SCIENCE

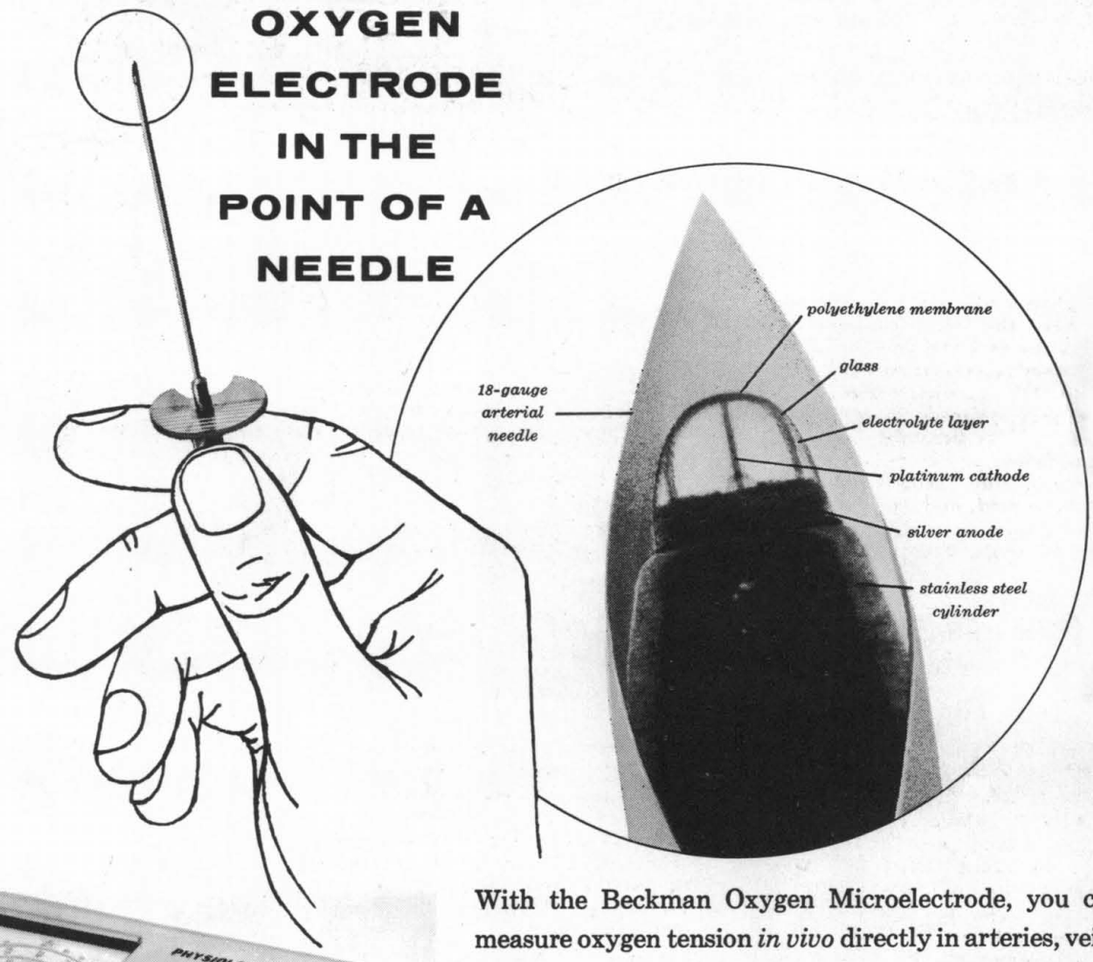
8 March 1963

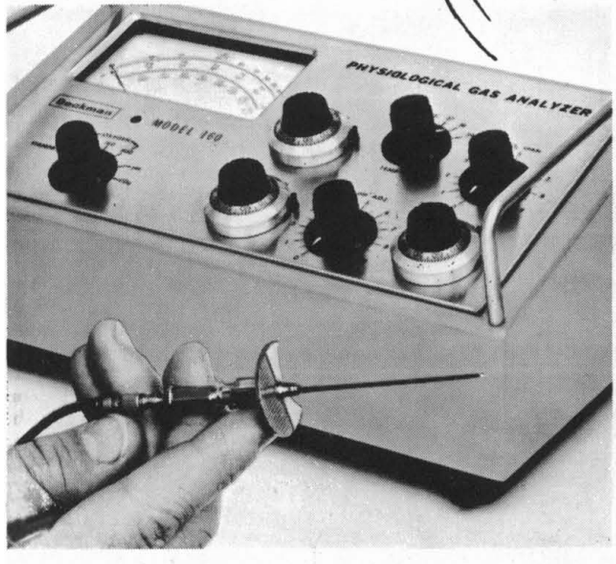
Vol. 139, No. 3558

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

ONE SPECIES, TWO TYPES OF FLOWERS

AN OXYGEN ELECTRODE IN THE POINT OF A NEEDLE





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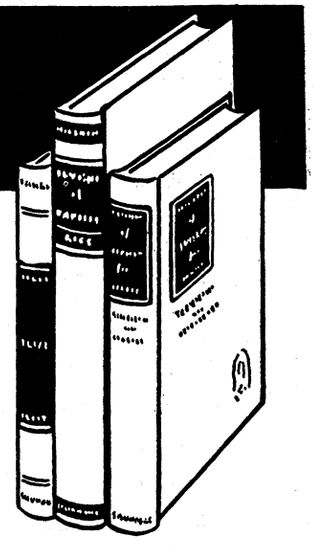

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Vol. 139, No. 3558

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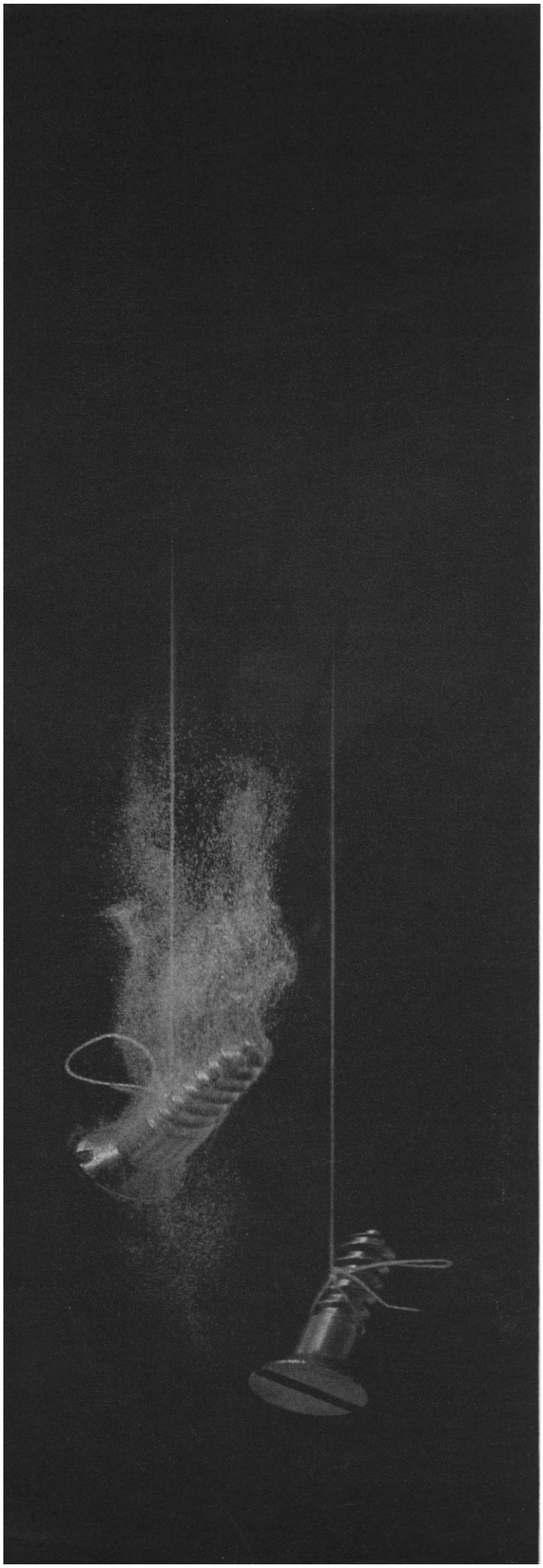
COVER

Some species of flowering plants produce both male-sterile and hermaphrodite flowers on separate plants (gynodioecism). *Plantago lanceolata* is well established around the world as a weedy follower of man and is generally pollinated by wind. The male-sterile head is on the left, the hermaphrodite is on the right. Flowering proceeds from the base to the apex of the spike and perfect flowers pass through pistillate, staminate, and fruiting phases in that order. See page 877.



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The unsettled mobility of gases in solids

One of the more elusive phenomena of nature—the diffusion of gases into solids—may cause peculiar, even detrimental, metallurgical effects.

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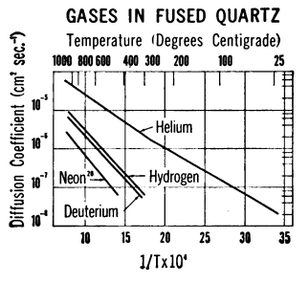
In addition, the delicate nature of mobility measurements has diverted our experimentalists into investigating gases diffusing through glass lab equipment. The detour has proven fruitful. Their studies of gases in natural and synthetic fused quartz—the simplest form of glass—have furnished further clues to the basic structure of the glassy state.

It's another example of how General Motors engineers and scientists are working to find a better way—with research in depth.

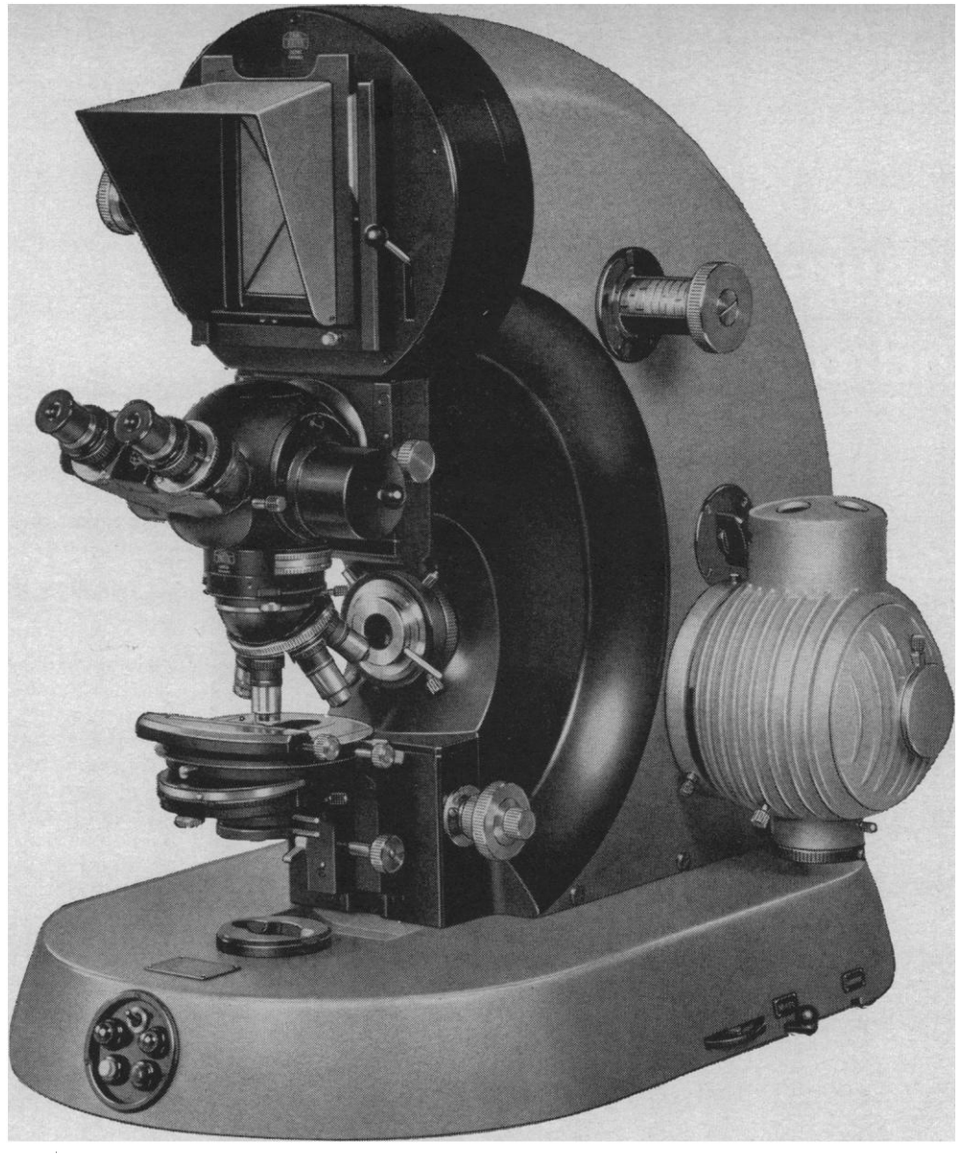
General Motors Research Laboratories

Warren, Michigan



Compiled from recent GM publications in *J. Chem. Phys.* List available upon request.

Screw at left loaded with hydrogen by electrolysis and suspended in a hot oil bath.



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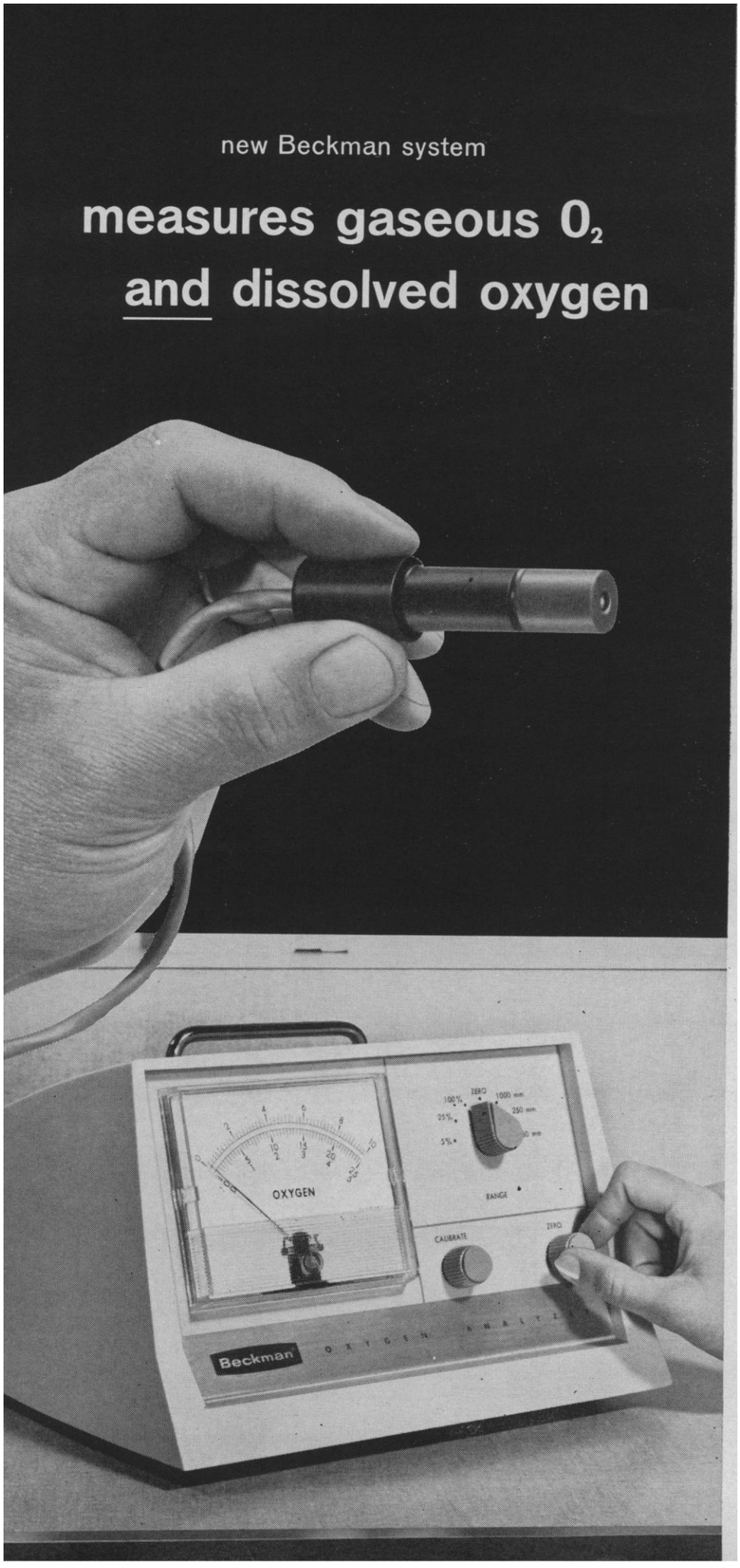

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Wes Kemp had a fully developed negative and positive just 20 seconds after he took this picture of a sky diver at the Parachuting Center in Orange, Mass. He used a Linhof Technika loaded with **Polaroid P/N 4 x 5 Film.**

proper spirit, even by sophisticated laymen, and I feel that self-criticism of this kind should be restricted to our own journals. Futhermore, I do not share the views regarding the grant-supported workshops. In my own area of research, in the past 2 years, we have experienced two important breakthroughs as a result of such workshops. The opportunity for personal contact which is provided by these meetings is not provided by the large open meetings. Equally important is the fact that there is no publication of the proceedings, which permits one to present recent observations which may not yet be fully documented. If the editorial should serve to make such meetings more difficult, then science will have been done a great disservice.

BERNARD L. HORECKER

Department of Microbiology, New York University School of Medicine, New York

"Organized Elements" in Carbonaceous Meteorites

In a recent article (*1*) Anders and Fitch reported on their failure to observe in preparations of carbonaceous chondrites the "organized elements" of Claus *et al.* (*2*, *3*). In other papers (*4*), Fitch and Anders have shown in detail the difficulty of using morphological criteria to determine the nature and origin of meteorite microstructures in the 5- to 30-μ range.

However, the possible occurrence of microfossils in meteorites has attracted considerable attention, and other workers have identified structures in carbonaceous chondrites that they consider to be indigenous fossil remains. These workers are Staplin (*5*), Reimer (see *3*), Palik (*6*), Cholnoky (*7*), Skuja (see *3*), Ross (*8*), Engels (*9*), and Timofeev (see *3*).

On the other hand, several persons, after examining the structures in question, have supported the view of Fitch and Anders that identification of them as microfossils is premature. Thus, Fox (*10*) has suggested that the objects are spheroids of nonbiological organic matter, together with droplets of sulfur and recent contaminating organisms. Deflandre (*11*) has similarly claimed that the objects are terrestrial contaminants and artifacts. Briggs (*12*), who examined preparations made under sterile conditions to eliminate contamination during preparation, has suggested that some of the "organized elements" are mineral grains and that others are associations of sulfur with organic matter, probably of abiogenic origin. Mueller (*13*) has recently presented evidence that one class of "organized element," which displays a very complex morphology, is a rare limonite pseudomorph of troilite.

In view of this marked disagreement it is clear that the true nature of the "organized elements" will be established only after prolonged study by many different scientists competent in various fields. Thus, contributions from bacteriologists, palynologists, micropaleontologists, pathologists, crystallographers, histologists, and organic chemists are necessary, and it is improbable that any single person is competent to identify microscopic objects in all these fields.

Since meteorites, particularly carbonaceous chondrites, are difficult to obtain for study and are at present available to only a small group, we have prepared a catalog of photographs (*14*) of meteorite microstructures for wide circulation. Copies will be sent on application to any scientist. It is hoped in this manner to obtain suggestions as to the identity of the "organized elements" from as wide a group of specialists as possible. It is also hoped that new criteria for identification will be forthcoming.

GREGG MAMIKUNIAN
MICHAEL H. BRIGGS

Chemistry Section, Space Sciences Division, Jet Propulsion Laboratory, California Institute of Technology, Pasadena

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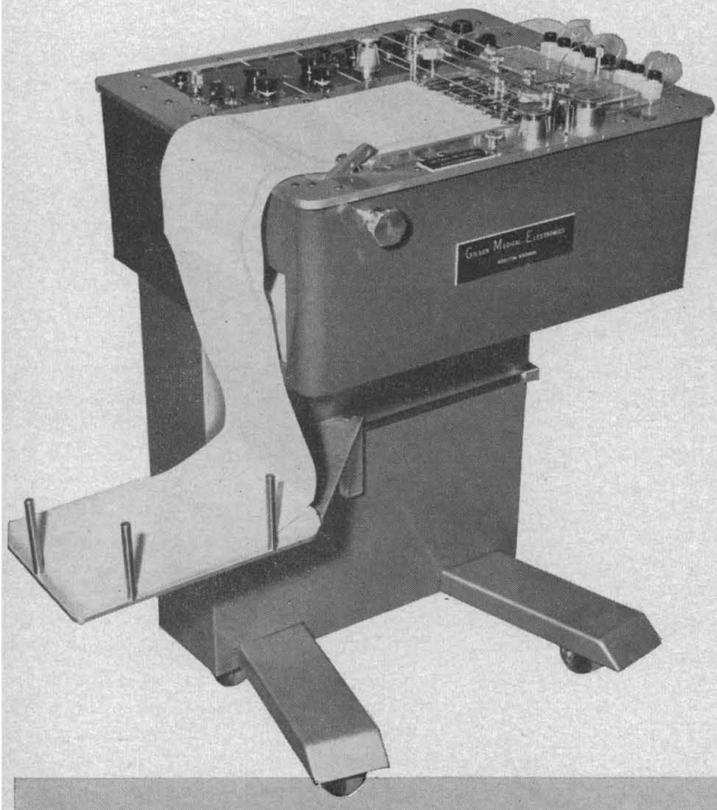

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SCIENCE

A Favorable Environment for Research

Most scientists require a stimulating atmosphere to realize their full creative capacity. The factor of most importance in determining a favorable environment is constructive interaction among colleagues. Discussions can generate enthusiasm and a stream of sparkling ideas. In the implementation of new concepts, members of the group can be mutually helpful. One person may remember a relevant article in the literature. Another may know of an applicable technique. As research progresses, suggestions for other approaches may open new doors. As results come in, discussion of their validity and significance can lead to a more rigorous approach and ultimately to additional insight.

Interaction among members of a research group must be continuous, with minimal intrusion of distracting influences. Indeed, it is distractions that can most readily quench creative fire or prevent it from igniting in the first place. One potent destructive influence is irritation. This can stem from outside events, but it is more likely to arise within the group itself. Jealousy and gossip can be effective poisons, and one trouble maker can ruin the spirit of a laboratory.

Recently, academic scientists have fostered a new form of distraction. A man of any stature, according to the current vogue, must have at least one nonprofessional assistant and, if he is a person of real consequence, a battery of assorted flunkeys. If a scientist is doing routine development work or is administrative head of a large laboratory or department, nonprofessional help is essential. However, if his major function is to perform fundamental research, nonprofessional and even professional assistance can be a drain rather than a help. These aides may render dedicated service, but the price of this service can be destruction of the creative fire. To justify their presence and to satisfy their need for achievement, the scientist must keep them busy—must plan for them and direct them. Later he must hear the details of why things can't be done or admire the flourish with which they were done. Usually members of the staff occupy the space nearest that of the scientist and thus hold a first mortgage on his time. He finds that he has fostered not an intellectually stimulating environment but a sterile one, that he has robbed himself of some of the time needed for creative effort.

I was privileged to be a graduate student in Berkeley during the late 1930's when nuclear research was the big frontier in science and the Radiation Laboratory was one of the most exciting places in the world. The staff of the laboratory consisted almost entirely of pre- and postdoctoral fellows and totaled about 25. There were no secretaries to answer the telephone or make coffee. A machinist fabricated some parts for apparatus, but almost all the experimental equipment was made by the fellows. They also took care of the operation and repair of the cyclotron. In this purely professional atmosphere there was intense concentration on physics. Although the staff (including Professor Lawrence) performed what now would be regarded as menial jobs, their conversation at such times was largely about research.

In today's academic world many tasks are performed by technicians, and supposedly the scientists are free to do higher things. It doesn't work out that way. In practice, scientists spend much of their time being the equivalent of straw bosses in a factory. These days it is easy for a promising young scientist to surround himself with pairs of hands, but he should ask, "Is it worth while?"—P.H.A.

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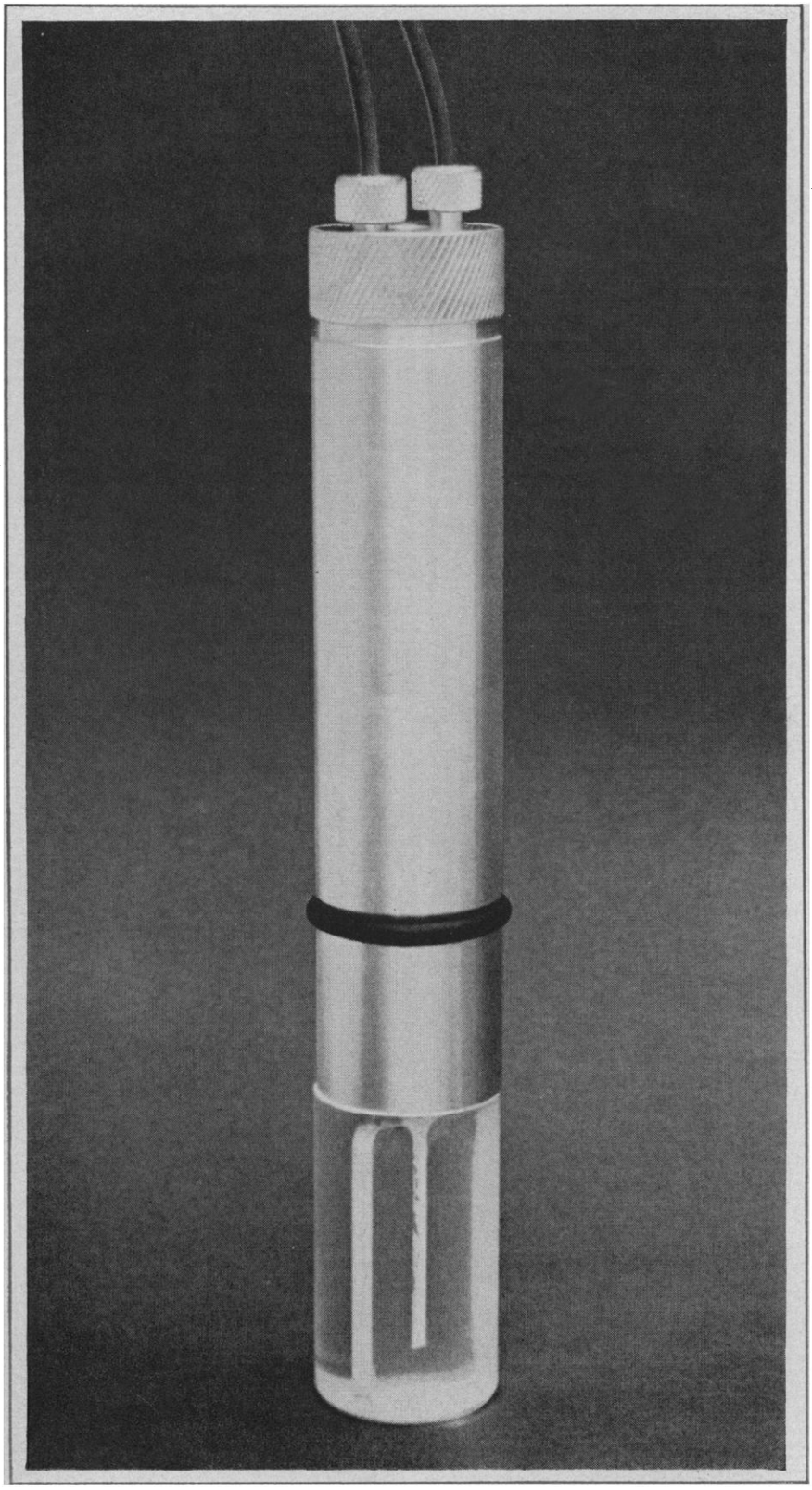

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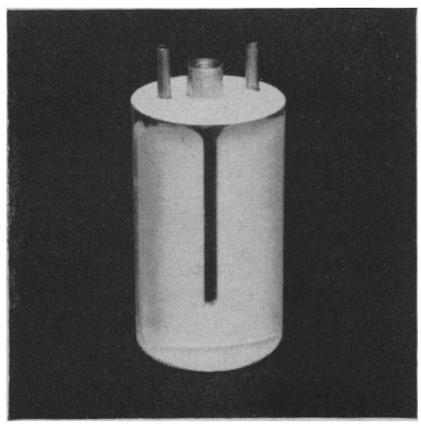

The Chroma/Cell is designed to maintain the lowest fluid pressure drop consistent with good efficiency. The anthracene-packed cell cavity has a large surface-to-volume ratio providing good collection of photons produced by beta particles. The cross-section of the cell cavity presented to the liquid stream is designed to minimize flow impedance and the possibility of turbulence. Cell background is low and almost completely independent of the cavity volume. Most of the normal background encountered is usually a result of radioactive contamination of the photomultiplier tube envelopes.

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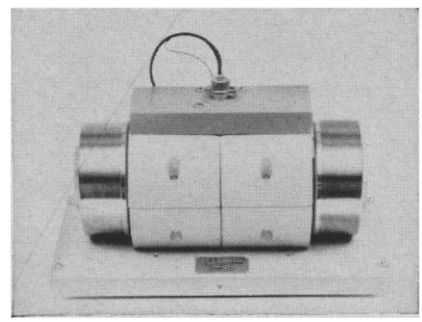
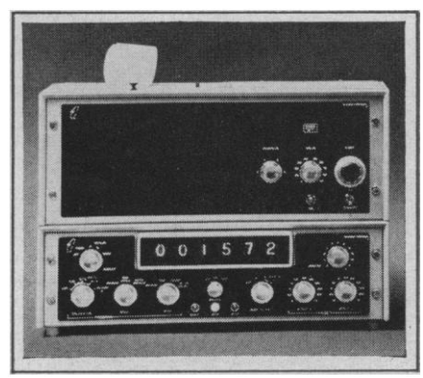
Nuclear-Chicago offers a selection of Chroma/Cell systems for nearly all aqueous flow counting applications.

These systems feature a convenient bench-top detector assembly. They are available with automatic digital and analog readout options. Pulse-height discrimination is performed by a fast three-channel analyzer developed specifically for beta spectrometry.



Chroma/Cell systems are an excellent choice for continuous-flow scintillation counting. The bench-top detector assembly illustrated above also allows you to analyze individual liquid scintillation samples when not monitoring liquid flow.



Nuclear-Chicago's flow monitoring systems offer a choice of analog and/or digital read-out instruments to fit your specific needs. The combination scaler/timer illustrated above provides fast digital print-out of data in time intervals as short as one second. Graphic recorders are available in single-channel, dual-channel, and integrating versions, and linear or log ratemeters may be selected.

Convert your liquid scintillation spectrometer to automatic flow counting in minutes

The Chroma/Cell detector can be utilized separately to extend the usefulness of all Nuclear-Chicago liquid scintillation spectrometry systems. Just insert the Chroma/Cell in the detecting chamber of any Series 700 or 720 spectrometer for economical conversion to continuous liquid flow monitoring.

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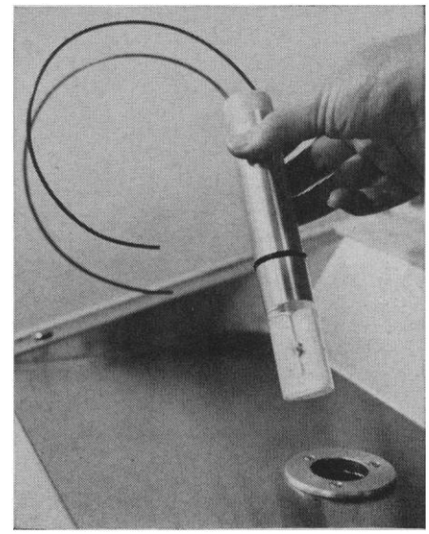
These direct conversion features, available only with Nuclear-Chicago instruments, allow the researcher to enlarge the data-producing capabilities of his liquid scintillation spectrometer.



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Recent AAAS Symposium Volumes

#72. **Spermatozoan Motility.**

1962. 322 pages. 113 illustrations.
Edited by: David W. Bishop.
For the first time the details of sperm motility are here presented in monograph form. A wealth of previously unpublished data. A valuable souce of reference for the student and investigator, as well as for the practitioner of applied reproductive biology.

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#71. **Great Lakes Basin.**

1962. 320 pages. 92 illustrations.
Edited by: Howard J. Pincus.
The reader will find here material on pure and applied science, accounts of new research and reviews of material published elsewhere, historical and social studies, and pleas for action and planning.

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#70. **Fundamentals of Keratinization.**

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The fields of anatomy, dentistry, dermatology, medicine, pathology, and zoology are represented in this volume.

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". . . strongly recommended to all who are in search of facts and source material on the sciences in China."—*Science*, 22 September 1961

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1960. 436 pages. 65 illustrations.
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"The 26 contributors include many of the most respected names in American gerontology, and the chapters cover a wealth of material."—*Journal of Gerontology*

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#64. **Calcification in Biological Systems.**

1960. 526 pages. 283 illustrations.
Edited by: R. F. Sognnaes.
"Those interested in current concepts of mineralization of calcified tissues will find in this text the sources of current knowledge on the subject."—*American Journal of Orthodontics*, May 1961

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1960. 372 pages. 147 illustrations.
Edited by: Allan D. Bass and Gordon K. Moe.
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Structural Chemistry: Techniques

A symposium on the determination of molecular structure, ranging from discussions of classical diffraction techniques to reports on magneto-optical rotation spectra and the Mössbauer effect, was part of the program of the chemistry section of the AAAS at the Philadelphia meeting in December. Eight papers were presented.

A technique which will see wide application in the future is magneto-optical rotation spectroscopy (MOR), described by Victor Shashoua (du Pont Company). This is an extension of the method of optical rotatory dispersion in which the rotation of polarized light by the sample is measured as a function of frequency in the visible and ultraviolet regions of the spectrum. While the optical rotatory dispersion method (ORD) is limited to substances which are naturally optically active, the new method has no such limitation. All substances in a magnetic field rotate the plane of polarized light. Because of this, there are no inert solvents for this technique and considerable care has to be exercised in the interpretation of the results. Working with a magnetic field of 10,000 gauss and temperature control of ±0.1°, Shashoua was able to report a precision of ±0.003° in measuring the rotation.

The spectra obtained are similar in general character to the ORD spectra but often show considerably more detail than ORD shows in compounds which are naturally optically active. Results were shown for a wide variety of substances ranging from inorganic complexes to polypeptides. Among other effects this technique can detect triplet states as well as changes such as those due to complexing and change of *p*H on hemoglobin. More will be heard in the future about this generally applicable technique.

S. S. Hanna reviewed recent work with the Mössbauer effect. Because of the extreme sharpness of the gamma-ray lines, differences in absorption can be achieved by use of the Doppler effect produced by very low relative velocities of source to absorber. Thus, line widths of 10^{-8} electron volts can be measured by use of the drive mechanism on an ordinary lathe bed. The position of the nuclear energy levels is affected by the d-c magnetic field produced at the nucleus by the orbital electrons. Although only electrons in *s* orbitals contribute to the magnetic field at the nucleus, these electrons can be polarized by unpaired electrons in other orbitals. The Mössbauer effect thus is very sensitive to the electronic environment of the absorbing nucleus. Considerable data were presented for absorption by iron atoms in various chemical environments, but no clear relationship with molecular structure has been developed as yet. It appears that the Mössbauer effect is the best test available for the correctness of calculated electron density functions near the nucleus.

Walter C. Hamilton (Brookhaven National Laboratory) considered some of the more recent structural studies in which neutron diffraction techniques are used. Among the works cited was that of the square planar structure of XeF_4 and the linear structure of XeF_2.

M. KENT WILSON
Department of Chemistry, Tufts University, Medford, Massachusetts

Tongues of Science

The complex of problems which confronts the scientist in his attempt to take advantage of knowledge contributed by his colleagues in tongues other than his own was the subject of the symposium presented by the Information and Communication Section (T) on 26 and 27 December at the AAAS meeting in Philadelphia. The symposium, entitled Other Tongues of Science: Assimilating the Literature of Other Nations, was cosponsored by the National Science Foundation.

The symposium's 26 participants represented government and private agencies, organizations, societies, industries, and institutions actively supporting and carrying on programs to insure the inflow of scientific information into the United States and to make it available to the scientist in usable forms. While estimates vary somewhat, only about 35 percent of the scientific literature, even when it is made available, can be understood in the original by individuals competent to read English alone. Scientists who read Russian in addition to English have access to about 50 percent, or half of the world's scientific literature.

The currently extensive acquisition, translation, and publication activities in all areas and fields of science, costly both in terms of scientific manpower and in funds consumed, must be evaluated. How effective are the present translation programs? How necessary

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Brig. Gen. Webb's assignment

You sway in the Sea Beach Express under Manhattan and note how deeply engrossed is the young woman across the aisle in reading about movie stars. You walk down a side street in a Kansas town in the evening and note how every family in every house sits transfixed before the blue bottle. The motion picture camera has held the people in thrall for a long time now. You have your opinions and impressions of how most professional motion picture cameras are employed. You could be wrong.

Not long ago we announced a new 16mm professional motion picture camera, the KODAK Reflex Special. Embodies 10 years' research and design, we told the movie-makers. They bought. Then we took a look at exactly who they might be. Not entirely the crowd that the careless observer might have guessed—

Cineangioradiographers who make clinical x-ray movies of the great vessels and valves of the heart.

Psychiatrists.

Petroleum engineers.

Sociologists, professional ones.

Surgeons.

Aerospace medical people.

A biologist who shoots 5,000 feet per month of time-lapse motion pictures of tissue cultures, mostly through the oil-immersion microscope objective, and who has opened up dynamic morphology by photographing the mechanism of neoplasia, the functioning of organoids within the living cell, and the structural changes by which it answers physical and chemical changes in its environment.

A physicist, a mathematician, and a few others talked one night at Woods Hole till dawn about the motion picture as a research tool and means of communication between scientists, quite apart from science teaching. They moved the National Academy of Sciences, the National Research Council, and the National Science Foundation. These imposing bodies have correlated their complex functions to seek out the scholar bending a movie camera to his will in some ignored nook of the campus. Their survey has turned up two or three hundred of him.

NSF has granted funds to the National Academy of Sciences to start the American Science Film Association. Brig. Gen. Willard Webb has left the Library of Congress to become administrative director of ASFA. The isolated researcher with a movie camera and the scientifically dead-serious businessman with priceless studies of whales copulating can look to ASFA. It will be able to tell one how others have solved problems he is still struggling with and to help him make contact with colleagues in various parts of the world who want to see *his* footage. He ought to make sure that his name and his interests are on file with American Science Film Association, 704 Seventeenth St. N. W., Washington 6, D. C.

Neither ASFA, NSF, NRC, nor NAS endorses any particular brand name, but we do. In doing so we can answer many pertinent questions about cameras, projectors, film, processing services, and auxiliary equipment for anybody who asks them of Eastman Kodak Company, Motion Picture Film Department, Rochester 4, N. Y.

An interest in silver

To avoid crippling confusion in motivation, one stoutly reaffirms the belief of ages past that one is in business for the money. Today, however, other motivators exhibit their power, and though we still pursue the almighty dollar fiercely, once we have caught it we give little thought to the promise printed on it under President Washington's portrait. It promises silver.

Our house is founded on this truly unique gem of the periodic table. The marvelous behavior of the crystal lattice that it forms with bromine, when properly studded with impurities, makes photography possible; the importance of photography in both the serious and the gay is a major component of the force that attracted over 10^9 almighty dollars into the till last year. (Figuratively. Physically they are only a configuration of magnetized domains on a strip of iron oxide in some vault. Wonderful is the mind of man.)

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We also offer Silver Nitrite, Silver Arsenate, Silver Carbonate, Acetic Acid Silver Salt (*aren't we silly in our nomenclature!*), Silver Cyanate, p-Toluenesulfonic Acid Silver Salt, *numerous reagents* for *silver, and an invitation to all chemists interested in silver to keep in touch with* EASTMAN *Organic Chemicals Department, Distillation Products Industries, Rochester 3, N. Y. (Division of Eastman Kodak Company).*

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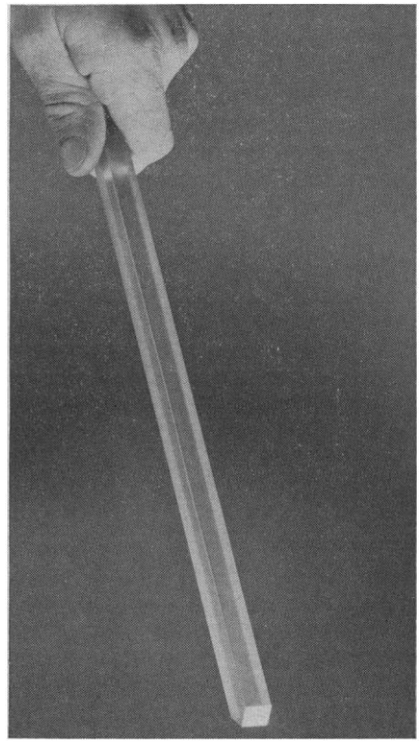

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are they? Are U.S. scientists being trained to handle foreign literature competently without translations? Should entire journals be translated or should translated titles or abstracts first be circulated to scientists as bases for the selection of certain full papers to be translated? Can answers to these questions be the same for all scientific disciplines? Or does the literature of one branch of science differ significantly from that of another?

One session of the symposium was devoted to accounts of how foreign scientific information is handled in other countries. Representatives of information agencies in Great Britain, Canada, Japan, and Scandinavia presented details of current programs in their respective areas. Cooperation, coordination, and integration of the work of various information groups and interests within the country contributed significantly. Traditional early introduction of foreign languages into school curricula provides those who enter science with a good working knowledge of those languages.

As to the nature of translations, whole journal (cover-to-cover) translations apparently are desirable in certain disciplines such as physics. Most of the significant Russian research reports in physics, for example, are concentrated in relatively few journals. By translating these completely one can cover the field remarkably well. In other fields of Russian science, such as astronautics, research information is diffuse; reports are scattered throughout many publications. To cover Russian astronautics, then, a selection of articles to be translated becomes a necessity.

It was acknowledged that the broadening of language training programs for U.S. scientists is needed. Merely satisfying language requirements for advanced degrees provides the young scientist with only limited ability to read the scientific literature in these tongues. Furthermore, he is apt to select languages he feels are easier to master, rather than those he is most likely to require to cover the literature of his field. Even at best, the linguistically-gifted and well-trained scientist seldom comprehends the subtleties of more than two foreign languages. He too must depend on translations for much of the literature in other tongues.

As the literature increases in volume in countries as yet scientifically immature, the language problems will increase proportionately.

It seems clear that for the continued

health and growth of science in the United States substantial foreign translation programs must be continued for the foreseeable future.

Derek J. deSolla Price was the speaker at a Section T luncheon. His subject, "A calculus of scientific information and manpower," dealt with such propositions as these: the number of scientists in a field increases as the squares of the number of good scientists and amount of good work; the dollar cost of research increases as the square of the total number of scientists employed; the more scientifically mature a country becomes, the less will be its share of the world-total of scientific work. As a final corollary of his theory he suggested that the scientific paper as a means of communication is fast dying and will be replaced in part by person-to-person communication and in part by machine-handled data and perhaps also some such device as a scientific daily newspaper analogous to the *Wall Street Journal* or the *Financial Times.*

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Forthcoming Events

April

1–2. **Process Automation,** 5th symp., Santa Monica, Calif. (D. Kader, P.O. Box 1065, Canoga Park, Calif.)

1–3. Oak Ridge **Radioisotope** Conf.—Applications to Physical Science and Engineering, Gatlinburg, Tenn. (Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn.)

1–4. American **Radium Soc.,** annual, White Sulphur Springs, W. Va. (C. G. Stetson, ARS, Dept. of Radiology, Englewood Hospital, Englewood, N.J.)

1–5. American College of **Physicians,** Denver, Colo. (E. C. Rosenow, Jr., 4200 Pine St., Philadelphia 4, Pa.)

1–27. World **Meteorological** Organization, 4th congr., Geneva, Switzerland. (Secretariat, WMO, 41 Avenue Guiseppe Motta, Geneva)

2–6. **Psychology,** 8th Inter-American congr., Mar La Plata, Argentina. (G. M. Gilbert, Psychology Dept., Long Island Univ., Brooklyn 1, N.Y.)

3–5. American Soc. of **Internal Medicine,** annual, Atlantic City, N.J. (ASIM, 3410 Geary Blvd., San Francisco 18, Calif.)

3–5. **Streamflow Regulation** for Quality Control, symp., Cincinnati, Ohio. (J. E. McLean, Field Operations Section, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Pkwy., Cincinnati 26)

3–6. National Council of Teachers of **Mathematics,** Pittsburgh, Pa. (M. H. Ahrendt, 1201 16th St., NW, Washington 6)

4–5. Agricultural **Meteorology**, 5th natl. conf., Lakeland, Fla. (American Meteorological Soc., 45 Beacon St., Boston 8, Mass.)

4–5. **Systems**, 2nd symp., Cleveland, Ohio. (M. Mesarovic, Case Inst. of Technology, University Circle, Cleveland 6)

4–6. International Assoc. for **Dental Research**, British section, 11th annual, London, England. (C. Tonge, Dept. of Anatomy, King's College Medical School, Newcastle upon Tyne 1, England)

4–6. Latin **Medical** Conf., Rome, Italy. (Prof. Urso, Policlinico Umberto 1, Viale Policlinico, Rome)

5–6. Alabama **Acad. of Science**, Tuscaloosa. (W. B. DeVall, Forestry Dept., Auburn Univ., Auburn, Ala.)

6. **Paleontological Research** Inst., Ithaca, N.Y. (R. Harris, PRI, 109 Dearborn Pl., Ithaca)

7–9. Royal **Microscopical** Soc., Bethesda, Md. (M. C. Brown, 4409 Glenridge St., Kensington, Md.)

7–13. Panamerican **Diabetic** Congr., 2nd, Chicago, Ill. (Diabetic Inst. of America, Inc., Suite 1646, Chicago 2, Ill.)

8–10. American Assoc. for **Thoracic Surgery**, 43rd, Houston, Tex. (AATS, 7730 Carondelet Ave., St. Louis, Mo.)

8–10. **Feedback Mechanisms in the Nervous System**, Villahermosa, Mexico. (E. Eidelberg, Div. of Neurobiology, St. Joseph's Hospital, 350 W. Thomas Rd., Phoenix, Ariz.)

8–10. **Seismological** Soc. of America, Berkeley, Calif. (K. V. Steinbrugge, 465 California St., San Francisco 4, Calif.)

8–11. American **College Personnel** Assoc., Boston, Mass. (B. A. Kirk, Counseling Center, Univ. of California, Berkeley 4)

9–11, American Assoc. of **Anatomists**, Washington, D.C. (L. B. Flexner, Dept. of Anatomy, School of Medicine, Univ. of Pennsylvania, Philadelphia)

10–11. Engineering Aspects of **Magnetohydrodynamics,** 4th symp., Berkeley, Calif. (G. S. Janes, Avco-Everett Research Laboratory, Everett 49, Mass.)

11–13. Natural **Radiation** Environment, intern. symp., Houston, Tex. (J. A. S. Adams, Dept. of Geology, Rice Univ., P.O. Box 1892, Houston 1)

11–13. Eastern **Psychological** Assoc., 34th annual, New York, N.Y. (M. A. Iverson, Dept. of Psychology, Queens College of the City University of New York, Flushing 67)

11–13. **Pulsatile Blood Flow**, intern. symp., Philadelphia, Pa. (E. O. Attinger, Presbyterian Hospital in Philadelphia, 51 N. 39 St., Philadelphia 4)

11–13. Southern Soc. for **Philosophy and Psychology**, Miami Beach, Fla. (E. A. Alluisi, Human Factors Research Lab., Lockheed Georgia Co., Marietta, Ga.)

12–13. Pennsylvania **Acad. of Science**, East Stroudsburg, (K. B. Hoover, Messiah College, Grantham, Pa.)

14–18. **Electrochemical** Soc., Pittsburgh, Pa. (ES, 30 E. 42 St., New York 17)

15–16. American Soc. for **Artificial Internal Organs**, annual, Atlantic City, N.J. (B. K. Kusserow, Medical College of Vermont, Burlington)

15–20. Association for Research into **Periodontal Diseases**, 17th intern., Athens, Greece. (O. Louridis, ARPA, 8 rue Hippocratous, Athens)

16–18. **Optical Masers**, intern. symp., New York, N.Y. (L. Bergstein. Symp. Committee, Polytechnic Inst. of Brooklyn, 55 Johnson St., Brooklyn 1, N.Y.)

16–19. USAF **Aerospace Fluids and Lubricants** Conf. (unclassified), San Antonio, Tex. (J. Harmon, Southwest Research Inst., 8500 Culebra Rd., San Antonio)

16–20. American **Physiological** Soc., Atlantic City, N.J. (H. Rahn, Dept. of Physiology, Univ. of Buffalo, Buffalo 14, N.Y.)

16–20. British Inst. of **Radio Engineers**, Southampton, England. (BIRE, 9 Bedford Sq., London, W.C.1, England)

16–20. Federation of American Societies for **Experimental Biology**, annual, Atlantic City, N.J. (M. O. Lee, 9650 Wisconsin Ave., NW, Washington 14)

16–21. American Soc. for **Experimental Pathology**, Atlantic City, N.J. (K. M. Brinkhous, Dept. of Pathology, Univ. of North Carolina, Chapel Hill)

16–21. American Inst. of **Nutrition**, Atlantic City, N.J. (A. E. Schaefer, Bldg. 16, Rm. 207, NIH, Bethesda 14, Md.)

16–24. **Forensic Immunology, Medicine, Pathology, and Toxicology**, 3rd intern. meeting, London, England. (I. Sunshine, 2121 Adelbert Rd., Cleveland, Ohio)

17–19. Institute of **Environmental Sciences**, technical meeting and equipment exposition, Los Angeles, Calif. (Natl. Office, P.O. Box 191, Mt. Prospect, Ill.)

17–19. **Institute of Physics and the Physical Society**/Joint British Committee for Vacuum Science and Technology, conf., Liverpool, England (Inst. of Physics, 47 Belgrave Sq., London, S.W.1, England)

17–19. **Nonlinear Magnetics**, intern. conf., Washington, D.C. (Inst. of Radio Engineers, 1 E. 79 St., New York 21)

17–19. **Plastics**, joint congr. of West Germany, Switzerland, and Austria, Vienna. (Wirtschaftsförderungsinstitut der Bundeskammer der gewerblichen Wirtschaft, 3 Hoher Markt, Vienna 1, Austria)

17–20. American **Astronomical** Soc., meeting, Tucson, Ariz. (P. M. Routly, 265 Fitz Randolph Rd., Princeton, N.J.)

17–20. American **Geophysical** Union, annual, Washington, D.C. (AGU, 1515 Massachusetts Ave., NW, Washington 5)

17–20. German Soc. of **Surgery**, 80th meeting, Munich. (E. Derra, Chirurgische Klinik der Medizinischen Akademie, Moorenstr. 5, Düsseldorf, Germany)

17–21. Man, **Technology, and Medicine in Nuclear and Space Age**, 3rd intern. congr., Rome, Italy. (A. J. Shneiderov, 1945 Calvert St., NW, No. 44, Washington 9)

18. Society of **Plastics Engineers**, regional technical conf., Syracuse, N.Y. (R. R. Collis, c/o Joseph Cashier & Co., Inc., 810 E. Water St., Syracuse)

18–20. **Neurosurgery**, 2nd European congr., Rome, Italy. (B. Guidetti, Viale Universita 30, Rome)

18–20. **Stereology**, 1st intern. congr., Vienna, Austria. (Vienna Medical Acad., Alserstrasse 4, Vienna 9)

18–21. Radiology in **Otolaryngology**, intern. symp., Bordeaux, France. (G. Guillen, 45, cours du Marechal Foch, Bordeaux)

SCIENCE AND ENGINEERING TELEVISION JOURNAL

The "Science and Engineering Television Journal" is televised weekly at 11:10 P.M. in cooperation with New York City's educational TV station, WNDT/Channel 13. These 1-hour telecasts are designed to supplement the traditional channels of communication among scientists and engineers. Plans are being considered which will make "Television Journal" recordings available to other ETV stations about the country.

14 March: **BIOMETEOROLOGY**—American Meteorological Society. Chairman: Dr. Fred Sargent, Professor of Physiology, University of Illinois.
Definition of biometeorology within the framework of ecology; discussion of types of environment; problems of quantification of elements within an environment; application of biometeorology studies.

21 March: **CLOSING THE MEASUREMENT GAP**—AAAS in collaboration with the National Bureau of Standards. Chairman: Dr. Robert D. Huntoon, Deputy Director of the National Bureau of Standards.
The program will attempt to create increased awareness of the vital role that measurement plays in the physical sciences, the life sciences, and engineering.

28 March: **COMMENTARY ON CURRENT ASTRONOMY**—American Astronomical Society. Chairman: Dr. William Liller, Department of Astronomy, Harvard University.
The program will be directed to scientists and engineers in all fields; discussion of the most significant developments in modern astronomy—the most exciting areas of current astronomical research.

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20. New Jersey **Acad. of Science**, annual, Glassboro, N.J. (H. L. Silverman, 361 Highland Ave., Newark 4, N.J.)

21–24. **Rare Earth**, conf., Grand Bahama Island. (K. S. Vorres, Dept. of Chemistry, Purdue Univ., Lafayette, Ind.)

21–25. International College of **Surgeons**, North American Federation, annual, Los Angeles, Calif. (W. F. James, 1516 Lake Shore Dr., Chicago 10, Ill.)

22–24. Institute of the **Aerospace** Sciences, Dallas, Tex. (R. R. Dexter, 2 E. 64 St., New York 21)

22–24. American **Oil Chemist** Soc., Toronto, Ont., Canada. (K. F. Mattil, Swift & Co., Packers and Exchange Ave., Chicago 9, Ill.)

22–24. **Biomedical Engineering**, 3rd symp., San Diego, Calif. (J. H. McLeod, Program Committee, 8484 La Jolla Shores Dr., La Jolla, Calif.)

22–25. American **Physical Soc.**, Washington, D. C. (K. K. Darrow, APS, Columbia Univ., New York 27)

22–26. **Radioisotopes and Radiation** in Plant and Animal Insect Control, intern. symp., Athens, Greece. (J. H. Kane, Intern. Conferences Branch, Div. of Special Projects, U.S. Atomic Energy Commission, Washington 25)

22–27. American Acad. of **Neurology**, Minneapolis, Minn. (C. A. Kane, 80 E. Concord St., Boston, Mass.)

23–25. Electronic Processes in **Dielectric Liquids**, Durham, England. (Administration Assistant, Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

24–26. German Soc. of **Hygiene and Microbiology**, Würzburg. (W. Herrmann, Städtischen Krankenanstalten, Robert Koch-Haus, Essen, Germany)

24–26. Institute of **Radio Engineers**, regional conf., San Diego, Calif. (E. Herz, 4444 Mt. Castle Ave., San Diego 17)

24–28. German **Roentgen** Congr., 44th, Baden-Baden, Germany. (H. Lossen, GRC, Universitäts-Strahleninstitut, Langenbeckstr. 1, Mainz, Germany)

25–27. Mississippi **Acad. of Sciences**, University. (C. Q. Sheely, Dept. of Chemistry, Mississippi State College, State College)

25–27. Ohio **Acad. of Science**, Wilberforce. (G. W. Burns, 505 King Ave., Columbus 1, Ohio)

25–27. **Population** Assoc. of America, Philadelphia, Pa. (P. C. Glick, Bureau of the Census, Washington 25)

25–27. West Virginia **Acad. of Science**, Buckhannon. (J. A. Duke, S.J., Dept. of Chemistry, Wheeling College, Wheeling, W. Va.)

25–28. Association of **Clinical Scientists**, Louisville, Ky. (R. P. MacFate, 54 W. Hubbard St., Chicago 10, Ill.)

26–27. American **Mathematical** Society, University Park, N.M. (AMS, 190 Hope St., Providence 6, R.I.)

26–27. American Assoc. of **University Professors**, San Francisco, Calif. (W. P. Fidler, AAUP, 1785 Massachusetts Ave., NW, Washington 6)

26–27. Illinois State **Acad. of Science**, Carbondale. (C. L. Kanatzar, MacMurray College, Jacksonville, Ill.)

26–27. South Dakota **Acad. of Science**, Rapid City. (T. Van Bruggen, State Univ. of South Dakota, Vermillion)