

# SCIENCE

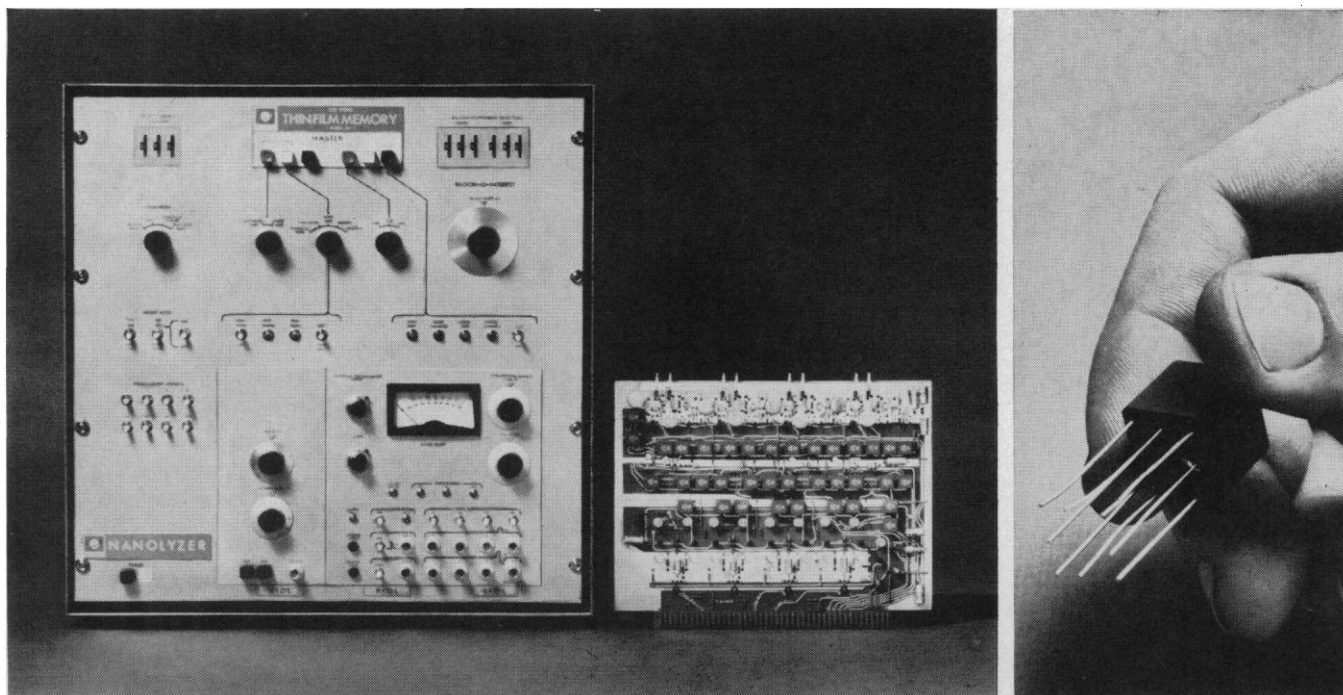
17 July 1964

Vol. 145, No. 3629

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



ICEBERG CANYON



*The Nanolyzer is modular in design and construction. It uses printed circuit boards with functional logic groups on separate boards (illustrated with the Nanolyzer at left) The computer circuits use all-silicon transistor Snap-Logic elements (illustrated at right) to assure matched circuit components during servicing and replacement.*

## THE NEW RIDL NANOLYZER\* OPENS TOTALLY NEW AREAS OF INVESTIGATION

The new RIDL Nanolyzer\* is an important advance in multi-channel pulse height analyzer design. It has removed the instrumentation limits, imposed by presently available analyzers, on new areas of investigation in high energy physics, fast radio-chemistry and like applications.

The principal advantage of the Nanolyzer is its ability to collect and handle more data per unit time with an unprecedented degree of accuracy. It accepts, analyzes, stores and displays data seven to fifty times faster than conventional analyzers. Central to this ability is the utilization of a 100 megacycle ADC providing a 10 nanosecond / channel address rate, Snap-Logic silicon elements and a thin-film memory plane.

In addition to the obvious advantage of high speed data acquisition for applications where high counting rates or very short counting times are encountered, the Nanolyzer effects im-

portant economies of time and cost in less demanding uses. Its data handling speed permits more efficient use of accelerator facilities, and results in more accurate data.

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time or clock-time, or preset count operation in any selected channel. Entire memory or any selected part useable during data storage or display. Region-O-Interest\* control for selective readout of entire memory, halves, quadrants or between digitally selected upper and lower channel limits. Readouts through magnetic tape, parallel printers, punch tape, IBM typewriter and live external display.

**CONSTRUCTION:** Modular construction, plug-in printed circuit boards, all-silicon transistor Snap-Logic\* elements. Solid state throughout, functional and simple to use controls.

Would you like to know more about this remarkable Nanolyzer? We will be happy to send you more information and complete specifications. After critical evaluation, we believe that you will agree that the development of the Nanolyzer is one of the most significant advancements in multi-channel analyzer technology in recent years. Please write for literature.

NUC-R-4-229

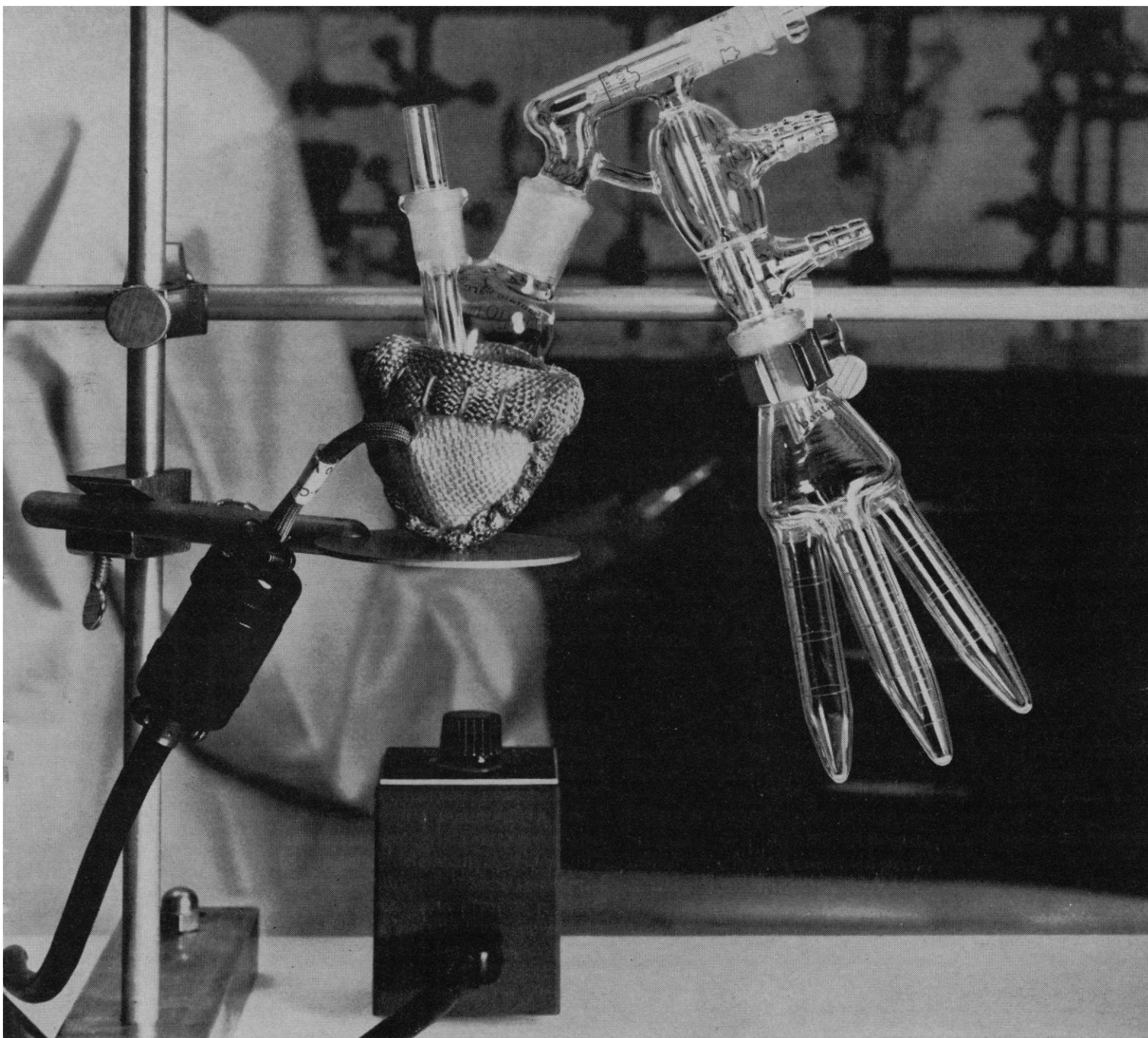
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## The Case of the Meandering ML's

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Acting on a tip from Dr. Raymond Firestone at Merck & Co., Rahway, we went to work on our new K-28480 Bantam-ware Short Path Fractionator. Make the column about an inch long and let the thermometer bulb and stem serve as a packing, he said. Construct the condenser and vacuum connection in two

inches, total length. Use only one joint on the fraction cutter but design it so that pipettes can be inserted to the bottom of any of the four receivers. Then, tilt the whole assembly so that drops fall from the drip tip  $\frac{1}{4}$  14/20 joint into one of the four receivers without unnecessary wetting. But nothing is vertically aligned, we pleaded. I know, he said. In desperation, we tried it.

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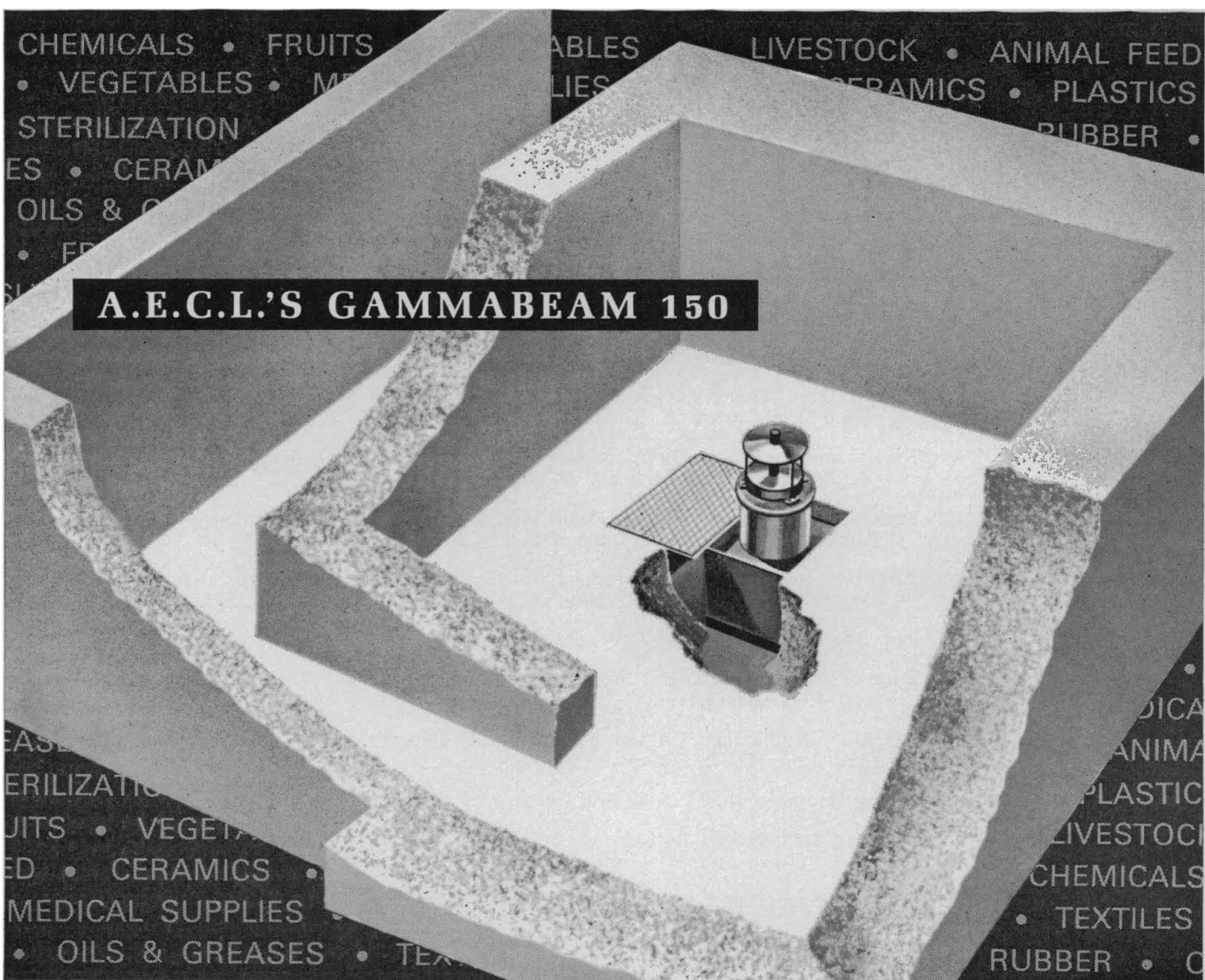
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## COVER

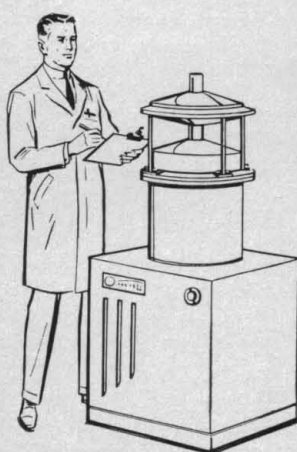
Aerial view of Iceberg Canyon, at eastern end of Lake Mead on the Arizona-Nevada state line. This aquatic expanse among the nearly barren, volcanic hills of this section of the Mohave Desert typifies the diversity of habitats available to the vertebrates of Arizona (see review of *The Vertebrates of Arizona*, page 258). [E. Tad Nichols]





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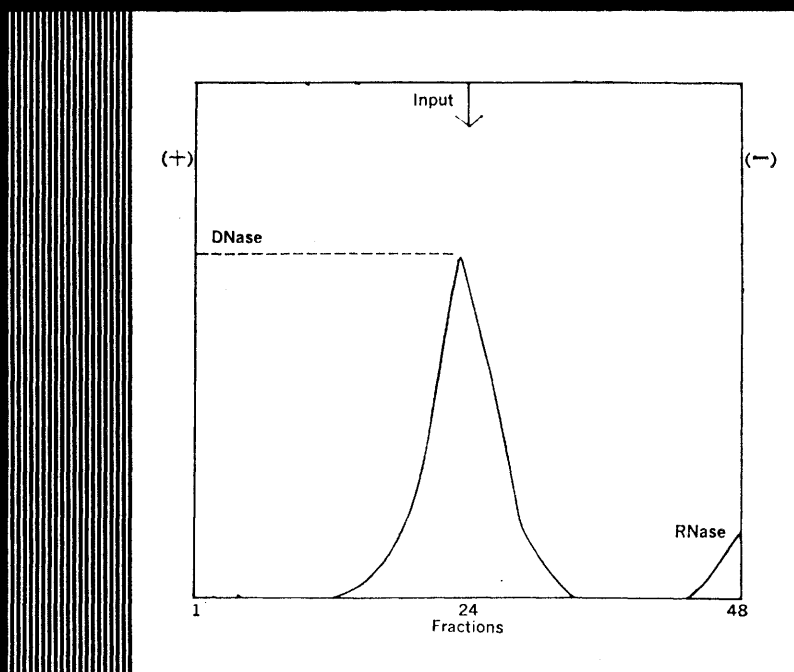


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**Interdisciplinary Symposia** Possible meteoric or lunar influences on meteorological phenomena; basic concepts of biochemical differentiation; medical geology and geography; history of the popularization of science.

**Special Sessions** AAAS Presidential Address by Alan T. Waterman; the AAAS Distinguished Lecture by Richard H. S. Crossman; the Joint Address of Sigma Xi and Phi Beta Kappa by René Dubos; the George Sarton Memorial Address by Lloyd G. Stevenson; and the National Geographic Society Illustrated Lecture.

**International Conference on Primate Behavior** Three AAAS sections and the combined ESA and ASZ Section on Animal Behavior and Sociobiology are sponsors. Five sessions, open to the public, will include 37 speakers from four continents.

**AAAS Committees** Sessions of the AAAS Committee on Meetings, including two sessions on the sociology of science arranged and chaired by Robert K. Merton; the Committee on Science in the Promotion of Human Welfare; the Commission on Science Education.

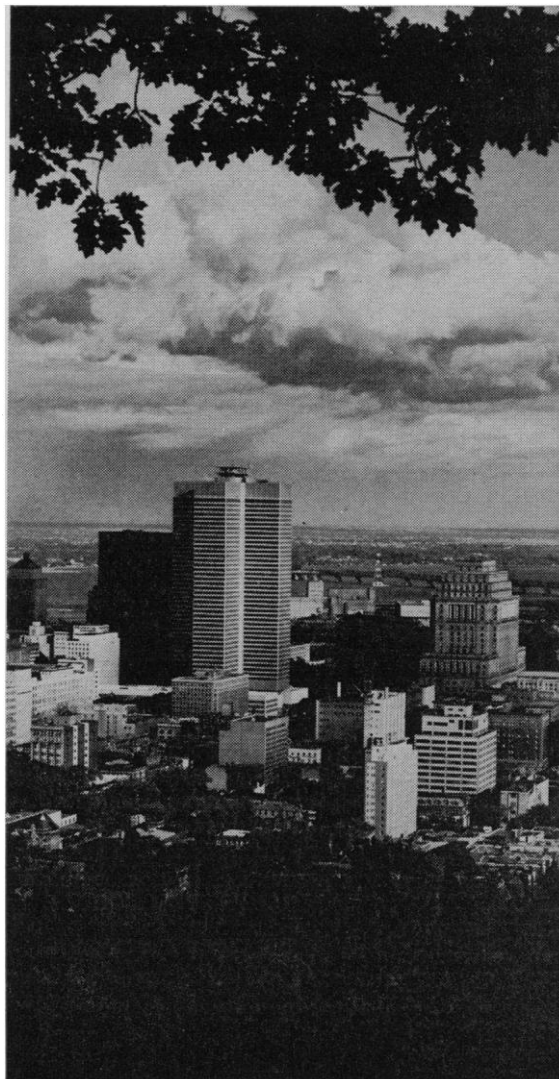
**Sections and Societies** The 20 AAAS Sections and some 70 participating societies are scheduling specialized symposia, and some have sessions for contributed papers.

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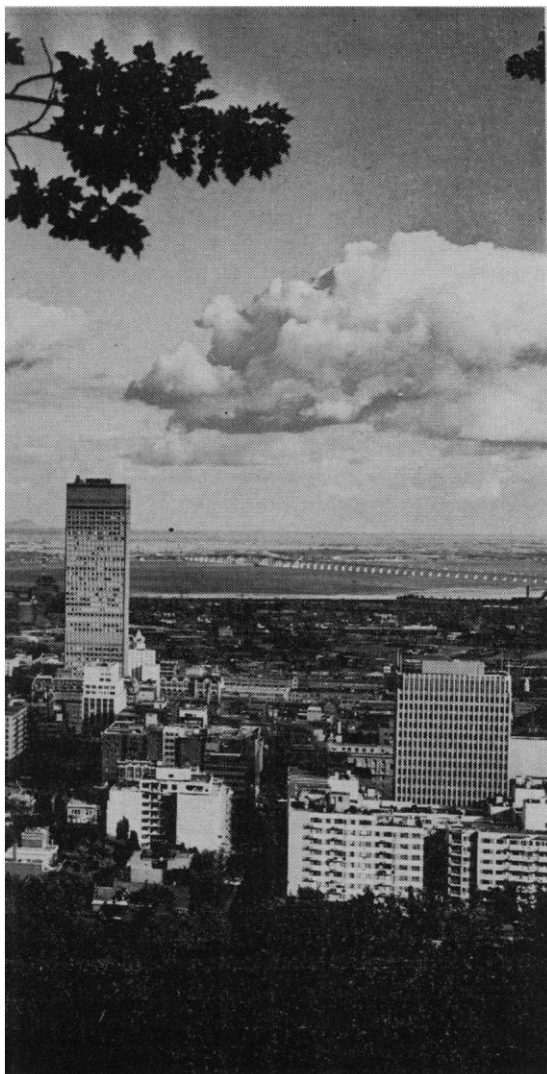
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Make sure you have the accommodations you prefer. A list of headquarters hotels of participating societies appears on page 299. The AAAS headquarters is the Queen Elizabeth.

The hotels for the AAAS Montreal meeting have established special, low rates and have reserved large blocks of rooms for the meeting.

Use the coupon below to make your hotel reservation in Montreal. Send your application to the AAAS Housing Bureau in Montreal, not to any hotel. Give a definite date and estimated hour of arrival, and also probable date of departure. The Housing Bureau will make the assignment and send you a confirmation promptly.

A rollaway bed can be added to any room at \$3.00 per night. Mail your application now to secure your first choice of accommodations.

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For a list of the headquarters of each participating society and section, see page 299.

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Laurentien (Sheraton)	7.50	12.00	12.00	21.00- 30.00
Ritz Carlton	10.00	15.00	15.00	35.00
Berkeley	7.00	10.00	10.00	17.50
Queen's	6.50	10.00		17.00

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### Why even those who think they understand the situation in the infrared beyond photography may not

Most IRTRAN material and most work of infrared opticians wind up in military hands. The security curtain is rather opaque. We are free to issue data within the U.S.A. on the physical nature of the materials. Beyond that we play dumb. Apart from IR technology for the analytical lab and chemical process control (where all is well), we do not envy those who must decide what may safely be disclosed.

Military considerations ultimately and inevitably have emotional content. Emotion suffuses the idea that someone who means you harm has technical devices for extending the senses that he and you both received at birth. You hope you know more about these means than he does and more about what to look for with these means. To feel this way goes along with the human condition. It sets one limit on the decisions of the declassifying boards.

The opposite limit is set by another realization which the members of these boards share with you. They too know that secrets stale quickly and that scientists in a position to freshen them up were born with a "need to know" but can produce no documents to prove it and often don't even want to. Intelligent

military seek an optimum between these limits.

Two unclassified symposia on "Remote Sensing of Environment" and one classified one at the Institute of Science and Technology of the University of Michigan have given the military the thoughts of such diverse types as geologists, botanists, astronomers, conservationists, meteorologists, oceanographers, foresters, archaeologists, and half a dozen species of engineers. Everybody present knew that the already known applications will take care of themselves but wondered about the unknown ones that are in danger of dying unborn for want of cross-fertilization.

The final report of the symposia, identified as Document 4864-6-F, carries the following statement: "Qualified requesters may obtain copies of this document from: Defense Documentation Center, Cameron Station, Alexandria, Virginia." We have inquired how one qualifies as a requester and have been informed by the Defense Documentation Center that all reports it releases must be for use on a current Department of Defense contract or project.

### For determination of cyanide, cyanate, and/or ammonia at high dilution

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### For those whose test tubes shake in other causes

Sales of these two are doing well. Their principal use is in a fine cause. Until 1951, when *Sewage and Ind. Wastes* 23, 1402 told how they can be deployed to detect as little as 0.1 p.p.m. of cyanide in industrial effluvia, counting dead fish had been more sensitive a method for  $CN^-$  than the available chemical tests. (An only slightly less sensitive test than fish-killing had been the killing of bacteria we depend on to decompose sewage.) In *Anal. Chem.* 25, 1188 the same authors also detailed the use of these reagents in ammonia determination.

Now (in *Anal. Chem.* 36, 865) along comes a lady in Prague who thoroughly scrutinizes what is going on in this ammonia

determination. While we don't vote the same ticket she votes, and while she omits serving the reader by identifying "pyrazolone" as EASTMAN 1397 and "bispyrazolone" as EASTMAN 6969, and while her contribution to the ammonia-measuring technique seems limited to suggestions for diminishing interference by  $CN^-$ ,  $CNS^-$ ,  $Fe^{++}$ ,  $Zn^{++}$ ,  $Cu^{++}$ , and  $Ag^+$ , her paper reads like a model of how an analytical chemist should think. She demonstrates, incidentally, that contrary to the original hypothesis, pyrazolone is not the major actor in the procedure and that the test depends on formation of rubazoic acid. Now *that* is a biochemically interesting compound to track down on the back shelves of the library.



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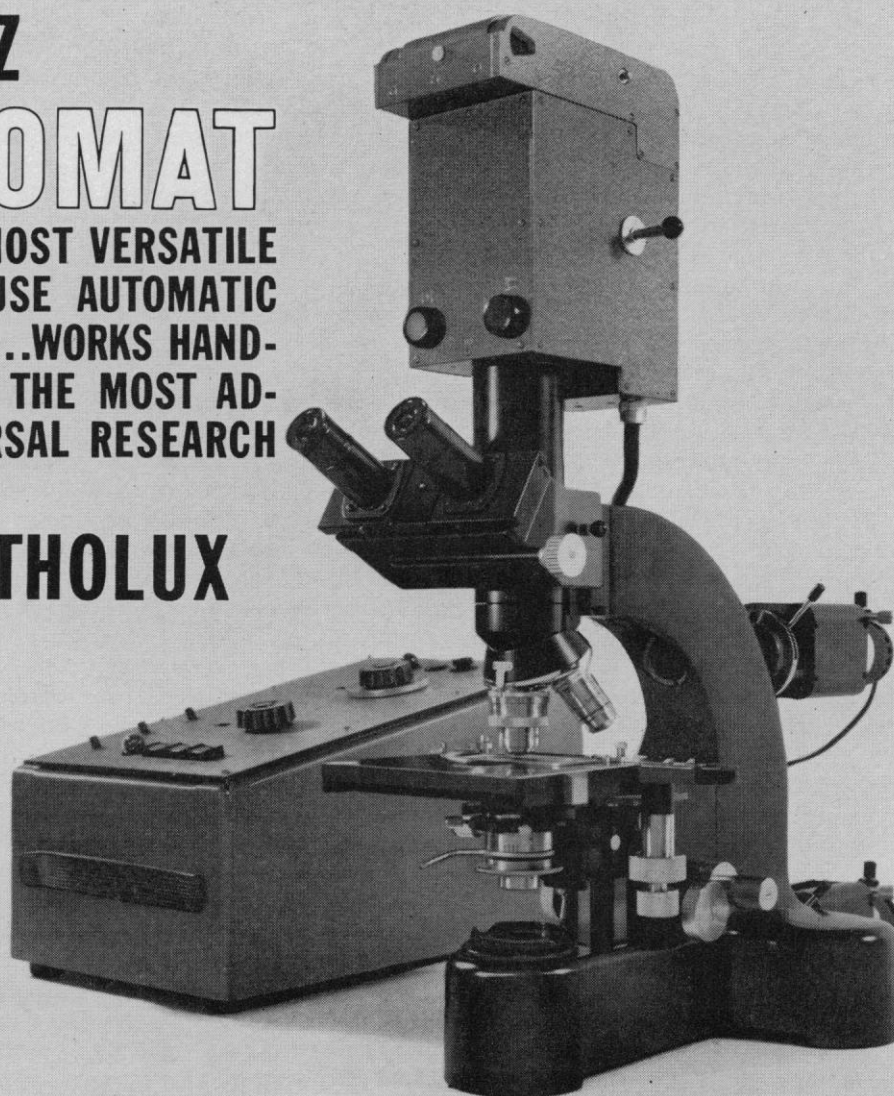
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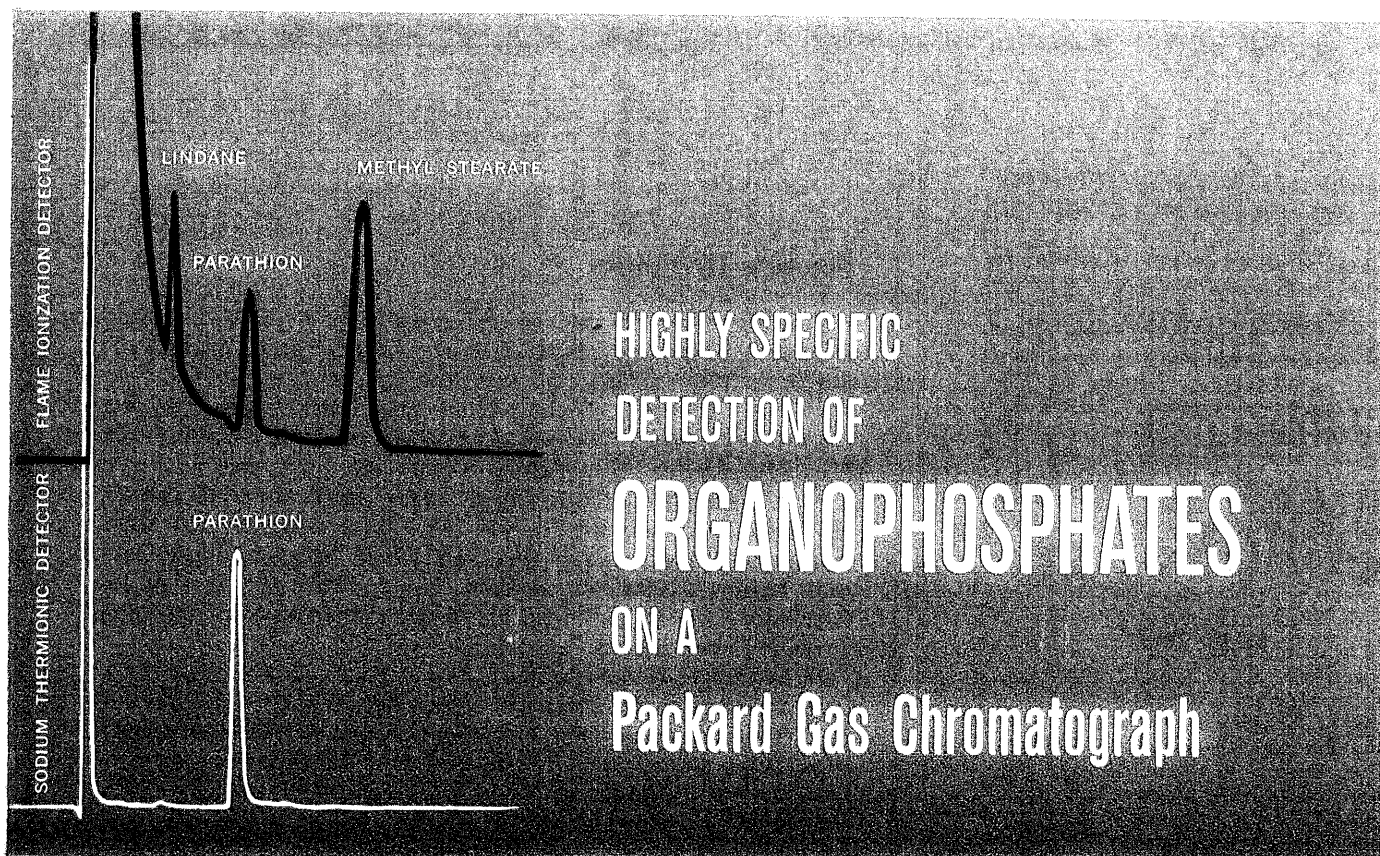
## Foreign Programs for Universities

Political realities argue that we must plan to furnish technical assistance to other countries for some years into the future. If this be so, we will need a continuing supply of well-qualified people for a variety of overseas assignments. If people of high quality are to be available, a basic requirement is that foreign duty constitute a meaningful part of a professional career. This is a major point of *A.I.D. and the Universities*, John Gardner's recent report to the Administrator of the Agency for International Development.

Much of Gardner's advice is directed toward A.I.D., for there are many respects in which this government agency and its relations with universities could be improved. But much of the advice, and the part emphasized here, is aimed at universities, for it does not take a very long chain of reasoning to conclude that universities must have a key role in improving our technical assistance program.

In order for Professor X to be of maximum value to his host country, he must not only have technical proficiency and a reasonable knowledge of the country, he must stay long enough to become a living part of the situation he is attempting to help. Usually this is long enough to mean considerable loss of contact with graduate students and colleagues at home; too often it has meant being passed over in favor of someone on the campus when promotions and other favorable actions were under consideration. In short, going overseas on a technical assistance mission has often posed a choice between a trip of such short duration as to be of questionable value to the host country and one long enough to impose real personal penalties. The way to avoid this difficulty, Gardner says, is to root out "the attitude that overseas activities are something quite separate from the mainstream of the university's life and being. . . . If the university treasures its integrity then it has two choices: Get out of overseas activities entirely or recognize such activity as *an integral part of university life and work.*"

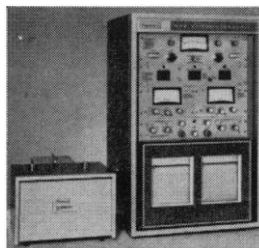
A university that takes the second alternative must concentrate, perhaps on one region or on one kind of technical assistance, and will develop special competence (faculty, library, research) in its area of concentration. It will arrange for a faculty member to take graduate students on overseas assignments, both because the foreign experience is a constructive part of their training and because in their later careers they too are likely to spend some time abroad. And it will make sure that foreign duty is as well recognized through honors and advancement as is duty on the home campus. All of this requires self-discipline and agreement, from the departments to the president's office, that selected, but only selected, kinds of foreign assistance constitute an integral part of that university's area of special competence. A university that adopts this position has a strong basis for insisting to A.I.D. that it is a university, not simply a convenient contracting and recruiting agency for short-term use, and that it must therefore have those contractual arrangements that will help it to contribute most effectively over the long run to achieving the objectives of the nation's foreign assistance program.—DAEL WOLFE



Phosphorous-containing compounds are one of the most recent groups to yield to a Packard Gas Chromatograph. The chromatogram which is shown above was made on a Packard Model 7611 dual system (dual column oven, dual detectors, dual electronics and dual recorders) and represents an important achievement in simultaneous determination of compounds of widely separated concentration.

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- 1  $\mu$ g parathion.
- 2  $\mu$ g methyl stearate

**COLUMN:** 5 ft. x 4 mm all glass

**LIQUID PHASE:** 10% Dow Corning Silicone Fluid (DC200)

**SUBSTRATE:** 80-90 mesh Ana-crom ABS (acid and base washed, and silanized)

**CARRIER GAS FLOW RATES:**  
Nitrogen 60 cc/min  
Hydrogen FID 40 cc/min; STD 60 cc/min  
Air 300 cc/min

**TEMPERATURES:**  
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Column 205°C  
Detectors 200°C  
Outlet 200°C

**DETECTORS:** Standard Packard Hydrogen Flame Ionization (FID); Modified Packard Ionization Detector with sodium emission grid (STD).

**ELECTROMETER RANGES:**  
FID  $1 \times 10^{-9}$  amperes full scale  
STD  $3 \times 10^{-7}$  amperes full scale

**DETECTOR VOLTAGE:** 300 volts

**NOISE LEVEL:**  $1 \times 10^{-11}$  amperes full scale

**CHART SPEED:** 30 inches/hour

\*L. Guiffreda, J.A.O.A.C., 47, No. 2, 293 (1964)

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9-14. South American Union of Engineers' Federations, 10th conv., Rio de Janeiro, Brazil. (Federação Brasileira de Associações de Engenheiros, Caixa Postal 1229, Rio de Janeiro)

10-14. Structural Developments in Inorganic Chemistry, New Hampton, N.H. (W. G. Parks, Dept. of Chemistry, Univ. of Rhode Island, Kingston)

10-15. Pan American Federation of Engineering Socs., 8th biennial conv., Caracas, Venezuela. (L. K. Wheelock, Engineers Joint Council, 345 E. 47 St., New York 10017)

11-14. American Soc. for Pharmacology and Experimental Therapeutics, San Francisco, Calif. (H. G. Mandel, George Washington Univ. Medical School, Washington, D.C. 20005)

12-14. Ballistic Missile and Space Technology, 9th symp., U.S. Naval Training Center, San Diego, Calif. (C. Morrow, Aerospace Corp., P.O. Box 95085, Los Angeles, Calif. 90045)

12-14. Galaxies, preliminary conf., Uppsala, Sweden. (T. Page, Van Vleck Observatory, Wesleyan Univ., Middletown, Conn. 06457)

12-14. X-Ray Analysis Applications, 13th annual conf., Denver, Colo. (W. G. Mueller, Metallurgy Div., Denver Research Inst., Denver 80210)

13-15. International Soc. for Horticultural Science, Edinburgh, Scotland. (G. de Bakker, Le v.d. Boschstraat 4, The Hague, Netherlands)

16-21. Histochemistry and Cytochemistry, intern. congr., Frankfurt am Main, Germany. (T. H. Schiebler, Anatomisches Institut der Universität, Koellikerstr. 6, 87 Würzburg, Germany)

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17-20. Natural Ultra Low Frequency Electromagnetic Fields, symp., Boulder, Colo. (W. H. Campbell, National Bureau of Standards, Boulder)

17-21. Combustion, 10th intern. symp., Cambridge, England. (Combustion Inst., 986 Union Trust Bldg., Pittsburgh 19, Pa.)

17-21. Cryogenic Engineering, conf., Philadelphia, Pa. (K. D. Timmerhaus, Engineering Research Center, Ketchum 129, Univ. of Colorado, Boulder)

17-21. Simulation in Space Technology, Blacksburg, Va. (F. J. Maher, Virginia Polytechnic Inst., Blacksburg)

17-22. International Astronomical Union, symp., Thessaloniki, Greece. (Maj. B. R. Agins, Air Force Office of Scientific Research, SRMA, Washington, D.C.)