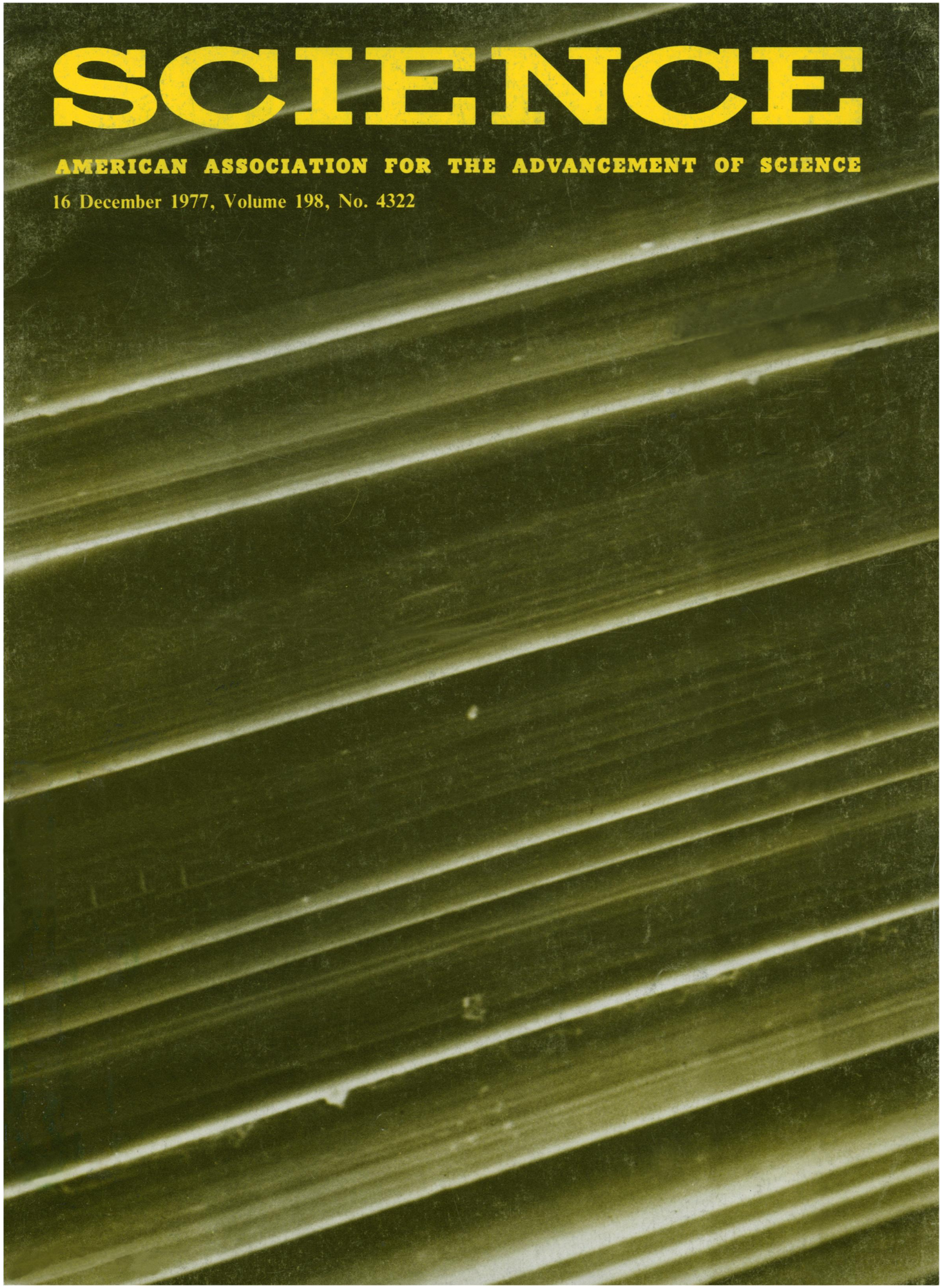
SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

16 December 1977, Volume 198, No. 4322



The Nobe

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30 years ago the Nobel Prize winners Prof. The Svedberg and Prof. Arne Tiselius instilled into the new company the need for high quality in scientific instruments. Their cooperation and encouragement developed into close contacts with scientists worldwide. As a result, LKB is today in the forefront of ideas in biochemistry, and can present to the scientist the right equipment and techniques at the right time.

Using LKB equipment guarantees nobody a Nobel Prize, but it does lay a sure and certain basis for careful experiments and accurate results.

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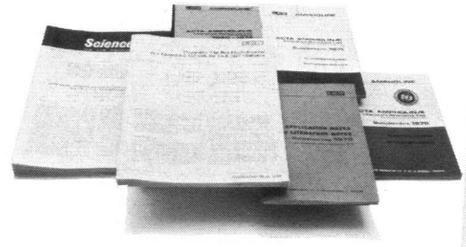
LKB supplies equipment necessary for growing and disintegration of microorganisms through to the final characterisation of a purified substance. Probably the most important techniques in biochemistry are those involving separation and analysis, and there we have our greatest experience.

LKB helps science advance, and serves the scientist

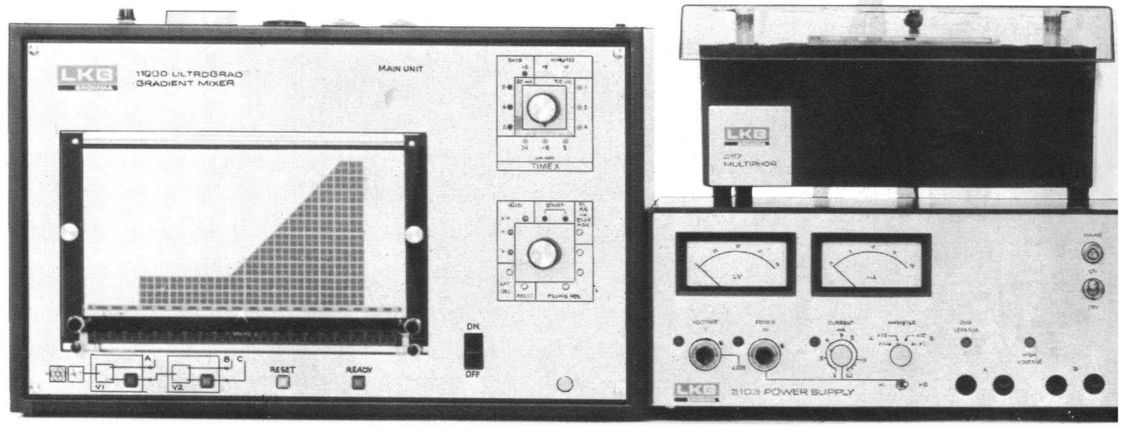
For science to advance, knowledge must be shared. At LKB knowledge comes from our experience and research and from our many worldwide contacts. We share our knowledge in several ways: in the quality of our instruments, as Workshops and Seminars, literature such as *Acta Ampholinae,* Application Notes and SCIENCE TOOLS.



Electrophoresis

This technique laid the basis of LKBs entry into biochemical separations, and prepared the way for further developments. In developing reliable equipment we were greatly helped and encouraged by Arne Tiselius, whose important work on electrophoresis was rewarded by a Nobel Prize in 1948.

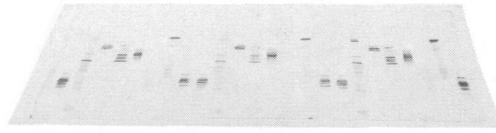
LKB provides the basic equipment needed for an electrophoretic system, analytical or preparative, column or thin layer: equipment such as power supplies with constant power, voltage and current; Multiphor for thin layer electrophoresis and immunoelectrophoresis; and Uniphor® for column electrophoresis.



I Prize Kit

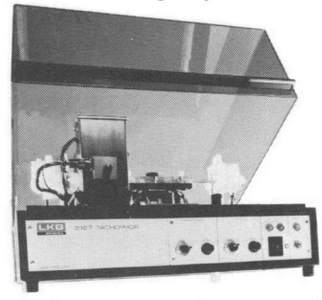
Electrofocusing

LKB has led the world in electrofocusing since we introduced it in 1966. Our breakthrough then was with Ampholine® carrier ampholytes and electrofocusing columns. The recent introduction of Multiphor, the ready-to-use Ampholine® PAG-plates, and the PEGG kit for preparative electrofocusing in granulated gel has extended even further the scope of this very efficient, high resolution, technique.



Isotachophoresis

Kohlrausch's theory of 1897 was turned into simple practice when LKB introduced Tachophor in 1974. This latest and most advanced electrophoretic technique can be used for analysis or preparation on the microscale using Tachophor, a complete separation taking only 20–40 minutes.



For large-scale preparation in polyacrylamide gel, Uniphor should be used.

Gel filtration

The lagging development of gel filtration media has been given a new impulse by the introduction of LKB Ultrogel®. This new medium, a copolymer of polyacrylamide and agarose, gives better resolution and high flow rates. Ultrogel is becoming the gel of choice, especially in the difficult area of serum protein fractionation.

All the equipment you need for gel filtration – columns, Uvicord® UV monitors, Perpex Pumps, UltroRac® and RediRac fraction collectors – is made by LKB.

Ion exchange, affinity and adsorption chromatography

The "adapted gradient technique", using LKB Ultrograd® gradient mixer, gives much improved resolution over ordinary gradient elution. You dictate the shape of the gradient simply by cutting it out on chart paper. Ultrograd produces controlled and reproducible gradients, and to scale-up for preparative work you simply increase the flow rate.

This summary of LKB equipment is necessarily short. Our new 58-page colour booklet "LKB Systems and Methods for Biochemical Research" illustrates all LKB equipment and describes in some detail the methods for which they are used. Our colour poster "Preparative Separation Principles in Biochemistry" is a worldwide attraction: like the booklet you can get a free copy by writing or phoning to us.

LKB

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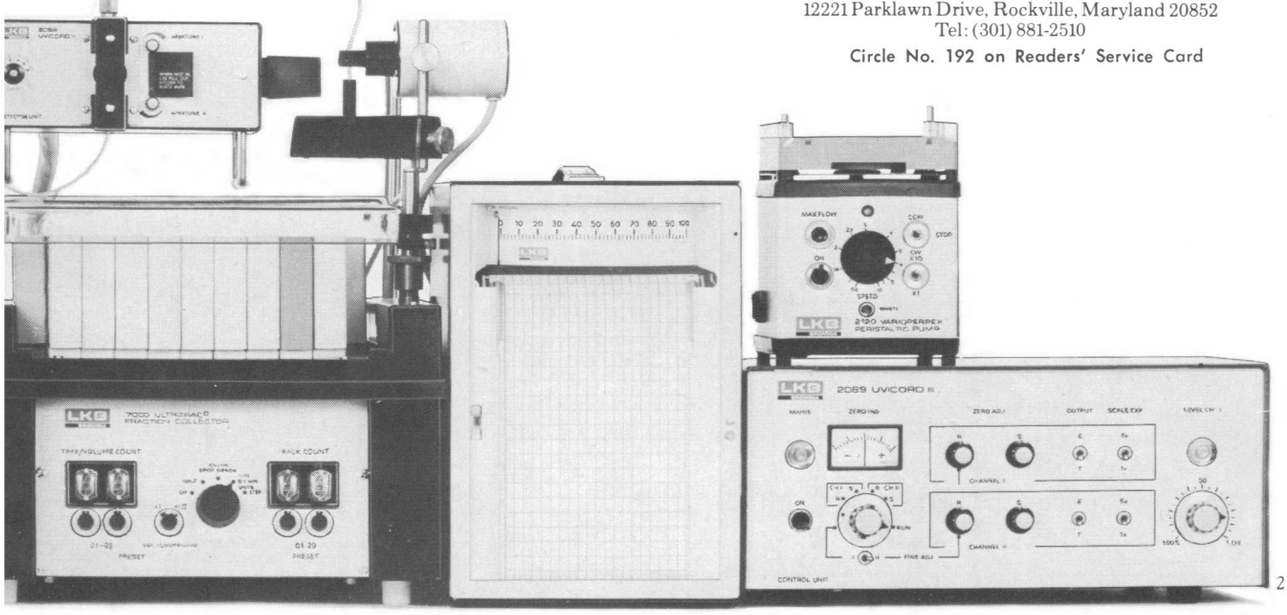

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Volume 198, No. 4322

SCIENCE

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Scanning electron micrograph of reconstituted collagen tape (width of field of view, about 300 micrometers). See page 1164. [E. Banks *et al.*, Polytechnic Institute of New York, Brooklyn, New York]

One of these Perkin-Elmer Fluorescence Spectrophotometers fits *your* need and *your* budget.

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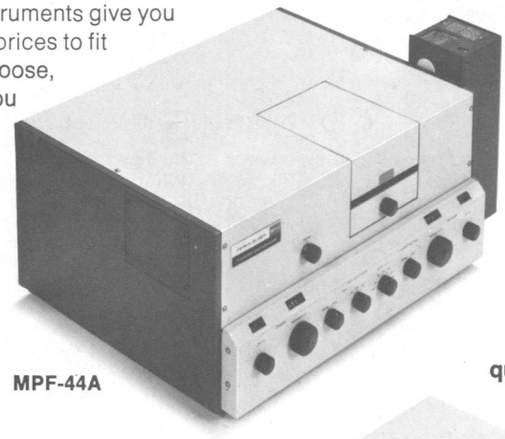
Perkin-Elmer is the place to start when you're considering a spectrophotometer. These four instruments give you a full choice of operating features at prices to fit every budget. And whichever you choose, Perkin-Elmer back-up makes sure you get the results you want.



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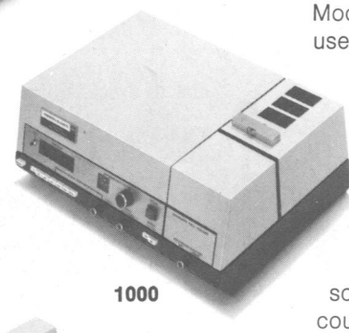
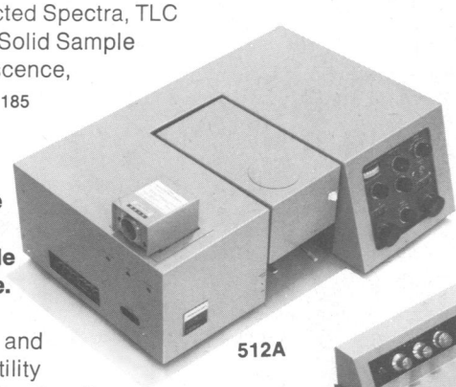


1000



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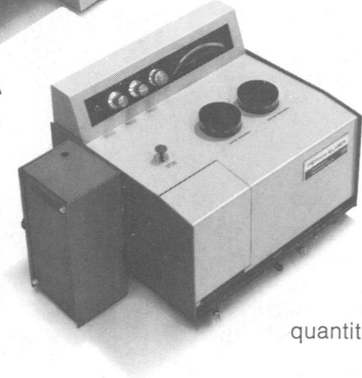
Model 512A: First combined double beam fluorescence and absorption instrument available at a moderate price. The combination of performance, price, and measurement versatility makes it an extremely attractive instrument for a large percentage of uses. Included are routine analytical or quality control work, the need to cancel out fluorescent blanks, the capability of differentiating very small differences between two similar samples, and research work requiring good performance. Circle No. 186



204A

Model 204A: Low priced, routine analytical instrument. For laboratories requiring an instrument to do routine quantitative analysis or quality control work at a lower price, the Model 204A with meter should be considered. For those who have the need to record emission and excitation spectral data at a reasonable price, whether in the routine situation such as in the identification of morphine in toxicology or for the more general application of analytical methods development, the Model 204A with recorder should be considered. Circle No. 187

Model 1000: Low priced, routine quantitative analytical instrument. The Model 1000 is designed to be used primarily in laboratories requiring a small, convenient, precise and stable instrument for performing routine quantitative fluorimetric analyses. Its capability is due in part to a low wattage stroboscopic source of low ozone output, coupled with electronics that automatically integrate many signal measurements, giving a fast, very precise analytical result on built-in digital readout.

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Letters

Human Subjects Research

In reporting a recent investigation by the New York State Department of Health of research involving human subjects at the State University of New York at Albany (SUNYA), R. Jeffrey Smith (News and Comment, 28 Oct., p. 383) cites a series of allegations about the policies and research of the university's psychology department that we consider misleading or incorrect.

First, it should be noted that students in SUNYA's introductory psychology classes are not coerced into experimentation. In addition to having the option of writing a short research paper instead of participating in research, students who do act as subjects have a choice among experiments and can always refuse to participate or can discontinue participation in any experiment with the right to full credit if they merely appear for an appointment. These options have been made clear to students in writing at the beginning of each semester.

Informed consent is a requirement for those studies that involve risk or the production of any discomfort (social, psychological, or physical) that would be greater than that experienced by an individual in his normal everyday life. The guidelines used by the researchers at SUNYA were those developed by the American Psychological Association, which stipulate, among other things, that prospective subjects must be informed of the nature of the discomfort involved. Subjects were told that mild electric shocks would be experienced, that the shocks would be uncomfortable but not painful and could do no permanent harm, and that they (the students) were free to refuse to participate or to discontinue participation at any time during the experiment without prejudice. Oral consent was obtained from each subject and several refused to participate. The regulations of the Department of Health, Education, and Welfare (HEW) and the law in the State of New York require that written consent be obtained. Because the university viewed only government-sponsored research as regulated by HEW guidelines and because no one knew of the existence of the obscure state law (which had not been enforced since its inception in September 1975), the psychology department was guided by the ethics manual published by its professional association. Thus, while technically our consent procedures were not in compliance with either state law or the HEW guidelines, our noncompliance was not intentional and most likely not inconsistent with practices at other universities throughout the United States.

The implication from the cited allegations is that an electric shock apparatus was malfunctioning at the time one experiment was being conducted and that a student could have been killed. There is no evidence that this was the case. The shock apparatus was not, as alleged, taken to an engineer immediately after the experiment was conducted. The study was completed on or about 1 February 1977. A graduate student and an undergraduate are known to have attempted to modify the equipment for another study, and when it completely broke down it was taken to an engineer for repair (on 20 March). The engineer said that *at the time he examined it* a person could, under certain unspecified conditions, suffer a lethal shock. He also said (although it is not reported) that he could not say what state the equipment was in at the time the study was conducted several months before.

Another cited allegation is that a study was conducted by the Albany public schools without the approval of the state health commissioner or the informed consent of the children's parents. It is further reported that there was widespread local criticism of the Albany school board for permitting the experiments. In fact, parental permission was obtained for the study in question. The Albany school board also approved the research and the consent procedures used. It is true that the public health commissioner's approval was not sought, but at that time no one at the university knew of this stipulation in the state law.

Finally, an allegation is cited that the

Congressional Science Fellowships: Child Policy Applications Invited

The American Association for the Advancement of Science invites applications for the sixth year of its Congressional Science Fellow Program. (See *Science*, 2 December 1977, page 918).

The AAAS selects individuals from a broad range of disciplines and science-related professions to spend one year working in some area of Congress, and runs a program for its and other sponsors' Fellows. In the past five years 24 individuals, selected and sponsored by AAAS, have held Congressional Science Fellowships. Each program year includes more than ten other fellows selected by several cooperating affiliated sponsors. To date, 70 people have held such Fellowships. This year the AAAS will make five Congressional Science Fellowship Awards. One unrestricted and four in some area of child and family policy, that is, child development, education, health policy, and so forth.

The award is $16,000 for the period of one year, beginning 1 September 1978, and includes nominal moving and travel expenses. Interested applicants requiring a higher stipend are encouraged to discuss their situation with the program director. The AAAS provides a two-week orientation. Each Fellow chooses his or her own assignment with guidance from the AAAS.

Candidates may apply from any physical, biological or behavioral science or field of engineering, as well as any health-, education-, or child-policy related area. Candidates must be members of the the AAAS or concurrently applying for membership.

Information on the selection criteria, application procedure, and program details are available from **Dr. Richard A. Scribner, Director, AAAS Congressional Science Fellow Program, AAAS, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036.** Deadline for application is 15 March 1978. Announcement of the awards will be made before 1 May 1978.

psychology department had set up its own Ethics Review Committee to monitor research involving human subjects, *in violation of requirements* by HEW and the State of New York. Proper perspective would show that, because there was no overall institutional review process for nonsponsored research at the university, and because the psychology department was concerned that careful professional ethical standards be maintained in all human research, an ethics review process was voluntarily established in 1975. In our view, this was a responsible action by the psychology department, not an attempt to circumvent proper procedure. In fact, had this review process not been in effect, written research proposals, judgments of risk by committee members, and consent and debriefing procedures would not have been available for inspection by the state health department in their recent investigation.

The dispute between the New York State Department of Health and the university has now been resolved. The basic issue all along was the fact that the university did not have a properly constituted institutional review board and that nonsponsored research involving human subjects was not reviewed by the institutional review board. The university has admitted to these violations of state law and has taken all the required steps to remedy the situation.

JAMES T. TEDESCHI
GORDON G. GALLUP, JR.
Department of Psychology,
State University of New York,
Albany 12222

Although Gallup and Tedeschi say that SUNYA psychology students were not coerced into participating in experiments, an instruction sheet provided to the students by the psychology department says, "The majority of the faculty of the Psychology Department would prefer that students choose to participate in research for the following reasons" and then goes on at some length to elaborate on the faculty's position. In the settlement, SUNYA officials admitted that the voluntary consent of the students had not been obtained.—R.J.S.

Protease Inhibitors and Muscular Dystrophy

It was rewarding to have our research on the use of leupeptin in dystrophic muscle mentioned in a recent Research News article on protein degradation by Gina Bari Kolata (11 Nov., p. 596). However, the description of our studies leaves something to be desired. The focus of our research with protease inhibitors has not been to make chicken "muscles get larger," although this is a consequence of the in vivo treatment, but to prevent or inhibit degeneration of muscle tissue, especially in dystrophic cells. This we quite conclusively demonstrated in tissue culture (*1*) and in vivo, as reported at a recent symposium on muscular dystrophy (*2*). It is encouraging that Libby and Goldberg have corroborated our results. As we have suggested, the use of these low-molecular-weight nonimmunogenic protease inhibitors (first described by Umezawa and his coworkers) offers promise not only in the elucidation of the mechanism of protein turnover but also in the treatment of degenerative disorders.

ALFRED STRACHER
Department of Biochemistry,
Downstate Medical Center,
State University of New York,
Brooklyn 11203

References

1. E. B. McGowan, S. A. Shafiq, A. Stracher, *Exp. Neurol.* **50**, 649 (1976).
2. E. B. McGowan, L. Siemankowski, S. A. Shafiq, A. Stracher, in *Pathogenesis of Human Muscular Dystrophies*, L. P. Rowland, Ed. Excerpta Medica, Amsterdam, 1977; available from Elsevier/North-Holland, New York).

Lignite-Fueled Power Plants: Radioactive Emissions

Unless the Texas Utilities Company is planning to surreptitiously operate advanced fission reactors, John Walsh incorrectly implies (News and Comment, 4 Nov., p. 471) that stack releases from lignite-fueled electric generating stations would contain measurable amounts of uranium fission products.

In fact, a study (*1*) of the radiological impact of gaseous effluents from a model coal-fired power plant indicates that radium-226 and radium-228 are the major contributors to offsite population doses. These radium isotopes are *decay* products of uranium-238 and thorium-232, respectively.

ARTHUR E. DESROSIERS
Yankee Atomic Electric Company,
20 Turnpike Road,
Westborough, Massachusetts 01581

References

1. J. P. McBride, R. E. Moore, J. P. Witherspoon, R. E. Blanco, *Radiological Impact of Airborne Effluents of Coal-Fired and Nuclear Power Plants* (ORNL-5315, Oak Ridge National Laboratory, Oak Ridge, Tenn., 1977).

How we fit into

Receptor Site Studies

Steroid Receptor Studies
Dihydrotestosterone, [1,2,4,5,6,7,16,17-^{3}H(N)]-
Dihydrotestosterone, [1,2,4,5,6,7-^{3}H(N)]-
Dexamethasone, [6,7-^{3}H(N)]-
Estradiol, [2,4,6,7,16,17-^{3}H]-
Estradiol, [2,4,6,7-^{3}H]-
Prednisolone, [6,7-^{3}H(N)]-
Progesterone, [1,2,6,7-^{3}H(N)]-
Testosterone, [1,2,6,7,16,17-^{3}H(N)]-
Triamcinolone acetonide, [6,7-^{3}H(N)]-
R5020-^{3}H (manufactured by New England Nuclear under licensed agreement of ROUSSEL UCLAF)

α-Adrenergic Receptor Studies
Dihydroergocryptine,9,10-[9,10-^{3}H(N)]-

β-Adrenergic Receptor Studies
Dihydroalprenolol hydrochloride, *levo*-[*propyl*-2,3-^{3}H]-
Propranolol hydrochloride, DL-[^{3}H(G)]-
Propranolol hydrochloride, *levo*-[4-^{3}H(N)]-

Cholinergic Receptor Studies
Choline chloride, [*methyl*-^{3}H]-
(QNB) Quinuclidinyl benzilate, DL-[*benzilic*-4,4′-^{3}H(N)]-
Tubocurarine chloride, *dextro*-[13′-^{3}H(N)]-

Dopamine Receptor Studies
Dihydroxyphenylethylamine, 3,4-[*ethyl*-1-^{3}H(N)]-
Dihydroxyphenylethylamine, 3,4-[*ethyl*-2-^{3}H(N)]-
Haloperidol, [^{3}H(G)]-
Spiroperidol, [1-*phenyl*-4-^{3}H]-

Amino Acid Receptor Studies
Aminobutyric acid, γ-[2,3-^{3}H(N)]-
Glycine, [2-^{3}H]-

Opiate Receptor Studies
Enkephalin (5-L-methionine), [*tyrosyl*-3,5-^{3}H(N)]-
Enkephalin (5-L-leucine), [*tyrosyl*-3,5-^{3}H(N)]-
Enkephalinamide (2-D-alanine-5-L-methionine), [*tyrosyl-ring*-2,6-^{3}H]-
Dihydromorphine, [7,8-^{3}H(N)]-
Diazepam, [*methyl*-^{3}H]-

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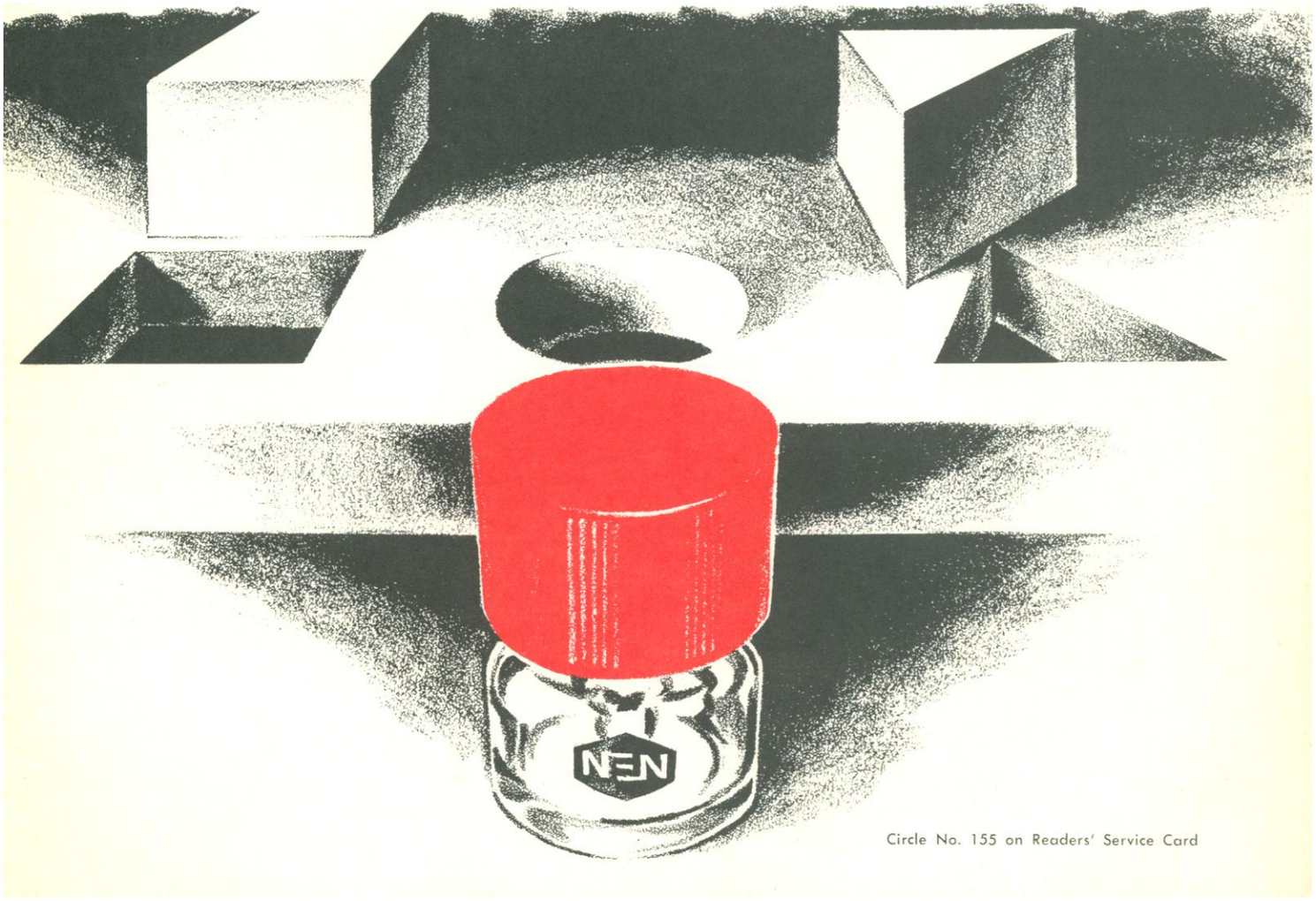

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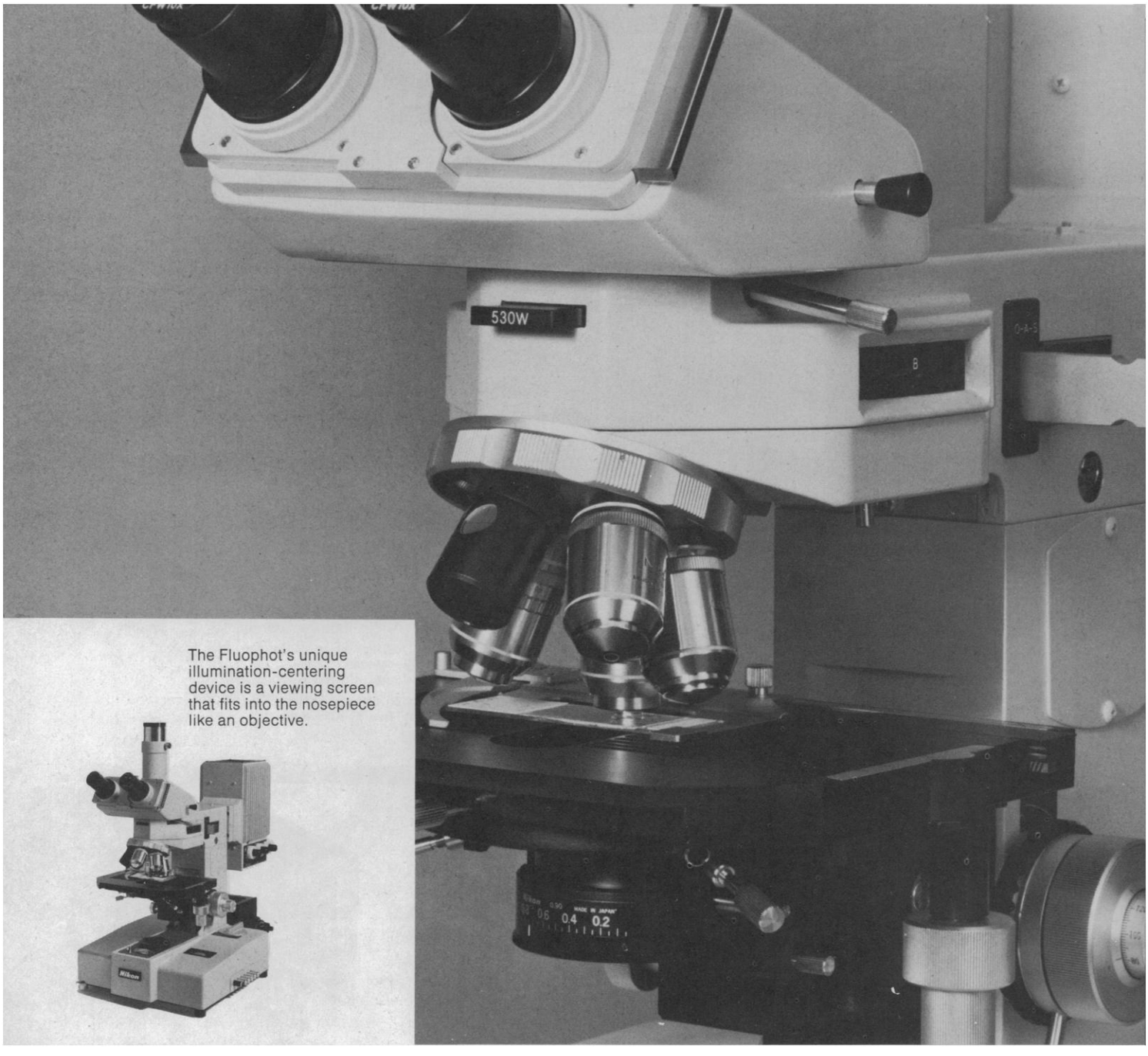

The Fluophot's unique illumination-centering device is a viewing screen that fits into the nosepiece like an objective.

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Do yourself a good turn. See the new Nikon Fluophot. Nikon Inc., Instrument Division, Ehrenreich Photo-Optical Industries, Inc., 623 Stewart Ave., Garden City, N.Y. 11530; (516) 222-0200.

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16 December 1977, Volume 198, Number 4322 **SCIENCE**

Responsibility for Health

Most individuals do not worry about their health until they lose it. Uncertain attempts at healthy living may be thwarted by the temptations of a culture whose economy depends on high production and high consumption. Asceticism is reserved for hairshirted clerics and constipated cranks, and every time one of them dies at the age of 50, the hedonist smiles, inhales deeply, and takes another drink.

Prevention of disease means forsaking the bad habits which many people enjoy—overeating, too much drinking, taking pills, staying up at night, engaging in promiscuous sex, driving too fast, and smoking cigarettes—or, put another way, it means doing things which require special effort—exercising regularly, improving nutrition, going to the dentist, practicing contraception, ensuring harmonious family life, submitting to screening examinations. The idea of individual responsibility flies in the face of American history, which has seen a people steadfastly sanctifying individual freedom while progressively narrowing it through the development of the beneficent state. On the one hand, social Darwinism maintains its hold on the American mind despite the best intentions of the neoliberals. Those who are not supine before the federal Leviathan proclaim the survival of the fittest. On the other, the idea of individual responsibility has given way to that of individual rights—or demands, to be guaranteed by government and delivered by public and private institutions. The cost of private excess is now a national, not an individual, responsibility. This is justified as individual freedom—but one man's freedom in health is another man's shackle in taxes and insurance premiums. I believe the idea of a "right" to health should be replaced by that of a moral obligation to preserve one's own health. The individual then has the "right" to expect help with information, accessible services of good quality, and minimal financial barriers. Meanwhile, the people have been led to believe that national health insurance, more doctors, and greater use of high-cost, hospital-based technologies will improve health. Unfortunately, none of them will.

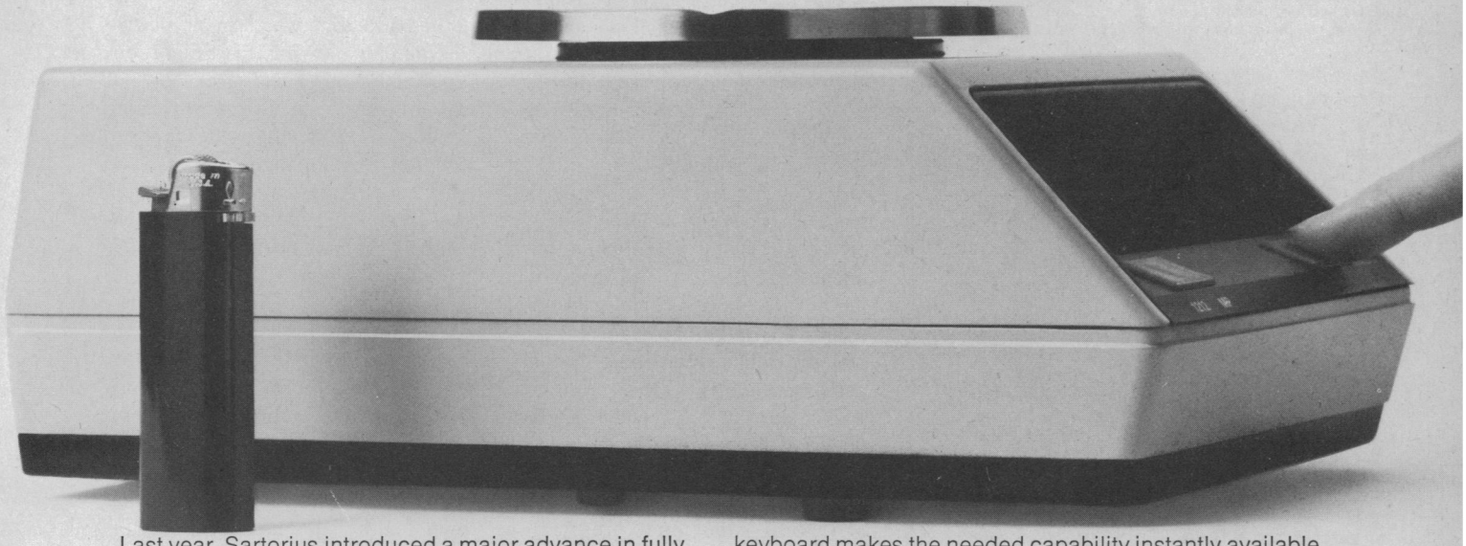
The barriers to the assumption of responsibility for one's own health are lack of knowledge (implicating the inadequacies of formal education, the too-powerful force of advertising, and the informal systems of continuing education), lack of sufficient interest in and knowledge about what is preventable and the cost/benefit ratios of nationwide health programs (implicating the powerful interests in the health establishment, which could not be less interested, and calling for a much larger investment in fundamental and applied research), and a culture which has progressively eroded the idea of individual responsibility while stressing individual rights, the responsibility of society at large, and the steady growth of production and consumption ("We have met the enemy and he is us!").

The individual must realize that perpetuating the present system of high-cost, after-the-fact medicine will only result in higher costs and greater frustration. The next major advances in the health of the American people will be determined by what the individual is willing to do for himself and for society at large. If he is willing to follow reasonable rules for healthy living, he can extend his life and enhance his own and the nation's productivity. If he is willing to reassert his authority with his children, he can provide for their optimal mental and physical development. If he participates fully in private and public efforts to reduce the hazards of the environment, he can reduce the causes of premature death and disability. If he is unwilling to do these things, he should stop complaining about the rising costs of medical care and the disproportionate share of the gross national product that is consumed by health care. He can either remain the problem or become the solution to it; beneficent government cannot.—JOHN H. KNOWLES, *President, Rockefeller Foundation, 1103 Avenue of the Americas, New York 10036.*

*This is adapted from his article in *Daedalus*, vol. 106, page 57 (Winter 1977); reprinted in *Doing Better and Feeling Worse: Health in the United States* (Norton, New York, 1977), page 57.

SARTORIUS DOES IT AGAIN!

Introducing new microprocessor-equipped electronic balances with new capabilities, new add-on data keyboards, and new low (from $1,295) prices.



Last year, Sartorius introduced a major advance in fully electronic weighing with the revolutionary Series 3700 Balances.

This year, Sartorius does it again with its new MP models. These extremely versatile electronic top-loading balances utilize Texas Instruments microprocessors to vastly expand data handling and processing capabilities.

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MP models also provide complete weighings in 1-2 seconds, instant electronic taring, automatic overload protection, a built-in vibration filter, data storage memory, and are available with BCD and analog outputs.

Can you afford to buy a new balance without these capabilities?

When you choose a Sartorious MP model, you have selected a balance that will be quite as advanced tomorrow as it is today. Even if you do not need all its capabilities now, the purchase of the appropriate plug-in keyboard makes the needed capability instantly available any time in the future. Only Sartorius offers this flexibility.

For all their advanced technology, Sartorius MP models, priced as low as $1,295 are significantly less expensive than many other electronic balances without such features. For literature, write: Sartorius Balances Division, Brinkmann Instruments, Inc., Cantiague Road, Westbury, N.Y. 11590.

sartorius

MODEL (Partial Listing)	1205MP	1202MP	1212MP (Dual Range)	3704	3716 (Dual Range)	3713MP (Dual Range)	3802MP
Weighing Range	0-160g	0-300g	0-30g 0-300g	0-1200g	0-120g 0-1200g	0-300g 0-3000g	0-6000g
Readability	0.001g	0.01g	0.001g 0.01g	0.01g	0.01g 0.1g	0.01g 0.1g	0.1g
Price	$2295.	$1295.	$1650.	$2195.	$1995.	$2495.	$3225.

Annual Meeting Washington

12-17 February 1978

Meeting Program — Part II

HOTEL CODES: Sheraton Park . . . SP, Shoreham . . . SA.

The forthcoming AAAS Annual Meeting in February, which will be held here in Washington, contains many symposia of interest in all branches of science and engineering. Those of general interest and of interest in the physical sciences and engineering were listed in the 2 December issue of *Science*. Listed below are the 41 symposia of interest in the biological and social sciences; those in the areas of science policy and education will appear in the 23 December issue.

You may find the full preliminary program in the 4 November issue (pages 489–495) and information about tours and cultural events at the time of the Meeting in the 18 November issue (pages 718 and 719). We urge you to look over this earlier material, as well as the material listed below under the categories of biological sciences, agriculture and food, medicine and health, behavioral science, human development and habitation, and anthropology. Reserve your place at this Meeting; return your housing and registration forms soon; they can be found on pages 1140 and 1141 of this issue.

—ARTHUR HERSCHMAN

7. Biological Sciences

The Physiology of Ions in Muscle and Other Cells (13 Feb., SP): Donnan theory, extracellular osmolarity, developing tissues, muscle fibers, nonosmotic water, contractile dynamics, cardiac myofilaments, reticulum membrane, calcium movement, muscle contraction.

Mary E. Clark, Giuseppe Inesi, Paul J. Paolini, Joseph A. M. Hinke, Robert W. Freel, Carlton F. Hazlewood, Arthur K. Solomon, F. Norman Briggs, John Solaro, Richard J. Podolsky, Elizabeth W. Stephenson, Martin F. Schneider, P. Horowicz.

Some Mathematical Questions in Biology (14 Feb., SA): Random models, optimization models, musical perception, stochastic problems, pattern formation, immune response.

Simon A. Levin, George Oster, Stephen J. Gould, Christopher Longuet-Higgins, Jack D. Cowan, Joseph B. Keller, Peter H. Richter, Alan S. Perelson.

Recombinant DNA, Public Health, and Biomedical Research Policy (15 Fed., SP): Virulence, epidemiology, antibiotic resistance, workers view, industrial hazards, ethics, environmental protection, legislative problem.

Jonathan A. King, Halsted Holman, Richard Novick, George Wald, Wallace Rowe, Luther Williams, Claire Sullivan, Anthony Mazzocchi, Sheldon Krimsky, Ann Neale, Francine Simring, Richard Ottinger, Harlyn Halvorson, Albert Wheeler, Susan Wright.

A Cold Look at the Warm-Blooded Dinosaurs (16 Feb., SP): Endothermy, population structure, parietal-pineal complex, living reptiles, thermoregulation.

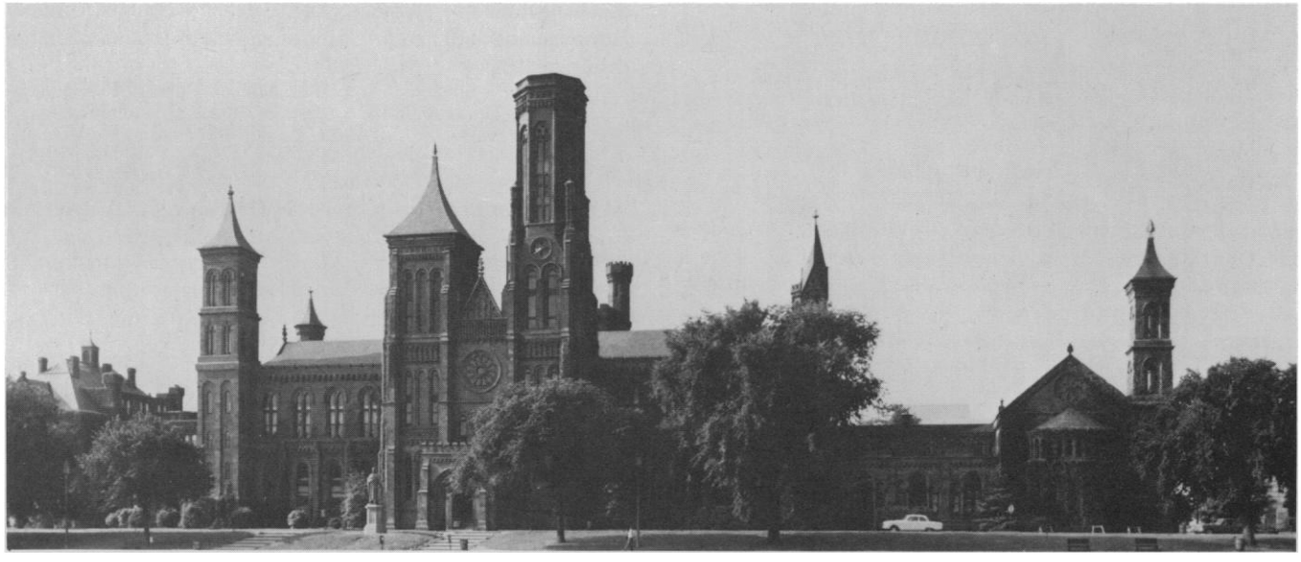
Roger D. K. Thomas, Everett C. Olson, John H. Ostrom, Robert T. Bakker, Jan J. Roth, Neil Greenberg, Nicholas Hotton.

Biological Transformations of Inorganic Nitrogen (17 Feb., SP): Fixation, needs of crops, soil-plant systems, denitrification, micro-organisms, world needs.

Wilber H. Campbell, R. W. F. Hardy, W. J. Payne, E. L. Schmidt, James M. Tiedje.

Threatened and Endangered Species (17 Feb., SP): Legislation, international efforts, ecological stability, economics, conservation and management.

Donald J. Zinn, Michale E. Berger, Patsy T. Mink, Richard W. Dyer, Charles Warren, John Spink.



Smithsonian Institution. This red brick "castle" on the Mall was the first of the great Smithsonian museums. Built in 1846, it now houses administrative offices and an information center. [Washington Area Convention and Visitors Bureau]

8. Agriculture and Food

Nutrition and Agriculture: Strategies for Latin America (13 and 14 Feb., SP): World study, strategies in tropics, Amazon program, agroindustries, Yugoslav experience, vertically integrated agroindustry, Peruvian experience, nutrition planning, Colombian experience, Asian cases, NAS study, case of Chile, research collaboration, malnutrition problems.

Joel Bernstein, Teresa Salazar de Buckle, Miguel Jimenez, D. Gale Johnson, Eduardo Alvarez Luna, Rodolfo Morena Dahme, Martin E. Piñeiro, Charles H. Wood, Marianne Schmink, Sterling Wortman, Almiro Blumenschein, Ernesto Cruz, Edward Pastucha, Alexander Grobman, Juan Sala, Raymond Goldberg, Agide Gorgatti Netto, Tomas Uribe, David Gwatkin, Sol H. Chafkin, Martin Forman, Giorgio Solimano, Peter Hakim, Robert Klein, Antonio Carlos Campino, Werner Jaffe, Victor Horcasitas, Benjamin F. Buchanan, Harrison Brown, Theresa Tellez Brown, Peter R. Jennings, Jackson A. Rigney, Jose E. Araujo Goncalves.

Food Production and Energy: Present Status and Future Alternatives (14 Feb., SP): Energy use, needs, resources, fuels, engines.

Bill A. Stout, Bruce A. McKenzie, Earle E. Gavett, Gary H. Heichel, William C. Burrows.

Future Production and Consumption of Meat (15 Feb., SP): Production without grain, genetic improvement, value of meat, residues, saturated and unsaturated fats.

Clair E. Terrill, C. Wayne Cook, Gordon E. Dickerson, P. Vincent J. Hegarty, Thomas H. Jukes, Raymond Reiser.

The Question of Meat (15 Feb., SP): Nutrition, health, economic, ethical cases for and against.

Alex Hershaft, George V. Mann, John A. Scharffenberg, Richard E. Lyng, James B. Mason, Carol T. Foreman.

New Agricultural Crops (16 Feb., SP): Ancient crops, guayule, winged bean, jojoba.

Gary A. Ritchie, Richard S. Felger, Noel D. Vietmeyer, Christine A. Newell, Theodore Hymowitz, LeMoyne Hogan.

Public Support for Agricultural Research and Extension Education: Evaluation of Benefits from Public Investments (16 Feb., SP): Issues and priorities, funding obstacles, returns to investment, projections of productivity.

B. R. Eddleman, James Nielson, J. B. Cordaro, Willis L. Peterson, Yao-Chi Lu.

Pesticides: Role in Agriculture and the Environment (17 Feb., SP): Increasing and stabilizing production, socioeconomic impacts, energy utilization, the environment, human health, pest management.

David Pimentel, T. J. Sheets, Fred H. Tschirley, Gerald A. Carlson, Eddy L. LaDue, John H. Berry, John L. Buckley, William F. Durham, L. D. Newsom.

9. Medicine and Health

Prevention of Genetic Disease and Developmental Disabilities (13 Feb., SA): Screening, heterozygote experience, alpha-1-antitrypsin deficiency, Duchenne muscular dystrophy, chromosomal disorders, neural tube defects, hemoglobinopathies.

Tamah L. Sadick, Siegfried M. Pueschel, Barton Childs, Robert Guthrie, Charles R. Scriver, Richard C. Talamo, Marie-Louise E. Lubs, Cecil B. Jacobson, Aubrey Milunsky, Maurice J. Mahoney, David G. Nathan.

Social Acceptance of Preventive Dentistry Programs (14 Feb., SA): Programs in United States and abroad, economic analysis, social factors.

Donald B. Giddon, Richard D. Mumma, Jr., Myron Allukian, Jr., Paul J. Feldstein, Albert F. Wessen, Stephen F. Kegeles, John C. Greene.

Pharmacology on the Firing Line (14 Feb., SA): Current role, human research, cancer therapies, Delaney amendment, addictive disorders.

Lowell M. Greenbaum, Sorell L. Schwartz, Joseph R. Bertino, John Doull, Jerome H. Jaffe.

Assessing the Contributions of the Social Sciences to Health (15 Feb., SA): Demographic methods, health and fertility, industrialization, political and economic organizations, medical education, cultural and environmental factors, psychosocial factors, health services.

M. Harvey Brenner, John Radcliff, Nathan Keyfitz, John F. Kantner, Peter Kong-Ming New, Jude T. May, Ellen Greenberger, Stanley J. Reiser, Nancie L. Gonzalez, William Schofield, James R. Greenley.

Solving the Riddle of Cancer: Role of the Physician (16 Feb., SA): Alert physician, skilled observer, basic scientist, multidisciplinary approach.

Albert B. Lowenfels, Thomas S. Cottrell, Joseph F. Fraumeni, Jr., Judah Folkman, John H. Weisburger.

Statistics and Environmental Factors in Health (16 Feb., SA): Workers exposed to ionizing radiation, carcinogenic risk, carcinogen bioassay data.

Alice S. Whittemore, Ethel S. Gilbert, Ronald E. Wyzga, David G. Hoel, Kenneth C. Chu, Bernard Altshuler, Lincoln E. Moses.

10. Behavioral Science

The Relationship Between the Health-Care Environment and Human Behavior (13 Feb., SA): Color in medical facilities, innovations in design, less stressful environment, recycling hospital space.

Devra Lee Davis, Brian Pierman, Alexander F. Styne, Gloria Weissberg, Peter Bourne, Aristide H. Esser, Larry Plumlee, Vilma Hunt, Lorenz K. Y. Ng.

Language Rehabilitation in Aphasia: An Examination of the Process and Its Effects (13 Feb., SA): Speech and language therapy, behavioral events, communicative ability, melodic intonation therapy.

Christy L. Ludlow, Robert T. Wertz, Robert H. Brookshire, Audrey Holland, Nancy A. Helm.

Brain and Behavior: Mechanisms of Perception, Learning, Memory, and Attention (14 Feb., SA): Visual system, cortical mechanisms, tecto-pulvinar system, eye movements, volitional movement, directed attention, focal brain lesions, memory disorders.

Donald B. Lindsley, Leo M. Chalupa, Robert W. Rhoades, James M. Sprague, Mark A. Berkley, Irving T. Diamond, Robert H. Wurtz, Edward V. Evarts, Vernon B. Mountcastle, Norman Geschwind, Marek-Marsel Mesulam, Brenda A. Milner.

New Light on Leadership Processes (15 Feb., SA): Leadership training, role-making processes, dynamics, path-goal and charismatic theories.

Edwin P. Hollander, Edwin A. Fleishman, Martin M. Chemers, George Graen, Robert J. House, Martin G. Evans.

Executive Development and Stress from the Psychoanalytic Point of View (15 Feb., SA): Developmental roots, executive functioning, maternal identification.

Louis A. Gottschalk, Gene Gordon, Albert J. Solnit, George H. Pollock, James Barber, Reginald Lourie, Thomas E. Bryant.

Humanization of Assessment: A Cybernetic Approach to Mental Health (16 Feb., SA): Human resource development, information systems, conceptual complexity, family therapy, program evaluation.

Mark N. Ozer, Frank Baker, Harry P. Cain, Curtis P. McLaughlin, Eugene Lasky, Edward J. Kelty, Mary Davis Moore, William Hogg, Murray Levine.

Culture and Science: Comparative Receptions of Psychoanalysis in Western Countries (17 Fed., SA): Germany, France, England, Netherlands, Spain.

John C. Burnham, Hannah S. Decker, Nathan G. Hale, Stephen Y. Wilkerson, Ilse N. Bulhof, Thomas F. Glick.

Cocaine (17 Feb., SA): History, medicines, neurophysiological models of psychosis, federal policy, drugs and culture.

Lester Grinspoon, David F. Musto, Andrew T. Weil, Robert M. Post, Peter G. Bourne, James B. Bakalar.

11. Human Development and Habitation

Aging from Birth to Death (13 Feb., SA): Cognitive and intellectual functioning, stressful events, social support, the life cycle, sources of change, transition to adulthood, demographic change, inflation, unemployment, aging in America.

Matilda White Riley, Paul B. Baltes, Sherry L. Willis, Melvin L. Kohn, Carmi Schooler, Bruce P. Dohrenwend, John M. De Figueiredo, Robert L. Kahn, Sidney Cobb, Anne Foner, David I. Kertzer, Halliman H. Winsborough, Peter Uhlenberg, James N. Morgan, Theodore J. Gordon.

Emotional Development in Infants (14 Feb., SA): Emerging models, maternal behavior, perception, cognition and emotion.

David Pearl, Robert N. Emde, Mary D. Salter Ainsworth, Joseph J. Campos, L. Alan Sroufe, Richard Q. Bell.

The Life Cycle: Development in the Middle Years (14 Feb., SA): Post-parental period, personality development, mid-life transition.

Daniel J. Levinson, Robert A. LeVine, David L. Gutmann, Florine B. Livson.

The Extended Family in the Postindustrial Society (16 Feb., SA): 21st century, the market and the budget, household school, familiar groups.

David P. Snyder, Carol Stack, Kenneth E. Boulding, Winifred I. Warnat, Gregg Edwards, Margaret Mead.

Families in the Metropolis: Emerging Concerns in Urban Housing (16 Feb., SA): Housing quality, publicly assisted housing, preference and selection, quality of family life.

Harvey M. Choldin, Sandra C. Howell, Sue Weidemann, Guido Francescato, James R. Anderson, Amos Rapoport, Patricia Klobus-Edwards, John N. Edwards, Alan Booth.

The Aged in Families (17 Feb., SA): Perspectives on caring, historical role, aged parents, federal role.

Norman Metzger, Robert N. Butler, David F. Musto, Jane Otten, Robert M. Ball.

12. Anthropology

The Viability of the Village in Contemporary Society (13 Feb., SA): Middle East, India, Southeast Asia, human development, Sahelian, Hungarian, renewable energy, education.

Priscilla Reining, Barbara Lenkerd, Daniel G. Bates, Charlotte V. Wiser, Clive Bell, Michael Maccoby, Francis P. Conant, David Shear, Conrad C. Reining, James W. Howe, John Simmons, Margaret Mead.

Fertility Decline in the Less-Developed Countries: The Emerging Patterns (14 Feb., SA): Quantitative analysis, historical perspective, middle-class and poor, health programs and fertility, People's Republic of China, government policy, population, food intake, child rearing, income distribution.

Nick Eberstadt, W. Parker Mauldin, Maris H. Vinovskis, Nathan Keyfitz, Susan C. M. Scrimshaw, Richard Tabors, John Aird, William Petersen, Rose E. Frisch, Moni Nag, Robert C. Repetto.

Keystones of Culture: The Discovery of Culturally Specific Behavior Patterns Through Research Film Analysis (15 Feb., SA): Phenomenological inquiry, visual data, Pashtoun society, Canela Indian, Micronesia.

E. Richard Sorenson, William H. Crocker, Asen Balikci, Steven C. Schecter, M. Michael Maloney.

Emergence of Language: Continuities and Discontinuities (16 Feb., SA): Comparative psychology, sign language, neural mechanisms, man and animals.

Stewart H. Hulse, A. Noam Chomsky, William C. Stokoe, Doreen Kimura, Beatrice T. Gardner, R. Allen Gardner.

An Account of the Auditory Mode: Man versus Ape (16 Feb., SA): Ephemerality, do apes talk, sound and thought, spoken word.

Frank E. X. Dance, William Work, Ralph B. Thompson, Philip Lieberman, Walter J. Ong.

Public Anthropology (17 Feb., SA): Development, social impact, federal government, archeological experience.

Bela C. Maday, Laura Nader, D. Glynn Cochrane, John H. Peterson, Sue-Ellen Jacobs, Lucy M. Cohen, Charles R. McGimsey III, Peter Kong-Ming New.

Indians of the Eastern United States (17 Feb., SA): Integrity and continuity, federal relationship, other Indians, non-Indian neighbors, injustice.

Sam Stanley, Robert K. Thomas, Stephen Feraca, Vine Deloria, Jr., John Stevens, Susan Stevens, Thomas Tureen, Sol Tax.

Annual Meeting Washington
12-17 February 1978

Advance Registration Form (D)

ENCLOSED IS:

AAAS Member: ☐ $24 Single Registration Fee ☐ $36 Double Registration Fee (attendant and spouse)

Non-Member: ☐ $30 Single Registration Fee ☐ $42 Double Registration Fee (attendant and spouse)

Student: ☐ $12 Single Student Registration Fee ☐ $18 Double Registration Fee (student attendant and spouse)

Non-Member applying for AAAS membership* and meeting registration: (Annual membership dues include 52 issues of SCIENCE. Double membership—individual and spouse—includes one subscription to SCIENCE.)

☐ $52 Single Registration and Membership ($24 registration and $28 dues)

☐ $64 Double Registration and Single Membership (name of applicant _____) ($36 registration and $28 dues)

☐ $76 Double Registration and Membership ($36 registration and $40 dues)

*These rates apply to USA membership only. Inquire for Canadian or Foreign rates.

Program and badge will be mailed to each registrant in mid-January.
Registrations received after 20 January will be held at the AAAS Information Booth.

NAME OF REGISTRANT: _____
(Last Name) (First and Initial)

NAME OF SPOUSE REGISTRANT: _____
(Last Name) (First and Initial)

REGISTRANT'S MAILING ADDRESS: _____
[For receipt of program(s), badge(s), and SCIENCE (for new applicants)] (Street)

_____
(City/State) (Zip Code)

ADDITIONAL REGISTRANTS: _____
(With same mailing address. Use new form if address differs)

_____

REGISTRANT'S INSTITUTION OR COMPANY: _____

_____ _____ _____
(City) (State) (Zip Code)

Check days attending: Sun ☐ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☐

CONVENTION ADDRESS: _____
(Where you can be reached) (Hotel or Street Address)

Note: Special one-day attendance registration is available at the Meeting Registration Desks ($12 regular, $6 student).
A book containing the abstracts of the Meeting papers will also be available at the Registration Desks at an additional charge of $5.

☐ **Please check here if you need special services due to handicap. We will contact you prior to the meeting.**

Mail to: American Association for the Advancement of Science, Dept. R,
1515 Massachusetts Ave., NW, Washington, D.C. 20005

SURVEY OF ATTENDANTS
Annual Meeting, Washington, 12–17 February 1978

Your answers to the following questions will help us in planning future AAAS Annual Meetings. Please complete the following form and either return it with your registration form or send in separately (to the same address) if you wish to respond anonymously (in any case, the two forms will be processed separately).

Principal Professional Interest
11 ☐ Physical, mathematical
12 ☐ Biological, medical
13 ☐ Engineering
14 ☐ Social, behavioral
15 ☐ Science policy
16 ☐ ..... (other)

Principal Professional Activity
21 ☐ Teaching, education
22 ☐ Health practice
23 ☐ Other practice, consulting
24 ☐ Research, development
25 ☐ Administration
26 ☐ ..... (other)

Institutional Affiliation Type
31 ☐ University, 4-year college
32 ☐ Other educational
33 ☐ Industrial, commercial
34 ☐ Other private
35 ☐ Government
36 ☐ ..... (other)

Highest Educational Level
41 ☐ Doctoral Degree
42 ☐ Master's Degree
43 ☐ Other professional
44 ☐ Bachelor's Degree
45 ☐ ..... (other)

Age
51 ☐ Under 26 years
52 ☐ 26 to 35 years
53 ☐ 36 to 45 years
54 ☐ 46 to 55 years
55 ☐ 56 to 65 years
56 ☐ Over 65 years

Distance Traveled to Meeting
61 ☐ Under 51 miles
62 ☐ 52 to 150 miles
63 ☐ 151 to 400 miles
64 ☐ 401 to 1000 miles
65 ☐ 1001 to 3000 miles
66 ☐ Over 3000 miles

Last AAAS Meeting Attended
71 ☐ 1972 in Washington
72 ☐ 1973 in Mexico City
73 ☐ 1974 in San Francisco
74 ☐ 1975 in New York
75 ☐ 1976 in Boston
76 ☐ 1977 in Denver

Hotel Reservations

Room Rates*

Annual Meeting
Washington
12-17 February 1978

The 144th National Meeting of the American Association for the Advancement of Science will be held in Washington, DC, 12–17 February 1978. Symposia, contributed paper sessions, and all other Meeting activities are scheduled in the Sheraton-Park (headquarters) and Shoreham Americana hotels. Both hotels will have AAAS registration and information desks and provide housing at the following convention rates:

Hotel	Single	Double	Twin	Suites**	Parking
SHERATON-PARK *(Headquarters)*	$32	$42	$42	$85	$2.60 for daytime parking.
2660 Woodley Road, N.W.	35	45	45	and up	$3.60 per 24 hrs. (*inquire at the*
(No. of rooms held: 1000)	38	48	48		*Front Desk about in and out*
	40	50	50		*privileges*).
SHOREHAM AMERICANA	$30	$40	$40	$70	$3.00 per 24 hrs. (*with in and*
2500 Calvert Street, N.W.				and up	*out privileges*).
(No. of rooms held: 600)					

STUDENT RATES: Both the SHERATON-PARK and SHOREHAM AMERICANA hotels have provided these special room rates for students:

Triple occupancy: $15 per person; **Quadruple occupancy:** $12 per person

Only prearranged groups of 3 or 4 students with the same arrival and departure dates qualify for these special rates. All names must appear on the Hotel Reservation Form.

*Per day; add 8% D.C. sales tax. Charge for additional person in room, $10; rollaway beds or cots, $10 (both hotels.) Children accommodated free in same room with parents: Sheraton-Park, age 18 and under; Shoreham-Americana, age 14 and under.

**Lowest available rate for one-bedroom/parlor suites; rates for larger suites available on request.

NOTE: If room rate specified is not available, the next available higher rate will be assigned. Confirmation will come to you directly from the hotel. Please make all reservation changes and cancellations through the Housing Bureau *in writing*. Room assignment will be delayed if any information is omitted from the Hotel Reservation Form.

HOTEL RESERVATION FORM

Please type or print

Reservations received after 20 January cannot be assured.
The Housing Bureau will not accept any reservations by telephone.

CHOICE OF HOTEL: First _____ Second _____

ROOM: ☐ Single ☐ Double ☐ Twin **SUITE:** ☐ 1 Bedroom ☐ 2 Bedrooms **PREFERRED RATE $** _____

STUDENTS: ☐ 3 persons per room ☐ 4 persons per room

Please indicate any special housing needs due to a handicap: _____

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ARRIVAL: Date _____ ; _____ a.m. _____ p.m.

DEPARTURE: Date _____ ; _____ a.m. _____ p.m.

Be sure to list definite arrival and departure date and time. Hotel reservations will be held only until 6 p.m. unless otherwise specified. Check out-time is 1:00 p.m. at both hotels.

NAMES AND ADDRESSES OF ALL OCCUPANTS OF ROOM

Name _____ Name _____

Address _____ Address _____

City _____ State _____ Zip _____ City _____ State _____ Zip _____

Name _____ Name _____

Address _____ Address _____

City _____ State _____ Zip _____ City _____ State _____ Zip _____

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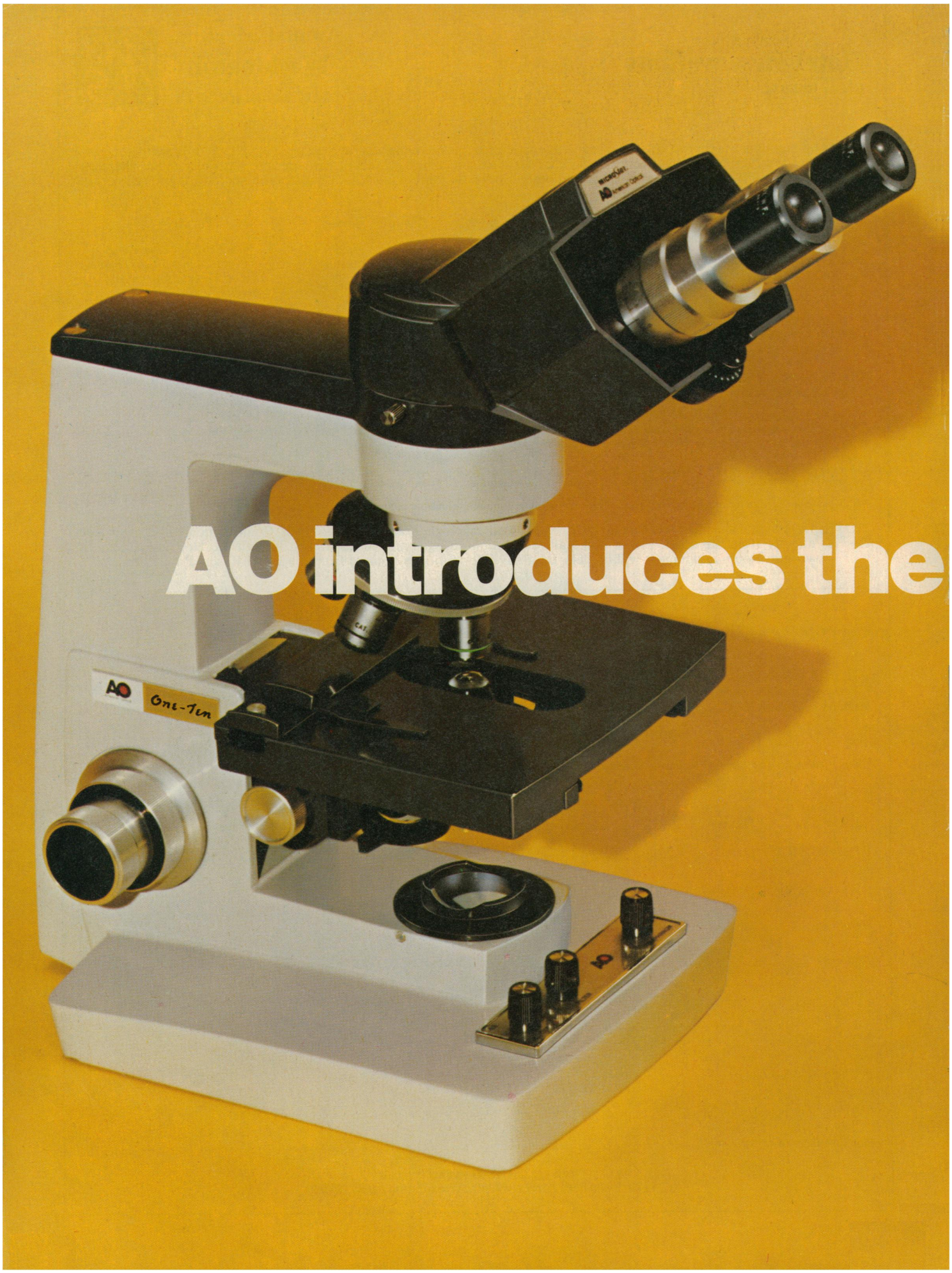
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