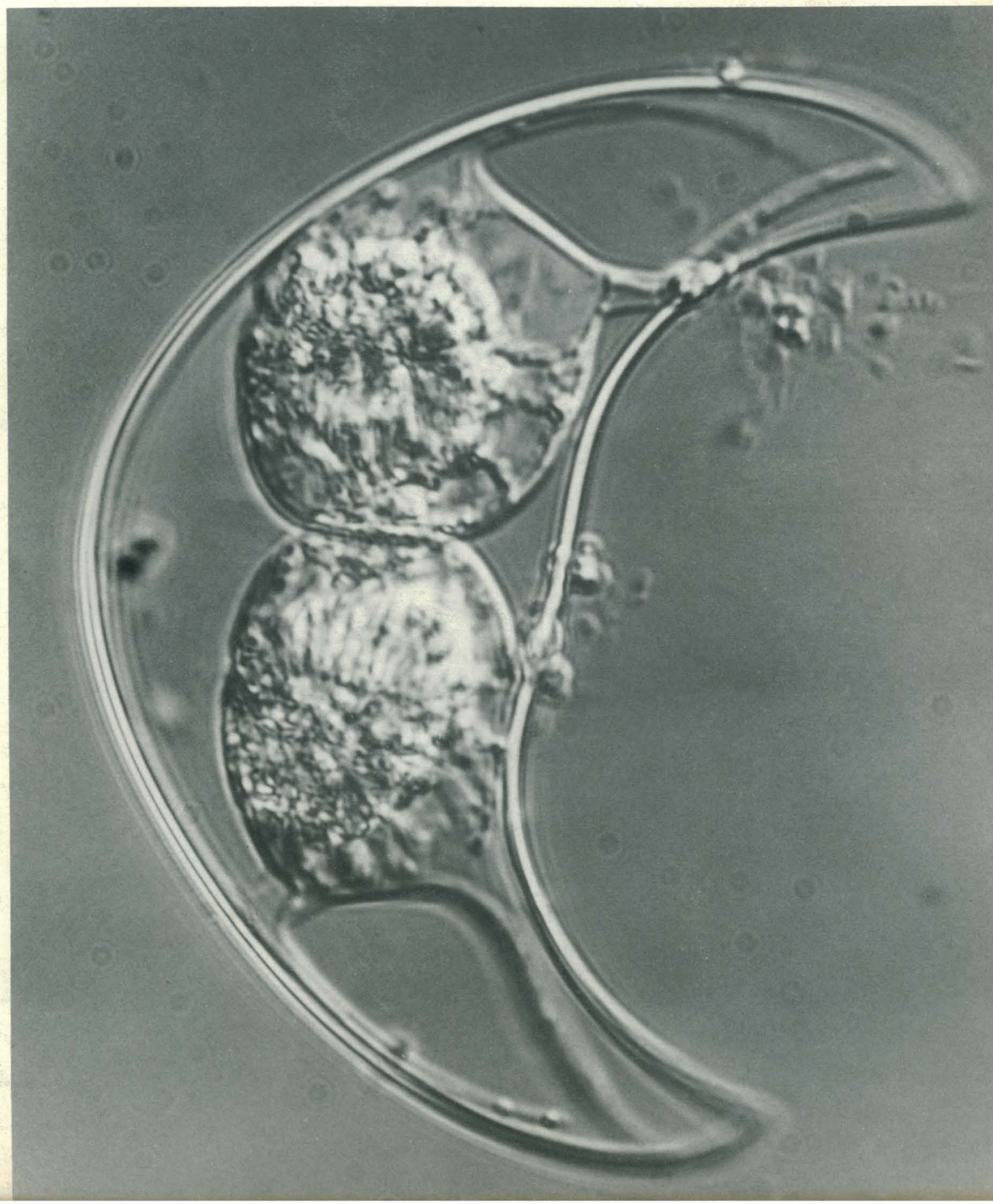
SCIENCE

8 September 1972

Vol. 177, No. 4052

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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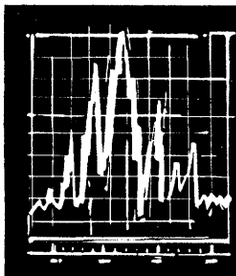
L-Methionine-D or ^{13}C
L-Aspartic Acid-^{15}N

(partial list only)



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SCIENCE

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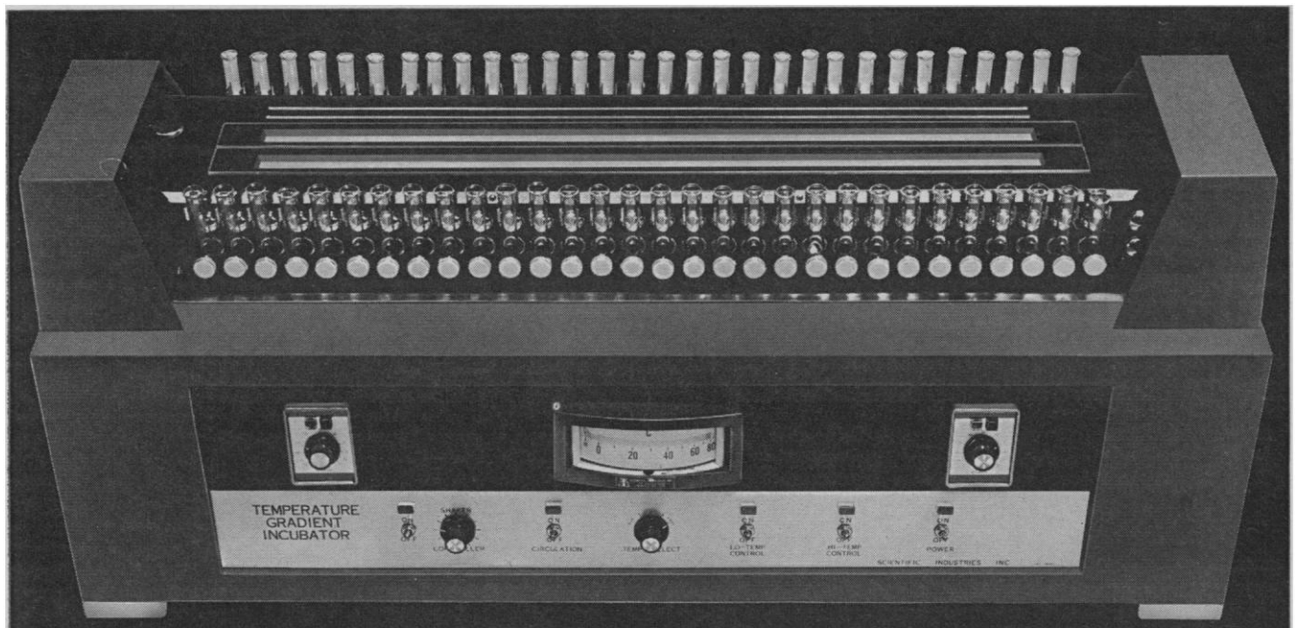
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Nonmotile vegetative cell (in culture) of the bioluminescent marine dinoflagellate *Pyrocystis lunula* reproduces asexually by forming motile reproductive cells (swarmers) from the parent cell protoplast. Two developing swarmers (cover), upon maturation, are released from the cyst and quickly develop into lunate vegetative cells (actual size, 120 micrometers). See page 884. [E. N. Moudrianakis, Johns Hopkins University]



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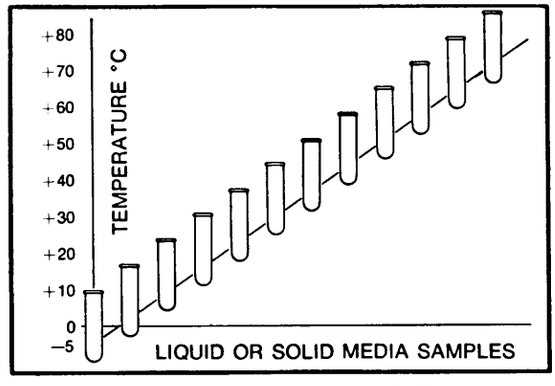

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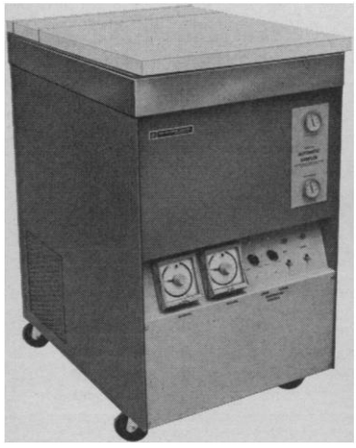

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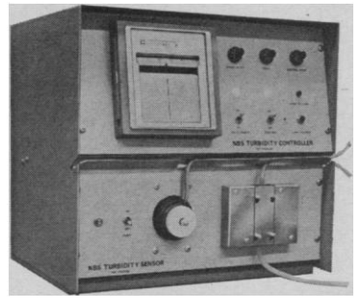
Periodic, round-the-clock sampling of cell suspension and other biological solutions can now be achieved on an automatic basis without operator supervision. Samples are rapidly chilled and maintained at low temperature to halt metabolism and other reactions.

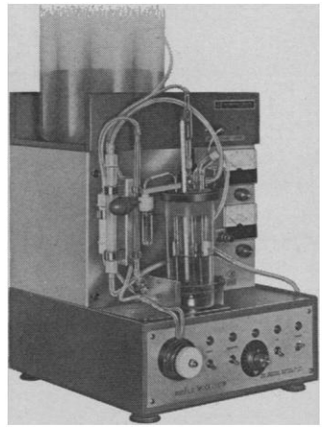


TURBIDITY CONTROLLER

The NBS Turbidity Controller is a precision instrument for continuous monitoring and control of microbial density and cell dry weight values in aqueous systems. This bench top unit is readily integrated with most fermentation equipment and chemical reactors.

BENCH-TOP CHEMOSTAT

The BioFlo is a 350 ml chemostat, fully equipped for expanding the study of microbial physiology in growing cell populations. Every essential component is supplied--from the feed, harvest and culture vessels to the tubing clamps and filters. A full range of instrumentation is available for control of agitation, aeration, temperature and substrate addition.



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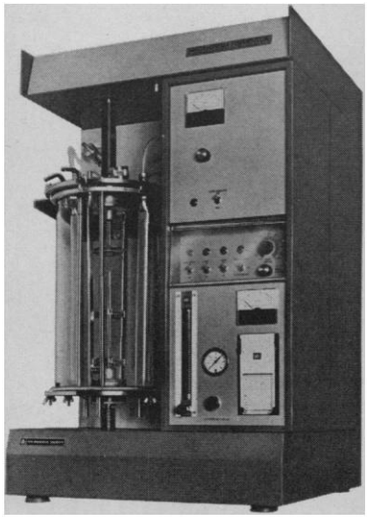

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The cap does the rest—*automatically* chooses the optimized program that's right for your samples.

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The program selector cap is also an integral part of the Mark II™ Liquid Scintillation System. The 300-sample, cooled system with maximum performance and versatility.

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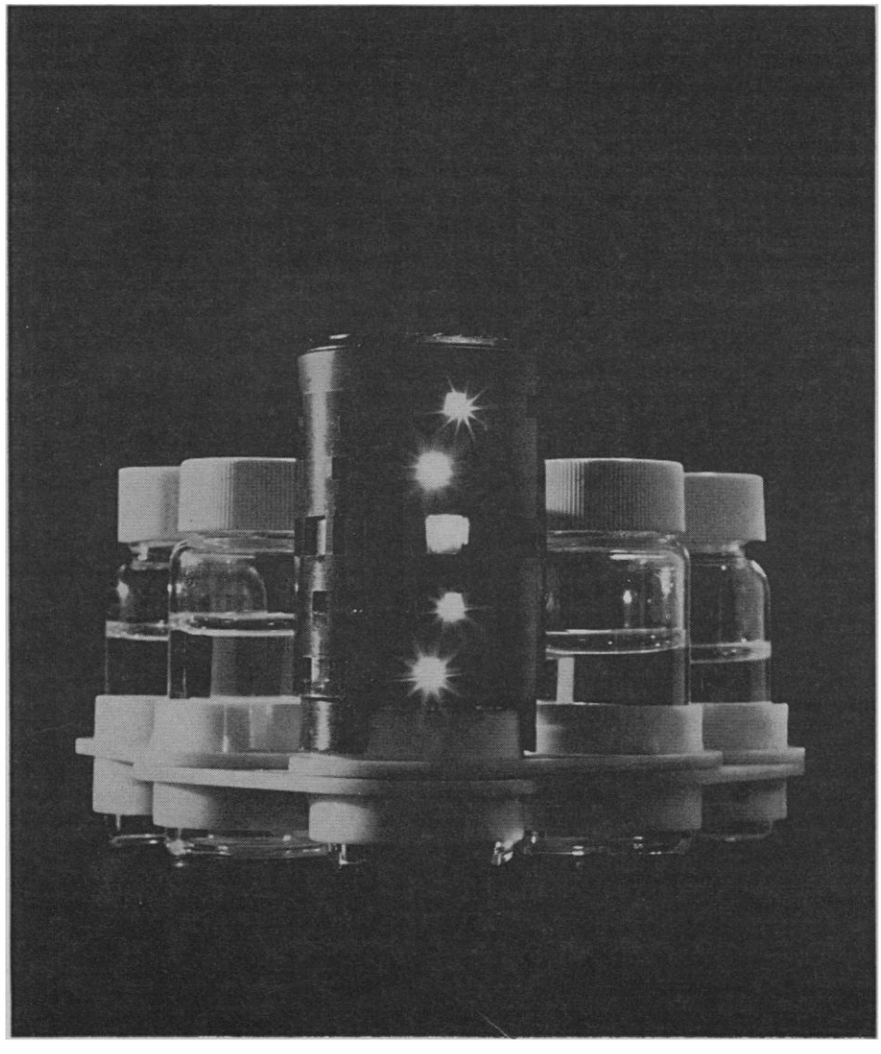

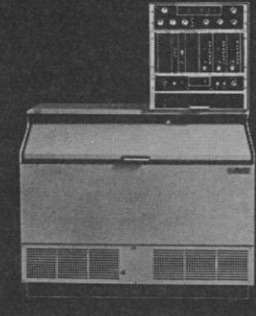

The Mark II
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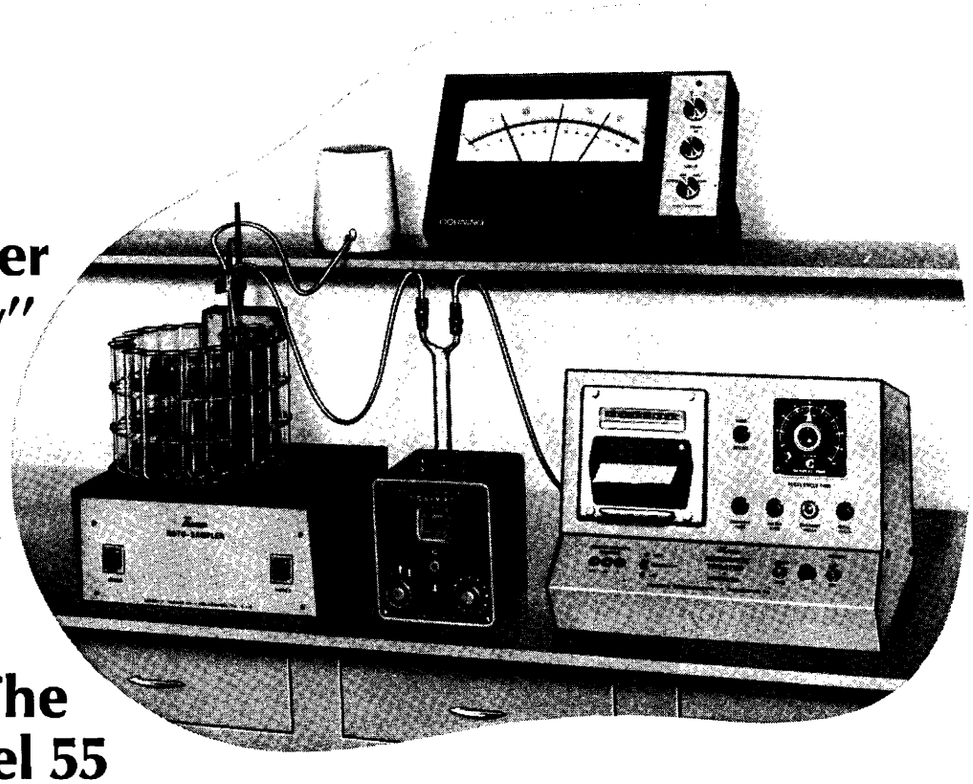
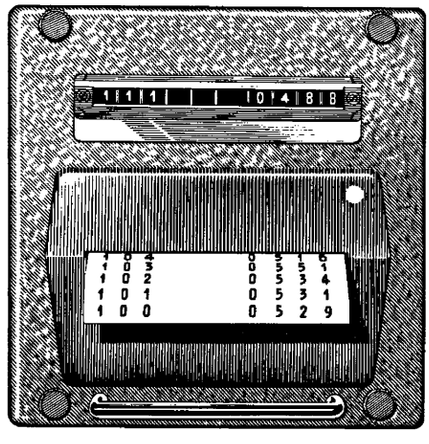
Another "walk-away" winner from *Thomas*



The Model 55 AUTOMATIC PRINTOUT TITRATOR

Walking away from a task CAN mean getting it done—with Thomas "walk-away" products like the Model 55 Titrator, the kind of instruments that release an analyst from repetitive, mechanical chores—to do more important work.

The job here is to do 20 titrations as quickly as possible, with high precision and absolute uniformity of endpoint.



Sample number and titration results issue on tape as shown above. The digital register indicates the same information for sample last titrated and indicates progress of the series.

The way to do it is to load the sample rack, push the button and walk away.

The Model 55 starts titrating Sample No. 1, and does not stop until it finishes Sample No. 20. All samples are titrated to same endpoint; within ±0.02 pH unit or ±0.5 mv. Titrant volume for each sample is recorded, with sample number, on paper tape printout. Volumes are printed to nearest 0.01 ml, between 00.00 and 09.99 ml, sample numbers as 3 digits between 000 and 999.

The Model 55 uses 50 ml test tubes as titration vessels —they're cheaper, easier to clean and store than beakers. The high precision of the 10 ml buret saves expensive standardized reagents; you are now probably using three times as much.

If you think you are locked-in on "standard" methods, methods which specify sample volumes and titrant minima imposed by limitations of out-dated volumetric glassware and visual endpoint determination, we'll be glad to show you how you can enjoy the benefits of our "walk-away" titrator without loss of analytical accuracy. Please ask us.

If you are wondering about cost, we think you'll find that the price of the complete Model 55 Titrator is less than the annual cost of 50 manual titrations per day in your laboratory. Ask us about this, too.

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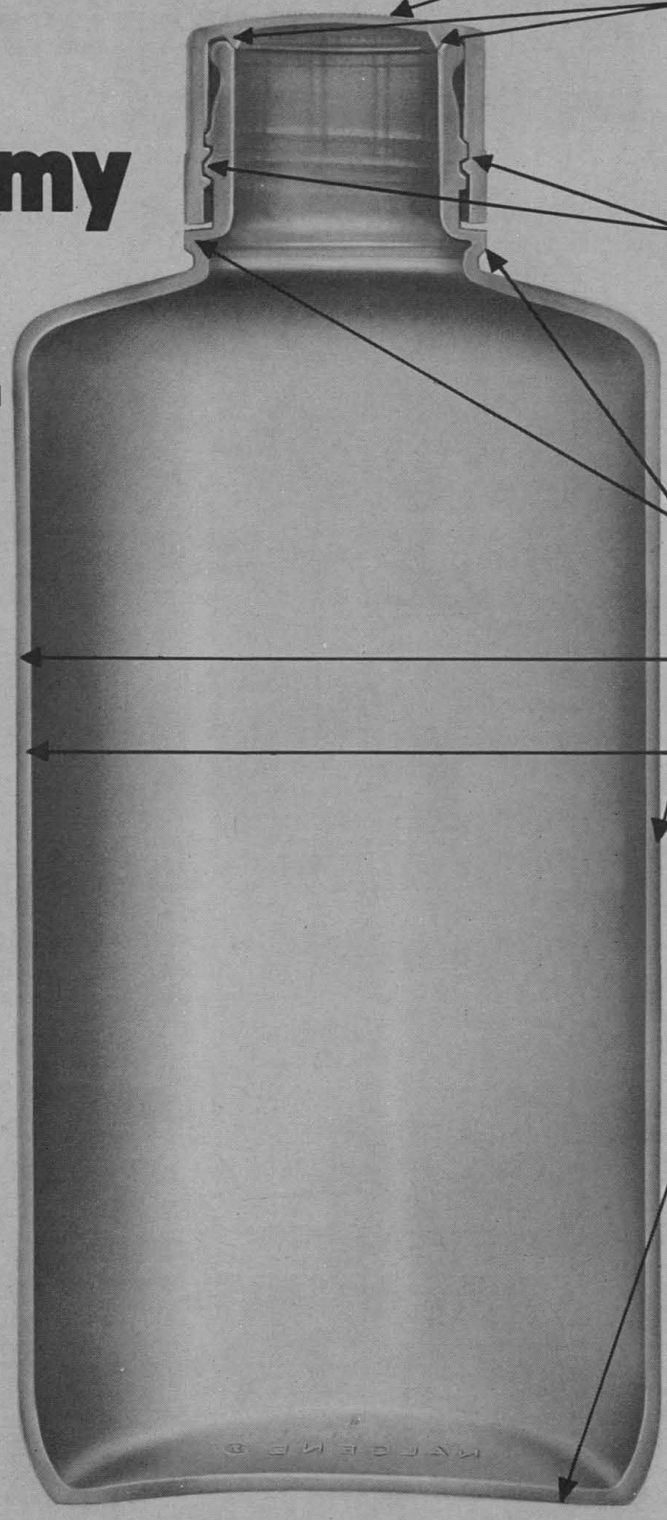
The Anatomy of a Bottle.

We'll do almost anything to convince you to buy our bottles.

We'll even bare their anatomy.

Once you look into it, it's quite simple. The Nalgene® lab bottle is *engineered* to work with its closure as a system.

You already know Nalgene plastic bottles are unbreakable. Now we'll show you how we design and make them leakproof, non-contaminating, easy to clean, long lasting and convenient to use. In short—why Nalgene bottles are the very best you can buy.



Closure is tough, one-piece, autoclavable polypropylene.

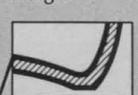
Seal ring, molded inside the closure, fits tightly against the beveled inner edge of the bottle neck as the closure is tightened—*makes the Nalgene bottle totally leakproof.* No need for closure liners that wear, leak and cause contamination.

Threads on Nalgene bottles and closures are continuous and deeper than you'll find on any other bottles—plastic or glass. This greater contact area permits twice as much tightening force against the seal ring. You can't snap Nalgene threads by over-torque because they're not round but straight-shouldered "semibuttress" threads—another mark of good design.

A shrink seal ring on all Nalgene bottles from 30-1000ml, will take a plastic seal for security or shipping purposes or to string an identifying tag.

Walls are thick and rugged—won't crack or split like the paper-thin walls found on many bottles.

Seven different plastics are used for the extensive Nalgene bottle line. Each is the best grade available, with no plasticizers or extenders added. One of these plastics has just the right combination of physical properties for your bottle's requirements. To give our smaller size bottles greater strength and rigidity, our wide-mouths and Boston rounds are made of linear (high density) polyethylene instead of conventional polyethylene—available *only* from Nalge.



Bottom Even the *bottom* is special. The inner corners are curved for easy cleaning. The base is flatter than most for a wide stance and greater stability. Molded into the bottom are letters identifying the plastic used, the capacity in *both* milliliters and ounces, and—most important for your protection—our name is there, too.

There are *30 different styles and 22 sizes* of Nalgene bottles from one ounce to 13 gallons. Choose from round, square, rectangular; wide or narrow mouths; clear, translucent, opaque or amber; even color-coded closures are available for many.

Specify NALGENE bottles whenever you order bottles.

We put a lot of extra value into our bottles. Don't settle for anything less.

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Read this and if it isn't enough reason to use our NCS™

NCS Solubilizer is a solution of quaternary ammonium bases in toluene which was developed by Amersham/Searle research to solubilize biological samples for liquid scintillation counting. It's literally as easy to use as "ABC."

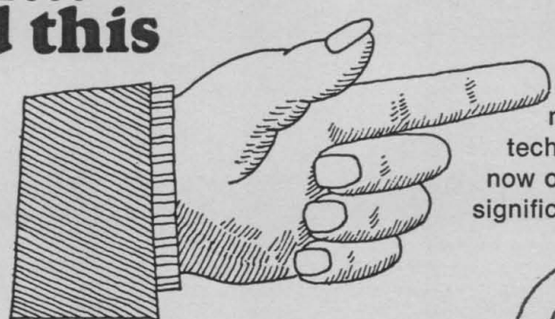
Add sample and NCS to the counting vial (usually 4-6 parts NCS to 1 part sample).

Bring temperature to (but not exceeding) 50°C until the sample is digested.

Cool and add scintillator solution.

NCS possesses the remarkable ability to solubilize a variety of biological samples and aqueous solutions in toluene cocktails. Results of tests on whole tissue, tissue homogenates, blood, plasma, purified protein, nucleic acids, and salt solutions show that the use of NCS results in considerably—and consistently—higher figures of merit (counting efficiency times sample weight) than the use of other digestion reagents or procedures.

then... read this



Thanks to the ever-increasing acceptance of NCS and the even more sophisticated production techniques currently being used, we can now offer this exceptional product at a significant price reduction. See for yourself:

NCS Patent 3,506,828

NCS	Old Price	New Price
100 ml		$14.00/bottle, 1-5 bottles $13.00/bottle, 6-10 bottles > 10—special quote
500 ml	$60/bottle, 1-4 bottles $56/bottle, 5-9 bottles $54/bottle, 10-14 bottles	$51.00/bottle, 1-5 bottles $45.50/bottle, 6-10 bottles > 10—special quote

For a bibliography of NCS, and references to its uses, write the address below requesting pamphlet #RC.

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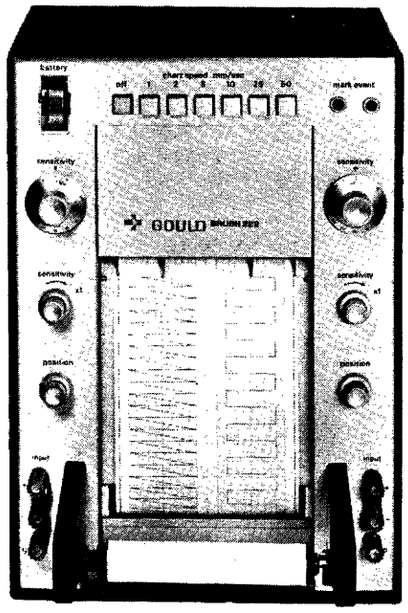
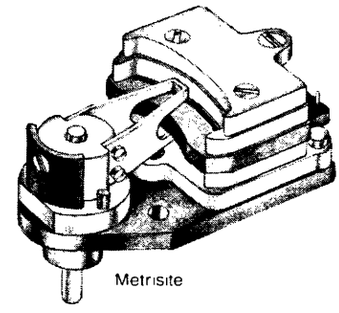
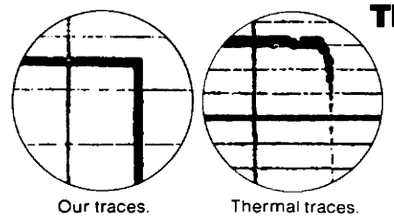


ACCURACY. With the 222, you get linearity guaranteed to 99.5% with our Metrisite® servo loop feedback system. Of course, there are other recorders just as accurate. We know that. Because we make most of them.



Metrisite



Our traces. Thermal traces.

THE CLEANEST TRACES. When you say hello to your 222, you say good-bye to smudging, smearing, skipping and puddling traces. The reason: pressurized inking that forces a crisp, clean trace not just onto, but into the paper.

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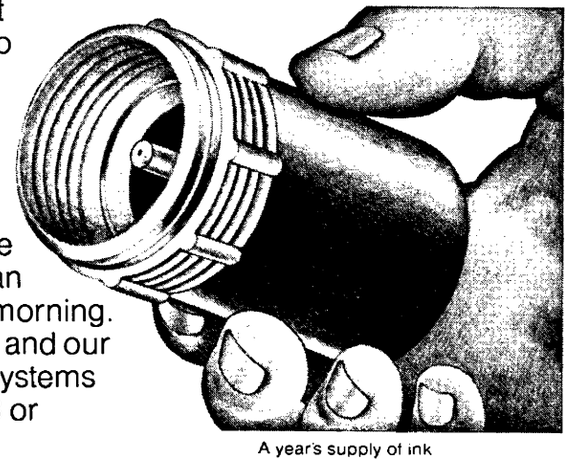
SOLID FEATURES, NOT FRILLS. Like: built-in preamps that give you measurement range from 1mV per division to 500V full scale without recalibration. Pushbutton-controlled chart speeds. Two event channels. An ink supply that lasts a year. And a no-mess disposable ink cartridge, so your fingers never look like part of a Rorschach test.

LONG-LIFE BATTERIES. The internal battery supply gives you 12 hours of continous operation. Up to 6,000 hours of total operating life. And complete rechargability in just 16 hours. Just plug the 222 into an ac or dc outlet overnight and you're ready to go in the morning.

We think you may want to know more about the 222 and our other recorders. So, write us. Gould Inc., Instrument Systems Division, 3631 Perkins Avenue, Cleveland, Ohio 44113 or Rue Van Boeckel 38, Brussels 1140, Belgium.



A year's supply of ink

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that early man was resistant to the toxic principles but through a rapid, backward evolution lost that resistance in the few thousand years since the advent of cooking.

We are precisely in agreement with Goodhart's statement that the ability of the hominid man to penetrate ranges away from the tropical forests may have been due to the fact that he was able to live largely on meat.

A. CARL LEOPOLD
Department of Horticulture,
Purdue University,
Lafayette, Indiana 47907

ROBERT ARDREY
Via Garibaldi 89,
Trastevera, Rome, Italy

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The *p*H Concept

With all due respect for S. P. L. Sørenson's brilliant contributions to our understanding of *p*H and buffers (News and Comment, 3 Mar., p. 973), the continued teaching of the concept of *p*H has been an educational disaster. Of our annual class of 250 medical students, only about 40 admit that they "understand *p*H"; in fact, not more than 10 can discuss *p*H meaningfully without 4 hours of reviewing their biochemistry. On the other hand, virtually the entire class is immediately comfortable with the concept of "proton concentration," expressed as a molarity.

The persistence of medical school teachers in pushing the *p*H concept has prevented students from a proper understanding of simple and basic ideas in physiology, pharmacology, and biochemistry. For example, they do not find it immediately obvious exactly how *p*H regulates the absorption of various drugs, since they have to memorize certain rules relating *p*H to proton concentration (no matter how simple these rules may be to the teachers). Similar problems arise in the teaching of renal physiology and buffer biochemistry.

In addition to hindering the education of our future doctors, the *p*H concept has been a precedent for a nightmarish research development, many researchers now express the molarity of Ca^{2+} in terms of *p*Ca. Pharmacologists are starting to use *p*D, *p*C, *p*R, *p*A, etc. The expression of experimental data is becoming "overworked," and the reader is less and less sure of what exactly the researcher has done in his laboratory experiments. The *p*H concept often becomes meaningless in molecular biology. If the *p*H in the mitochondrion is around 7, then there are perhaps a mere 1000 protons in the organelle. The *p*H on the edge of membranes is about 5 to 6, the *p*H in the central plane of the membrane is about 10 or 11. It is more meaningful to think about proton concentrations eith-

er in bulk solution or as local variations at interfaces.

Join the crusade to replace the teaching of *p*H by the teaching of proton concentration in all undergraduate courses. We need an organization to promote this cause.

PHILIP SEEMAN
Department of Pharmacology, University of Toronto, Toronto 181, Canada

Limit on Tax Exclusion

The Internal Revenue Service (IRS) allows a tax exclusion of $300 per month for Public Health Service (PHS) (and other) trainees. During the current economic depression, more than the usual number of trainees have received support from PHS training grants for a period of more than 3 years. IRS publication 507 (*1*) states that: "The number of months you may exclude amounts you receive as scholarships or fellowship grants if you are not a candidate for a degree is limited to 36 months during your lifetime." This limitation is not mentioned in PHS publication 1302 (*2*).

On the other hand, the IRS has ruled that postdoctoral appointees who are paid from a training grant, but who are not bona fide trainees, that is, are not deriving primarily training or educational benefits from their appointments, may not take the tax exclusion at all. I call these regulations to the attention of the scientific community because it appears that few of those affected are aware of their existence. It can be disconcerting to find out the hard way.

E. N. BREWER
Department of Radiology, Division of Radiation Biology, Case Western Reserve University, Cleveland, Ohio

References

1. *Tax Information on Scholarships and Fellowships* (Publication 507, Internal Revenue Service, Government Printing Office, Washington, D.C., 1969).
2. *Public Health Service Grants for Training Projects—Policy Statement* (Publication 1302, Division of Research Grants, Public Health Service, Bethesda, Md., 1967).

Cancer Politics

The letter from a number of cancer scientists (23 June, p. 1288), which referred to the report (News and Comment, 28 Apr., p. 386) on the National Cancer Act by Barbara J. Culliton as "yellow journalism," is reminiscent of past attempts of the current Administration to silence a free press.

The public is protected by a press which is free to criticize people in power, and their actions. Without this free press, politicians become tyrants. The news section of *Science* is an important part of that free press because, until recently, the politicians of science have been almost immune to criticism. The rules of science and academe are different from the rules of politics. Scientist-politicians would like to have it both ways and be able to engage in the ruthless political game under the rules applicable to the scientific and academic communities.

Unrelenting criticism is essential in politics; as Harry Truman said, "If you can't stand the heat, get out of the kitchen." What is going on in the cancer field at the present time is politics, not science. The news staff of *Science* is to be congratulated for its forthrightness and its willingness to take a stand that might be unpopular with people in power. As science becomes larger and more political, there will be an increasing need for reporters who have the knack of being hypercritical.

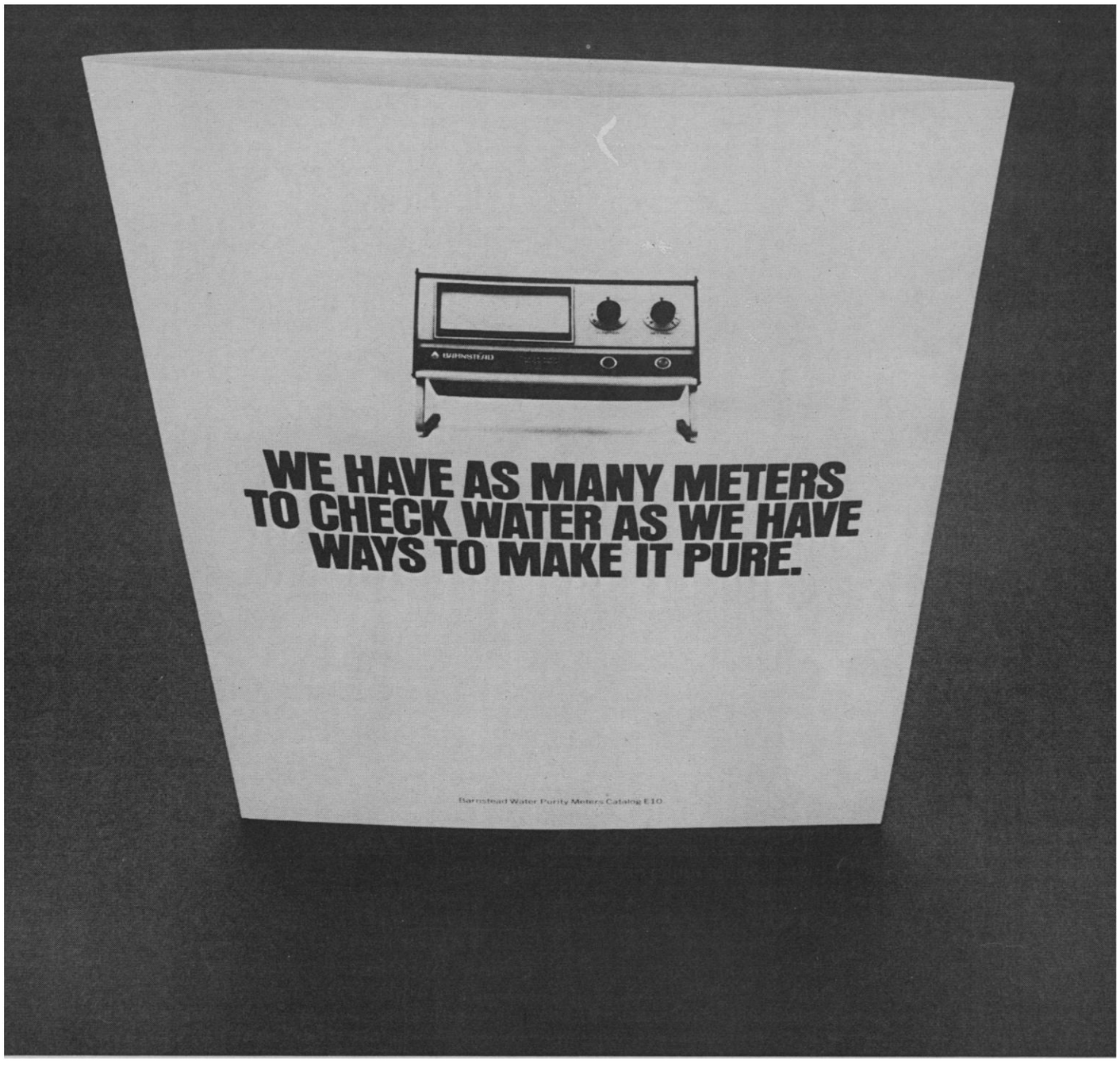
Carl Baker is very highly thought of among his colleagues, and he has many friends. This is also true of Earl Warren, Richard Nixon, George McGovern, and many other political figures. In the political arena, the kind of criticism that appeared in Culliton's report should be accepted as routine.

H. IRA PILGRIM
1514 Preston Street, Salt Lake City, Utah 84108

I wish to take strong exception to the attack on Barbara J. Culliton for her report on the National Cancer Act. All of the signers are themselves administrators and apparently feel themselves attacked.

I do not view Culliton's handling of the developments around the National Cancer Act, the National Cancer Institute, and the persons involved as do the signers of the letter. Not being privy to the "political inner workings" of the cancer research industry, I am grateful to her for the kind of exposure in the report, and I congratulate the Editor for publishing it.

GREGORY S. DUBOFF
Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan, Ann Arbor 41804



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8 September 1972, Volume 177, Number 4052

SCIENCE

On Growing Old in America

Each year, old age is overtaking more of us and at a faster rate: the beginning of retirement is advancing into the early 60's, and for some even into the 50's, while life expectancy is being extended from 47 years in the early 1900's to the present 70 years.

The problems of the aged may be cataloged in terms of money, health, and psychosocial dislocation. Persons over age 65 face an ever-widening income gap in relation to the rest of the population. In the late 1950's, the government estimated that a retired couple needed between $2700 and $3400 to live modestly. Today, over half of the families of the aged receive less than $3000, and half of those aged who live alone get under $1000. Under such circumstances, poor housing, poor nutrition, and poor health are constant companions. Thus, although the aged constitute only 10 percent of the population, they account for 25 percent of the hospital beds in use and 25 percent of the cost of medical care—and their illnesses are very likely to be long-term. Emotional distress is the almost inevitable result of failing powers, social isolation, and the loss of well-established social roles. Old age, says Simone de Beauvoir, is life's parody.

Society's responses to these problems have been indifferent, inadequate, and fragmented. Social Security, for example, averages $2500 per couple per year, and Medicare and Medicaid fall short by $5 billion to $7 billion of meeting the annual costs of medical care for the aged.

Increasingly, recourse has been to institutionalization, and increasingly this has meant the nursing home. Today there are in the United States 23,000 nursing homes, with well over a million beds. This is 250 percent more than existed in 1960, and seven new homes open each day. Simultaneously with this growth, nursing homes have become the basis for a national scandal—they have been labeled warehouses for the dying by the Chicago *Tribune*. The Senate Subcommittee on Long-term Care has heard testimony of weak federal policy, lax inspection procedures, control of licensing boards by vested interests, incompetent administration, untrained and incompetent staff personnel, indifferent physician services, criminal negligence in the administration of drugs, the extensive use of tranquilizers to control patients, and filth and brutality—and underlying all this, the charge of profiteering.* But even if all nursing homes were well operated, they would not be enough, for they accommodate only 5 percent of the aged population. In addition to an unambiguous national policy and strict enforcement of regulations, the nation needs a broad spectrum of alternatives that might include such elements as hospitals for long-term disease, day hospitals, provision for home care, and educational and career opportunities.

But the key to the problems of the aged is not national resources or the know-how of the medical and behavioral sciences. It is a fundamental change in national attitude. One may speculate that our present indifference to the plight of the aged stems from our historical preoccupation with youth, stronger now than ever before; from our addiction to the notion of obsolescence (things are meant to be used, discarded, and replaced); or from our frontier psychology of self-reliance. But whatever the reason, it is now time for a change in attitude. Behavioral scientists would serve society well in their role of citizen if they found ways to help facilitate that change. For we must recognize, with Simone de Beauvoir, that the only solution to the problem of old age is for each old person to go on pursuing ends that give his existence a meaning. And this is his birthright.—WILLIAM BEVAN

* *Trends in Long-term Care*, Hearings before the Subcommittee on Long-term Care, Special Committee on Aging, United States Senate (Government Printing Office, Washington, D.C., part 11, December 1970; parts 12 and 13, April 1971).

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ity, and fetal antigens remain to be clarified immunologically, chemically, and genetically.

Finally, P. Bretscher (Salk Institute) presented a speculative model for the development of generalized autoimmunity, in which both B and T cells would be required for induction of antibody production by foreign antigen, but in which only B cells would be necessary for maintenance of tolerance (paralysis of self-antigen). Such a model will have to take into account extensive data from autoimmune-prone NZB mice and from human patients and families with autoimmune disorders.

During the past decade, the study of immunogenetics has revealed several important biological phenomena. The synthesis of a single immunoglobulin polypeptide chain involves at least two genes, and an unknown mechanism generates extraordinary diversity in the variable region sequences of immunoglobulins. Mammalian histocompatibility antigens are extensively polymorphic, are coded by a genetically complex chromosomal region, and are linked to genes controlling immune responsiveness. An interacting system of two cell types is necessary to trigger antibody synthesis. The implications of these findings extend beyond the field of immunology to other genetic systems involved in differentiation.

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HUGH O. MCDEVITT
Division of Immunology, Stanford University, Stanford, California 94305

Forthcoming Events

October

1–4. National **Agricultural Chemical** Assoc., 39th annual, White Sulphur Springs, W.Va. (D. Hayley, NACA, Madison Bldg., 1155 15th St., NW, Washington, D.C. 20005)

1–5. Society of American **Foresters,** Hot Springs, Ark. (H. R. Glascock, Jr., SAF, 1010 16th St., NW, Washington, D.C. 20036)

1–14. International Assoc. of **Theoretical and Applied Limnology,** jubilee symp., Plon, West Germany. (W. Ohle, Max-Planck-Inst. für Limnologie, Postfach-165, 232 Plon)

2–3. **Air Pollution Medical Research** Conf., American Medical Assoc., Chicago, Ill. (F. W. Barton, Council on Environmental and Public Health, AMA, 535 N. Dearborn St., Chicago 60610)

2–4. **Distribution and Partition of Trace Elements and Origin of Volcanic Rocks,** intern. conf., sponsored by American Geophysical Union, Univ. of Rhode Island, Intern. Assoc. of Volcanology and Chemistry of the Earth's Interior, Newport, R.I. (American Geophysical Union, 1707 L St., NW, Washington, D.C. 20036)

2–4. **Soil Microcommunities,** 2nd conf., Syracuse, N.Y. (D. L. Dindal, Dept. of Forest Zoology, State Univ. College of Forestry, Syracuse 13210)

2–5. American **Vacuum** Soc., Chicago, Ill. (J. H. Singleton, Westinghouse Research Labs., Beulah Rd., Pittsburgh, Pa. 15235)

2–5. **Yeast Protoplasts,** 3rd intern. symp., sponsored by Spanish Biochemical Soc., Spanish Biological Soc., and Spanish Research Council, Salamanca. (Secretariat, Third Intern. Symp. on Yeast Protoplasts, Departamento de Microbiologia, Facultad de Ciencias, Universidad de Salamanca, Salamanca)

2–6. Modern Trends in **Activation Analysis,** 4th intern. conf., Sacly, France. (American Nuclear Soc., 244 E. Ogden Ave., Hinsdale. Ill. 60521)

2–6. **Environmental Health Aspects of Lead,** Commission of the European Communities and U.S. Environmental Protection Agency, Amsterdam, Netherlands. (Secretariat, Direction Protection Sanitaire, Commission des Communautés Européennes, 29, rue Aldringen, Luxembourg)

2–6. International Congr. on **Marine Corrosion and Fouling,** 3rd, Gaithersburg, Md. (H. C. Burnett, Room B264, Materials Bldg., Natl. Bureau of Standards, Washington, D.C. 20234)

2–6. **Remote Sensing of Environment,** 8th intern. symp., Ann Arbor, Mich. (Conference Dept., Extension Service, Univ. of Michigan, Ann Arbor 48104)

3–4. Symposium on **Aquatic Environment: Microbial Transformations and Water Quality Management Implications,** Office of Water Programs, U.S. Environmental Protection Agency, Washington, D.C. (L. J. Guarria or R. K. Ballentine, Fresh Water Pollution Control Section, Water Quality Protection Branch, Water Quality Non-Point Sources Control Div., OWP, EPA, Washington, D.C. 20460)

3–5. **Dietary Lipids and Postnatal Development,** intern. symp., Milan, Italy. (Miss H. J. Prain, Inst. of Pharmacology and Pharmacognosy, Univ. of Milan, Via A. Del Sarto, 21, 20129 Milan)

3–5. **Plastics, Electrical Properties and Applications,** Plastics Inst. of America, Rensselaer, N.Y. (R. K. MacCrone, Materials Div., School of Engineering, Rensselaer Polytechnic Inst., Troy, N.Y. 12181)

3–5. USA–Japan **Computer** Conf., American Federation of Informational Processing Socs. and Information Processing Soc. of Japan, Tokyo, Japan. (R. W. Rector, University Extension, Continuing Education in Engineering and Science, 6115 Mathematical Sciences Bldg., Univ. of California, Los Angeles 90024)

3–6. American **Roentgen Ray** Soc., Washington, D.C. (T. F. Leigh, Emory Univ. Clinic, Atlanta, Ga. 30322)

3–6. **Trends in Physics,** European Physical Soc., Wiesbaden, West Germany. (EPS, P.O. Box 39, CH-1213 Petit-Lancy 2, Switzerland)

3–9. Intern. Soc. of **Biometeorology,** 6th intern. congr., Stresa, Italy. (S. W.

Tromp, Hofbrouckerlaan 54, Cegstgeest., Leiden, Netherlands)

4–6. **Food Plants and Their Diets in Relation to Environmental Factors,** Intern. Assoc. for Quality Research on Food Plants and German Soc. for Quality Research, Berlin, West Germany. (W. Schupan, D-6222, Geisenheim/Rheingaum Heidestrasse 9, West Germany)

4–6. **Populations by Microorganisms,** New York Acad. of Sciences, New York, N.Y. (W. Likely, NYAS, 2 E. 63 St., New York 10021)

4–6. **Thrombosis and the Molecular Biology of the Platelet and Other Interacting Cells,** 2nd intern. symp., Chicago, Ill. (R. M. Booyse, Dept. of Biochemistry, Rush Medical College, 1753 W. Congress Pkwy., Chicago 60612)

4–18. **Forests and Social-Economic Development,** 7th World Forestry Congr., Buenos Aires, Argentina. (M. B. Dickerman, U.S. Natl. Committee, U.S. Dept. of Agriculture, Forest Service, Washington, D.C. 20250)

5–6. The **Military and Society,** 5th symp., U.S. Air Force Acad., Colo. (R. Fogleman, Dept. of History, USAF Academy 80840)

5–6. **Toward a Unified Concept of Biological Waste Treatment Design,** Intern. Assoc. on Water Pollution Research, Atlanta, Ga. (F. G. Pohland, Civil Engineering Dept., Georgia Inst. of Technology, Atlanta)

5–7. **Culture of Invertebrate Animals,** Greenport, N.Y. (W. L. Smith, Dept. of Marine Science and Technology, Suffolk County Community College, Selden, N.Y. 11784)

5–7. National **Gaming** Council, 11th annual symp., Baltimore, Md. (S. J. Kidder, Center for Social Organization of Schools, Johns Hopkins Univ., 3505 N. Charles St., Baltimore 21218)

5–7. Federation for **Unified Science Education,** 7th conf., Gainesville, Fla. (B. R. Blair, 803 Seagle Bldg., Univ. of Florida, Gainesville 32601)

5–8. **Alcoholism and Addiction,** intern. conf., Dun Laoghaire, Ireland. (Mrs. O. Thompson, Irish Natl. Council on Alcoholism, 19 Fleet St., Dublin 2, Ireland)

5–8. American Soc. of **Bariatrics,** Las Vegas, Nev. (W. L. Asher, 3195 S. Broadway, Englewood, Colo. 80110)

6–7. **Atmospheric Physics,** American Physical Soc., New York State section, Rochester. (F. K. Elder, Jr., Rochester Inst. of Technology, 1 Lamb Memorial Dr., Rochester 14623)

6–7. **Endocrinology and Metabolism,** 8th Midwest conf., Columbia, Mo. (A. D. Kenny, Space Sciences Research Center, Univ. of Missouri–Columbia, Research Park, Columbia 65201)

6–8. **New Dimensions in Planetarium Use,** Middle Atlantic Planetarium Soc., Chadds Ford and West Chester, Pa. (M. A. Bennett, Splitz/McGraw-Hill, Chadds Ford 19317)

8. International Soc. for **Developmental Psychobiology,** Houston, Tex. (W. A. Himwich, Thudichum Psychiatric Research Lab., Galesburg State Research Hospital, Galesburg, Ill. 61401)

8–11. Society of **Research Administrators,** 6th annual, Seattle, Wash. (D. V. Baker, Dept. of Pathology, Univ. of Washington, Seattle 98195)

8–12. **Education in the Health Sciences,** 1st intern. conf., The Hague, Netherlands. (C. A. Chorus, P.O. Box 9058, The Hague)

8–13. **Chemistry and Physics of Compound Semiconductor Surfaces and Molecular Beam Epitaxy,** Electronics Div., Electrochemical Soc., Miami Beach, Fla. (H. R. Huff, Texas Instruments Inc., P.O. Box 5936, M/S 144, Dallas 75222)

8–13. **Electrochemical** Soc., Miami Beach, Fla. (E. G. Enck, ES, P.O. Box 2071, Princeton, N.J. 08540)

8–13. International Congr. of **Nephrology,** 5th, Mexico City, Mexico. (J. E. Exiare, Inst. Nacional de Cardiologia, Dpto. de Nefrologia Avenida, Cuauhtemoc 300, Mexico 7, D.F.)

8–13. **Water Pollution Control** Federation, Atlanta, Ga. (R. A. Canham, WPCF, 3900 Wisconsin Ave., Washington, D.C. 20016)

9–10. **Radiation Sterilization,** United States Pharmacopeial Convention, Inc., Washington, D.C. (R. H. Henry, USPCI, 12601 Twinbrook Parkway, Rockville, Md. 20852)

9–12. **Cybernetics and Society,** American Soc. for Cybernetics, jointly with Inst. of Electrical and Electronics Engineers, Washington, D.C. (K. S. Narendra, Engineering and Applied Science, Yale Univ., 10 Hill House, New Haven, Conn. 06520)

9–12. **Instrument** Soc. of America, New York, N.Y. (H. S. Kindler, ISA, 400 Stanwix St., Pittsburgh, Pa. 15222)

9–12. International **Iron and Steel** Inst., 6th conf., London, England. (IISI, 5 Place du Cham de Mars, 1050 Brussels, Belgium)

9–12. Association of **Official Analytical Chemists,** 86th annual Washington, D.C. (L. G. Ensminger, AOAC, Box 540, Benjamin Franklin Sta., Washington, D.C. 20044)

9–12. American **Osteopathic** Assoc., 77th annual, Bal Harbour, Fla. (E. P. Crowell, AOA, 212 E. Ohio St., Chicago, Ill. 60611)

9–13. American **Dietetic** Assoc., 55th annual, New Orleans, La. (Mrs. J. R. Barnes, ADA, 620 N. Michigan Ave., Chicago, Ill. 60611)

9–13. International Commission on **Optics,** 9th conf., Santa Monica, Calif. (D. S. Nicholson, P.O. Box 95213, Air Force Unit Post Office, Los Angeles, Calif. 90045)

9–13. International Congr. of **Orthopedic Surgery and Traumatology,** 12th, Tel Aviv, Israel. (Secretariat, SICOT 12, P.O. Box 16271, Tel Aviv)

9–13. **Reactor Shielding,** 4th intern. conf., European Nuclear Energy Agency, French Atomic Energy Commission, in collaboration with the Intern. Atomic Energy Agency, Paris, France. (J. H. Kane, Office of Information Services, U.S. Atomic Energy Commission, Washington, D.C. 20545)

10–11. **Industrial Health** Foundation, 37th annual, Pittsburgh, Pa. (R. T. P. deTreville, IHF, 5231 Centre Ave., Pittsburgh 15232)

10–13. International Symp. on **Chemiluminescence,** Athens, Ga. (ISC, Dept. of Chemistry, Univ. of Georgia, Athens 30601)

10–13. **Proton Linear Accelerator** Conf., Los Alamos, N.M. (M. S. Livingston, Los

Alamos Meson Physics Facility, Los Alamos Scientific Laboratory, Los Alamos 87544)

10–13. American **Vacuum** Soc., Chicago, Ill. (Mrs. D. M. Hoffman, RCA Laboratories, Princeton, N.J. 08540)

10–15. Soc. for **Clinical and Experimental Hypnosis**, Boston, Mass. (Mrs. M. Kenn, SCEH, 140 West End Ave., New York 10023)

11–12. **Gearing and Transmission**, American Soc. of Mechanical Engineers, San Francisco, Calif. (M. Jones, Information Services, ASME, 345 E. 47 St., New York 10017)

11–13. American Assoc. of **Petroleum Geologists** and Soc. of **Economic Paleontologists and Mineralogists**, Gulf Coast, Corpus Christi, Tex. (Miss K. Wilson, AAPG, 1444 S. Boulder, Box 979, Tulsa, Okla. 74101)

11–14. American Inst. of **Chemical Engineers**, 1st Pacific congr., Kyoto, Japan. (AICE, 345 E. 47 St., New York 10017)

11–14. American Soc. of **Human Genetics**, Philadelphia, Pa. (W. E. Nance, Medical Genetics, Univ. of Indiana, 1100 W. Michigan St., Indianapolis 46202)

11–14. American Soc. of **Photogrammetry**, Columbus, Ohio. (W. Prescott, 4822 E. Livingston, Columbus 43227)

11–19. Institute of **Sanitation Management**, 15th annual, Philadelphia, Pa. (H. C. Rowe, ISM, 1710 Drew St., Clearwater, Fla. 33515)

11–24. World **Meterological** Organization, Commission for Marine Meteorology, 6th session, Tokyo, Japan. (Secretariat, WMO, P.O. Box 1, CH-1211, Geneva 20, Switzerland)

12–15. American Academy of **Child Psychiatry**, New Orleans, La. (Miss L. M. Robinson, 1800 R St., NW, Washington, D.C. 20009)

12–15. **Public Health, an Interdisciplinary Approach**, Bucaramanga, Colombia. (C. P. Martinez, Asociacion Colombiana para el Avance de la Ciencia, Air Box 783, Bucaramanga)

13–17. American **School Health** Assoc., San Diego, Calif. (G. R. Knotts, 107 S. Depeyster St., Kent, Ohio 44240)

13–21. American Soc. of **Clinical Pathologists** and College of **American Pathologists**, San Francisco, Calif. (J. Graves, Intersociety Committee on Pathology Information, Inc., College of American Pathologsts, 9650 Rockville Pike, Bethesda, Md. 20014)

14–15. **Histochemical** Soc., Boston, Mass. (S. I. Zacks, Dept. for Sick and Injured, Pennsylvania Hospital, 8th and Spruce Sts., Philadelphia 19107)

14–19. American Academy of **Pediatrics**, New York, N.Y. (R. G. Frazier, AAP, 1801 Hinman Ave., Evanston, Ill. 60201)

15–17. The **Environment—Conflicts, Costs, Action**, Blacksburg, Va. (Miss M. A. Johnson, Burruss 400, Virginia Polytechnic Inst. and State Univ., Blacksburg 24061)

15–17. International Federation of **Fertility** Socs., 8th world congr. of **Fertility and Sterility**, Tokyo, Japan. (I. Halbrecht, Medical School, Tel Aviv Univ., Tel Aviv, Israel)

15–18. American **Gas** Assoc.—Inst. of **Gas Technology**, Cincinnati, Ohio. (AGA, 1515 Wilson Blvd., Arlington, Va. 22209)

15–20. American Council of **Independent Laboratories**, San Juan, Puerto Rico. (P. Ledoux, Ledoux & Co., 359 Alfred Ave., Teaneck, N.J. 07666)

15–20. International Congr. of **Radiology**, 13th, Madrid, Spain. (J. Bonmati, La Gasca 27, Madrid 1)

15–21. American College of **Gastroenterology**, Montreal, P.Q., Canada. (D. Weiss, ACG, 299 Broadway, New York 10017)

16–17. Association of **Earth Science Editors**, Inc., Boulder, Colo. (Mrs. P. W. Dickerson, AESE, Box 31571, Dallas, Tex. 75231)

16–17. American Assoc. of **Poison Control** Centers, and American Acad. of **Pediatrics**, 15th annual, New York, N.Y. (M. S. McIntire, Childrens Memorial Hospital, 44th and Dewey Ave., Omaha, Neb. 68105)

16–18. Society for **Industrial and Applied Mathematics**, Austin, Tex. (R. K. Windsor, SIAM, 33 S. 17 St., Philadelphia 19103)

16–19. American Soc. for **Metals**, Cleveland, Ohio. (A. R. Putnam, ASM, Metals Park, Ohio 44073)

16–19. American Soc. for **Nondestructive Testing**, Cleveland, Ohio. (ASNT, 914 Chicago Ave., Evanston, Ill. 60202)

16–20. Congress of **Neurological Surgeons**, Denver, Colo. (R. G. Ojemann, Massachusetts General Hospital, Boston 02114)

17–19. Institute of **Navigation**, Annapolis, Md. (R. E. Freeman, IN, Suite 832, 815 15th St., NW, Washington, D.C. 20005)

17–19. **Technology for Man**, Human Factor Society, 16th, Beverly Hills, Calif. (J. L. Hoyt, HFS, P.O. Box 1369, Santa Monica, Calif. 90406)

17–20. Society for **Experimental Stress Analysis**, Seattle, Wash. (R. E. Rossi, SESA, 21 Bridge Sq., Westport, Conn. 06880)

17–20. **Optical** Soc. of America, San Francisco, Calif. (Miss M. E. Warga, OSA, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

17–21. Congress of **Neurological Surgeons**, Denver, Colo. (B. S. Patrick, University Medical Center, Jackson, Miss. 39216)

18–20. **Entomological** Soc. of America, Eastern Branch, Atlantic City, N.J. (D. J. Sutherland, Dept. of Entomology and Economic Zoology, College of Agriculture and Environmental Science, P.O. Box 231, Rutgers Univ., New Brunswick, N.J. 08903)

19–20. International Congr. on **Road Safety**, Dutch Road Safety Assoc., The Hague, Netherlands. (Secretariat, c/o Holland Organising Centre, 16, Lange Voorhout, The Hague)

19–20. **Recycling Municipal Wood Fiber Wastes for Paper**, Milwaukee, Wis. (J. Gammell, Univ. of Wisconsin–Extension, Dept. of Engineering, 600 W. Kilbourn Ave., Milwaukee 53203)

19–21. **Tau Beta Pi** Assoc., Inc., College Park, Md. (R. H. Nagel, Box 8840, University Sta., Knoxville, Tenn. 37916)

19–22. American College of **Apothecaries**, San Francisco, Calif. (R. A. Benedict, ACA, 7758 Wisconsin Ave., Washington, D.C. 20014)

20. **Industrial Pharmacy** Section, American Pharmaceutical Assoc., 12th annual eastern regional, Cherry Hill, N.J. (A. J. Scarpone, Pharmaceutical Product Development Dept., Lederle Labs., Pearl River, N.Y. 10965)

20–21. **Magnetospheric Substorms**, American Geophysical Union, Houston, Tex. (AGU, 1707 L St., NW, Washington, D.C. 20036)

20–2. **Aerospace Medicine**, 2nd intern. congr., Intern. Acad. of Aviation and Space Medicine, Melbourne, Australia. (F. Parle, ICAM-72, 50 Franklin St., Melbourne, Victoria 3000)

22–25. **Diagnostic Radiologic Facilities and Operations**, Rochester, N.Y. (D. LiLella, Univ. of Rochester School of Medicine and Dentistry, Rochester 14642)

22–25. **Electrical Insulation and Dielectric Phenomena**, Natl. Acad. of Sciences, Buck Hill Falls, Pa. (R. A. Cliffe, NAS, 2101 Constitution Ave., NW, Washington, D.C. 20418)

22–26. American College of **Chest Physicians**, Denver, Colo. (A. Soffer, ACCP, 112 E. Chestnut St., Chicago, Ill. 60611)

22–26. International Council for **Scientific Management**, 16th intern. congr., Munich, Germany. (Rationalisierungs-Kuratorium der Deutschen Wirtschaft (RKW) e.V., Postfach 9193, 6000 Frankfurt/Main 9, Germany)

23. **Medical Correctional** Assoc., New York, N.Y. (Miss C. Malamud, 171 Hawthorne Ave., Glen Ridge, N.J.)

23–24. **Spectroscopy** Symp. and Exhibition, 19th, Spectroscopy Soc. of Canada, Montreal, P.Q., Canada. (J. G. Dick, Dept. of Chemistry, Sir George Williams Univ., 1435 Drummond St., Montreal)

23–26. American Inst. of **Biological Sciences**, 2nd natl., Miami Beach, Fla. (AIBS, 3900 Wisconsin Ave., NW, Washington D.C. 20016)

23–26. **A World of Information**, American Soc. for Information Sciences, 35th annual, Washington, D.C. (ASIS, Suite 804, 1140 Connecticut Ave., NW, Washington, D.C. 20036)

23–28. **Medical Radioisotope Scintigraphy**, Intern. Atomic Energy Agency, Monaco. (J. H. Kane, Office of Information Services, U.S. Atomic Energy Commission, Washington, D.C. 20545)

24–26. **Analytical Chemistry in Nuclear Technology**, 16th conf., Oak Ridge National Lab., Gatlinburg, Tenn. (L. J. Brady, P.O. Box X, ORNL, Oak Ridge, Tenn. 37830)

24–26. International Conf. on **Computer Communication**, Assoc. for Computing Machinery, IEEE Computer Soc., and IEEE Communication Technology Group, Washington, D.C. (S. Winkler, IBM Corp., 18100 Frederick Pike, Gaithersburg, Md. 20760)

24–26. **Continuing Medical Education**, State Medical Association Representatives, 3rd natl. conf., American Medical Assoc., Chicago, Ill. (C. H. W. Ruhe, Div. of Medical Education, AMA, 535 N. Dearborn St., Chicago 60610)

24–27. **Heat and Mass Transfer Problems in Food Engineering**, Intern. Union of Food Science and Technology and European Federation of Chemical Engineering, Wageningen, Netherlands. (In-

tern. Agricultural Centre, P.O. Box 88, Wageningen)

25–27. **Parenteral Drug** Assoc., New York, N.Y. (H. E. Boyden, PDA, Western Savings Fund Bldg., Broad and Chestnut Sts., Philadelphia, Pa. 19107)

25–28. National Assoc. of **Biology Teachers**, Anaheim, Calif. (J. P. Lightner, NABT, 1420 N St., NW, Washington, D.C. 20005)

25–28. **Implementing Nuclear Safeguard,** sponsored by Natl. Science Foundation, Manhattan, Kan. (R. Leachman, Diversion Safeguard Program, Cardwell Hall, Kansas State Univ., Manhattan 66502)

26–27. **Solid Earth and Ocean Tides,** Geodesy/Solid Earth and Ocean Physics Research Conf., Columbus, Ohio. (A. F. Spilhaus, Jr., AGU, 1707 L St., NW, Washington, D.C. 20036)

26–28. National Council for **Geographic Education**, Milwaukee, Wis. (W. E. Elam, NCGE, Room 1226, 111 W. Washington, Chicago, Ill. 60602)

26–28. **Religious Scene in the 70's: Analysis and Prospects**, Soc. for the Scientific Study of Religion, Inc., Boston, Mass. (W. V. D'Antonio, SSSR, Box U68A, Univ. of Connecticut, Storrs 06268)

27. Utah Acad. of **Sciences, Arts and Letters**, Salt Lake City. (H. Buchanan, Dept. of Botany, Weber State College, Ogden, Utah 84403)

27–28. **Research in Issues in Social Intervention** Programs, New York Acad. of Sciences, New York, N.Y. (W. Likely, NYAS, 2 E. 63 St., New York 10021)

27–29. **Philosophy of Science** Assoc., Lansing, Mich. (P. D. Asquith, Dept. of Philosophy, Morrill Hall, Michigan State Univ., East Lansing 48823)

29. American College of **Dentists**, San Francisco, Calif. (R. J. Nelsen, ACD, Suite 304, 7316 Wisconsin Ave., Bethesda, Md. 20014)

29–1. International Socs. for **Hygiene, Preventive and Social Medicine**, Vienna, Austria. (Mrs. E. Weidenhaus, Weiner Medizinische Akademie, Stadiongasse 6-8, A 1010 Vienna)

29–1. **Problem-Directed and Medical Information Systems**, 4th annual, Soc. for Advanced Medical Systems, Saddle Brook, N.J. (Mrs. P. Horner, SAMS, Suite N-300, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

29–1. Academy of **Psychosomatic Medicine**, San Diego, Calif. (A. J. Krakowski, APM, 202A Cornelia St., Plattsburgh, N.Y. 12901)

29–1. American Inst. of **Ultrasound in Medicine**, 17th annual, Philadelphia, Pa. (B. B. Goldberg, Dept. of Radiology, Episcopal Hospital, Front St. and Lehigh Ave., Philadelphia 19125)

29–2. American Assoc. of **Cereal Chemists**, Miami Beach, Fla. (R. J. Tarleton, AACC, 3340 Pilot Knob Rd., St. Paul, Minn. 55121)

29–2. American **Dental** Assoc., San Francisco, Calif. (C. G. Watson, ADA, 211 E. Chicago Ave., Chicago, Ill. 60611)

29–2. **Materials Research** Symp., Inst. for Materials Research, Natl. Bureau of Standards, Gaithersburg, Md. (Office of Standards Reference Materials, NBS, Washington, D.C. 20234)

29–3. **Serving Man in an Urban En-**