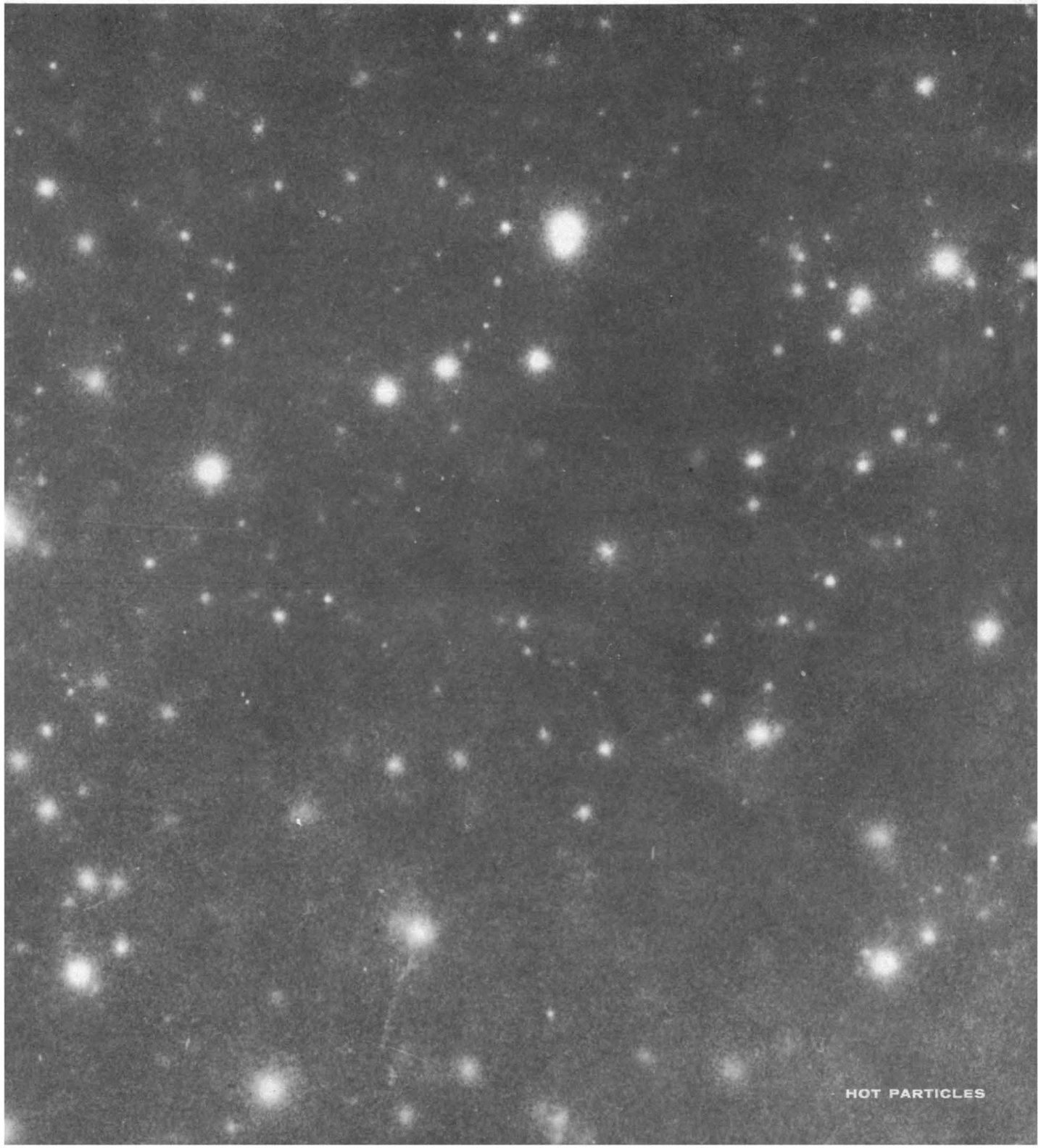
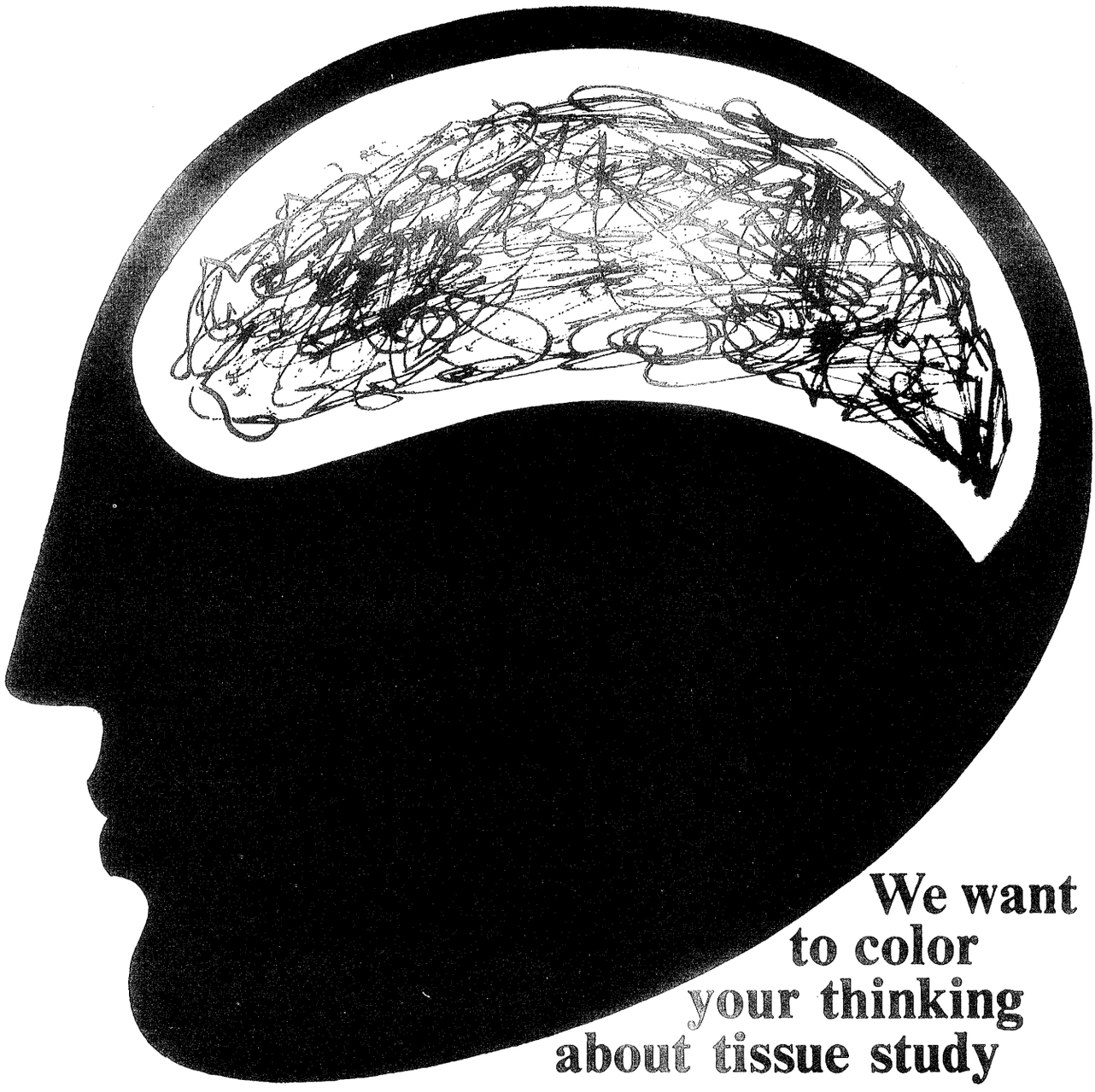
SCIENCE

5 August 1966

Vol. 153, No. 3736

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE





We want to color your thinking about tissue study

Tetrazolium Salts were first described in 1892 but not studied extensively until 1941.

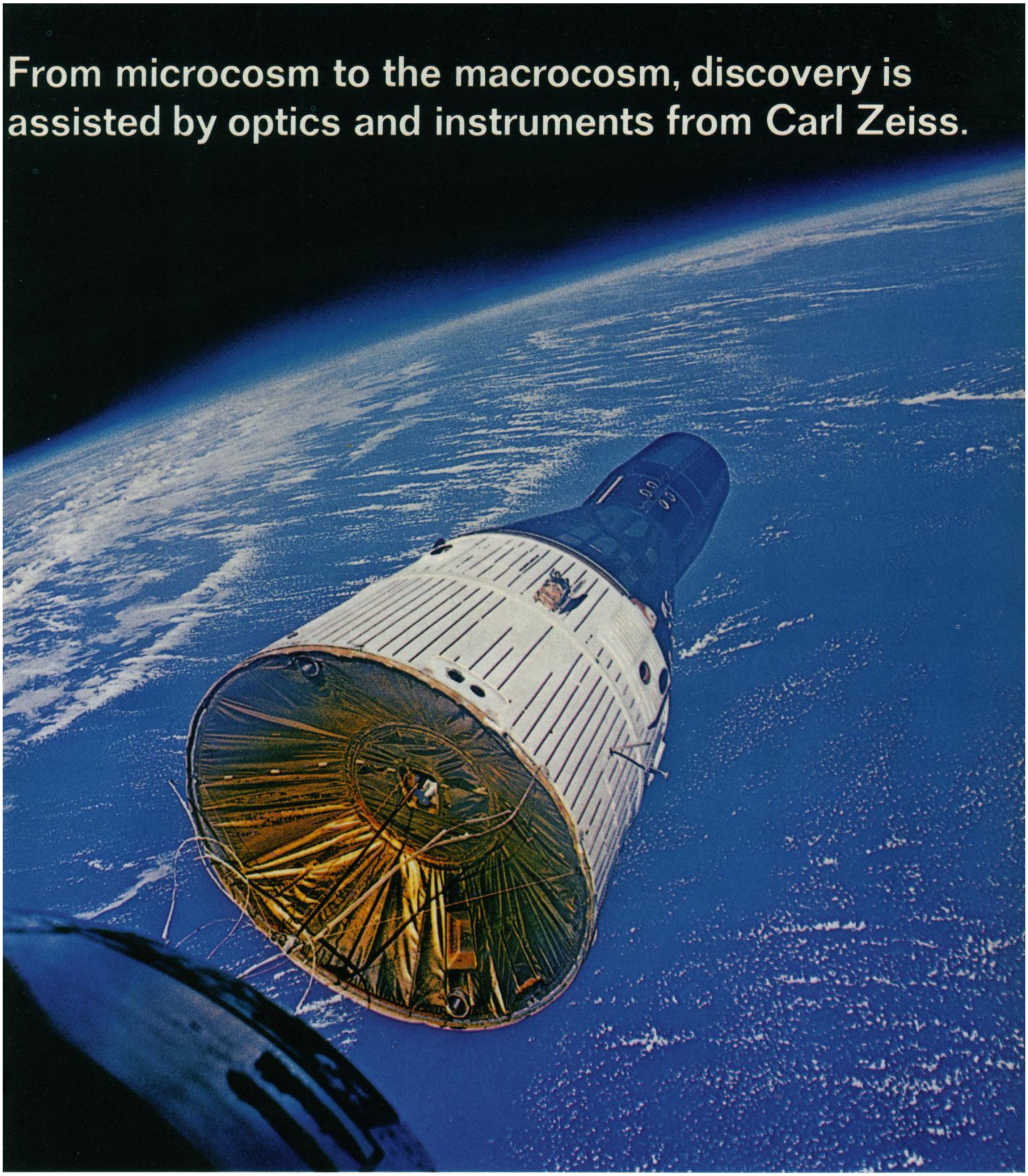
Recent study, however, has confirmed their great value for research investigations in enzymology, histochemistry, bacteriology, plant biology and radiation effects due to their ability to be reduced to an easily identifiable color in viable tissue.

Now, your lab can acquire complete initial stock of all available Tetrazolium Salts in 100 mg. containers for just $53.50. When ordering, specify NBCo Tetrazolium 32 Kit. Included among the 32 Tetrazolium Salts in the kit are:

Triphenyl Tetrazolium Chloride ■ Blue Tetrazolium ■ Iode NitroTetrazolium Chloride ■ Neotetrazolium Chloride ■ Tetranitro Blue Tetrazolium Chloride ■ Nitro BT ■ M-Nitro Neotetrazolium Chloride (M-Nitra NT) ■ 3 (4,5 Dimethyl Thiazolyl 1 - 2) 2,5 Diphenyl Tetrazolium Bromide ■ Additional salts, derivatives of the preceding, now offered for the first time.

NBCo offers stat service on Tetrazolium Salts. Phone collect, 216-662-0212 (USA only). NBCo will process your order and guarantee shipment within 60 minutes of your call; one-day delivery anywhere in the continental USA, 80 hours anywhere in the world. Send for our free catalog containing more than 3000 items.

NUTRITIONAL BIOCHEMICALS CORPORATION
21010 Miles Avenue
Cleveland, Ohio 44128 U.S.A.



The first space rendezvous was photographed through a Carl Zeiss lens, the Zeiss Planar f/2.8 80mm.

ZEISS

THE GREAT NAME IN OPTICS

CARL ZEISS
WEST GERMANY

444 FIFTH AVE., NEW YORK, N. Y. 10018 • OFFICES IN: ATLANTA, CHICAGO, LOS ANGELES, SAN FRANCISCO, SEATTLE, WASHINGTON, D. C., BOSTON

Report from

BELL LABORATORIES

Superfluidity and superconductivity: a common origin

In 1962 B. D. Josephson of Cambridge University suggested that if a voltage were maintained between two pieces of superconductor joined by a thin dielectric layer, the matter waves in each piece of the superconductor would oscillate coherently, at frequencies differing by an amount proportional to the voltage between them.

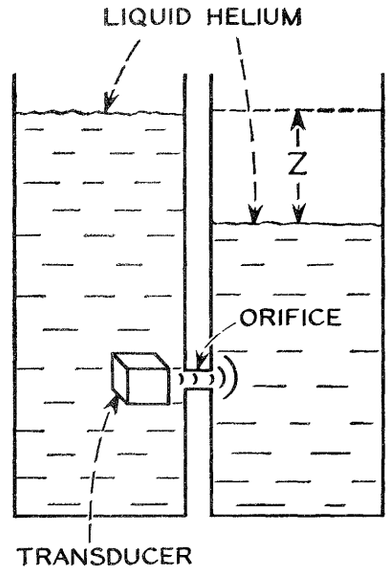
This led P. W. Anderson and P. L. Richards at Bell Telephone Laboratories to reason as follows: if, as many scientists believe, superfluidity has the same matter-wave origin as superconductivity, it should be possible to perform an analogous superfluidity experiment. In this case, oscillation would take place at ultrasonic frequencies and would be proportional to the difference in height of two columns of superfluid, joined by a tiny orifice (see diagram and graph). Their success with these experiments strongly confirms the similarity between the two phenomena.

Theory predicts that the matter waves in each column are coherent (in phase) but that the wave frequency in one column differs from that in the other by an amount proportional to the height difference. The difference frequency is evidenced by an alternating flow through the orifice, superimposed on the overall steady flow from the high to the low column.

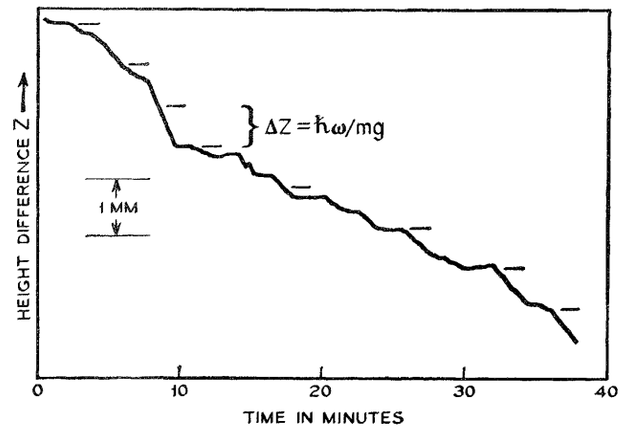
Anderson and Richards detect this alternating flow by locating a small transducer near the orifice and operating it at constant frequency. As the liquid levels gradually equalize, the height-determined difference frequency successively equals a number of simple multiples of the transducer frequency. At each of these points, the steady flow is strongly affected or may even cease briefly.

Bell Telephone Laboratories
Research and Development Unit of the Bell System

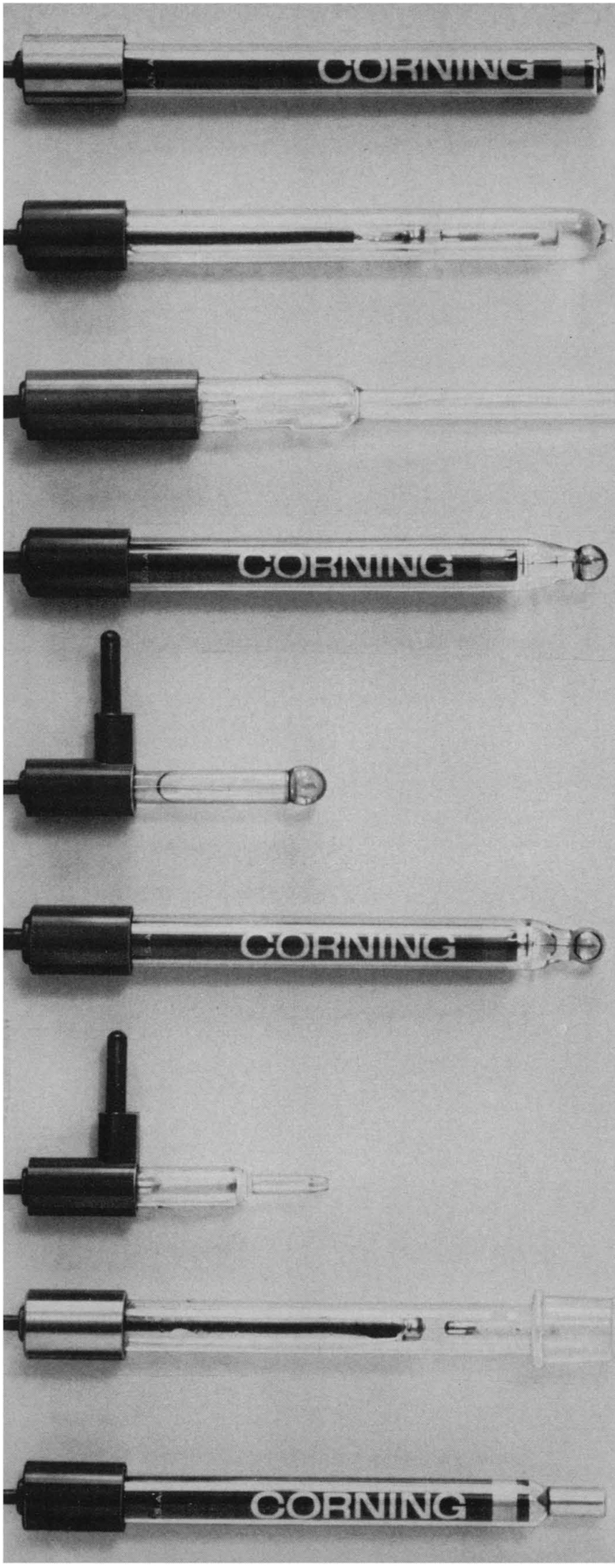
P. W. Anderson, left, and P. L. Richards with apparatus used in superfluidity experiment.



Height difference between two columns of superfluid helium is analogous to voltage difference between superconductors. A superfluid would normally flow smoothly and rapidly through the 15-micron diameter orifice. In the Anderson-Richards experiment, however, flow proceeded in steps (illustration below).



The two columns of superfluid helium begin at different heights (ordinate of graph). When the ultrasonic oscillator (69.3 KHz) is turned on, the two heights equalize in steps, as shown. The explanation is that the frequency of matter waves within superfluid helium changes with changing difference in heights of the two columns. Changing frequency results in a series of matter frequencies that are integral multiples and submultiples of the frequency of the ultrasonic waves impressed on the orifice. As a result, helium is periodically impeded as it flows from the high- to low-level column. The results are summarized by the quantum rule shown on the graph where Z is the height difference, $\hbar$ is Planck's constant over 2π, ω is frequency, m is the mass of the helium atom, and g is the gravitational acceleration.



Are you using the only electrodes so good they're guaranteed?

Only CORNING makes electrodes that perform so well they're guaranteed for six full months. This unprecedented guarantee, detailed below, covers the complete CORNING line: pH Electrodes with Triple-Purpose Glass Membrane, and reference, combination, and metallic electrodes.

"Any CORNING® electrode purchased by a user between July 1, 1966, and December 31, 1966, is guaranteed for a period of six months from the date of customer registration. The guarantee applies to any cause that renders the electrode inoperative during six months of normal laboratory use." Conditions: 1. Register the purchase with Corning Glass Works, Medfield, Mass., within one month of purchase date. 2. Return the inoperative electrode directly to Medfield. Upon receipt of the registered inoperative electrode, Corning Glass Works will promptly send the user a replacement electrode free of charge.

Order soon from your CORNING Scientific Instruments dealer. Ask him for our complete electrode and instrument catalog, or write to the address above.

An electrode guarantee—one more example of the new standards that come from CORNING.

5 August 1966
Vol. 153, No. 3736

SCIENCE

SCIENCE is published weekly on Friday and on the fourth Tuesday in November by the American Association for the Advancement of Science, 1515 Massachusetts Ave., N Washington, D.C. 20005. Now combined with **The Scientific Monthly®**. Second-class postage paid at Washington, D.C. Annual subscriptions $8.50; foreign postage, $1.50; Canadian postage, 75¢; single copies, 35¢, except **Guide to Scientific Instruments**, which is School year subscriptions: 9 months, $7; 10 months, $7.50. Provide 4 weeks' notice for change of address, giving new and old address and zip numbers. Send a recer address label. SCIENCE is indexed in the **Reader's Guide to Periodical Literature**.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Autoradiograph of the rain residue collected in Japan, 20 May 1965. The residue was exposed to Kodak KK x-ray film for 6 days (23–29 November 1965). The light spots correspond to the highly radioactive particles produced in the second Chinese nuclear explosion on 14 May 1965 (about × 5). See page 633. [K. Yoshikawa, University of Arkansas]

WASHINGTON, D. C. • 133rd AAAS

Order Your General Program

It provides complete, detailed information about all the sessions and symposia scheduled, the Annual Exposition of Science and Industry, and the Science Theatre.

Program Highlights

Moving Frontiers of Science: Lynn White on The Historical Roots of Our Ecologic Crisis; Th. Dobzhansky on the Changing Man; Thomas F. Malone on Weather Modification; Daniel S. Greenberg on Problems of Securing Constructive Legislation.

Washington Academy of Sciences Invited Address: Speaker: P. M. S. Blackett, Nobel laureate in physics, president of the Royal Society.

Interdisciplinary Symposia: Science in International Perspective with P. M. S. Blackett, Sir Lawrence Bragg, Victor F. Weisskopf; Political Aspects of the Population Explosion; Scientific Exchange and Use of Information; Systems of Pollution Control.

Special Sessions: AAAS Presidential Address by Henry Eyring; the Joint Address of Sigma Xi and Phi Beta Kappa by Walter Orr Roberts; the Seventh George Sarton Memorial Lecture; and the National Geographic Society Illustrated Lecture.

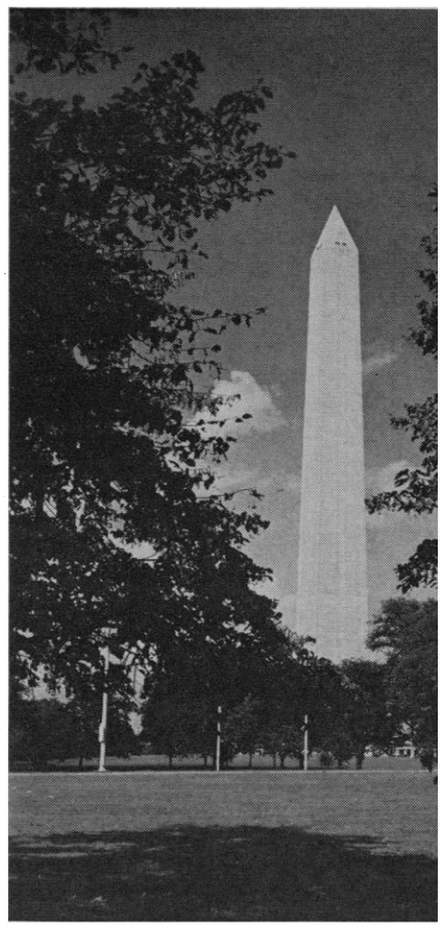
AAAS Committees: Committee on Arid Lands symposium on Migration to Arid Lands; Committee on Science in the Promotion of Human Welfare symposium on Utility of the Construct of Race; Commission on Science Education.

Sections and Societies: The 20 AAAS Sections and some 90 participating societies are scheduling specialized symposia and papers.

AAAS Science Theatre: The latest foreign and domestic films.

Exhibits: The Annual Exposition of Science and Industry is in the Exhibit Halls of the Sheraton-Park Hotel, AAAS Headquarters.

Advance Registration: By registering in advance, you avoid delay at the Registration Center on arrival; you receive the *General Program* in time to plan your dates at the meeting; and your name is posted in the Visible Directory of Registrants when the meeting opens. Use the coupon below.



J. Stinchcomb

AAAS
1515 Massachusetts Ave., NW
Washington, D.C. 20005

Date of Application .....

(Check 1a or 1b) 1a. ☐—Enclosed is $5 Advance Registration Fee. This brings me the **General Program** and a **Convention Badge.**
1b. ☐—Enclosed is $3 for the **General Program.** (If I attend the meeting, the Badge, which I need to obtain the privileges of the meeting, will cost me $2 more.)

2. FULL NAME (Dr., Miss, etc.) .....
(Please print or typewrite) (Last) (First) (Initial)

3. OFFICE ☐ OR HOME ☐ ADDRESS .....
(For receipt of General Program)

CITY ..... STATE ..... ZIP CODE .....

4. ACADEMIC, PROFESSIONAL, OR BUSINESS CONNECTION .....

5. FIELD OF INTEREST .....

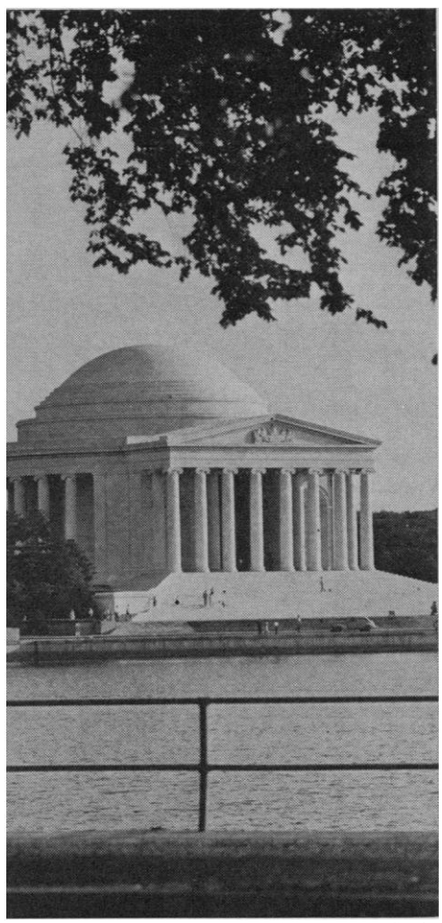
6. CONVENTION ADDRESS .....
(May be added later, after arrival)

Please mail this coupon and your check or money order for the total amount to the AAAS in Washington, D.C. (address as shown).

MEETING • 26-31 DECEMBER

Reserve Your Hotel Room

Make sure you have the accommodations you prefer. A list of headquarters hotels of participating societies appears on page 441. The AAAS headquarters is the Sheraton-Park; the other hotels are co-headquarters.



National Park Service

The hotel sleeping accommodations are for your convenience in making your room reservation in Washington. **Please use the coupon below and send it directly to the AAAS Housing Bureau in Washington.** Give a definite date and estimated hour of arrival, and also your probable date of departure. The Housing Bureau will make the assignment and promptly send you a confirmation.

For more details on all of the above facilities and services, and for a list of the headquarters of each participating society and section, see the 22 July issue of Science, page 437.

HOTEL RATES* (Per Day)

Hotel	Single**	Double	Twin	Suites†	Parking
Sheraton-Park (1260)	$10–14	$16–18	$16–18	$30	Free for registered guests
Motor Inn (214)	15	19	19		
Shoreham (900)	10–14	16–18	16–18	35	$2
Motor Inn (100)	15	19	19		Free for registered guests
Washington Hilton (1200)	10–16	18–20	18–20	50–75	$2

*All rooms are subject to a 4% District transient room tax.

**Each hotel has reserved 50 single rooms at $10 and an additional 50 single rooms at $11 for those who book early.

†One-bedroom parlor suites; rates for larger suites available upon request.

There is no charge for children at any of the hotels.

AAAS Housing Bureau
1616 K Street, NW
Washington, D.C. 20006

Date of Application .....

Please reserve the following accommodations for the 133rd Meeting of the AAAS in Washington, D.C., 26–31 December 1966

First Choice of Hotel ..... Second Choice..... Third Choice .....

Type of room: Single ☐ Double ☐ Double, twin beds ☐ Suite ☐ Rate desired ..... Maximum rate.....

Number in party ..... Sharing this room will be: .....
(List name and address of each person, including yourself. Attach list if space is insufficient.)

.....

.....

DATES: ARRIVAL ..... A.M. ..... P.M. ..... DEPARTURE .....
(These must be indicated—add approximate hour, A.M. or P.M.)

NAME .....
(Individual requesting reservation) (Please print or type)

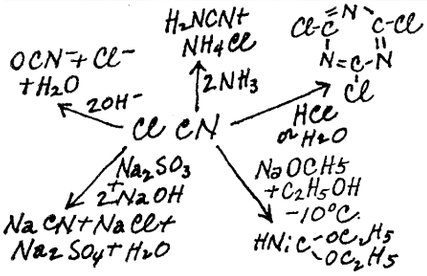
ADDRESS .....
(Street) (City and State) (Zip Code)

Mail this coupon now to the AAAS Housing Bureau. Rooms will be assigned and confirmed in order of receipt of reservation.

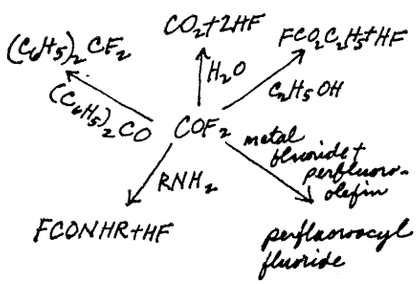
4 New Gases from Matheson

For organic synthesis
warning agent in fumigant gases,
preparation of polymers and copolymers

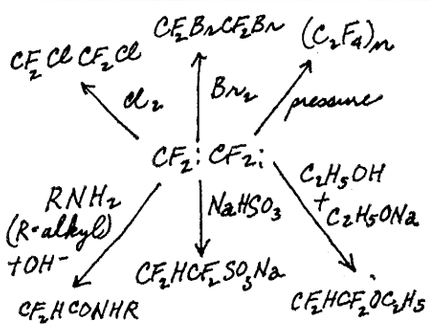
Typical Reactions



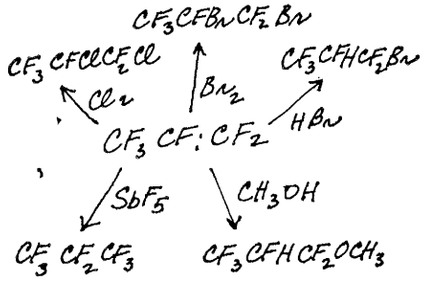
Cyanogen Chloride/ClCN
A colorless, toxic gas having an irritating odor and producing lacrimation. We supply it in No. 4 and 5 steel cylinders as a liquefied gas under its own vapor pressure of about 25 p.s.i.g. at 70°F. Minimum purity 97 mole %. It boils at 55.6°F. (13.1°C.) and freezes at 20.3°F. (-6.5°C.). Cyanogen chloride is used as an intermediate in organic synthesis, and as a warning agent in fumigant gases. For manual flow control, Matheson needle valves No. 55-660 and, for No. 5 cylinders, No. 58 are available.



Carbonyl Fluoride/COF_2
A colorless, toxic, strongly irritating gas. Shipped in steel cylinders as a liquefied gas under its own vapor pressure of about 800 p.s.i.g. at 70°F. Minimum purity 97 mole %. It boils at -117.6°F. (-83.1°C.) and freezes at -173.2°F. (-114.0°C.). Carbonyl Fluoride is used as an intermediate in organic synthesis. For manual flow control Matheson needle valves No. 55-660 and for lecture bottles, No. 58 are recommended.



Tetrafluoroethylene/$CF_2{:}CF_2$
Tetrafluoroethylene is a colorless, flammable, non-toxic gas. It is very reactive and must be stabilized with an inhibitor (1% by weight α-terpene). Shipped in steel cylinders as a liquefied gas under its own vapor pressure of about 285 p.s.i.g. at 70°F. Minimum purity 98.0 mole %. It boils at -100.5°F. (-76.3°C.) and freezes at -224.5°F. (-142.5°C.). Tetrafluoroethylene is used as an intermediate in organic synthesis and for the preparation of polymers (Teflon®) and copolymers. For automatic pressure regulation we recommend Matheson diffusion resistant metal diaphragm regulator No. 19-350, for manual flow control, needle valves No. 50-350 and for lecture bottles, No. 31 valve.



Hexafluoropropylene/$CF_3CF{:}CF_2$
A colorless, non-flammable gas. Shipped uninhibited as a liquefied gas under its own vapor pressure of about 85 p.s.i.g. at 70°F. Minimum purity 99.0 mole %. It boils at -20.2°F. (-29°C.) and freezes at -248.8°F. (-156°C.). Hexafluoropropylene is used primarily for the synthesis of copolymers and as an intermediate in organic synthesis. For automatic regulation, we recommend Matheson regulators No. 1P-660 and No. 1L-660 and low pressure regulator No. 70-660, and for manual flow control needle valve No. 50-660. For lecture bottles use needle valve No. 31.

"TEFLON" is a registered trademark of DuPont

Mail Coupon for Prices and Data

MATHESON
East Rutherford, N. J.; Joliet, Ill.;
La Porte, Texas; Morrow, Ga.;
Newark, Calif.

Matheson of Canada, Ltd.,
Whitby, Ont.

The Matheson Company, P.O. Box 85, East Rutherford, N. J.
Please send prices and data on:
☐ Cyanogen Chloride ☐ Tetrafluoroethylene
☐ Carbonyl Fluoride ☐ Hexafluoropropylene

Name_____
Firm_____
Address_____
City, State, Zip_____

of the concept of the "World Weather Watch," but had instead credited it to the recent National Academy of Sciences report to which I referred. I certainly did not intend such an implication.

To the best of my knowledge, the first mention of the "World Weather Watch" concept is contained in the document "First Report on the Advancement of Atmospheric Sciences and their Application in the Light of Developments in Outer Space," published by the World Meteorological Organization sometime in 1962. The draft of this report was prepared early in 1962; Harry Wexler and V. A. Bugayev were architects of many of the main features of the plan, as well as authors of the draft.

The idea of the World Weather Watch, and the name itself, apparently came out of the early discussions by Wexler and Bugayev, though it is often hard to know precisely where a name or concept finds its earliest source.

Those of us who knew and admired Wexler's fertile and unbounded mind can imagine Harry coming up with such an idea as the keystone of a vastly improved global meteorological observing system, or, if it had been Bugayev or some other participant who first advanced the idea, of Harry's seizing on it with enthusiasm and generously helping to elaborate it as it was described in the WMO first report.

WALTER ORR ROBERTS
National Center for Atmospheric Research, Boulder, Colorado 80302

Dimethyl Sulfoxide Conference

In the review of the DMSO Conference (Meetings, 17 June, p. 1646) a statement appears concerning our work at Letterman General Hospital. The impression is given that we have successfully completed studies with the use of topical DMSO as a vehicle for antibacterial agents in treating infections of the skin and as a vehicle for the topical application of insect repellents. This is incorrect. At the meeting, I tried to make clear that we were just beginning these studies when our work with DMSO on human skin in vivo was interrupted. I said that we plan to resume these studies, because the demonstrated rapid and deep penetration by materials incorporated in DMSO into the horny layer of the human skin and into the follicles indicated that DMSO might increase the effectiveness of incorporated antibacterial agents in the treatment of pyodermas, dermatophytoses, and acnes. I also said that it might be possible that the application of suitable insect repellents in DMSO, and their penetration into the horny layer and slow extrusion over many weeks could so prolong the effectiveness of the repellents as to render them much more useful in preventing insect-vectored diseases, including malaria.

MARION B. SULZBERGER
Letterman General Hospital, San Francisco, California 94129

Our group was quoted as reporting that "topical application of 70 percent DMSO helps clear gingivitis, without indication of untoward effect." We made no such statement; as a matter of fact we have had no experience whatsoever in this area of therapy. The following statement should be substituted: ".007 Decadron in a 70 percent solution of DMSO was found to have a useful suppressant action on certain chronic lesions of the oral mucous membranes without indication of untoward effects."

AUSTIN H. KUTSCHER
School of Dental and Oral Surgery, Columbia University, New York 10032

Our work regarding intravesical instillation of DMSO was incorrectly reported. It was stated "that the instillation of undiluted DMSO for one hour daily into bladders of dogs resulted in no structural or functional changes." We reported gross edema following the intravesical instillation for one hour of varying concentrations of DMSO. The gross edema was minimal using 10 percent DMSO solution, moderate with 25 percent DMSO solution, but severe when 50 or 100 percent DMSO solutions were tested. Furthermore, the bladder of the dogs tested with 50 and 100 percent DMSO concentrations exhibited an acute inflammatory cell response both grossly and microscopically, 24 hours, and also, 7 days after the single test period. We did not demonstrate any effect from various DMSO concentrations on bladder function by the method we used. Our study definitely demonstrated that adverse effects occur locally when 50 and 100 percent DMSO test solution is instilled into the urinary bladder for a one hour period.

HARVEY J. LERNER
803 Spruce Street, Philadelphia, Pennsylvania

"This is photography"

The Chicago Museum of Science and Industry has a new exhibit area that uses beauty and other wiles to plant an unconscious notion in the heads of youngsters, underprivileged and overprivileged, that photography is a *subject*. Please join us in hoping that for a few souls each day it will become a sort of door to a useful and interesting life.

Moving movie film from camera to projector

When you make motion pictures for scientific purposes, you have to do something about getting the film processed. For slowing down action, speeding it up, or recording it as it was, movies are too valuable to be foregone because of processing complications. The issue can be ducked with grace.

If your organization makes enough movies to maintain its own captive processing facilities, the complications get turned over to people who are paid to take them all in stride. This is a very convenient arrangement that can even put the organization into the silver-mining business as an additional source of spending money.*

Outside your walls there are reliable companies that make a living at processing movie film. The channel that supplies your raw film may be able to put you in touch with them.

The company that made your KODAK EKTACHROME MS, ER, or EF Film can also process it for you. You pay for the service by purchasing a KODAK Prepaid Processing Mailer PK10 from a Kodak dealer and mailing 100 feet of film in it to the nearest Kodak Processing Laboratory on a list printed in the mailer. This is about as uncomplicated as you can get.

If that is a little too simple for your taste or needs, you can ask for more speed.

You can mean that two ways, and we are ready to deliver on either or both of them. You could mean you want the exposure index effectively doubled in the processing, a neat trick for which these particular films were designed. Dealers can quote on this special Kodak Processing Service, just as they handle Kodak processing for lengths exceeding 100 feet. "Speed" could also mean that you want us to make a special effort to have the processed film back in the mail to you within 24 hours of receipt at our nearest processing lab. This Commercial Expedited Processing Service carries a small extra charge which the dealer can quote, but it is of limited availability and may be a waste of small change. We say that because a vast amount of Kodak-processed film gets mailed back within 24 hours anyway, without additional charge.

If you need the name of such a dealer or any other processing information about EKTACHROME *Films for technical movies, ask Instrumentation Products, Eastman Kodak Company, Rochester, N.Y. 14650.*

*Some Kodak dealers offer an arrangement whereby they credit your account for silver from spent processing solutions, recovered by the simple means of a KODAK Chemical Recovery Cartridge. Thus a rare natural resource is conserved for reuse, not dispersed into the environment.

Lady who listens

A lively debate has been conducted in this magazine (150:1294, Dec. 3, '65; 151:1564, Mar. 25, '66; and 152:798, May 6, '66) about the use of *5,5-Dimethyl-2,4-oxazolidinedione* in the estimation of intracellular pH, leading to broader questions about transport across cell membranes. That we find ourselves on top of the news by being able to sell this provocative item as EASTMAN 9950 to those who wish to join the fray, we owe to the sensitive ear of this lady. Though

not a scientist herself, she maintains quite a correspondence on the deployment of organic compounds in attacking scientific problems.

(Miss) Mary Knibbs runs the British end of the EASTMAN Organic Chemicals business. Her address is Kodak Limited, Kirkby Industrial Estate, Liverpool. She had been Personal Assistant to the British Chief of Staff to the Allied Commission for Austria. Our affiliate hired her as secretary to the manager of a very small chemical factory at Liverpool. Soon it was growing fast with Miss Knibbs binding up cut fingers, dispensing aspirin tablets, paying the wages and salaries, and running the cafeteria. Things went so well that when her boss was promoted there was no question about who could best manage the Research Chemical Sales Division. Enough time has elapsed since 1959 for the figures to prove it was a good appointment. She insists that no matter how many laboratories inquire in any given hour for urgently wanted compounds, each must get the impression that the staff had been sitting idle since breakfast waiting for the phone to ring.

Distillation Products Industries, Rochester, N.Y. 14603 (Division of Eastman Kodak Company) offers a new catalog of the many thousands of EASTMAN *Organic Chemicals. It costs us plenty, but we don't charge for it.*

Dangers in the dark

Once upon a time there were two imaginary and imaginative brothers named Ike and Mike who did not imagine alike. Ike was quite a showman. He reeked pizazz. He could think of a million little tricks to make people sit up and take notice. The sad part about Ike was that after the people did sit up and take notice, they felt cheated when they discovered how little he had that was worth taking notice of.

This taught a valuable lesson to Mike, who was younger. Mike devoted his share of the family brilliance to soundness. He shunned pizazz like the plague. And he turned out sadly, too. He made his stuff sound and look so dull that the people couldn't bear to give it any attention. Far too late to do him any good, his brilliant imagination was recognized one cold night in a library by a scholar searching for something of an entirely different category.

A middle course is not only possible but desirable. A lecture to a class or a paper to a colloquium can be vivid without going quite as far in its graphics as the average television commercial. For an occasional "spectacular," where some representation of motion such as flow of different rates and directions, reciprocation, rotation, vibration, etc. will help get a complicated idea across at an important presentation, we now even offer a rotating polarizing device called the KODAK Motion Adapter that fits over the KODAK CAROUSEL Slide Projector. We shall be glad to tell you how to come by a new kind of slide that provides such apparent cyclic motion. Inquire of Eastman Kodak Company, Motion Picture and Education Markets Division, Rochester, N.Y. 14650.

The same address can also provide a short pamphlet entitled "Effective Lantern Slides," which deals with less startling slides. Nevertheless, reading it and heeding it will keep you from doing unto others what has all too often been done unto you in the dark. Single copies free; $6 per thousand to program committees and others concerned about unnecessary punishment of technical audiences.

5 August 1966, Volume 153, Number 3736 **SCIENCE**

EDITORIAL CORRESPONDENCE: 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Phone: 202-387-7171. Cable: Advancesci, Washington. Copies of "Instructions for Contributors" can be obtained from the editorial office. ADVERTISING CORRESPONDENCE: Rm. 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE 6-1858.

NIH Budget Hearings

Some of the most important documents issued by the Federal Government are records of hearings on appropriations. Of special relevance to scientists is a report of the hearings on the National Institutes of Health of a subcommittee headed by Representative John E. Fogarty of Rhode Island. The volume*, consisting of 775 pages, includes detailed budgets, reports of advances in medical research, presentations by top personnel at NIH, and examination of witnesses by Mr. Fogarty and his colleagues.

To the scientist, the materials of substantive interest are the technical presentations. However, the actual hearings had dramatic qualities. Representative Fogarty was the star of the show. With great skill he built a defensible record for medical research, drawing useful testimony from the witnesses. When they hesitated or when the answer seemed likely to be complex he asked them to prepare a statement for the record. A reading of the report of the hearings leaves one impressed with the crucial role of a few people in determining the course of medical research in this country. Subtract Representative Fogarty, Senator Hill, or Doctor Shannon and history would have been different. As to the future, the document provides hints, for it suggests coming events involving Surgeon General Stewart, Secretary Gardner, and President Johnson.

The hearing began with a presentation by Dr. Shannon in which he discussed inborn errors of metabolism. He pointed out that prevention is at present the only feasible "cure" for many serious congenital anomalies and diseases. Therefore, it is important to develop tests for genetically carried deficiencies. One such new technique is a blood test for identifying women who may be carriers of a gene that causes progressive muscular dystrophy. Some 27 other genetically controlled defects of metabolism are now known, many of them giving rise to congenital deformities or mental retardation.

Directors of the various Institutes presented highlights of work under their jurisdiction. One of the urgent problems is rubella (German measles). Following an epidemic in 1964–65, pregnant mothers who had been infected with the disease delivered up to 30,000 infants who either died or were damaged. Sequelae included congenital deformities. As a result of recent work development of a vaccine seems practical.

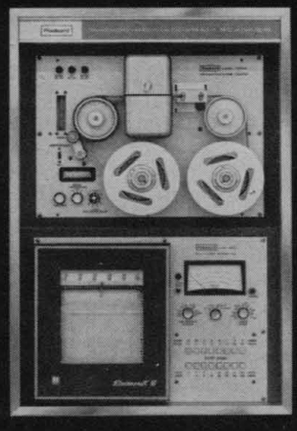
Several presentations underlined the possible importance of environmental factors in disease. There is a striking difference in the incidence of coronary heart disease in Japanese and Americans. In 1960 the rate for men in Japan aged 45 to 64 was 99.2 versus 611.4 per 100,000 U.S. white males. Another difference between disease rates in the United States and Japan is the occurrence of stomach cancer. The causative agents seem to be toxins produced by molds. In Japan, where molds are used in fermentation, the incidence rate of stomach cancer is high. In tropical Africa, where food contamination by molds is ubiquitous, liver cancer occurs frequently.

Of potential personal interest to most scientists are studies on the risk of heart disease. These show that inadequate physical activity increases the risk and lessens the chance of recovery from heart attack.

The report of the NIH hearings contains material of interest to physicians, scientists, and engineers. Reading the report would reassure many that funds are being invested wisely. A good story is available but it is not being disseminated. In future NIH could find itself in need of a broad base of support. This may not be forthcoming unless better means of informing potential friends are devised.—PHILIP H. ABELSON

* Part 4, "Department of Health, Education, and Welfare, National Institutes of Health," hearings before a subcommittee of the Committee on Appropriations, U.S. House of Representatives (available without charge from Committee on Appropriations, U.S. House of Representatives, Washington, D.C.).

EVERY PACKARD RADIOCHROMATOGRAM SCANNER COUNTS PAPER STRIPS AND TLC PLATES



CHANGEOVER TAKES LESS THAN A MINUTE

You don't make compromises to count either medium on *this* scanner. It was designed to provide unmatched sensitivity and ease of operation with both paper strips and TLC plates, and it's shipped ready to use with either. For TLC work the user may select manual counting of single plates or an attachment for automatic, in-line scanning of four plates. ■ This versatility with chromatography media is just one of the features of a scanner that users have learned is completely reliable under all conditions of use. Other features include choice of windowless or window counting, wide selection of collimator slit widths, pushbutton selection of scanning speeds and ability to handle chromatograms from ½ to 2 inches in width. For complete details contact your Packard Sales Engineer or request Bulletin 1038U from Packard Instrument Company, Inc., 2200 Warrenville Road, Downers Grove, Illinois 60515, or Packard Instrument International S.A., Talstrasse 39, 8001 Zurich, Switzerland.

Packard