Flasks

Polystyrene flasks with nontoxic screw caps and rubber liners feature volumetric media markers. They are shaped for stacking and come in two sizes: 250 milliliters (75 square centimeters) and 30 milliliters (25 square centimeters). They are sterilized by irradiation. Cooke Laboratory Products. Circle No. 930 on Readers' Service Card.

Hematology Reference Standard

Count-A-Part Complete is a seven-in-one hematology reference standard prepared from human blood. It is suitable for use in standardizing any counting instrument or quality control practice in complete blood counting. The single set of assay values is valid for automated or manual determination of red blood count, white blood count, hemaglobin, hematocrit, mean corpuscular volume, mean corpuscular hemoglobin, and mean corpuscular hemoglobin concentration. The standard, free of shrunken cells, is available at normal and abnormal levels, and in combination kits. Diagnostic Technology, Incorporated. Circle No. 928 on Readers' Service Card.

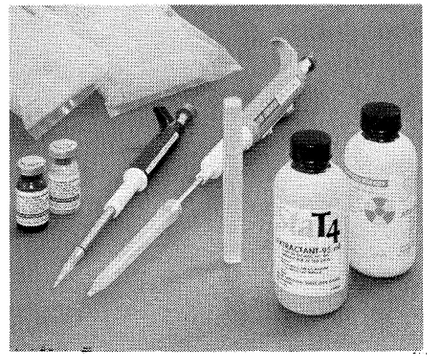

Fig. 1. Oxford Laboratories' $StaT_4$ thyroid evaluation kit for clinical and research applications contains complete materials for this 40-minute procedure.

Serum Enzyme Analysis

The model KA-150 kinetic analyzer automates the determination of serum enzymes. Samples are handled at a rate of 150 per hour. Only 100 microliters of reagent and 10 microliters of serum are required for each test. The photometer uses two hollow cathode lamps as the source and it is sensitive to changes in absorbance as small as 5×10^{-6} angstroms per second. Results are printed as units per liter. If curvature is excessive or absorbance is out of range, the printout is in red as an error warning. Perkin-Elmer Corporation, Instrument Division. Circle No. 915 on Readers' Service Card.

Alkaline Phosphatase Reagent Set

The K/E-405 system contains reagents suited to kinetic or end-point determination of alkaline phosphatase activity. The kinetic test requires 3 minutes in most temperature-controlled spectrophotometers, 20 microliters of sample, and two pipettings. The end-point procedure requires a 10-minute incubation period without serum blanks, a 50-microliter sample, and three pipettings. Dade Division, American Hospital Supply Corporation. Circle No. 925 on Readers' Service Card.

Enzyme Analyzer

The Ministat 1 reads directly in international units and requires 30 seconds per reading. Absorbance is also read from the same dial from 0 to 2.0. Applications of this dual-wavelength instrument include most standard clinical photometric determinations. The device accepts standard 12 by 12 by 46 millimeter cuvettes for 1 milliliter of reagent and 40 microliters of serum or a microcuvette with 5 microliters of serum and 0.2 milliliter of reagent. Temperature range is 23° to 40°C and temperature is maintained within ± 0.1°C. Arthur H. Thomas Company. Circle No. 931 on Readers' Service Card.

Blood Containers

The 8000 series of Y-connector blood bags, available with two or three port entries, are suited for the high glycerol–mechanical refrigeration method of

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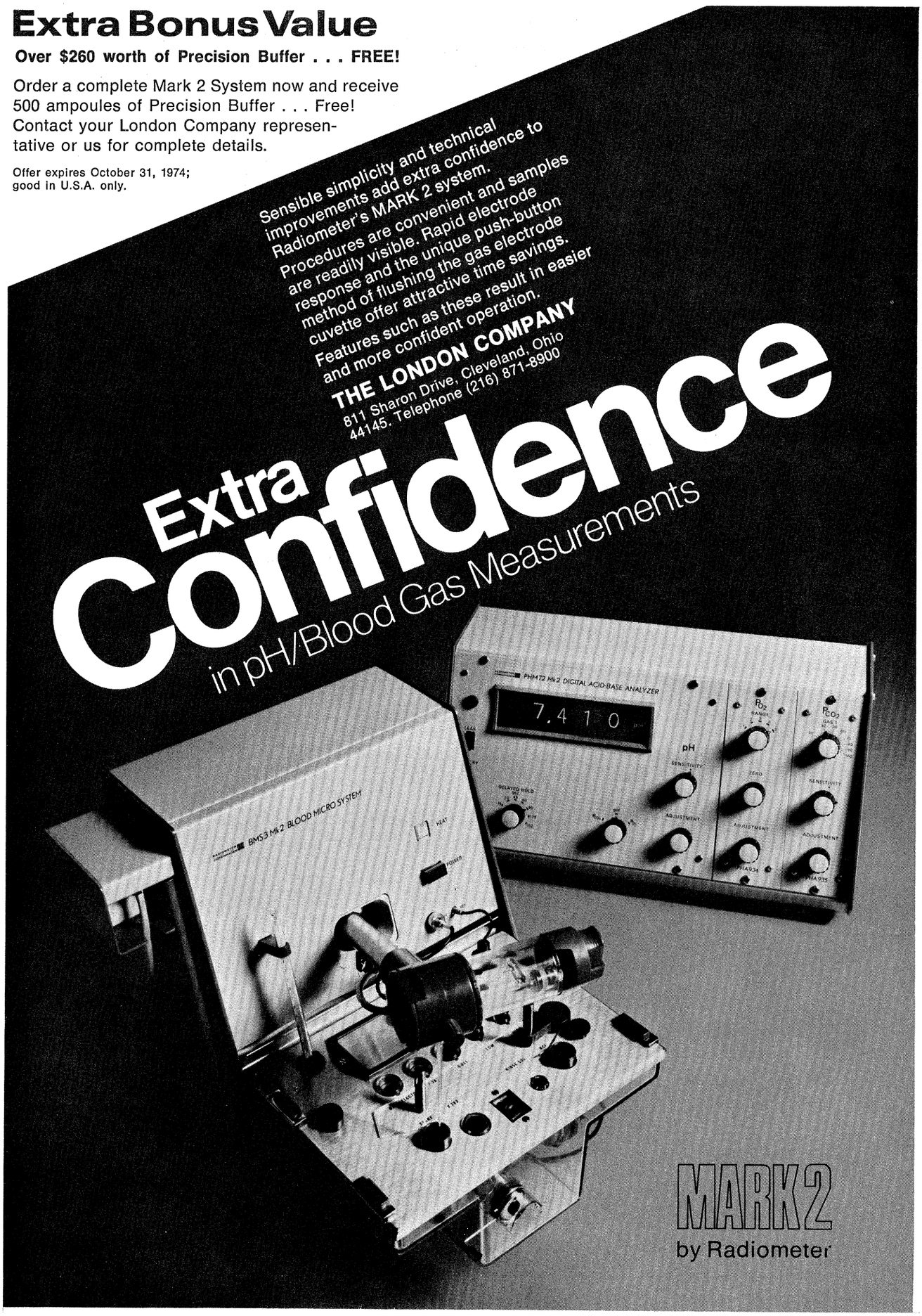

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blood freezing (– 80°C). The 3200 series of Y-connector blood bags are available for the low glycerol–liquid nitrogen method. These bags and connectors facilitate the combination of blood and glycerol and the transfer from mixing container to freezing container. Union Carbide Corporation. Circle No. 932 on Readers' Service Card.

Platelet Aggregation

The Platelet Aggregation Profiler automates clinical procedures. It provides a continuous comparison of platelet-rich and platelet-poor plasma and requires no standardization or calibration. The test procedure and operational status are displayed on an illuminated screen. The integrated chart recorder is automatically calibrated. Bio/Data Corporation. Circle No. 926 on Readers' Service Card.

Trichomonas Culture Kit

The Clinicult test is a self-contained unit with a paddle to accept the specimen and a medium to ensure both maximum growth of *Trichomonas vaginalis* and suppression of other organisms and an indicator dye to signal presence of the organism's by-products. In a double-blind experiment on 404 patients, Clinicult correctly identified *Trichomonas vaginalis* in 98 percent of the positive cases. Smith Kline Diagnostics. Circle No. 933 on Readers' Service Card.

Blood Product Quality Control

The RQC system tests purity and potency of antiserums and reagent red cells. The kit consists of six standardized reagents, two antiserums, a system rack, and recording sheets. Gamma Biologicals. Circle No. 934 on Readers' Service Card.

Cell Disruption Chambers

This device ruptures cells by explosive decompression. Applications include tissue homogenation, extracting material from living cells, and membrane separation. The chamber comes equipped with a vacuum gauge and screw controlled inlet and outlet sorts. Advantages include disruption without

destructive effects of heating, oxidation, or both. Kontes Glass Company. Circle No. 935 on Readers' Service Card.

Introduction to Radioimmunoassay

A 14-page pocket-sized bulletin No. 7243 introduces radioimmunoassay (RIA) and includes a glossary. Principles and techniques are explained, apparatus is described and illustrated, and there is a list of clinical and medical analyses that may be performed by RIA. Beckman Instruments. Circle No. 927 on Readers' Service Card.

Automated Blood Analyses

The System 1 glucose/blood urea nitrogen analyzer is automated from sample pickup to final results. Stat samples may also be analyzed with readout in 64 seconds. Results are displayed and printed out in milligrams per decaliter and self-calibration against a known standard is automatic. If calibration signal exceeds an established limit, sample tray will not advance until correct calibration is achieved. The turntable accommodates up to 40 samples. Sample volume is 14 microliters per test. Glucose measurement is based on rate of oxygen depletion in a glucose oxidase reaction, blood urea nitrogen is measured by change in conductivity rate during a urease reaction. Beckman Instruments, Clinical Products Division. Circle No. 936 on Readers' Service Card.

Literature

Radioassay News is a monthly newsletter for clinicians and biochemists and it includes information on techniques, instrumentations, meetings, and educational materials. Scientific Newsletters, Incorporated. Circle No. 937 on Readers' Service Card.

Immophase is a 12-page manual devoted to procedures for using beta-tagged (tritiated) digoxin antibody materials in radioassay of digoxin in serum. Corning Glass Works, Biological Products Department. Circle No. 938 on Readers' Service Card.

Micrometer Syringes and Burets describes glass and Teflon delivery devices. Roger Gilmont Instruments, Incorporated. Circle No. 940 on Readers' Service Card.

BULLETIN analytical equipment

Issued by: ANALYTICAL EQUIPMENT DEPARTMENT,
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Rapid processing of kidney biopsies for electron microscopy

by Jan Vincents Johannessen
The Gade Institute, Department of Pathology and Laboratory for Clinical Electron Microscopy, University of Bergen, 5000 Bergen, Norway.

The widespread use of kidney biopsy has contributed to the explosive expansion of clinical nephrology in the last 20 years.[1-3] This is now an established procedure in the investigation and management of patients with kidney disease and the only method of making an exact and morphological evaluation of diffuse renal disease during life.[4] Several forms of kidney disease in which the prognosis and response to therapy differ, cannot be distinguished clinically.[5,6] Their lesions may have an almost identical appearance on light microscopy[3,6], although they are readily differentiated by electron microscopy. Light microscopy is, therefore, not an entirely reliable means of differentiating renal lesions.[5,7-9]

A major obstacle to the use of electron microscopy in the routine evaluation of kidney biopsies has been the long processive time that is usually employed. However, rapid methods have been successfully used in electron microscopy of normal tissues from different animal species.[10-14] Therefore, the aim of the present study was to adapt and evaluate a rapid method of preparation of kidney biopsies for electron microscopy. The quality of the sec-

PRODUCTS and MATERIALS

Tubular Furnace

The model 1700 HTF has a 3-inch-diameter tubular capacity and reaches 1650°C. Heating elements made of Kanthal Super 33 are replaceable in minutes and offer rapid heat gain and long service. The unit is compact because it utilizes Zircar insulation. Applications include sintering, ceramic firing, brazing, annealing, crystal growth, and research. CM Manufacturing Company. Circle No. 908 on Readers' Service Card.

Three-Piece Separatory Funnels

Replaceable glass tips (Fig. 1) add to the value of a line of separatory funnels in terms of longevity and versatility. Tips come in several forms: long and straight, short and drip type in two sizes. These funnels will also accept glass burette tips. All funnels are available in 125-, 250-, or 500-milliliter sizes. Pear-shaped and globe-shaped funnels are also available in the 60-mill.liter size. Tips may be purchased separately. Corning Glass Works, Scientific Glassware Department. Circle No. 906 on Readers' Service Card.

Vortex-Evaporator

The vortex-evaporator accepts conical bottom centrifuge tubes, scintillation vials, and macro or micro test tubes. Standard sample blocks are available for vessels for processing by heating or cooling vortex mixing and vacuum evaporation. The unit controls temperature from −10° to 100°C and vortex speed by dial, and a gauge registers vacuum. The clear plastic lid allows the operator to observe the tubes in the sample block during processing. Buchler Instruments. Circle No. 917 on Readers' Service Card.

Temperature-Controlled Animal Board

The TCA board is designed to maintain constant body temperature of small animals during prolonged anesthesia. The device maintains a closed circuit between a probe placed in the animal and the board. Temperature maintenance is within 0.2° of 37°C. The board is completely immersible for cleaning and the temperature control unit is compact and remote for best use of bench space. Harvard Apparatus Company, Incorporated. Circle No. 919 on Readers' Service Card.

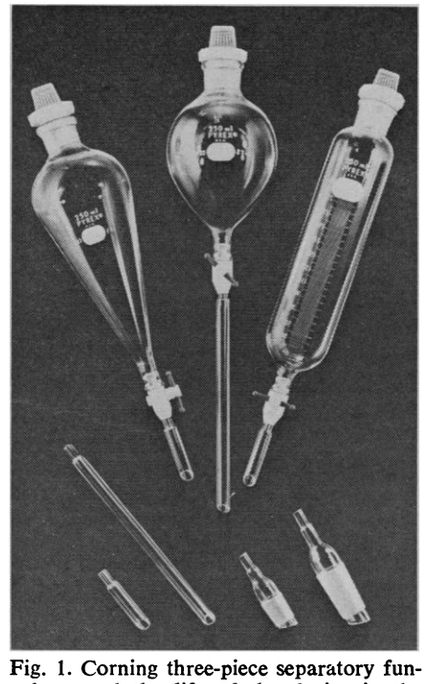


Fig. 1. Corning three-piece separatory funnels extend the life of the device in the laboratory and its versatility. The tips are interchangeable and replaceable.

Gem Refractometer

The Gemeter measures refractive index for gemstones in the range of 1.4 to 2.7. The stone is placed on an examination disk, a switch is depressed, and the refractive index is displayed on a panel. Sarasota Instruments, Incorporated. Circle No. 910 on Readers' Service Card.

Ring Viscometer

The series M measuring elements offer standard measuring devices for up to 20,000 centipoises, pressure capability up to 1000 pounds per square inch; and temperature capacity up to 300°F. The series includes ring viscometers, recording and indicating receivers, and a variety of devices designed for various applications. Options include electric or pneumatic control, alarms for high or low viscosities, temperature compensation, and electric output for data processing or computer control. Norcross Corporation. Circle No. 905 on Readers' Service Card.

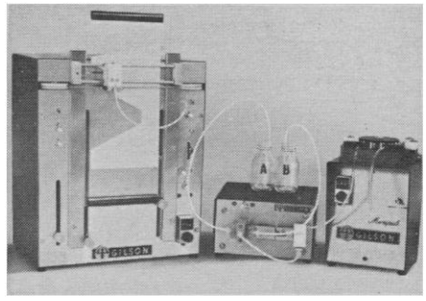
Modular Heating Bath

The Dri-Bath is a heating unit that accommodates various sized heating blocks for temperatures from ambient to 110°C. The heating blocks accommodate different numbers of various size tubes for incubation or chemical tests. Seven block sizes from those with 30 6.5-millimeter wells to those with 6 25.75-millimeter wells. A solid-state device controls temperature to within ± 0.1°C. There are indicator lights for heating cycle and power and a dial to indicate temperature setting as well. Thermolyne subsidiary of Sybron Corporation. Circle No. 907 on Readers' Service Card.

High-Speed Gel Permeation Chromatography Columns

Small particle diameter μStyragel columns in a high-efficiency liquid chromatograph will achieve analyses in 5 to 15 minutes. If resolution, rather than speed, is required, these columns will provide over 30,000 plates per meter as opposed to 2,200 plates per meter with standard systems. Resolution time is increased from approximately 100 to 200 plates per minute to 1000 to 2000 plates per minute.

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Readers' Service Card (see pages 650A and 714C) and placing it in the mailbox. Postage is free.—RICHARD G. SOMMER



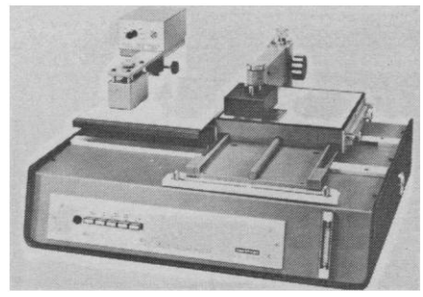


Fig. 2 (left). The MixoGrad system of Gilson Medical Electronics follows the profile of the desired gradient and combines liquids accordingly. Fig. 3 (right). Thin-layer chromatogram scanner from Shandon Southern Instruments accepts 20 by 20 centimeter plates without special preparation and automatically produces a two-dimensional plot of the distribution of radioactivity.

Columns are available in pore sizes of 10^6, 10^5, 10^4, 10^3, 10^2, and 500 angstroms. Waters Associates, Incorporated. Circle No. 914 on Readers' Service Card.

Gradient Former

The MixoGrad (Fig. 2) forms linear, concave, convex, or complex gradients of *p*H concentration and so forth by combining two liquids in continuously varying proportions. The gradient profile is drawn on millimeter graph paper and cut to shape. A profile-following device follows the gradient; scan speed is adjustable. MixoGrad includes column rinse and automatic shut-off upon completion. Gilson Medical Electronics, Incorporated. Circle No. 912 on Readers' Service Card.

Serum and Electrolyte Measurement

The Bionometer reads directly in milliequivalents per liter in 4 seconds. The readings are almost unaffected by nonelectrolytes in the sample. Tests may be run on samples down to 0.1 milliliter. The immersion probe is temperature compensated and readout is linear from 1 to 1999 milliequivalents per liter. Accuracy is ± 1 percent. Applications include monitoring such conditions as dehydration and mineral depletion or excess. Lab-Line Instruments, Incorporated. Circle No. 911 on Readers' Service Card.

Aldosterone Radioimmunoassay

A kit for aldosterone is adaptable to urine, serum, or plasma samples. Sample extraction procedure avoids emulsions and requires no evaporation of large volumes of solvents. Less than 2 hours is required for 20 samples. Recovery of the tritiated aldosterone tracer is greater than 80 percent for serum or plasma samples. The standard RIA curve yields a linear logit-log plot and is identical for various sample types. The antiserum has virtually no cross-reactivity with other plasma steroids. Assay is rapid; it requires only 45 minutes for incubation. Diagnostic Products Corporation. Circle No. 916 on Readers' Service Card.

Volumetric Pipets

Micro/Mac pipets feature self-adjusting volumes in six fixed sizes from 0.01 milliliter to 10 milliliters. The operator squeezes a bulb and the pipet automatically fills to the precise volume it holds. They are nondripping. Precision is 0.1 percent at 1 milliliter; delivery accuracy is 1 percent in all ranges. They are Pyrex and suitable for use with all laboratory reagents. Sizes below 0.5 milliliter are self-cleaning. Labindustries. Circle No. 913 on Readers' Service Card.

Plate Scanner

A new thin-layer chromatogram scanner (Fig. 3) is suited to radioassay. It has a dot printer that renders two-dimensional distributions of radioactivity. The detector uses a gas flow-through counter with high yield and low background. In a single spot, nearly 100 percent of upward-emitted beta particles and as few as 100 disintegrations per minute of carbon-14, 50 disintegrations per minute of phosphorus-32, and 1000 disintegrations per minute of tritium radiation are detectable. Iodine-125 may be detected in chromatograms by measuring auger electrons. Advance speed is variable from 15 to 6000 millimeters per hour and the fast return is set at 6000 millimeters per hour. Four, six, or eight chromatograms may be scanned simultaneously. Shandon Southern Instruments, Incorporated. Circle No. 909 on Readers' Service Card.

Portable Water Quality Analysis

The model 350A photometer and the Ecopak test kit series are the main components of the self-contained Ecolab water analysis kit. Test kits for 50 parameters of water quality and a manual of procedures as well as various glassware and tools are included. The reagent kits are either colorimetric such as tests for aluminum, chlorine, and detergents or titrimetric such as the tests for acidity, alkalinity, and carbon dioxide. Addition of a portable *p*H meter or conductivity meter enhances the capabilities of the system. Ecologic Instrument Corporation. Circle No. 918 on Readers' Service Card.

Literature

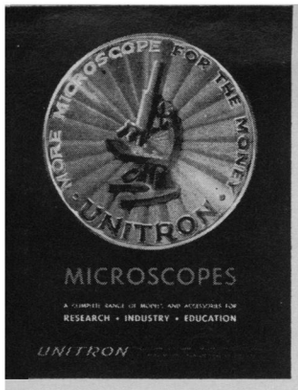
EDAX 707B/Micro-Edit is a 12-page brochure devoted to an energy-dispersive x-ray analysis system for scanning and transmission electron microscopes and microprobes. EDAX International Incorporated. Circle No. 921 on Readers' Service Card.

Clinical and Diagnostics Catalog 1974 describes a complete line of chemicals for clinical applications including a large number of test kits. Calbiochem. Circle No. 922 on Readers' Service Card.

Minicon Concentrators for Rapid Enrichment of Dilute Biological Samples is the subject of an eight-page illustrated pamphlet. Amicon Corporation. Circle No. 923 on Readers' Service Card.

Catalog Number 5174 features humidity indicators, thermometers, psychrometers, altimeters, anemometers, and other laboratory indicators. Abbeon Cal, Incorporated. Circle No. 924 on Readers' Service Card.

Kepco Power Supplies is a 130-page catalog of the latest offerings in electronic laboratory gear. There is also a handbook section devoted to ferroresonance, thermal design criteria, measurement techniques, programming, digital control, high-speed dynamics, operational theory, and multi-unit interconnections. A glossary is included. Kepco, Incorporated. Circle No. 939 on Readers' Service Card.



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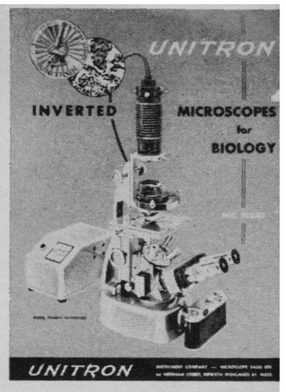

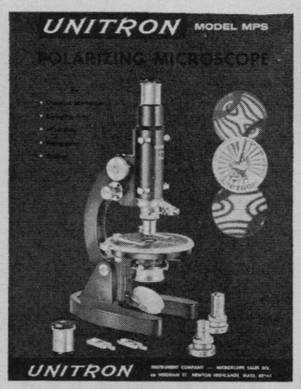

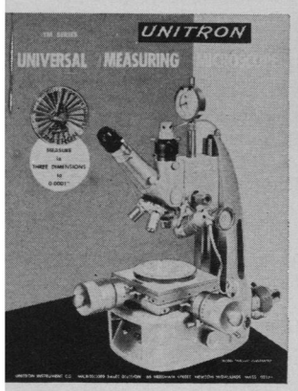

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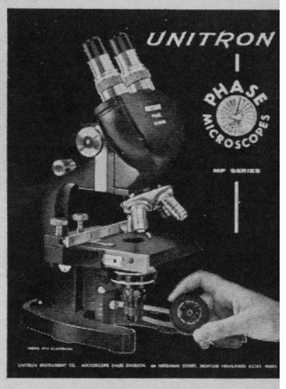

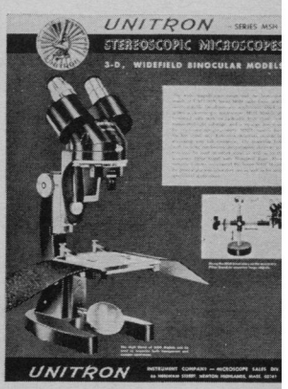

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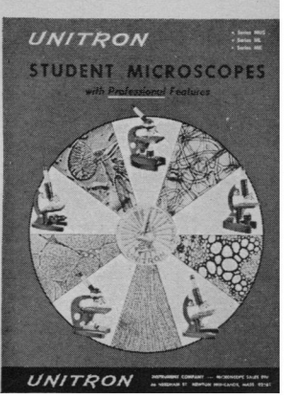

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(Continued from page 690)

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