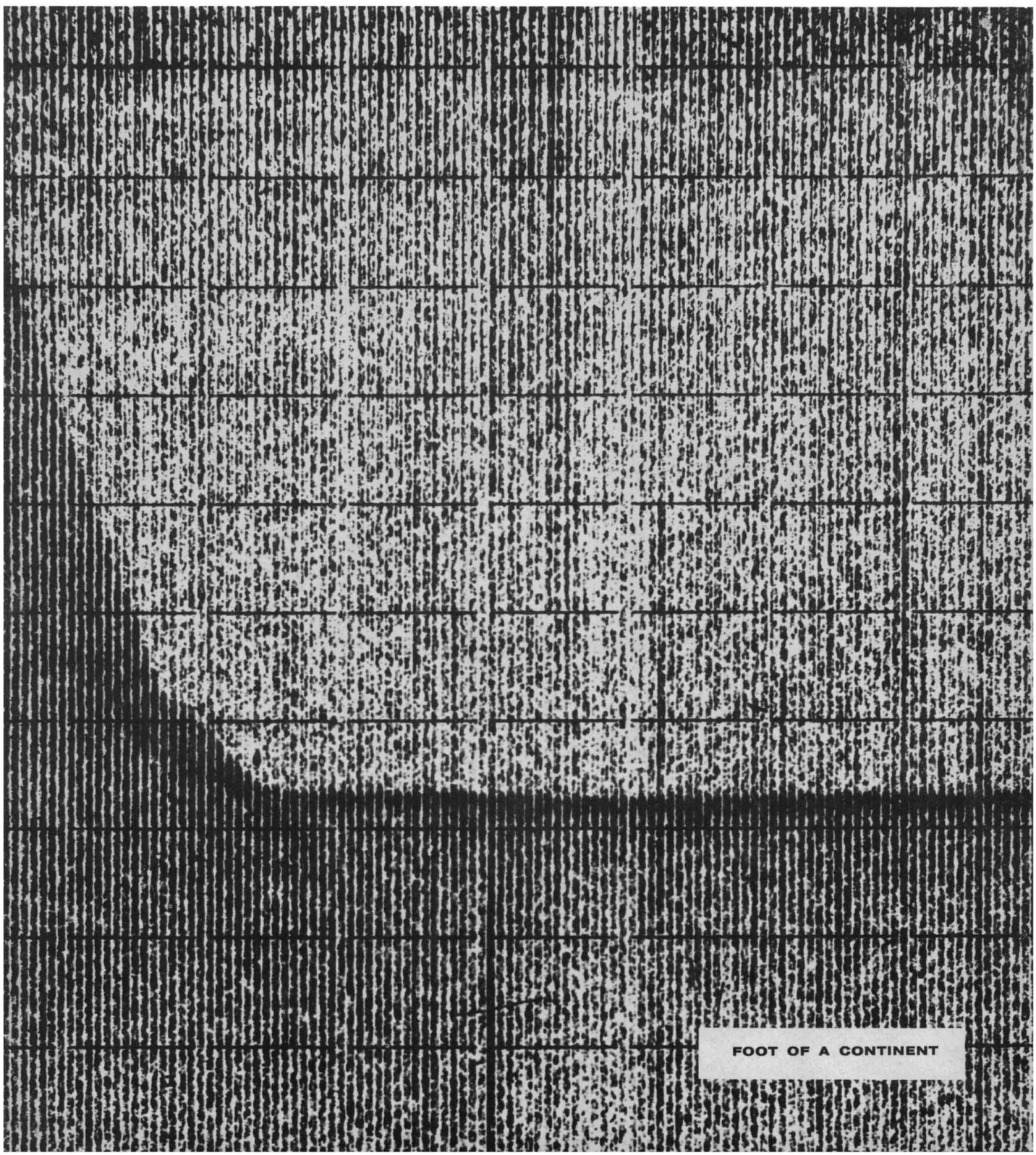
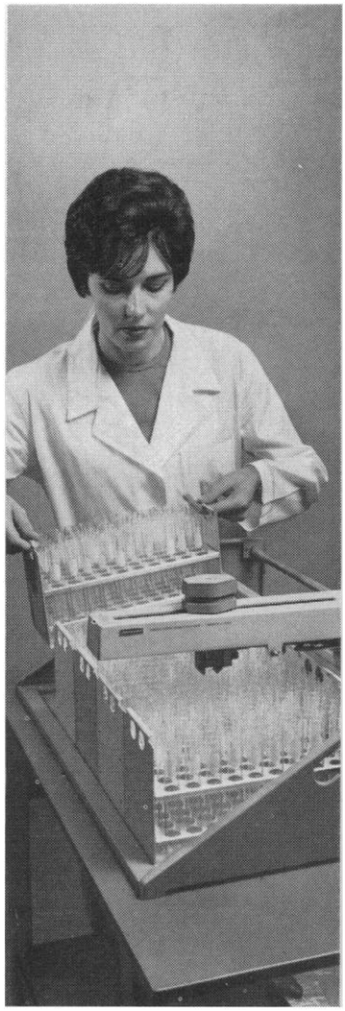
SCIENCE

8 January 1965
Vol. 147, No. 3654

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



FOOT OF A CONTINENT

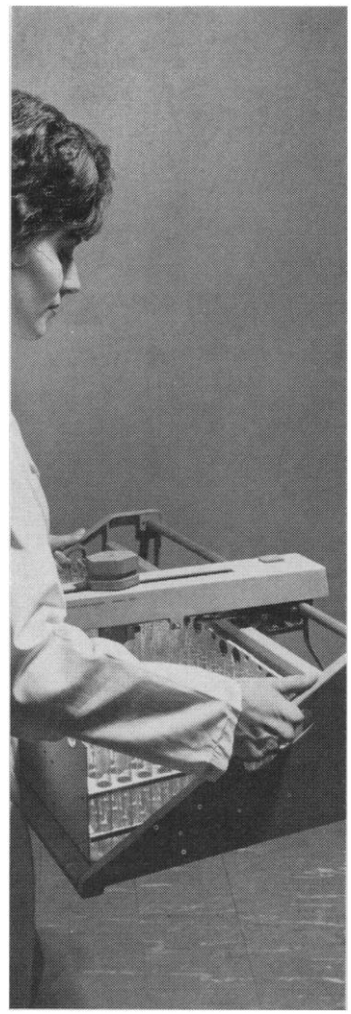


collect confidently

Whatever method of fraction collection you use (time, drop or volumetric), the delivery head of the Beckman 132 Fraction Collector will shut off automatically between tubes—to keep from spilling even a drop of valuable sample. Drip-proof delivery also makes it practical to fill tubes (there are 250 of them) in logical order, from front to back, row by row, for easier identification.

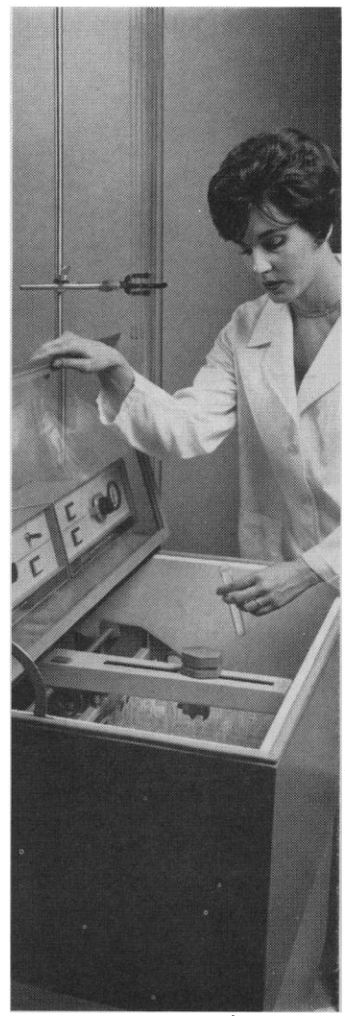
control remotely

The electronic control of this Fraction Collector (an expensive part of any collector) is a separate entity. You can keep it safely out of the way—to avoid damage by accidental spillage when tubes are handled. Equally important, the collector can be cooled completely while the control unit is kept outside the cooling area.



carry handily

Having the control unit separate also allows this Fraction Collector to be carried easily—it has convenient grip-slots on either side.



cool completely

This Fraction Collector has a companion Mobile Refrigeration Unit to save you cold room space. The unit holds fractions at 4° C, and cools an external column. Caster-mounted and easy to move, it permits refrigerated chromatographic analyses to be conveniently made anywhere in the laboratory. For more information about the refrigeration unit and the most advanced of Fraction Collectors, write for Data File 132-5.

it could only be the Fraction Collector from **Beckman** INSTRUMENTS, INC.

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8 January 1965
Vol. 147, No. 3654

SCIENCE

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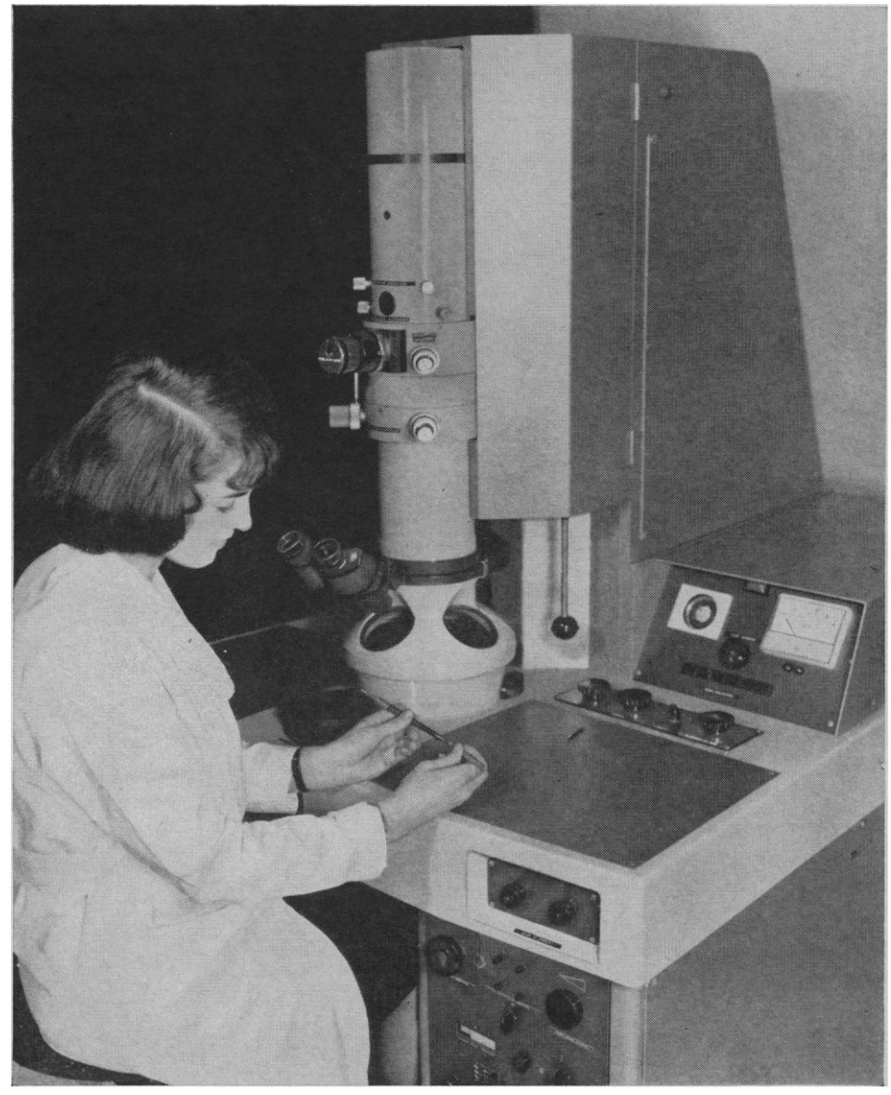
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Trace (made with precision depth recorder) of the foot of the North American continent east of Eleuthera Island, Bahamas. The vertical exaggeration is 12 to 1. The sloping surface (left), with an inclination of 16 degrees, is the foot of the continental slope. The flat surface to the right is that of the Blake-Bahama Abyssal Plain, which occurs here at a depth of 4825 meters. See page 145.

The Carl Zeiss EM 9

This electron microscope combines high resolving power with unsurpassed operating simplicity. Preparatory and operating steps have been greatly automated, allowing you to devote full attention to the research problem at hand. With minimum instruction, laboratory technicians can produce outstanding results.



RESOLUTION of 10-12Å is obtainable.

DIRECT MAGNIFICATION ranges from 1,500x to 40,000x in four fixed and calibrated steps, or continuously. Additional pole pieces for lower magnifications also are available.

FAST BEAM ALIGNMENT: The beam is aligned electromagnetically rather than by tilting or displacing the gun.

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CHANGING APERTURES is done quickly and easily, without breaking vacuum. Three objective apertures are available inside the column.

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FOCUSING is continuous, with numerical read-out indicator.

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FAST SPECIMEN CHANGE: When changing specimens, image-to-image elapsed time is about 40 seconds, including 12-15 second pump-out time.

An EM 9 is always on display in our showrooms for demonstration. Nationwide service is available. For literature write to Dept. SC

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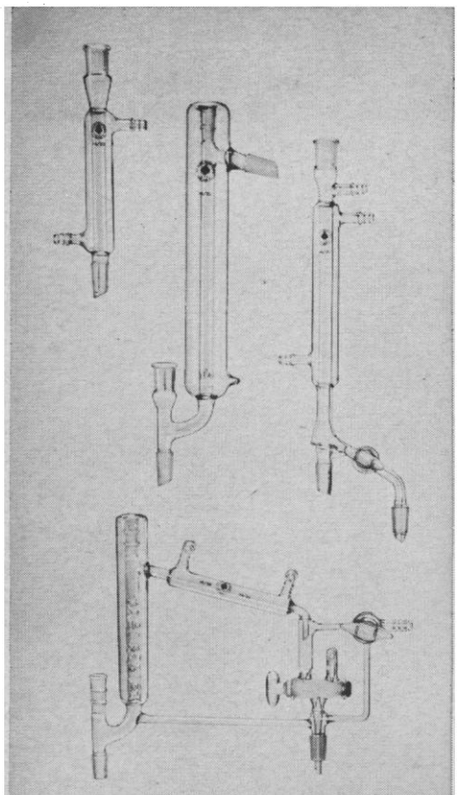
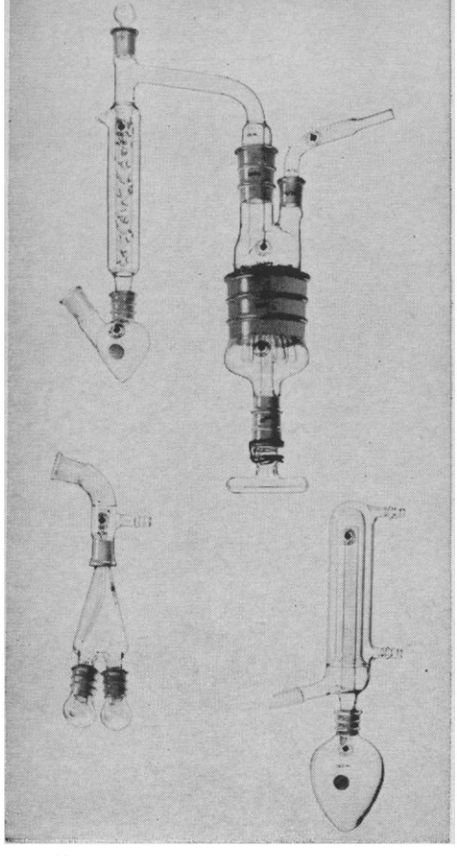


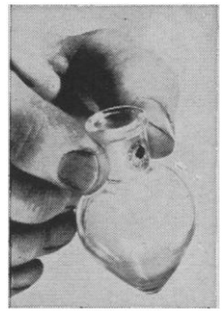
You will like Ace MINI-LAB: Best designed, most complete, all components interchangeable; costs less, uses less space than full scale glassware, reduces consumption of chemicals.



Success is originality that didn't stop there:

Ace Mini-Lab

Introduced in 1950, it is the most complete, best designed line of miniature glassware!



The moment you start working with a simple flask or one of our popular assemblies, a few of which are shown here, you will notice that Ace Mini-Lab not only takes up less space, results in considerable savings in reagent chemicals, but that the good design makes Ace Mini-Lab a pleasure to work with.

Ace Mini-Lab is the first *especially* designed line of miniature glassware. No simple reduction was employed: Our chemists and designers subjected each piece of glassware to practical experimentation until Mini-Lab performed with ease and efficiency. The popularity of Ace Mini-Lab attests to the success of their endeavors: Mini-Lab has been enthusiastically accepted in laboratories, in schools, everywhere.

Ace Mini-Lab is the most complete line of miniature glassware. It can function as your complete laboratory. New items are constantly being added. 27 recent additions are featured in the Ace Mini-Lab brochure.

Ace Mini-Lab is versatile, comes in ⅎ 14/20, ⅎ 19/22, and ⅎ 18/9 joints; a full line of components permits endless variations. The excellent original design and versatility will make Ace Mini-Lab the most satisfactory miniature glassware you have ever worked with. To check our complete selection, see your Ace Catalog 64 or send for Mini-Lab brochure.

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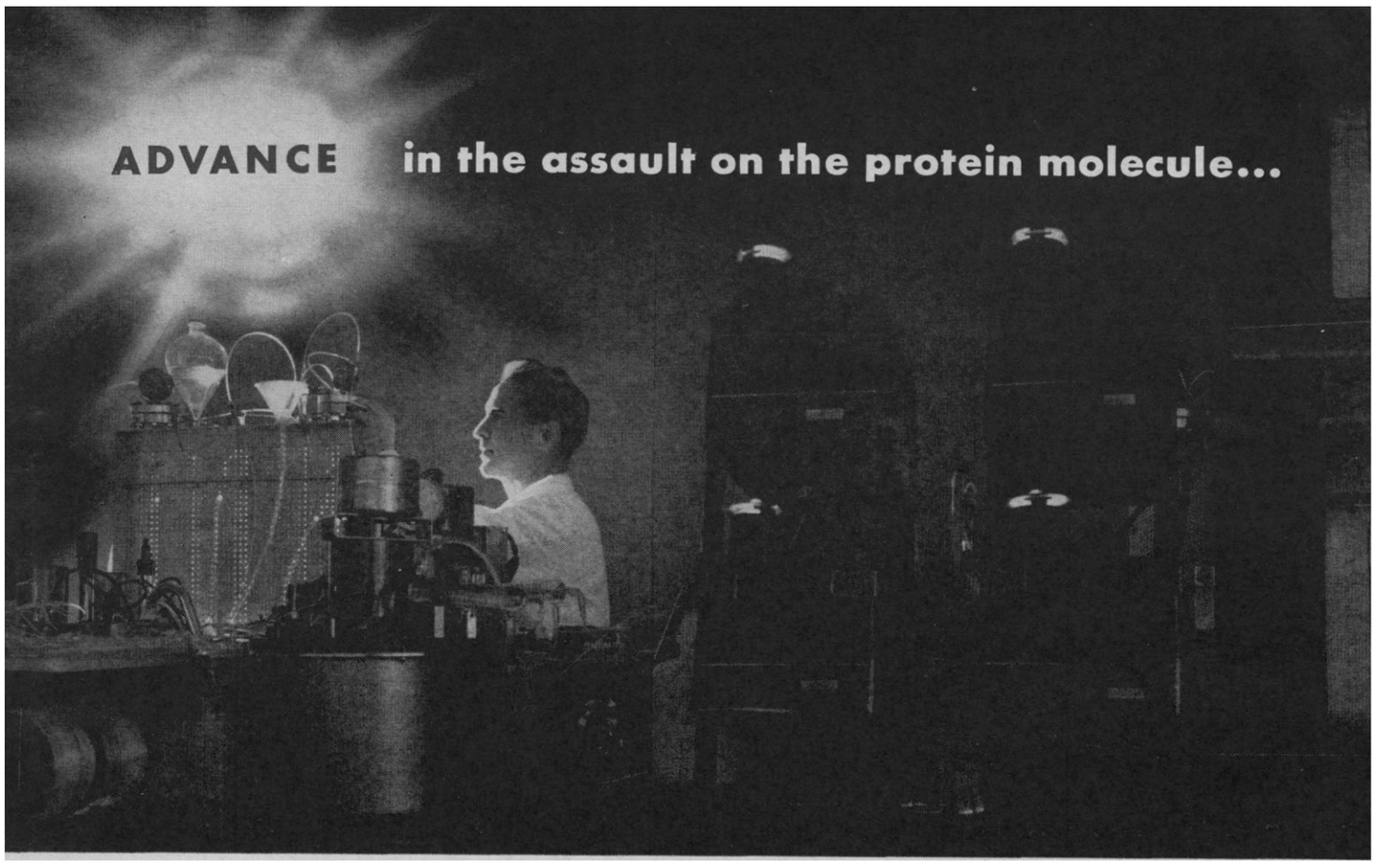


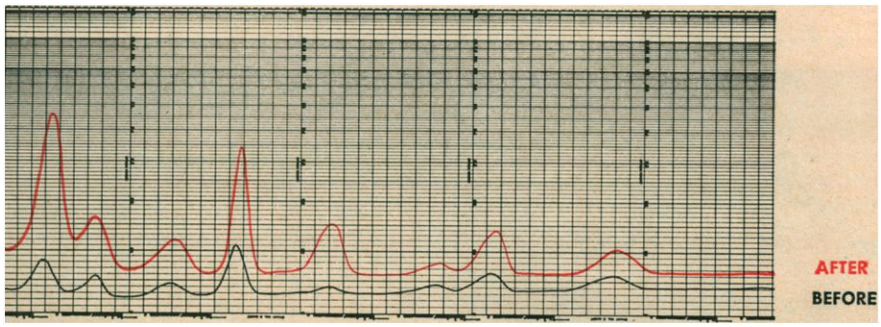
new automated technic provides rapid preparative and quantitative information on peptides ... their size, occurrence and distribution ... and assures detection.

The Technicon AutoAnalyzer system you see above may well make history in protein research. By an ingenious extension of multiple-analysis chromatography, it not only separates peptides for preparative purposes, but at the same time gives quantitative information.

The column effluent is split into many streams. One stream is subjected to a system of continuous hydrolysis. Another stream, unhydrolyzed, is used as control. Both are reacted with Ninhydrin. Comparison of these gives information about the size of the peptide. Other parallel streams can be used simultaneously for specific amino acid reactions. Thus, the basic AutoAnalyzer® train can be augmented and shaped at will to provide more and more analytic information.

In doing this, the system takes up where paper chromatography, electrophoresis and UV monitoring leave off. These methods are generally adequate enough for limited qualitative findings only.

The Technicon® peptide system is automated from beginning to end with thoroughgoing AutoAnalyzer efficiency, rapidity, and reliability. This versatile AutoAnalyzer reduces to *hours* the *days* now conscripted to the tedious task of peptide analysis.



Section of a chromatogram showing tryptic hydrolyzate of performic acid oxidized bovine pancreatic Ribonuclease before and after alkaline hydrolysis.

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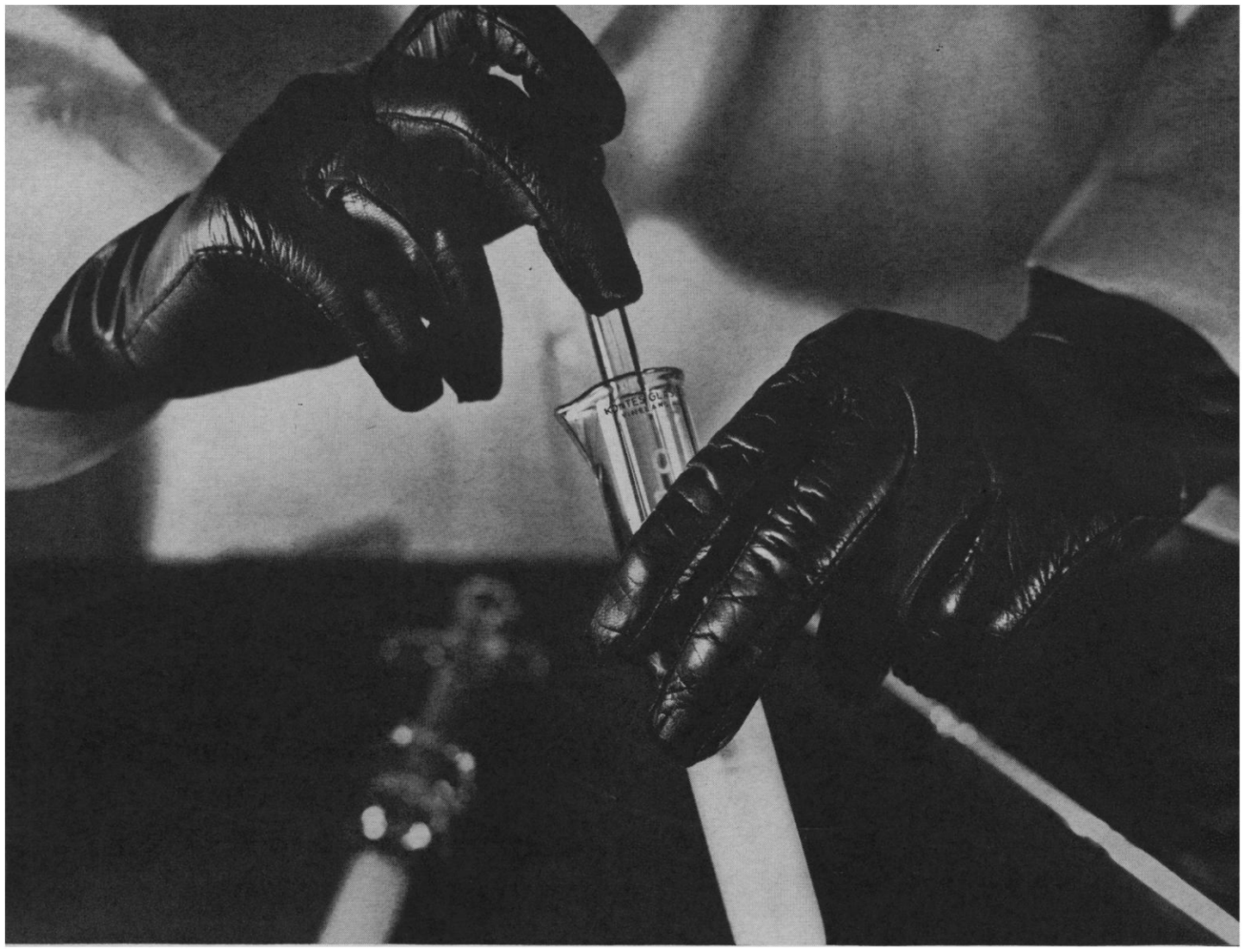

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You could say we're finicky in the manufacture of all our apparatus.

Many do.

We're precise with good reason.

Our kid glove craftsmanship assures you of reliability where it's needed—on the job.

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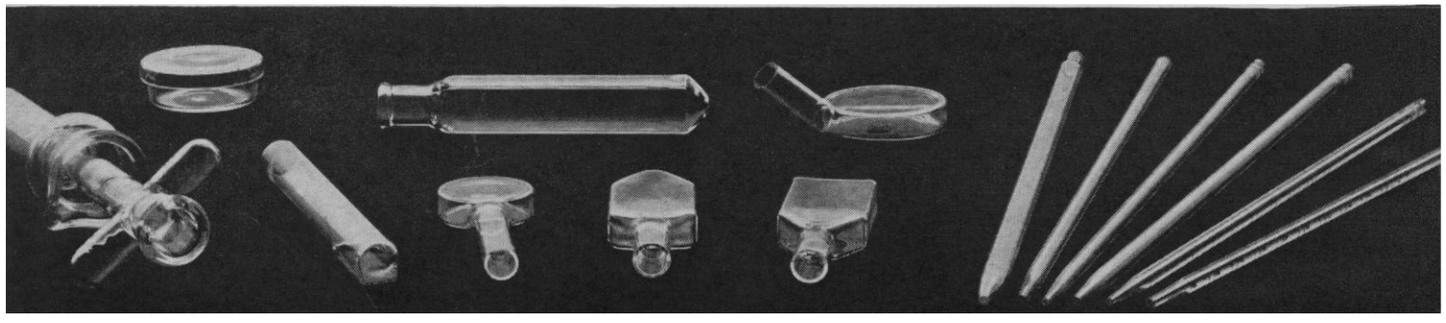

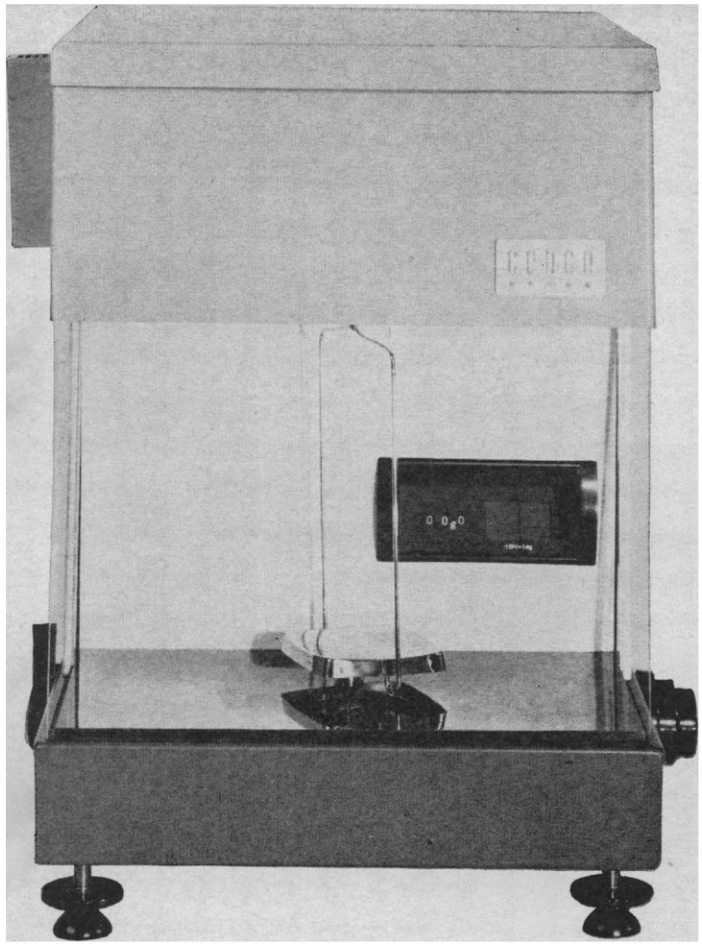

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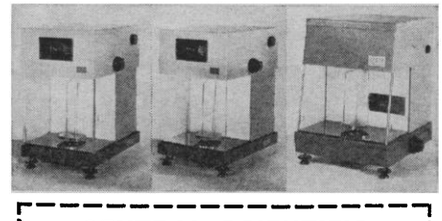
Capacity	160g	160g	200g
Sensitivity	1.0mg	0.1mg	0.1mg
Precision	±0.3mg	±0.05mg	±0.03mg
List Price*	$585.00	$650.00	$980.00

*Special quantity discounts are offered. CEN-4-239

Model 1580-H4 | Model 1581-H5 | Model 1582-B5



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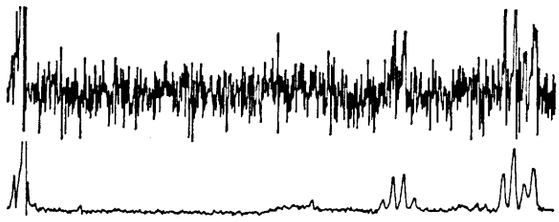
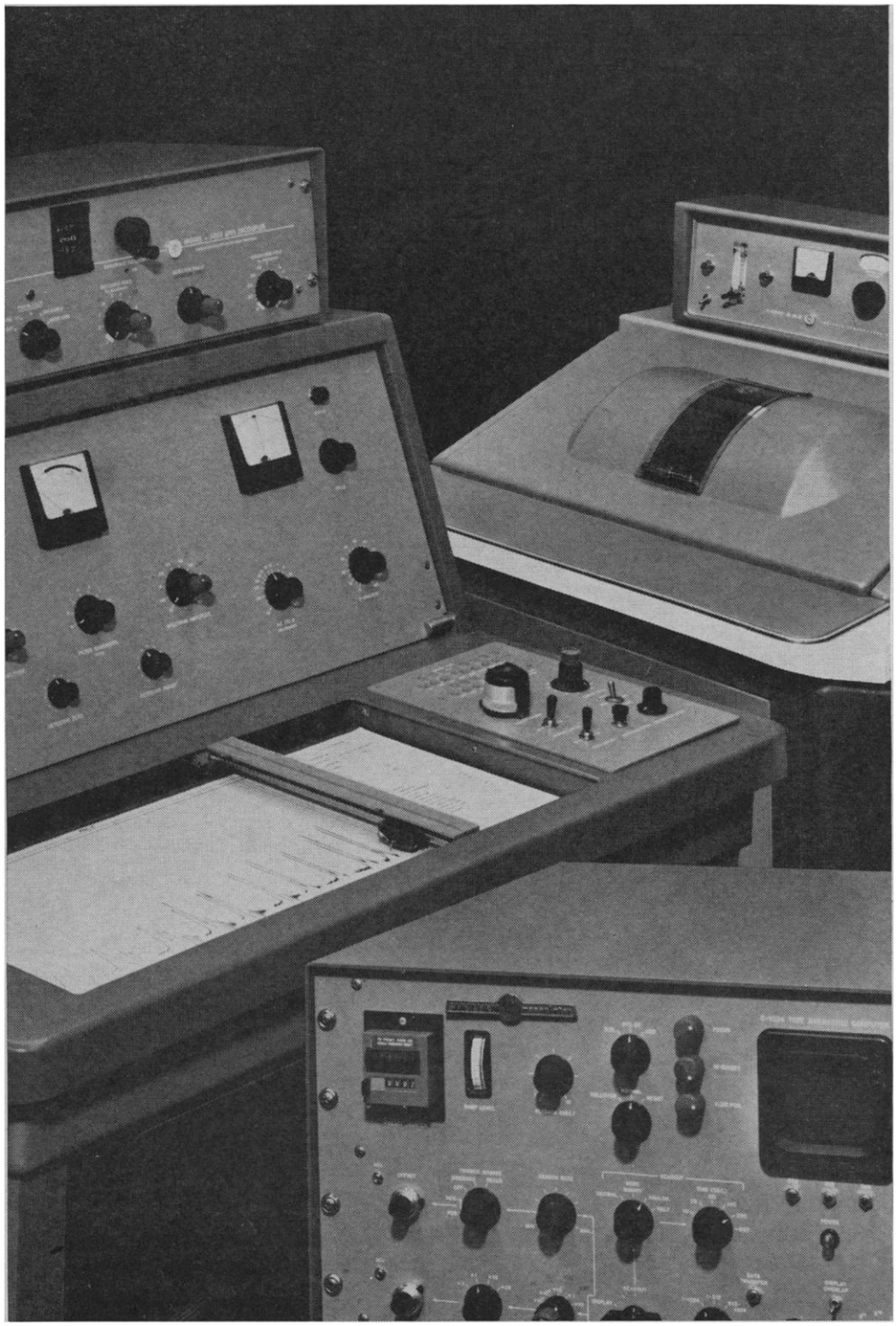


NOW'S THE TIME TO RECONSIDER NMR



☐ That first A-60 spectrum of a 0.10% ethyl benzene solution is so noisy that it is almost worthless. So we reran the sample a hundred times, using an A-60 spectrometer equipped with our new C-1024 time averaging computer. The second spectrum shows the result: a clear, readable, useful signal which has improved the signal-to-noise ratio by a factor of *10*.

☐ Just one example, but we could give you plenty of others. Why couldn't *you* use NMR before? Samples too minute? Working with biological specimens? Solubility-limited compounds? Or what? Anyhow, now's the time to take another look at what our A-60 —coupled with the C-1024— can do for you.

☐ The Varian A-60 offers a fast, non-destructive method of identifying compounds, functional groups, isotopic substitution sites, and components of mixtures. Now, with the time averaging computer accessory, it allows studies which were not previously feasible. Sensitivity is essentially limited only by the time you want to invest. Write our Analytical Instrument Division for details.

☐ P.S. Just in case you haven't heard, we now have spin decoupler and variable temperature accessories for our A-60 Spectrometers. They open up brand new paths to explore. Ask us about them sometime.

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Starting Jan. 10th

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Announcing the 1965 season of the fascinating TV program that explores and explains the sciences

Nominated for an Emmy Award, SCIENCE ALL STARS presents remarkable achievements by gifted teen-agers in every field from anthropology to nuclear physics with on-location participation by the nation's leading scientists

Honeywell's stage for scientific achievement promises to hit new highs in viewer interest as it begins its second season with a fresh new format. SCIENCE ALL STARS' success last year proved that a program appealing to the intellect can attract a sizable and influential audience. Thanks to the charm, humor and amazing range of interest of each teen-ager, the program also proved it could be highly entertaining as well as informative. Not unimportantly these teen-agers and others like them are making important additions to basic knowledge.

A new dimension is added in 1965 as SCIENCE ALL STARS takes its cameras and its teen-agers on location to the actual laboratories of the nation's leading scientists, educators and government officials.

On the first program of the new series we travel to NASA's famed Huntsville, Alabama Space Center where, flanked by the actual Saturn boosters, Dr. Wernher von Braun discusses propulsion with a young rocketry expert. On the same program a 15-year-old girl will present her project to discover a method of preventing tooth decay.

On the second program we travel to San Francisco where Dr. Edward Teller proposes to a teen-age physicist that physics, chemistry and math should be taught as one subject.

Other programs will present talented youngsters with such projects as speeding up the growth rate of plants . . . a demonstration of the vibrations of the nuclei of hydrogen atoms . . . automated train operation . . . proving Newton's laws with frictionless devices . . . a project that completely challenges present-day beliefs about the nature of the surface of Mars. You'll watch as young scientists create amino acids to show how life started . . . demonstrate how Carbon 14 is absorbed by plants . . . show how to raise germ-free chickens.

Many provocative questions are answered by the noted guests who will appear on "Science All Stars" this season:

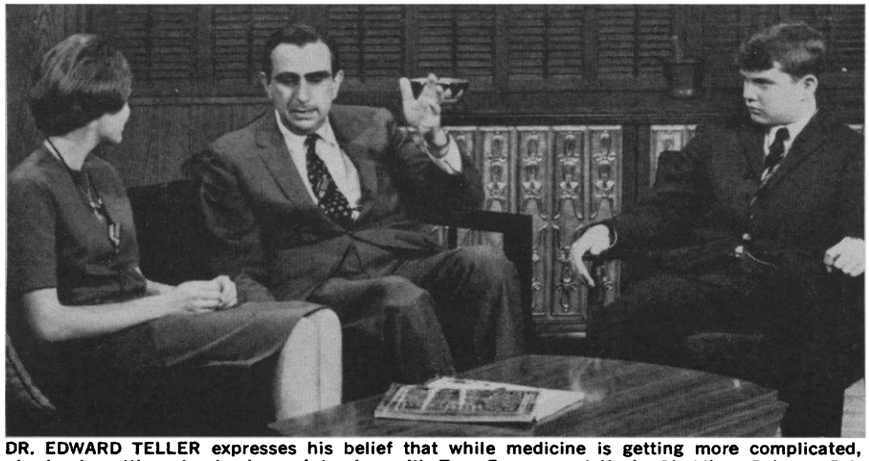
Dr. Wernher von Braun—Director, George C. Marshall Space Flight Center — Jan. 10 and 24

Dr. Edward Teller — Professor at Large, Univ. of Calif. — January 17.

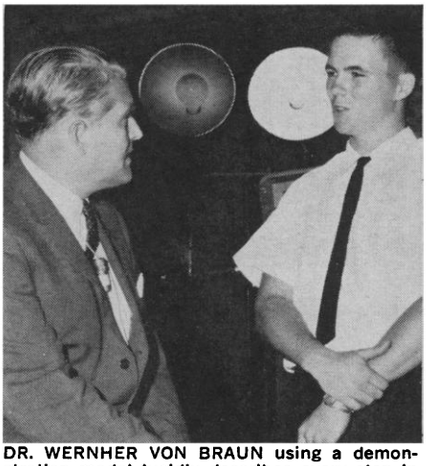
Dr. Loren Eiseley — Prof. of Anthropology, University of Pennsylvania and world authority on origins of man — Feb. 7

Admiral Horacio Rivero — Vice Chief of Naval Operations — Feb. 14

Dr. Konrad Bloch — 1964 Winner of Nobel Award for Medicine, Higgins Professor of Bio-chemistry, Harvard University — March 7



DR. EDWARD TELLER expresses his belief that while medicine is getting more complicated, physics is getting simpler in an interview with Tam Feeney and Kevin Gladding, Science Fair winners who will demonstrate projects in botany and physics on "Science All Stars".



DR. WERNHER VON BRAUN using a demonstration model lucidly describes every step in the lunar landing mission to Rick Bennett, a young rocketry expert.

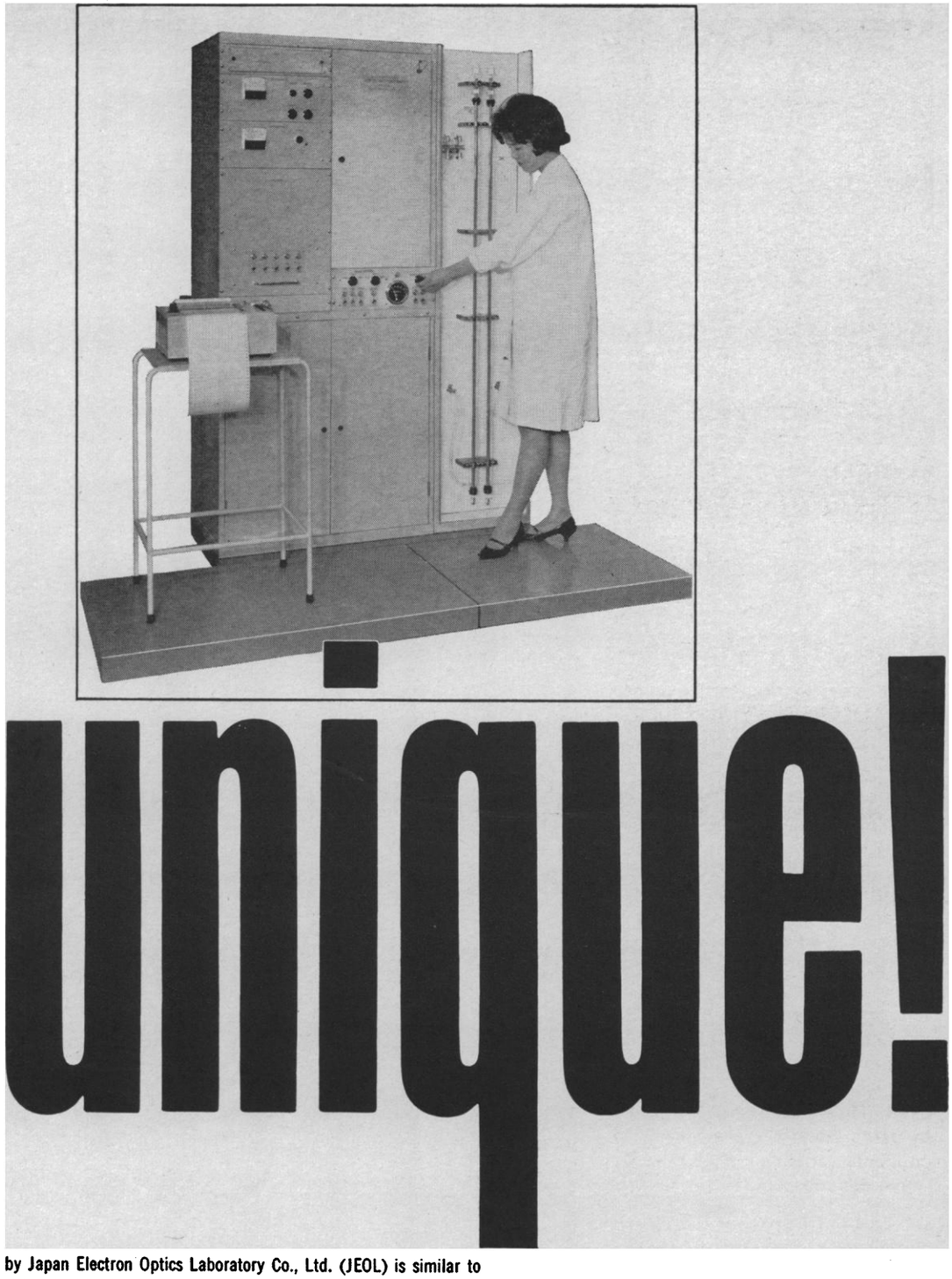
General Bernard Schriever — Commander, Air Force Systems Command — March 21

Dr. William McCorkle — Chief, Advanced Systems Lab., U. S. Army Missile Command — April 4

"Science All Stars" blends the enthusiastic, adventuresome spirit of Science Fair winners and the mature insights offered by recognized leaders of the scientific community. By emphasizing the inherent excitement of scientific exploration, the program makes science more understandable to the average person and promotes the desirability of science as a career. In sponsoring "Science All Stars", Honeywell hopes to stimulate a wider interest among young people in considering science as a life work.

You are invited to watch "Science All Stars" Sundays at 5:00 EST on the ABC TV Network starting January 10. (Check your TV listings for local program time.) Your comments will be appreciated. Address Dr. John Dempsey, Director, Honeywell Research Center, Hopkins, Minnesota.

Honeywell

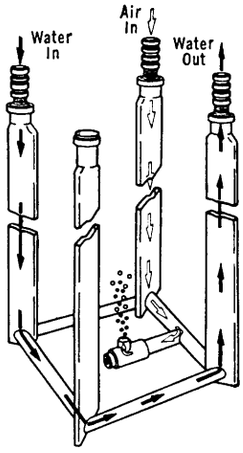


unique!

The JLC-01, manufactured by Japan Electron Optics Laboratory Co., Ltd. (JEOL) is similar to conventional automatic recording liquid column chromatographs — **except for one important difference.** Heat evolved during the separation process in the column system is measured by a sensitive, stable detector. Consequently, elution of any sample can be observed and be recorded automatically by detecting absorption-adsorption reaction, ion exchange reaction or partition reaction arising at the bottom of the column system. Sensitivity of 0.1 micromole is readily obtainable. ■ The JEOL Universal Automatic Recording Liquid Column Chromatograph provides several unique advantages. Samples previously impossible to detect can now be analyzed. Color reagents are not required permitting non-destructive, economical detection of the sample and fractionation of the eluded sample. Efficient, reliable design and compact construction enable easy, convenient and dependable operation. And, JEOL has established a complete domestic servicing network to assure continuous trouble-free service. ■ Complete technical data on the Universal Automatic Recording Liquid Column Chromatograph as well as an informative paper on the theory of this principle of chromatography is available. Please write JEOLCO. (U.S.A.), Inc., 461 Riverside Avenue, Medford 55, Massachusetts, phone 396-6241, area code 617.

New Bench-Top Fermentor

Is Small, Compact, Convenient to Use



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A wide range of microbial investigations can now be made with bench-top convenience in the MicroFerm, a compact research fermentor. In the quiet of your own laboratory, you can conduct realistic pilot studies while temperature, agitation, and aeration are carefully controlled.

±0.25°C TEMPERATURE CONTROL

To conserve space and achieve more efficient temperature regulation, the conventional water bath has been eliminated. A new design permits tempered water to flow through hollow baffles* in the fermentor from an integral recirculating system. Temperature is adjustable from 5°C above water-supply temperature to 60°C, by means of a Thermistor controller.

Cultures can be irradiated with fluorescent or neon illumination from a Photosynthetic Light Manifold.

Accommodates 4 interchangeable fermentors: 2, 5, 7½ or 14 liters. Easy to remove. Designed for repeated sterilization in a 20″ autoclave.

*Patent Pending

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A new concept in pH meters...

Interchangeable power supplies for laboratory and field.

Accuracy and stability found heretofore only in the highest-priced meters.

Rugged construction for use in any environment under field conditions.

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MODEL PB—with modular mercury cell power source providing over 6 months of normal usage in the field.

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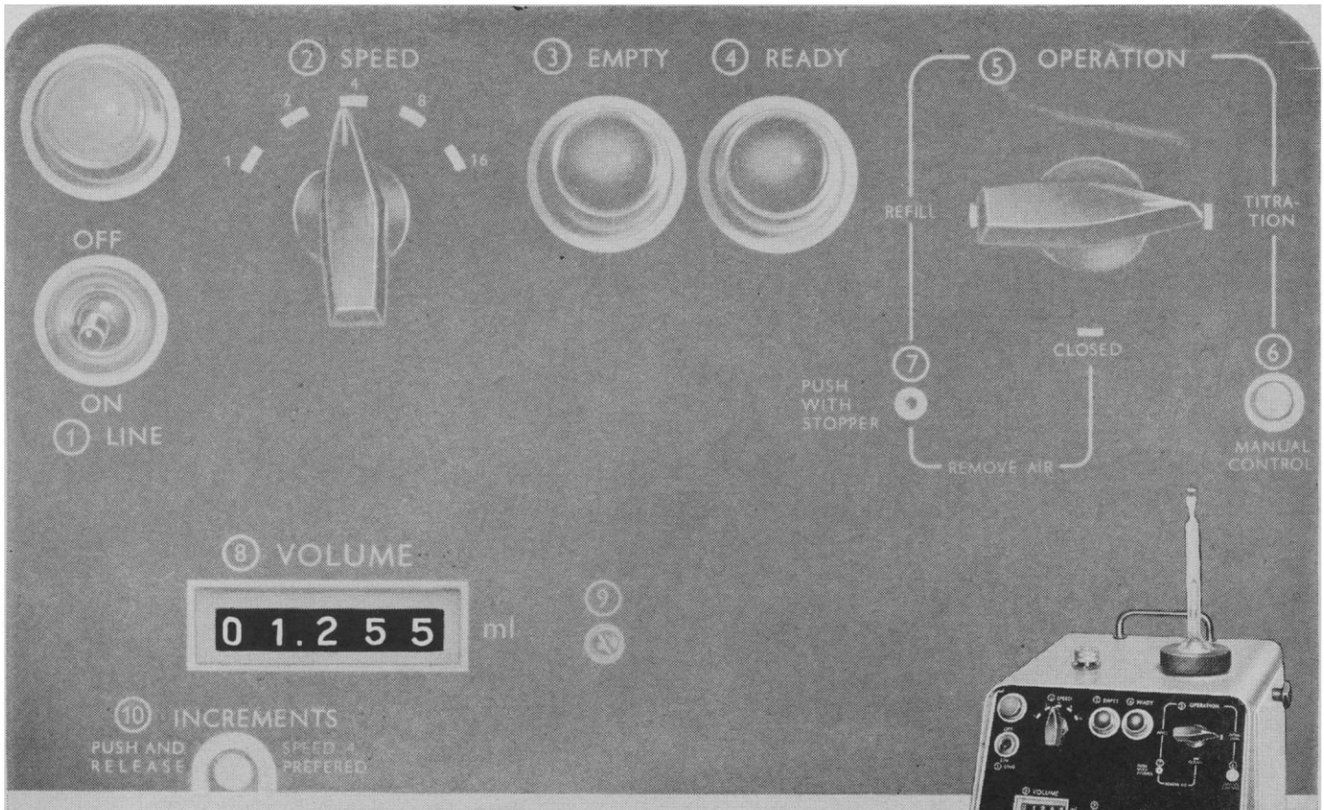

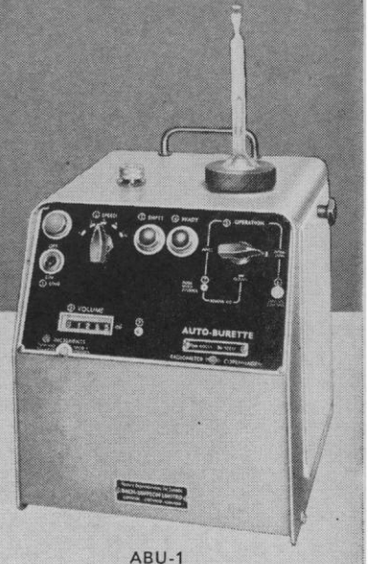

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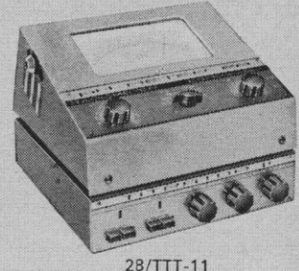

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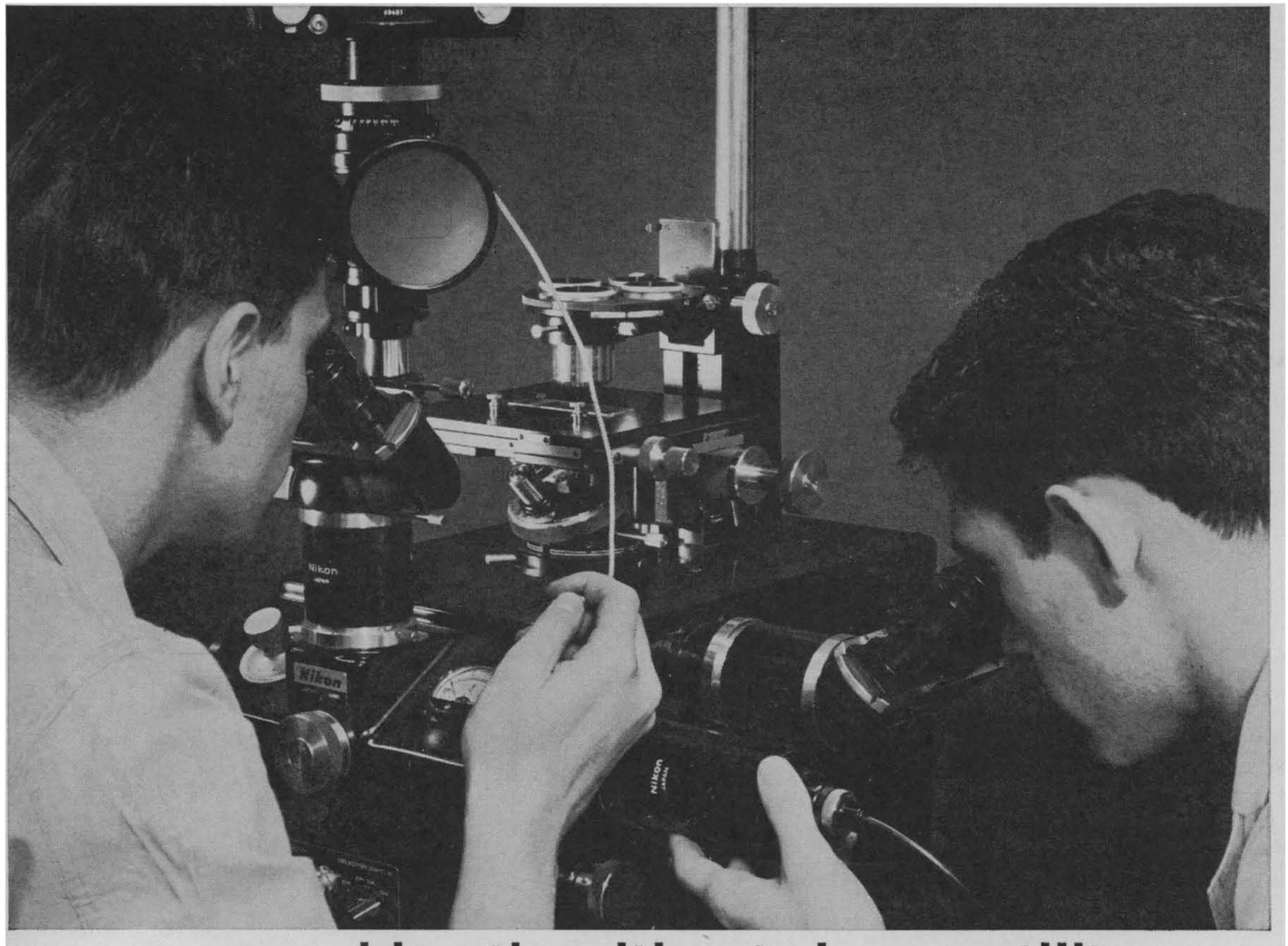

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brushed aside amidst the demands of the mob, the establishment, or the great society, depending upon one's view of things. And what concerns me most of all is that certain federal agencies are now in the business of underwriting the financial success of many educational institutions in this country. This fact, I feel certain, will one day rise to haunt us.

Perhaps it is true, as Greenberg suggests, that Fox's proposals simply did not meet certain standards and that he has only himself to blame, but somewhere, somehow, we must make room for the individual in the research world who wishes to pursue his own quiet ways, even while we are establishing priorities for federal research money. I can only echo Kusch's words that there must be something wrong with the system.

I have been disturbed that the science-underwriting federal agencies seem, much too often, to rely on the same individuals or institutions, time after time, to carry out research projects. I know, for example, that there are agencies which "suggest" to one of their favorites that a certain research project would be favorably viewed within that agency, but to get the personnel of that agency to admit to such a practice in an appropriations hearing is understandably impossible. I have been trying for the past several years in the Appropriations Committee to force the agencies to broaden the distribution of their research funds. Greenberg's article, if widely read, could be of considerable value in this regard.

GORDON ALLOTT
United States Senate, Washington, D.C.

A Calculus for Journal Publishers

In a recent editorial, "Basic research journals" (13 Nov., p. 869), Wolfle, describing the difficulties associated with the publication of 500 research journals, argues: "If we assume that no individual subscribes to more than five journals . . . 500 journals provide approximately 2.5×10^{11} different combinations to satisfy the individualistic needs of some 2.5×10^{5} scientists." From this he concludes that fewer journals would suffice and many journals should be merged.

I submit that this is a publisher's view and that many scientists see the problem differently. In the first place, the computation of combinations of 500 things taken 5 at a time is much more sensitive to the 5 than to the 500. Thus, if one assumes that a present subscriber to five journals would continue to receive about 1 percent of the literature as the journals merge, then the combinations available drop very rapidly to 19,900 when the total number of journals reaches 200 and the subscriber takes two.

Quite apart from the combinatorial question, however, is the problem presented to the scientist by the sheer bulk that 1 percent of the journals represents. You may remember Sherlock Holmes's comment that "A man should keep his little brain attic stocked with all the furniture that he is likely to use, and the rest he can put away in the lumber-room of his library, where he can get it if he wants it." It is my own view that most journals should be in libraries and that a scientist needs a much *greater* choice of printed material to stock his "brain attic." The *Physical Review* has recently split into two sections in an effort to meet the needs of its subscribers more effectively. Perhaps much more drastic methods should be considered.

There is much to be said for the view that most scientific journals in their present form should be considered archival and be held as reference material in libraries to which scientists have ready if not constant access. The material subscribed to by scientists for their own direct use could then be (i) one or two journals of broad scope and general impact, such as *Science*, and (ii) expanded abstracts of articles in retrievable form (such as perimeter punched cards) in the research field or fields selected by the subscriber. The scientist could then obtain reprints of the more relevant articles (if, indeed, he did not already have preprints) and could consult others in the library as necessary.

In all of this the principal question remains. Are the added costs (savings) of a proposed system offset by the increases (decreases) in usefulness of the system to the research scientist? This is the kind of criterion that Wolfle should be using.

Finally, let me say that I am aware that 100,000 scientific articles taken 100 at a time yield about 10^{342} combinations. Is it obvious that these are too many?

ALLAN M. RUSSELL
Scott Laboratory, Wesleyan University, Middletown, Connecticut

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8 January 1965, Volume 147, Number 3654

SCIENCE

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Water for North America

The United States currently uses about 1.25×10^9 cubic meters (350×10^9 gallons) of water per day. Consumption is growing, and water shortages are becoming more serious in areal extent as well as severity. One answer is desalination of sea water (*Science*, 18 December). In large-scale projects, in which nuclear reactors were used, fresh water perhaps could be obtained at about 6 cents per cubic meter (22 cents per 1000 gallons) at sea level and at the plant. Distribution of this water to points distant from the sea would entail very large additional expense.

An alternative approach is that of effectively utilizing part of the continent's natural water supplies. For example, in the northwestern section of North America, more than 800×10^9 cubic meters of water flow almost unused to the sea each year. Use of the potential supplies would solve most of the continent's water problems for as long as 100 years.* Unit cost of the water, delivered inland, would be a small fraction of that of desalted water even at sea level. Through a series of dams, lifts, tunnels, and canals, water from Canada and the northwestern United States would be conducted to the Great Lakes and to the southwestern United States and Mexico. By this means, the level of the Great Lakes would be regulated and maintained, and the amount of power generated at Niagara Falls and related sites would be increased. The canal conducting the water to the Great Lakes would be navigable, and huge blocks of hydroelectric power would be generated en route.

In the West, large areas in Utah, Nevada, Arizona, New Mexico, and other states, as well as three states in Mexico, could be irrigated. In Mexico alone, eight times more area could be served than will be supplied in Egypt by the Aswan High Dam. The needs of southern California also would be met. In all, 33 states would obtain some form of benefits from the plan. Canada would receive the equivalent of about $2 billion a year. The cost of the development is estimated at $100 billion; 20 years would be required for construction, after authorization.

Much of the water would be drawn from the Peace and the Yukon rivers. One of the features of the plan is a large storage lake in the Rocky Mountain Trench, just west of the continental divide; the lake would extend 800 kilometers northwest into Canada from the vicinity of Libby, Montana. A large storage basin is crucial, since most of the river flow of the region occurs during spring and summer. This projected flooding of Canadian territory could prove to be a major point of friction, even though the region is sparsely settled. In any event, past experience suggests that there would be long delays before the necessary international agreements were formalized.

However, many of the benefits for the United States could be obtained in a way not mentioned in the report. A substantial fraction of the flow of the Columbia River could be intercepted, near Hanford, Washington, and at other points, and lifted and caused to flow eastward and also southward through tunnels and canals. Very cheap electric power furnished by huge nuclear reactors could be used. The present NAWAPA concept is grand and imaginative. It is to be hoped that the Canadians will join us in this great project, but alternatives should be studied.—PHILIP H. ABELSON

* A conceptual plan for accomplishing this objective, NAWAPA (North American Water and Power Alliance), has been prepared by the Ralph M. Parsons Company, a large engineering and construction firm. The scheme is presently under study by a Senate subcommittee headed by Senator Moss of Utah.

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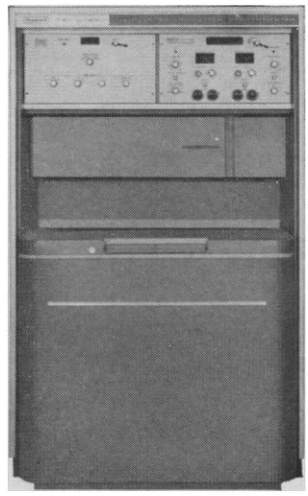

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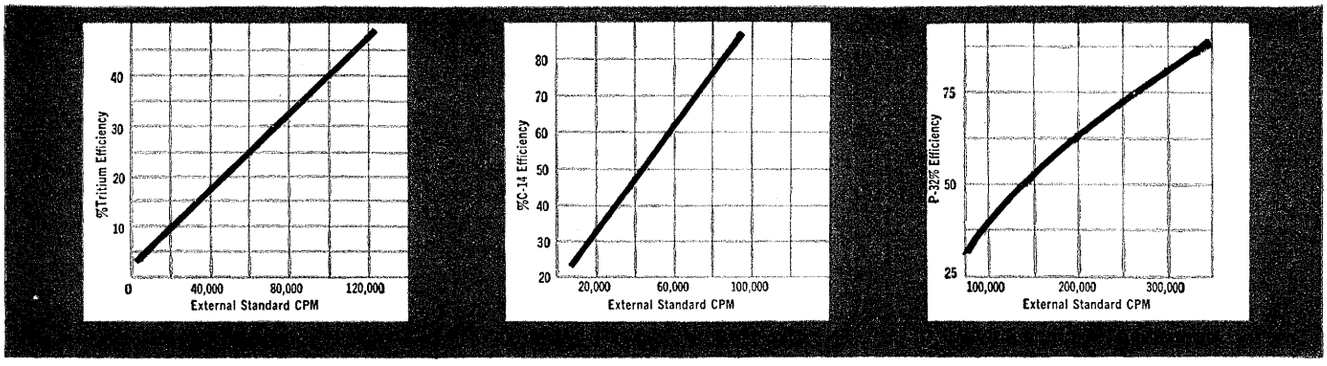

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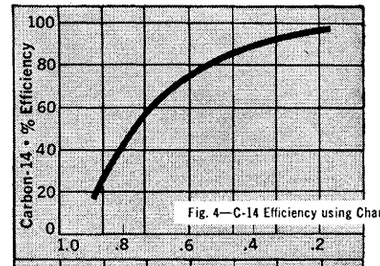

Fig. 4—C-14 Efficiency using Channels Ratio

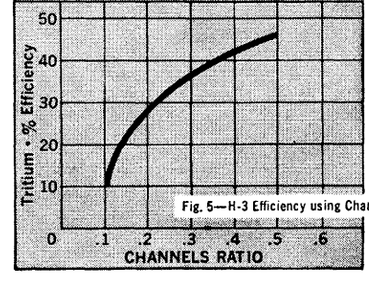

Fig. 5—H-3 Efficiency using Channels Ratio

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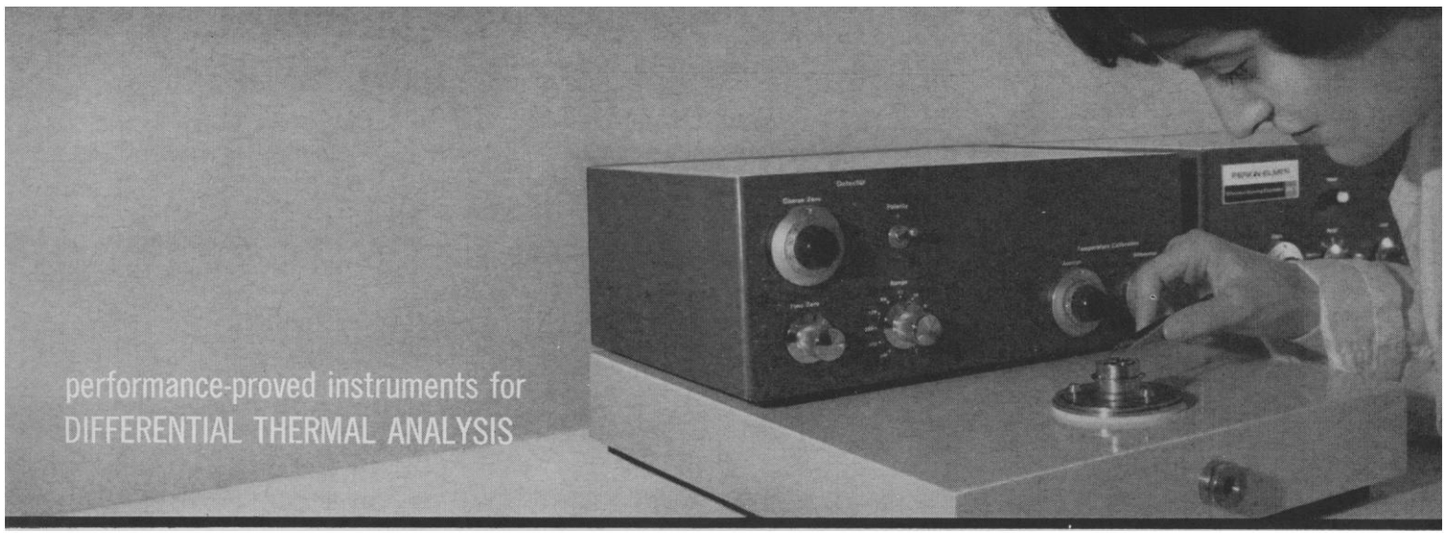

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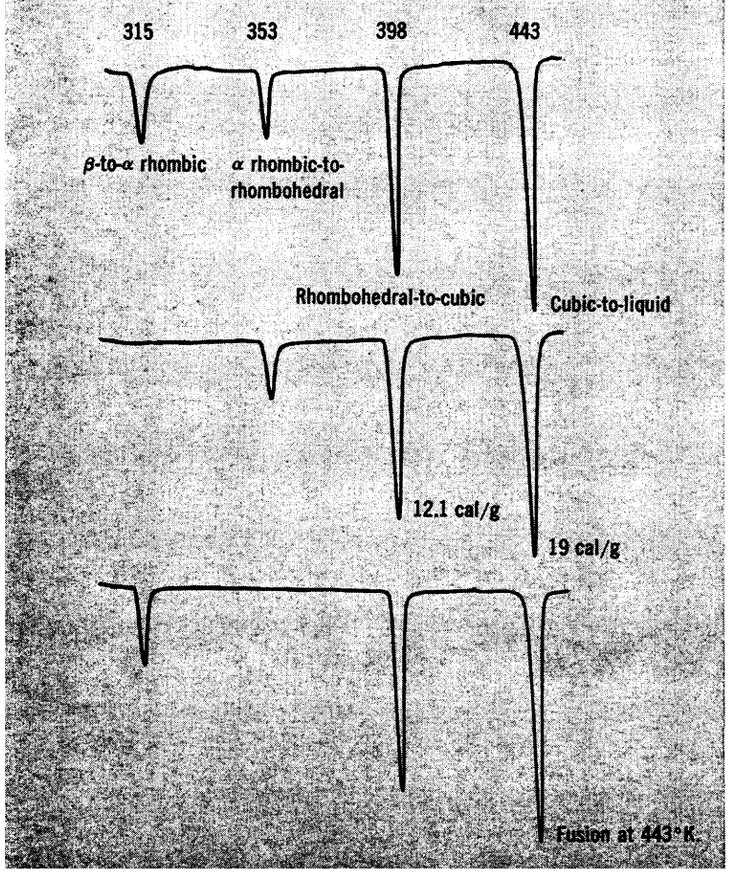
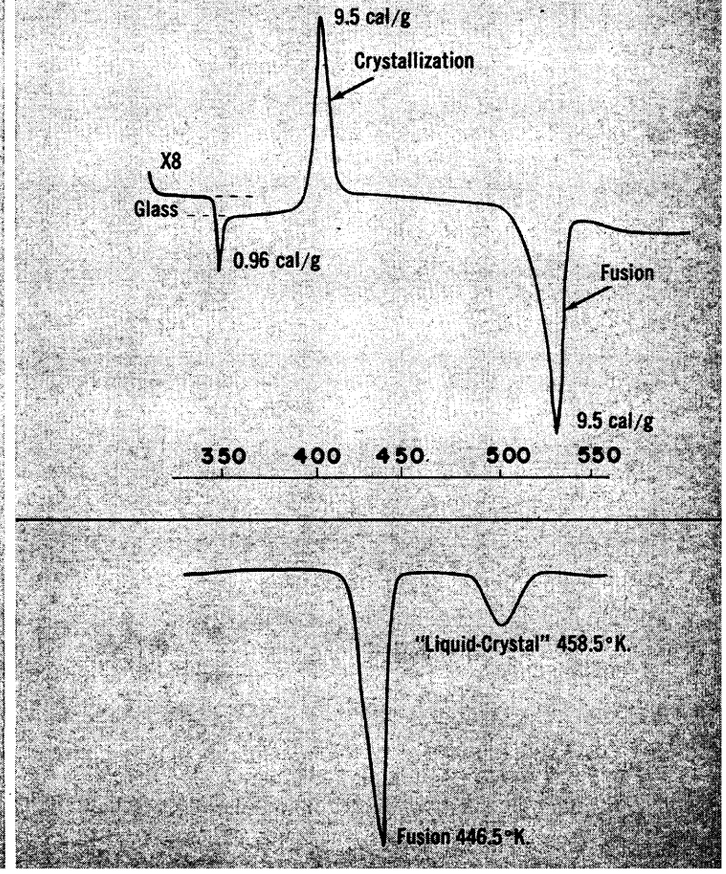
Thermograms illustrate crystal transitions of ammonium nitrate. Peak areas yield the transition energies shown.



Top chart is thermogram of polyethylene terephtalate. Peak areas correspond to transition energies as shown. Bottom run is anisaldazine.



specific effects—such as muscular degeneration, decalcification of bone and renal deposition of the excess calcium due to immobility, or circulatory decompensations as a function of fluid-balance disturbance—can be predicted on the basis of prior research and physicochemical theory, and when problems of measurement and transmission of measurements of relevant physiological parameters in flight have been solved, the data collected on short orbital flights, for few individuals, and in a context where hardware testing is the primary concern, can be expected to give only a first-approximation answer to questions of the interrelationships between the various states of physiological systems.

Finally, the necessity for return of the voyagers to the full richness of the terrestrial environment, it was seen, raises a fundamental and almost paradoxical question of the degree to which adaptation to the unquestionably strange micro-system of a space vehicle may interfere with readjustment to the earth's surface. Although not made explicit, a foreshadowing of problems of boundary-crossing to a point of physical no return was evident in discussions of the possibility that the human organism may adapt all too well to the alien environment of space.

With this serious question in mind the theme for the third conference, the life-threatening effects of minimum ecological conditions on cardiovascular, renal, and cerebral function, was established by the chairman, W. O. Fenn, of the University of Rochester.

DORIS HOWES CALLOWAY
Department of Nutritional Sciences, University of California, Berkeley

Biophysics

With A. Engström presiding, the second General Assembly of the International Organization for Pure and Applied Biophysics (IOPAB) met in Paris, 23 June 1964, during the international meetings of its special commissions on Cell and Membrane Biophysics and on Biophysics of Communication and Control Processes (*1*). The preliminary steps taken by the first Assembly in Stockholm in 1961 (*2, 3*) were confirmed, and the following 24 adherents were ratified: Argentina, Austria, Belgium, Brazil, Canada, China (Taiwan), Czechoslovakia,

Denmark, France, Germany (Deutsche Gesellschaft für Biophysik and the German Academy of Sciences at Berlin), Hungary, India, Israel, Japan, Netherlands, Norway, Rumania, Sweden, Switzerland, United Kingdom, United States, U.S.S.R., and Venezuela.

Adhering bodies are national societies for biophysics or national academies of sciences. The United States adheres through its National Academy of Sciences, which has set up a National Committee for Pure and Applied Biophysics whose members are selected nominees of some five national societies interested in biophysics. They are Thomas F. Anderson, chairman, Max A. Lauffer, Jr., vice-chairman, Edward Ford MacNichol, Jr., Alexander Rich, Robert L. Schoenfeld, Warren K. Sinclair, A. C. Young, and Raymond E. Zirkle. As officers of IOPAB or of its special commissions, A. K. Solomon, Walter A. Rosenblith, and Robley C. Williams are ex officio members.

Much of the real work of IOPAB is to be done by its semiautonomous special commissions, each covering a special branch of biophysics. In Paris the constitutions and memberships of three such commissions were ratified by the General Assembly: Cell and Membrane Biophysics (R. D. Keynes, Cambridge, England, presiding); Biophysics of Communication and Control Processes (W. A. Rosenblith, Cambridge, Massachusetts); and Molecular Biophysics (R. C. Williams, Berkeley, California). The Assembly also authorized the Council to form a special commission on Radiation Biophysics; adhering bodies are being asked to communicate their nominations for membership to the IOPAB's secretary-general.

The statutes of IOPAB provide for a second class of commissions, affiliated commissions, to permit the adherence of already-existing international groups in biophysics. A petition for admission of the International Organization of Medical Physics was approved, as was a similar petition by the Institute of Electrical and Electronics Engineers, which becomes affiliated with IOPAB through its relevant professional groups. In addition, IOPAB has relations with various international unions.

The first meeting of IOPAB was held in Cambridge, England, in 1959, sponsored by the International Union of Pure and Applied Physics. Currently both the International Union of Biochemistry and the International Union of Physiological Sciences have representatives on the special commissions of IOPAB.

Recognizing the difficulties of unifying education in biophysics, the Assembly requested M. Kotani (Japan) to form an *ad hoc* Committee on Educational Studies together with F. Hutchinson (New Haven, Connecticut) and others whom they may wish to co-opt.

The relative merits of open congresses as opposed to smaller invitational meetings were discussed at some length. Both types of meetings are obviously justifiable. The smaller meetings permit thorough discussions of specific problems by active research workers in closely related fields; open congresses, even though unwieldy, are particularly valuable for educating young scientists and for cross fertilization between scientists in relatively unrelated fields. Fortunately, the structure of IOPAB provides for both types of meeting: the autonomous special commissions can organize the types of meetings

they deem appropriate at any time, while large, open congresses can comprise both short, contributed papers and educational symposia on topics that have developed to a stage of general interest. The Assembly accepted by acclamation an invitation from the Austrian delegation to hold its next international congress in Vienna in September 1966.

The new officers and council members elected include: John C. Kendrew (U.K.), vice-president, succeeding A. Katchalsky (Israel) who becomes president; and A. Engström (Sweden), retiring president, now honorary vice-president. Gordon Sutherland (U.K.), retiring honorary vice-president, was thanked by acclamation for his successful efforts in helping to launch the Organization and frame its statutes. A. K. Solomon remains secretary-general until 1967; communications regarding IOPAB should be addressed to him at the Biophysical Laboratory, Harvard Medical School, Boston 15, Massachusetts.

THOMAS F. ANDERSON
Institute for Cancer Research, Philadelphia, Pennsylvania 19111

References

1. L. D. Harmon and F. M. Snell, *Science* **146**, 276 (1964).
2. R. H. Bolt and G. B. B. M. Sutherland, *ibid.* **131**, 742 (1960).
3. G. B. B. M. Sutherland, *Nature* **198**, 1141 (1963).

Forthcoming Events

January

18–20. **Solar Radiation Simulation,** intern. conf., Los Angeles, Calif. (H. F. Sander, Inst. of Environmental Science, 34 S. Main St., Mount Prospect, Ill.)

19. American Inst. of **Mining, Metallurgical,** and **Petroleum** Engineers, Metallurgical Soc., 7th mechanical working conf., Pittsburgh, Pa. (R. W. Shearman, Secretary, Metallurgical Soc. of AIME, 345 E. 47 St., New York 10017)

19. **Cor Pulmonale,** New York Heart Assoc., New York, N.Y. (NYHA, 10 Columbus Circle, New York 10019)

19–20. **Die Design and Press Tooling** Conf., American Soc. of Tool and Manufacturing Engineers, Hartford, Conn. (M. Zapico, Asst. Conf. Director, ASTME, 10700 Puritan Ave., Detroit 38, Mich.)

20–22. **Instrumentation,** College Station, Tex. (P. T. Eubank, Chemical Engineering Dept., Texas A&M Univ., College Station)

20–23. National Soc. of **Professional Engineers,** New Orleans, La. (P. H. Robbins, 2029 K St., NW, Washington, D.C.)

22. **Bibliographical** Soc. of America, New York, N.Y. (Mrs. H. C. Ralph, P.O. Box 397, Grand Central Station, New York 10017)

22–1. **Earthquake Engineering,** 3rd world conf., Auckland and Wellington, New Zealand. (Administrative Secretary, Third World Conf. on Earthquake Engineering, P.O. Box 5180, Wellington)

22–23. **Blood,** annual symp., Detroit, Mich. (W. H. Seegers, Dept. of Physiology and Pharmacology, Wayne State Univ. College of Medicine, Detroit)

22–23. **Hydrocarbon Analysis,** symp., American Soc. for Testing and Materials, Houston, Tex. (ASTM, 1916 Race St., Philadelphia 3, Pa.)

25–26. **Fundamental Phenomena in the Material Sciences,** 3rd annual symp., Boston, Mass. (D. B. Fay, Ilikon Corp., Natick Industrial Centre, Natick, Mass.)

25–26. **Viruses of Laboratory Rodents,** symp., Atlanta, Ga. (R. Holdenried, Natl. Cancer Inst., NIH, Bethesda, Md. 20014)

25–27. American Inst. of **Aeronautics and Astronautics,** New York, N.Y. (J. Bidwell, AIAA, 1290 Avenue of the Americas, New York 10019)

25–28. American **Meteorological** Soc., annual, New York, N.Y. (K. Spengler, AMS, 45 Beacon St., Boston 8, Mass.)

25–28. American Society of **Heating, Refrigerating and Air-Conditioning Engineers,** Chicago, Ill. (R. C. Cross, 345 E. 47 St., New York 10017)

25–28. Modern Methods of **Analytical Chemistry,** 18th annual intern. symp., Baton Rouge, La. (P. W. West, Dept. of Chemistry, Louisiana State Univ., Baton Rouge)

25–28. **Cardiovascular Diseases,** 2nd natl. conf., Washington, D.C. (C. H. Maxwell, 9650 Wisconsin Ave., NW, Washington, D.C. 20014)

25–29. American **Mathematical** Soc., Denver, Colo. (G. L. Walker, AMS, 190 Hope St., Providence, R.I.)

25–29. American Soc. for **Testing and Materials,** steel meeting, Mexico City, Mexico. (H. H. Hamilton, Public Relations, ASTM, 1916 Race St., Philadelphia, Pa. 19103)

25–30. American **Library** Assoc., Washington, D.C. (D. H. Clift, ALA, 50, E. Huron St., Chicago, Ill.)

26. Quasi Stellar **Radio Sources,** American Inst. of Physics, New York, N.Y. (E. H. Kone, AIP, 335 E. 45 St., New York)

26. **Mossbauer Effect Methodology,** symp., New York, N.Y. (M. Ress, New England Nuclear Corp., 575 Albany St., Boston, Mass.)

26–29. Canadian **Pulp and Paper** Assoc., technical, annual, Montreal. (Miss J. M. McKenzie, CPPA, Technical Section, 2280 Sun Life Bldg., Montreal 2)

27–30. American **Group Psychotherapy** Assoc., annual, San Francisco, Calif. (AGPA, Inc., 1790 Broadway, Room 516, New York, N.Y. 10019)

27–30. American **Physical** Soc., New York, N.Y. (K. K. Darrow, Pupin Physics Laboratory, Columbia Univ., New York 10027)

27–30. **Electrochemistry,** 5th seminar, Karaikudi-3, South India. (M. A. V. Devanathan, Central Electrochemical Research Institute, Karaikudi-3)

27–30. **Geological** Soc., Southwestern Federation, Austin, Tex. (S. P. Ellison, Jr., Department of Geology, Univ. of Texas, Austin)

27–31. **Neurosurgical** Soc. of America, San Juan, Puerto Rico. (C. H. Davis, Jr.,

Bowman Gray School of Medicine, Winston-Salem, N.C.)

28–29. Interactions of **Man and His Environment**, symp., Chicago, Ill. (W. K. Stuckey, Dept. of Public Relations, 1802 Chicago Ave., Northwestern Univ., Evanston, Ill. 60201)

28–29. **Rheology** Soc., winter meeting, Santa Barbara, Calif. (R. S. Porter, California Research Corp., Richmond Laboratory, 576 Standard Ave., Richmond, Calif. 94802)

28–30. American **Geophysical** Union, southwest regional, Socorro, N.M. (J. B. Franzini, Civil Engineering Dept., Stanford Univ., Stanford, Calif.)

28–30. International **Medical** Assembly of Southwest Texas, San Antonio. (S. E. Cockrell, Jr., 202 W. French Pl., San Antonio 12)

28–30. **Large-Scale Air-Sea Interaction**, symp., Bombay, India. (UNESCO, Office of Oceanography, Pl. de Fontenoy, Paris 7e, France)

28–30. **Mathematical** Assoc. of America and American Mathematics Soc., Denver, Colo. (H. M. Gehman, MAA, Univ. of Buffalo, Buffalo 14, N.Y.)

28–30. Selected Topics in **Cardiology**, conf., American College of Cardiology, Gainesville, Fla. (G. L. Scheibler, ACC, 350 Fifth Ave., New York, N.Y. 10001)

29–31. Southern **Radiological** Conf., Point Clear, Ala. (M. Eskridge, P.O. Box 4097, Mobile, Ala.)

31–2. Institute of **Electrical and Electronics** Engineers, New York, N.Y. (C. A. Woodrow, c/o General Electric Co., 1 River Rd., Schenectady 5, N.Y.)

31–5. Institute of **Electrical and Electronics** Engineers, New York, N.Y. (E. C. Day, IEEE, Box A, Lenox Hill Station, New York 10021)

31–6. International Festival of the **Scientific Film**, Brussels, Belgium. (Cercle des Sciences. Université Libre de Bruxelles, 22 avenue Paul Heger, Brussels 5)

February

1–2. **Protein** Conf., 19th annual, Rutgers Bureau of Biological Research, New Brunswick, N.J. (J. H. Leathem, Rutgers Univ., New Brunswick)

1–3. Solid Propellant **Rocket** Conf., American Inst. of Aeronautics and Astronautics, Washington, D.C. (D. L. Raymond, AIAA, 1290 Avenue of the Americas, New York 10019)

1–3. **Myasthenia Gravis**, conf., New York Acad. of Sciences, New York. (NYAS, 2 E. 63 St., New York, N.Y. 10021)

1–4. **Information Storage and Retrieval**, American Univ., Washington, D.C. (American Univ. Center for Technology and Administration, 2000 G St., NW, Washington 20006)

1–5. **Gas Chromatography**, conf., Los Angeles, Calif. (H. L. Tallman, Physical Sciences Extension, Room 6532, Engineering Bldg., Univ. of California, Los Angeles 90024)

2–3. American Soc. **Tool and Manufacturing Engineers**, Die Design and Press Tooling, seminar, Detroit, Mich. (L. S. Fletcher, ASTME, 10700 Puritan St., Detroit 38)

2–4. On-Line **Computing**, Symp., Los

Angeles, Calif. (T. Kramer, Engineering Extension, Univ. of California, Los Angeles 90024)

2–4. Society of the **Plastics** Industry, Reinforced Plastics Div. conf., Chicago, Ill. (C. L. Condit, SPI, 250 Park Ave., New York 10017)

3–5. Southwest **Chemical** Assoc./Chemical Market Research Assoc., joint meeting, Houston, Tex. (H. F. Pfann, Enjay Chemical Co., 60 W. 49 St., New York 10020)

3–5. **Military Electronics,** Inst. of Electrical and Electronics Engineers, Los Angeles, Calif. (IEEE, 3600 Wilshire Blvd., Los Angeles 90005)

3–5. Institute of **Management Science,** annual, San Francisco, Calif. (F. L. Weldon, Matson Navigation Co., 215 Market St., San Francisco 5)

3–6. **Fatty Acids** Seminar, Council of Scientific and Industrial Research, Hyderabad-9, India. (G. Satyanarayana Rao, Council of Scientific and Industrial Research, Regional Research Laboratory, Hyderabad-9)

4–5. American Soc. for **Engineering Education,** college-industry conf., Pittsburgh, Pa. (L. N. Canjar, Carnegie Inst. of Technology, Pittsburgh)

5. **Parenteral Drug Assoc.,** New York, N.Y. (Parenteral Drug Assoc., Inc., Western Saving Fund Bldg., Broad and Chestnut Sts., Philadelphia, Pa. 19107)

7–11. American Inst. of **Chemical** Engineers, 55th national, Houston, Tex. (AIChE, 345 E. 47 St., New York, N.Y. 10017)

8–10. American **Astronautical** Soc., annual, Denver, Colo. (Miss G. W. Heath, Flight Safety Foundation, 468 Park Ave. S., New York 10016)

8–11. Managerial Implications of the Emerging **Technology,** Washington, D.C. (P. W. Howerton Center for Technology and Administration, American University, 2000 G St., NW, Washington 20006)

8–12. American Soc. for **Testing and Materials,** spring meeting, Cleveland, Ohio. (ASTM, 1916 Race St., Philadelphia, Pa. 19103)

10–11. Corrosion of **Water Supply Systems,** 7th sanitary engineering conf., Urbana, Ill. (B. B. Ewing, Univ. of Illinois, Urbana)

10–12. American **Educational Research** Assoc., annual, Chicago, Ill. (R. A. Dershemer, 1201 16th St., NW, Washington, D.C.)

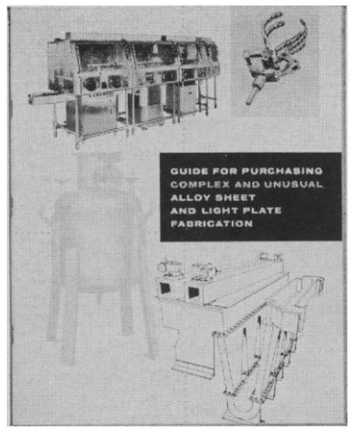
10–12. National Assoc. **Corrosion Engineers,** conf., Calgary, Canada. (T. J. Hull, NACE, 980 M&M Bldg., Houston, Tex. 77002)

10–13. National Soc. of College Teachers of **Education,** annual, Chicago, Ill. (E. J. Clark, Indiana State College, Terre Haute)

10–13. American College of **Radiology,** annual, Philadelphia, Pa. (F. H. Squire, Presbyterian–St. Luke's Hospital, 1753 West Congress St., Chicago, Ill. 60606)

11–13. **Biology of Human Variation,** conf., New York Acad. of Sciences, New York, N.Y. (NYAS, 2 E. 63 St., New York 10021)

12. **Science Programs** for General Education and the Preparation of Elementary Teachers, conf., Long Beach, Calif. (A. F. Eiss, National Science Teachers Assoc.,



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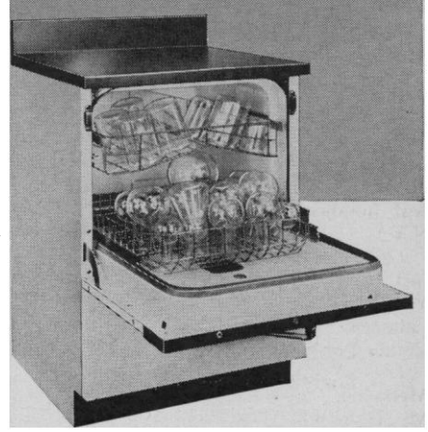

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13–15. National Assoc. for Research in **Science Teaching**, annual, Chicago, Ill. (J. D. Novak, Bio-Science Dept., Purdue Univ., Lafayette, Indiana)

14. Scientific Conference on **Psychoanalysis**, 3rd annual, Council of Psychoanalytic Psychotherapists, Inc., New York, N.Y. (Miss M. Nelson, 1965 Conference Program, Box 255, East Setauket, Long Island, N.Y.)

14–18. American Inst. **Mining, Metallurgical and Petroleum Engineers**, annual, Chicago, Ill. (R. W. Taylor, AIME, 345 E. 47 St., New York, N.Y. 10017)

14–11. German Foundation for the Developing Countries, **Public Health Training** Problems in Asia, intern. seminar, Berlin, Germany. (GFDC, Tagungsreferat, Agrippinenstrasse 10, 53 Bonn, Germany)

15–17. **Flight Testing** Conf., American Inst. of Aeronautics and Astronautics, Huntsville, Ala. (D. L. Raymond, AIAA, 1290 Avenue of the Americas, New York, N.Y. 10019)

15–17. American **Standards** Assoc., Inc., Chicago, Ill. (ASA, Inc., 10 E. 40 St., New York, N.Y. 10016)

15–20. Impact of **Mendelism on Agriculture, Biology, and Medicine**, intern. symp., New Delhi, India. (A. T. Natarajan, Secretary, Indian Soc. of Genetics and Plant Breeding, Division of Botany, Indian Agricultural Research Inst., New Delhi 12)

17. Use of **Enzymes** in the Food Industry, seminar, New York Inst. of Food Technologists, Inc., New York, N.Y. (A. Bolaffi, Jell-O Division Laboratories, General Foods Technical Center, Tarrytown, N.Y.)

17. Colors in **Food**, seminar, New York Inst. of Food Technologists, Inc., New York, N.Y. (A. Bolaffi, Jell-O Division Laboratories, General Foods Technical Center, Tarrytown, N.Y.)

17–19. American Acad. of **Occupational Medicine**, annual, Columbus, Ohio. (G. M. Hemmett, AAOM, Eastman Kodak Co., 343 State Street, Rochester 4, N.Y.)

17–19. **Solid State Circuits**, intern. conf., Inst. of Electrical and Electronics Engineers, Philadelphia, Pa. (R. Emberson, IEEE, Box A, Lenox Hill Station, New York, N.Y. 10021)

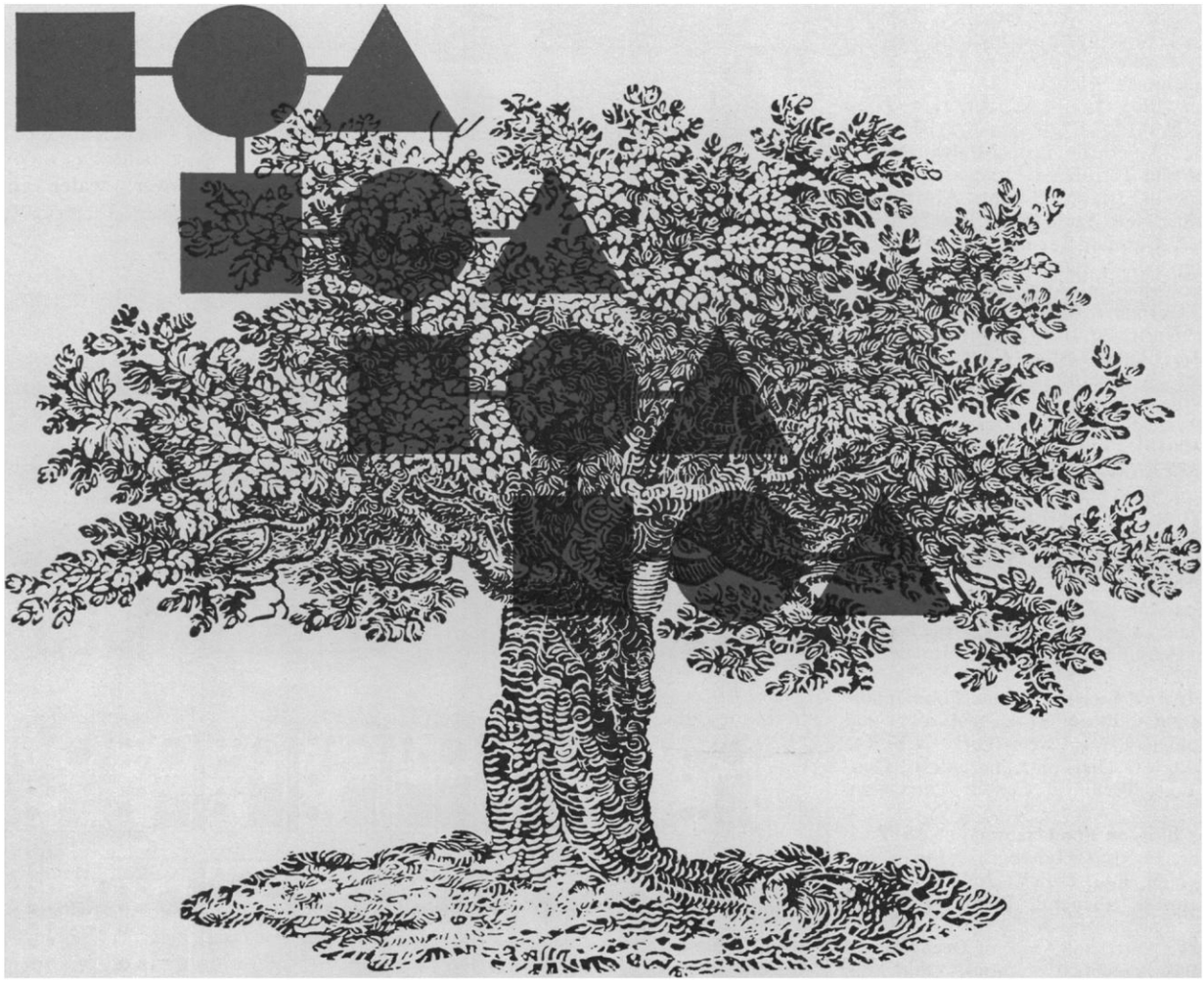
17–21. American College of **Cardiology**, annual, Boston, Mass. (Executive Director of the College, Empire State Building, New York, N.Y. 10001)

18–19. Mechanical and Transplant **Heart Substitutes**, symp., Heart Assoc. of Southeastern Pennsylvania, Philadelphia. (L. L. Perry, HASP, 318 S. 19 St., Philadelphia 19103)

18–20. **Skin Bacteria** in Infection, symp., San Francisco, Calif. (Administrative Secretary, Div. of Dermatology, Univ. of California, San Francisco Medical Center, San Francisco 94122)

19–20. **Comparative Psychopathology**—Animal and Human, annual symp., American Psychopathological Assoc., New York, N.Y. (F. J. Kallmann, APA, 722 W. 168 St., New York 10032)

20. **Reliability**, 6th annual West Coast symp., American Soc. for Quality Control, Los Angeles, Calif. (A. S. Golant, Rocketdyne, Canoga Park, Calif.)



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Laboratory mixer (Fisher-Kendall), designed to simulate the mixing motion of the human hand, accepts various containers from separatory funnels to fruit jars. From the main housing (of motor and gear train) two opposing arms protrude. On each arm is a cast aluminum holder mounted at an acute angle. The sample container is positively clamped to the holder by three separately adjustable "fingers" with suction cups. With rotation, the angle at which the sample is held makes for complex mixing. The 57-rev/min mixing speed handles large containers. Unbalanced loads on the two arms cause no vibration. Most substances may be mixed in their own containers, regardless of size or type of closure.—D.J.P. (Fisher Scientific Co., Fisher Bldg., Pittsburgh, Pa. 15219)

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Heat exchange tubing, flat on one side and made of synthetic rubber of high heat conductivity and elasticity, is wrapped around the apparatus to be tempered, and liquid of the proper temperature is circulated through it. Various circulating media, such as hot or cold water, steam, or ethyl alcohol, may be used for providing control in the range from −50° to +120°C. Tests on glass tubing whose wall thickness was 1.5 mm showed the heat transfer of the tubing to be in the range of 165 to 260 kcal/hour/m²/°C. Three sizes of the tubing are available, with the dimension of the flat side being 8, 15, and 30 mm. This tubing (called Calorex), because of the ease with which it may be fitted to apparatus of various shapes and sizes, should be useful in situations in which the use of a controlled temperature bath is inconvenient or impossible.—D.J.P. (Brinkmann Instruments, Cantiague Rd., Westbury, N.Y. 11590)

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Nitrogen refrigerator (Nitref 250 Cryobiology Container), 250-liter nitrogen capacity, has large access port and three independent, rotating, storage trays. Provides storage for 15,000 in.³ of tissues and cultures at ≧ −320°F; 29 inches in diameter, 48 inches high. Loaded through a 90-deg access port in the top. Each tray is independently controlled by a separate locking dial which is used to rotate the tray and lock it in position beneath the port. Stainless steel, double-wall construction. The accessories include a liquid-level sensor and storage cannisters.—D.J.P. (Hofman Laboratories, 225 Parkhurst St., Newark, N.J.)

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Osmometer, for 2- or 0.2-ml samples, employs a thermoelectrically cooled bath to control sample temperature. Range is 0 to 3000 milliosmols; repeatability (claimed) within 1 percent for 2-ml samples, 2 percent for 0.2-ml samples. Comes with 12 2-ml sample tubes and a rack which fits into a prechill bath built into the unit; samples in tubes are kept in this bath until read. For determination, the sample tube is placed in a hole in the top surface and a probe arm containing a thermistor and "ultrasonic" seeding transducer is swung into place. The sample is cooled rapidly by the cooling bath and freezing is induced by the seeding mechanism. The bath is then slowly warmed and the thawing plateau determined (ten-turn potentiometer and a null meter). Thermistor and potentiometer resistance are compared in a Wheatstone bridge whose error signal is amplified and read by the null meter. When the meter reads a constant null, the thawing plateau has been determined; osmolarity of the sample can be read directly in milliosmols from the potentiometer. Cooling bath is an antifreeze solution controlled down to −10°C ± 0.5°C. The heat sink for the thermoelectric module is cooled by a blower; water connections are not required. Electrically, the bridge is a-c, amplifier is solid-state, the meter has taut-band suspension. Dimensions: 54 × 28 × 33 cm high. Adapter and tubes for 0.2-ml samples are accessories.—D.J.P. (Fiske Associates, Inc., Bethel, Conn.)

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Pace pressure transducer kit, for laboratory general testing, provides multirange capability by using interchangeable diaphragms, eliminating need for several individual units; diaphragms easily replaced by removing four bolts. Split-body design; pressure is sensed through deflection of a flat magnetic stainless steel diaphragm located between two magnetic pick-off coil assemblies potted one in each of the body halves. Motion of the diaphragm changes inductance ratio between the pick-off coils; the effect is utilized in a bridge circuit to produce an output voltage proportional to pressure. The basic kit provides five diaphragms covering the ranges ±1, ±5, ±25, ±100, and ±500 lb/in.², gage or differential. The transducer (operates with any carrier system, including Pace models CD10 and CD25) accepts excitation of 1000 to 20,000 cy/sec; at 3000 cy/sec, for example, output is 50 mv/volt full scale, and maximum excitation voltage is 30 volt. Linearity is ±0.5 percent of the best straight line; hysteresis is ±0.25 percent over the pressure excursion. Maximum line pressure, 2000 lb/in.²; possible overpressure, 200 lb/in.² or 200 percent of the range, whichever is greater. Model KP15 is used in ambient temperatures from −65° to 250°F, with a sensitivity coefficient of 0.02 percent per °F and zero shift coefficient within 0.01 percent full scale per °F. Pressure cavity volume, 4×10^{-3} in.³; volumetric displacement, 3×10^{-4} in.³, full scale. Comes with wrenches, spare seals, and all necessary components in a hardwood case.—D.J.P. (Pace Engineering Co., 13035 Saticoy St., North Hollywood, Calif.)

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The material in this section is prepared by the following contributing writers:

Denis J. Prager (D.J.P.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

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NEW BOOKS

(Continued from page 143)

Quadratic Forms and Matrices. An introductory approach. N. V. Yefimov. Translated from the Russian edition (Moscow, 1962) by A. Shenitzer. Academic Press, New York, 1964. 174 pp. Illus. Paper, $2.45; cloth, $5.50.

A Selection of Problems in the Theory of Numbers. Wacław Sierpiński. Translated from the Polish edition by A. Sharma. Pergamon, London; Macmillan, New York, 1964. 126 pp. Illus. $4.50.

Solar System Astrophysics. John C. Brandt and Paul W. Hodge. McGraw-Hill, New York, 1964. 467 pp. Illus. $12.50.

The Solubility of Nonelectrolytes. Joel H. Hildebrand and Robert L. Scott. Dover, New York, 1964 (reprint, ed. 3, 1950). 502 pp. Illus. Paper, $2.50.

Space Physics. Harrie Massey. Cambridge Univ. Press, New York, 1964. 245 pp. Illus. Paper, $2.95; cloth, $6.50.

Statistics and Experimental Design in Engineering and the Physical Sciences. vols. 1 and 2. Norman L. Johnson and Fred C. Leone. Wiley, New York, 1964. vol. 1, 539 pp. $10.95; vol. 2, 409 pp. $11.50. Illus.

Structure of Molecules and the Chemical Bond. Y. K. Syrkin and M. E. Dyatkina. Translated and revised from the Russian edition (1946) by M. A. Partridge and D. O. Jordan. Dover, New York, 1964 (reprint, 1950 edition). 519 pp. Illus. Paper, $1.75.

Systematic Classification of Types of Intermetallic Structures. P. I. Kripyakevich. Translated from the Russian edition (1963). Consultants Bureau, New York, 1964. 35 pp. Illus. Paper, $10.

Tables of the Function $F(z) = = \int_0^z e^{x^2} dx$ **in the Complex Domain.** K. A. Karpov. Translated from the Russian edition (Moscow, 1958) by D. E. Brown. Pergamon, London; Macmillan, New York, 1964. 523 pp. $20.

Tables of the Legendre Functions $P_{-\frac{1}{2}+it}(X)$. pt. 1. M. I. Zhurina and L. N. Karmazina. Translated from the Russian edition (Moscow, 1960) by D. E. Brown. Pergamon, London; Macmillan, New York, 1964. 324 pp. $17.50.

Tables of the Velocity of Sound in Sea Water. L. S. Bark, P. P. Ganson, and N. A. Meister. Translated from the Russian edition (Moscow, 1961) by D. E. Brown. Pergamon, London; Macmillan, New York, 1964. 196 pp. $21.

Techniques of Process Control. Page S. Buckley. Wiley, New York, 1964. 315 pp. Illus. $15.

The Technology of Ceramics and Refractories. P. P. Budnikov. Translated from the Russian by Scripta Technica. M.I.T. Press, Cambridge, Mass., 1964. 655 pp. Illus. $15.

Les Temps Fossilifères. vol. 1, *Paléozoïque Inférieur.* Henri Termier and Geneviève Termier. Masson, Paris, 1964. 695 pp. Illus. F. 270.

A Textbook on Analytical Geometry. Joseph S. Mamelak. Pergamon, London; Macmillan, New York, 1964. 255 pp. Illus. $6.

Theoretical Physics. A. S. Kompaneyets. Translated from the second Russian edition by George Yankovsky. Gordon and Breach, New York, 1964. 592 pp. Illus. $9.50.

The Theory and Practice of Scintillation Counting. J. B. Birks. Pergamon, London; Macmillan, New York, 1964. 682 pp. Illus. $17.50.

Thermodynamics of Structure. Jere H. Brophy, Robert M. Rose, and John Wulff. Wiley, New York, 1964. 228 pp. Illus. Paper, $2.95.

Understanding Physical Chemistry. A set of simple yet difficult examination questions and their methods of solution. pts. 1 and 2. pt. 1, *Properties of Matter, Thermodynamics, Chemical Equilibrium*; pt. 2, *Electrochemistry, Kinetics, Structure and Bonding*. Arthur W. Adamson. Benjamin, New York, 1964. 556 pp. Illus. $10 (also available in two volumes; paper, $3.95 each).

The Use of Ferrites at Microwave Frequencies. Translated from the French edition (Paris, 1962) by J. B. Arthur. Pergamon, London; Macmillan, New York, 1964. 108 pp. Illus. $6.50.

Biological and Medical Sciences

Actions of Hormones on Molecular Processes. Gerald Litwack and David Kritchevsky, Eds. Wiley, New York, 1964. 595 pp. Illus. $17. 19 papers; contributors: James Ashmore, James A. Buzard, Lucinda Carr, Warren D. Davidson, Robert E. Davies, Ralph I. Dorfman, M. Feigelson, P. Feigelson, Edward H. Frieden, Jean Himms Hagen, Paul B. Hagen, Irwin J. Kopin, David Kritchevsky, Shutsung Liao, Gerald Litwack, W. H. McShan, Charles A. Nichol, J. F. Perdue, Steven Price, Thomas R. Riggs, Fred Rosen, J. R. Tata, Gordon M. Tomkins, H. G. Williams-Ashman, Albert I. Winegrad, Ira G. Wool, and K. Lemone Yielding.

Advances in Cancer Research. vol. 8. Alexander Haddow and Sidney Weinhouse, Eds. Academic Press, New York, 1964. 490 pp. Illus. $17. Five papers: "The structure of tumor viruses and its bearing on their relation to viruses in general" by A. F. Howatson; "Nuclear proteins of neoplastic cells" by Harris Busch and William J. Steele; "Nucleolar chromosomes: Structures, interactions, and perspectives" by M. J. Kopac and Gladys M. Mateyko; "Carcinogenesis related to foods contaminated by processing and fungal metabolites" by H. F. Kraybill and M. B. Shimkin; and "Experimental tobacco carcinogenesis" by Ernest L. Wynder and Dietrich Hoffmann.

Advances in Protein Chemistry. vol. 19. C. B. Anfinsen, Jr., M. L. Anson, John T. Edsall, and Frederic M. Richards, Eds. Academic Press, New York, 1964. 416 pp. Illus. $14.50. Four papers: "The hemoglobins" by G. Braunitzer, K. Hilse, V. Rudloff, and N. Hilschmann; "Hemoglobin and myoglobin" by Alessandro Rossi Fanelli, Eraldo Antonini, and Antonio Caputo; "Linked functions and reciprocal effects in hemoglobin: A second look" by Jeffries Wyman, Jr.; and "Thermodynamic analysis of multicomponent solutions" by Edward F. Casassa and Henryk Eisenberg.

Les alcaloïdes stéroïdiques des Apocy-

nacées. Robert Goutarel. Hermann, Paris, 1964. 289 pp. Illus. Paper, F. 48.

Aldosterone. A symposium (Prague), August 1963. E. E. Baulieu and P. Robel, Eds. Davis, Philadelphia, Pa., 1964. 543 pp. Illus. $19.50. 26 papers presented at a symposium organized by the Council for International Organizations of Medical Sciences, established under the joint auspices of UNESCO and WHO, in conjunction with the Second International Pharmacological Congress and the Second International Congress of Nephrology.

Algae and Man. Based on lectures presented at the NATO Advanced Study Institute. Daniel F. Jackson, Ed. Plenum Press, New York, 1964. 446 pp. Illus. $14.50. 19 papers: "Contributions of current research to algal systematics" by G. W. Prescott; "Criteria and procedures in present-day algal taxonomy" by C. van den Hoek; "The gross classification of algae" by Tyge Christensen; "The cytology of the phaeophyta—A review of recent developments, current problems, and techniques" by Margaret Roberts; "Environmental conditions and the pattern of metabolism in algae" by G. E. Fogg; "Micronutrient requirements for green plants, especially algae" by Clyde Eyster; "Some problems remaining in algae culturing" by A. G. Wurtz; "The ecology of benthic algae" by F. E. Round; "A discussion of natural and abnormal diatom communities" by Ruth Patrick; "The ecology of plankton algae" by James B. Lackey; "Principles of primary productivity: Photosynthesis under completely natural conditions" by Jacob Verduin; "Algae in water supplies of the United States" by C. Mervin Palmer; "Algal problems related to the eutrophication of European water supplies, and a bio-assay method to assess fertilizing influences of pollution on inland waters" by Olav Skulberg; "The biotic relations with water brooms" by George P. Fitzgerald; "Toxic algae" by Paul R. Gorham; "Extracellular products of algae" by Marcel Lefèvre; "Algae and medicine" by David Schwimmer and Morton Schwimmer; "Mass culture of microalgae for photosynthetic gas exchange" by Richard J. Benoit; and "The future of phycology" by F. Evens.

Amebiasis: Laboratory Diagnosis. A self-instructional course. Introduction and pts. 1, 2, and 3. "Introduction" (8 pp., 15¢); pt. 1, "Life cycle of *Entamoeba Histolytica*" (24 pp., 25¢); pt. 2, "Identification of intestinal amebae" (66 pp. and answer booklet, 65¢); pt. 3, "Laboratory procedures" (70 pp. and answer booklet, 60¢). M. M. Brooke, Ed. U.S. Department of Health, Education, and Welfare, Washington, D.C., 1964. Illus. Paper.

Anatomy of the Chordates. Charles K. Weichert. McGraw-Hill, New York, ed. 3, 1965. 768 pp. Illus. $11.

Annual Review of Phytopathology. vol. 2. James G. Horsfall and Kenneth F. Baker, Eds. Annual Reviews, Palo Alto, Calif., 1964. 431 pp. Illus. $8.50. 18 papers divided into the following sections: Pathogens (3 papers); Morphology and anatomy (1 paper); Physiology of host-pathogen interaction (6 papers); Influence of environment (2 papers); Action of toxicants (2 papers); Biological and cultural control (2 papers); Organ affected (1 paper).

Biochemistry of the Brain during the Process of Dying and Resuscitation. Mariya Sergeevna Gaevskaya. Translated from the Russian edition (Moscow, 1963) by J. A. Stekol. Consultants Bureau, New York, 1964. 107 pp. Illus. Paper, $17.50.

Biological Effects of Magnetic Fields. Madeleine F. Barnothy, Ed. Plenum Press, New York, 1964. 334 pp. Illus. $16. Twenty-eight papers on Theoretical considerations (7 papers); Effects of strong magnetic fields on specimens *in vivo* (11 papers); Effects of strong magnetic fields on specimens *in vitro* (6 papers); Effects of very weak magnetic fields (3 papers). Indexes and a bibliography are included.

Blood and Bone Marrow Cell Culture. H. Jackson Woodliff. Lippincott, Philadelphia, 1964. 155 pp. Illus. $6.

Blood Coagulation, Hemorrhage, and Thrombosis. Methods of study. Leandro M. Tocantins and Louis A. Kazal, Eds. Grune and Stratton, New York, ed. 2, 1964. 560 pp. Illus. $17.50. 130 papers.

Body Fluids and the Acid-Base Balance. A learning program for students of the biological and medical sciences. Halvor N. Christensen. Saunders, Philadelphia, Pa., 1964. 518 pp. Illus. Paper, $6.50.

Bone Biodynamics. A symposium (Detroit, Mich.), March 1963. Harold M. Frost, Ed. Little, Brown, Boston, 1964. 703 pp. Illus. $18. The symposium was intended to stimulate a greater diversity and volume of research in the basic orthopaedic sciences, in part by bringing together representatives of a number of disciplines who, in composite, had a broad biological interest. The papers were contributed by: Charles H. Bachman, C. Andrew Bassett, Göran C. H. Bauer, Robert D. Becker, David A. Cameron, D. Harold Copp, James F. Danielli, Honor B. Fell, Sylvia Fitton-Jackson, Boy Frame, Harold M. Frost, C. Howard Hatcher, Webster S. S. Jee, Lent C. Johnson, Jenifer Jowsey, J. Lee Kavanau, James MacGregor, Franklin C. McLean, C. Leslie Mitchell, William F. Neuman, B. E. Christopher Nordin, Homer A. Paschall, Robert D. Ray, John M. Reiner, Robert A. Robinson, Alfred S. Romer, Robert E. Rowland, Tawfik Y. Sabet, Elias D. Sedlin, Richmond Smith, Joseph Trueta, Marshall R. Urist, Charles L. Wadkins, Mackenzie Walser, Paul Weiss, Ira G. Wool, and Richard W. Young.

Can Psychopathology Be Measured? *Ann. N.Y. Acad. Sciences* **105**, art. 15. Harold E. Whipple, Ed. New York Academy of Sciences, New York, 1964. 114 pp. Illus. Paper, $4.

Cellules Vivantes et Populations Cellulaires. Dynamique et structure moléculaire. A. Policard. Masson, Paris, 1964. 196 pp. Illus. F. 26.

Cerebral Infarction. Alan Barham Carter. Pergamon, London; Macmillan, New York, 1964. 225 pp. Illus. $9.50.

Clinical Aspects of Adrenal Function. Ivor H. Mills. Davis, Philadelphia, Pa., 1964. 256 pp. Illus. $9.50.

Clinical Endocrinology and its Physiologic Basis. Arthur Grollman. Lippincott, Philadelphia, Pa., 1964. 454 pp. Illus. $18.50.

Diagnostic Classification in Child Psychiatry (*Psychiat. Res. Rep.* No. 18). Richard L. Jenkins and Jonathan O. Cole,

Eds. American Psychiatric Assoc., Washington, D.C., 1964. 162 pp. Paper, $3. Four papers: "Reflections on classification in child psychiatry as related to the activities of the Committee on Child Psychiatry of the Group for the Advancement of Psychiatry" by William S. Langford; "A progress report on a factor analytic approach to classification in child psychiatry" by Ralph Mason Dreger; "A descriptive typology of children's psychiatric disorders: II: A behavioral classification" by Barbara Fish and Theodore Shapiro; "Diagnoses, dynamics, and treatment in child psychiatry" by Richard L. Jenkins.

Dictionary of Herpetology. A brief and meaningful definition of words and terms used in herpetology. James A. Peters. Hafner, New York, 1964. 404 pp. Illus. $11.50.

Early Treatment of Cleft Lip and Palate. An international symposium (Zurich, Switzerland), April 1964. Rudolf Hotz, Ed. Huber, Berne, Switzerland, 1964. 244 pp. Illus. Paper, DM. 28.50. Twenty-nine papers on the progress made during the last 10 years in the treatment of oral clefts and an evaluation of the applicability of new therapeutic methods. Contributors from the United States were: M. B. Collito, Thomas D. Cronin, T. M. Graber, Robert M. McCormack, Sheldon W. Rosenstein, Orion H. Stuteville, and J. Daniel Subtelny.

Fifth International Congress on Animal Reproduction and Artificial Insemination. Trento, Italy, September 1964. *Proceedings*, vols. 1–6. General Secretariat of the Congress, Trento, Italy, 1964. vol. 1, 72 pp.; vol. 2, 466 pp.; vol. 3, 596 pp.; vol. 4, 727 pp.; vol. 5, 283 pp.; vol. 6, 230 pp. Illus. Paper, $24.

Electronics in the Medical Specialties. *Ann. N.Y. Acad. Sciences* **118**, art. 1. Harold E. Whipple, Ed. New York Academy of Sciences, New York, 1964. 133 pp. Illus. Paper, $4.

Folia Primatologica (vol. 1, Nos. 3 and 4, pp. 137–259, 1963). Karger, Basel, Switzerland, 1964. Illus. Paper, $15.50 per volume. Seven papers: "Etude électroencéphalographique de deux cynomorphes de l'ouest africain" by J. Bert and H. Collomb; "Relations between the lengths of the main parts of the foot skeleton in primates" by A. H. Schultz; "Ein angeborener Unterkiefer-Defekt bei *Procolobus badius badius* (Kerr, 1792)" by H.-J. Kuhn; "Lebensbild von *Megaladapis edwardsi* (Grandidier): Ein Rekonstruktionsversuch" by H. Zapfe; "On color vision in gibbon and orang-utan" by J. Tigges; "Feeding, activity and social behavior of the tree shrew, *Tupaia glis*, in a large outdoor enclosure" by J. G. Vandenbergh; and "Das Serumeiweissbild der Primaten unter besonderer Berucksichtigung der Haptoglobine und Transferrine" by V. Lange and J. Schmitt.

Genetik: Grundlagen, Ergebnisse, und Probleme in Einzeldarstellungen. vol. 4, *Plasmatische Vererbung*. Rudolf Hagemann. Fischer, Jena, East Germany, 1964. 280 pp. Illus. Paper, DM. 34.40.

The Hemophilias. An international symposium (Washington, D.C.), December 1963. Kenneth M. Brinkhous, Ed. Univ. of North Carolina Press, Chapel Hill, 1964. 438 pp. Illus. $7.50. Contains 45

papers and discussions presented at the symposium which was devoted to the fundamental biologic alterations existing in the hemophilic diseases as well as to current problems in the management of these disorders.

High School Biology: Special Materials. pts. 1 and 2. pt. 1, Text (unpaged); pt. 2, Student (unpaged); Teacher's manual (667 pp.). Produced at a 1964 summer writing conference. Biological Sciences Curriculum Study, Boulder, Colo., ed. 2, 1964. Illus. Paper, $6 set.

Immunology for Students of Medicine. J. H. Humphrey and R. G. White. Davis, Philadelphia, ed. 2, 1964. 508 pp. Illus. $8.95.

Introduction to Molecular Pharmacology. William C. Holland, Richard L. Klein, and Arthur H. Briggs. Macmillan, New York, 1964. 256 pp. Illus. $7.50.

The Lemming Cycle at Baker Lake, Northwest Territories, 1959 to 1962 (Technical Paper No. 15). Charles J. Krebs. Arctic Inst. of North America, Montreal, Canada, 1964. 104 pp. Illus. Paper, $2.

Macromolecular Structure of Ribonucleic Acids. A. S. Spirin. Translated from the Russian by Scripta Technica. Jacob A. Stekol, Translation Ed. Reinhold, New York; Chapman and Hall, London, 1964. 222 pp. Illus. $10.

Mammalian Cytogenetics and Related Problems in Radiobiology. Proceedings of a symposium (São Paulo and Rio de Janeiro, Brazil), October 1962. C. Pavan, C. Chagas, O. Frota-Pessoa, and L. R. Caldas, Eds. Pergamon, London; Macmillan, New York, 1964. 445 pp. Illus. $15. Twenty-seven papers.

New Perspectives in Biology. Proceedings of a symposium (Rehovoth, Israel), June 1963. Michael Sela, Ed. Elsevier, New York, 1964. 303 pp. Illus. $14.50. Twenty-two papers presented at a symposium held at the Weizmann Institute of Science to coincide with the inauguration of the Ullmann Institute of Life Sciences.

Newcastle Disease Virus: An Evolving Pathogen. Proceedings of an international symposium (Madison, Wis.), July 1963. Robert Paul Hanson, Ed. Univ. of Wisconsin Press, Madison, 1964. 366 pp. Illus. $7.50. The symposium was sponsored by the Univ. of Wisconsin and the American Assoc. of Avian Pathologists. Information gathered during the last three decades is presented in the 20 papers which are grouped in the following sections: Historical Perspective (2 papers); Recognition of Newcastle Disease as a New Disease (4 papers); Nature of Newcastle Disease Virus (3 papers); Properties of Newcastle Disease Virus (4 papers); Pathogenicity of Newcastle Disease Virus (3 papers); and Newcastle Disease Virus as a Myxovirus (4 papers).

Plant Virology. M. K. Corbett and H. D. Sisler, Eds. Univ. of Florida Press, Gainesville, 1964. Twenty-one papers contributed by Ellen M. Ball, F. C. Bawden, R. H. E. Bradley, L. Broadbent, D. L. D. Casper, M. K. Corbett, Robert W. Fulton, C. E. Hall, B. D. Harrison, F. O. Holmes, C. A. Knight, Frank Lanni, Max A. Lauffer, Robert A. Manaker, Karl Maramorosch, W. C. Price, D. A. Roberts, A. F. Ross, H. D. Sisler, Kenneth M. Smith, R. L. Steere, and William N. Takahashi.

Die Polarographie in der Chemotherapie, Biochemie, und Biologie. A symposium (Jenaer, Germany), September 1962. Hermann Berg, Ed. Akademie Verlag, Berlin, 1964. 529 pp. Illus.

Principles of Clinical Psychology. Luciano L'Abate. Grune and Stratton, New York, 1964. 327 pp. Illus. $8.75.

Problems of Cooley's Anemia. *Ann. N.Y. Acad. Sciences* **119**, art. 2. Harold E. Whipple, Ed. New York Academy of Sciences, New York, 1964. 482 pp. Illus. Paper, $8.

The Protura. A revision of the species of the world, with keys for determination. S. L. Tuxen. Hermann, Paris, 1964. 360 pp. Illus. F. 54.

The Psychoanalytic Study of the Child. vol. 19. Ruth S. Eissler, Anna Freud, Heinz Hartmann, and Marianne Kris, Eds. International Universities Press, New York, 1964. 493 pp. Illus. $10. Twenty-two papers. Contributors: Heinz Hartmann; Jeanne Lampl-de Groot; Anneliese F. Korner; Andrew Peto; Dorothy Burlingham; Selma Fraiberg and David A. Freedman; Augusta Alpert and Isidor Bernstein; M. Laufer; Humberto Nagera; Jose Barchilon; Mary E. Bergen; Arthur H. Schmale, Jr.; Robert A. Furman; Marion J. Barnes; Marjorie McDonald; Samuel Kaplan; Edith Buxbaum; Manuel Furer; and Melitta Sperling.

Pulmonary Physiology in Clinical Practice. William R. Pace, Jr. Davis, Philadelphia, Pa., 1965. 149 pp. Illus. Paper, $2.95.

Research Progress in Organic-Biological and Medicinal Chemistry. vol. 1. Ulisse Gallo and Leonida Santamaria. Società Editoriale Farmaceutica, Milano, Italy, 1964. 599 pp. Illus. $19. A collection of review articles by Italian scientists published to celebrate the first centenary of *Bollettino Chimico Farmaceutico*. The papers are: "Acid-soluble nucleotides of fungi" by A. Ballio; "Aspects of tryptophan metabolism in man" by C. A. Benassi; "Advances in physiopharmacology of synthetic curarimimetics" by D. Bovet and V. Rosnati; "Absorption, distribution, and excretion of vitamin B_{12}" by V. Capraro and A. Cresseri; "Ether derivatives of steroid hormones" by A. Ercoli, R. Gardi, and G. Bruni; "Italian contributions to the knowledge of alkaloids of South American plants" by G. B. Marini-Bettolo; "The constitution of echinulin" by A. Quilico; "The photodynamic substances and their mechanism of action" by L. Santamaria and G. Prino; "A new family of antibiotics: The rifamycins" by P. Sensi; "Studies on analeptics" by I. Setnikar; and "Chemistry and pharmacology of azetidines" by E. Testa, A. Wittgens, G. Maffii, and G. Bianchi.

Treatise on Invertebrate Paleontology. Raymond C. Moore, Ed. pt. K, Mollusca 3: *Cephalopoda General Features, Endoceratoidea, Actinoceratoidea, Nautiloidea, Bactritoidea*. Curt Teichert, Bernhard Kummel, W. C. Sweet, H. B. Stenzel, W. M. Furnish, Brian F. Glenister, H. K. Erben, R. C. Moore, and D. E. Nodine Zeller. Geological Society of America, New York; Univ. of Kansas Press, Lawrence, 1964. 547 pp. Illus. $11.50.

Tropical Diseases in Temperate Climates. Kevin M. Cahill. Lippincott, Philadelphia, Pa., 1964. 239 pp. Illus. $9.50.

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(approximately $2790) for single fellows are available; stipends for married fellows will be N. kr. 22,000, (approximately $3069) plus additional dependency allowances. Travel allowances are not available to applicants outside Europe. Deadline for applications: *15 February*. (Royal Norwegian Council for Scientific and Industrial Research, Gaustadalléen 30, Oslo 3, Norway)

The University of Chicago has announced the availability of graduate traineeships in **theoretical statistics: applications to the biomedical sciences**, leading to the Master of Science or Ph.D. degree, for the 1965–66 academic year. Nine-month awards, ranging from $1800 to $3000 plus tuition are available through a U.S. Public Health Service graduate training grant. U.S. citizens may apply simultaneously for this award, and for admission to the Department of Statistics. Deadline for applications: *15 February*. (P. Meier, Chairman, Department of Statistics, University of Chicago, 1118 East 58 Street, Chicago, Illinois 60637)

Courses

Wayne State University will conduct a summer Institute for Teachers of Engineering in the fields of **experimental stress analysis**, 26 July to 3 September. The program will be financed by a grant from the National Science Foundation and is intended for college and institute teachers of engineering, physics, and science. Topics to be covered include basic instrumentation, basic mechanics laws, brittle coatings, strain gage theory and application, photoelasticity, streaming birefringence, photothermoelasticity, x-ray diffraction, the Moire method, mechanical and optical extensometers, and transducers. Participants may apply for stipends of up to $75 per week, plus dependency and travel allowances. Academic credit up to 6 hours is available, and enrollment will be limited to 30. Deadline for applications: *15 February*. (J. Der Hovanesian, Institute Director, Wayne State University, Detroit, Michigan)

The American Society for Engineering Education and the U.S. Atomic Energy Commission will cosponsor a Summer Institute in **Nuclear Energy**,

28 June to 20 August. It will be held at North Carolina State University, Raleigh. Full-time staff members from engineering colleges, universities, and technical institutes engaged in or developing nuclear programs are eligible to apply. Others interested in engineering education may be allowed to participate if space is available. Applicants who wish to be considered must be granted an amount equal to 1 month's salary by their institutions; the AEC will match the grant to a maximum of $800. Travel allowances are also available. Deadline for applications: *15 February*. (Assistant Executive Secretary, American Soc. for Engineering Education, University of Illinois, 1201 West California Street, Urbana 61801)

A Summer Institute in Introductory **Biology** for College Teachers will be held at the Thompson Biological Laboratory of Williams College, 5 July to 14 August. It will be supported by the National Science Foundation, and is intended for biology teachers who are instructing at the general or introductory level. Topics to be covered include metabolism and energetics; comparative physiology; growth, development, and reproduction; heredity; origin of life, the evolution of biological diversity, adaptation, and speciation; behavior; and population biology and ecology. Participants will receive a stipend of $450, including dependency and travel allowances. No tuition will be charged; and no credit or degree will be granted. Deadline for applications: *15 February*. (Allyn J. Waterman, Biology Department, Williams College, Williamstown, Massachusetts)

The University of Illinois College of **Dentistry** has scheduled two courses in "Oral Pathology for Oral Surgeons," and "Medical Aspects of Dental Practice and Hospital Dentistry." The course in oral pathology is scheduled 13–17 March, and will cover the interpretation of microscopic features of oral lesions. Lesions of both soft tissue and bone will be illustrated from a clinical standpoint, which will include etiology, clinical features, and differential diagnosis. Emphasis will be placed on the histopathology, which will be correlated with the clinical appearance of the lesions. Tuition for the course will be $175. "Medical Aspects of Dental Practice and Hospital Dentistry" is scheduled 31 March to 1 April, and will be limited to 12 students. It will include hospital procedure and operating-room

technique, techniques of taking blood pressure, and venipuncture. Tuition will be $50. (Division of Postgraduate Education, University of Illinois College of Dentistry, 808 South Wood Street, Chicago 60612)

Purdue University's School of Engineering will sponsor a Summer Institute in **Geometronics**, 20 June to 14 August. Funded by the National Science Foundation, it is intended mainly for teachers of surveying and mapping in universities, junior colleges, and technical institutes. Each participant will enroll in three of six courses which are to run concurrently. The individual courses will carry 3 hours of graduate credit. The courses are photogrammetry, airphoto interpretation, geodetic control surveying, engineering and geodetic astronomy, electronic surveying, and locating and describing real property. Twenty-four NSF stipends of $75 per week, plus dependency and travel allowances, are available. Deadline for applications: *15 February*. (Kenneth Curtis, School of Civil Engineering, Purdue University, Lafayette, Indiana)

The National Science Foundation will sponsor a Summer Institute in **Anthropology** for college and junior college teachers at the University of Colorado in 1965. Forty selected participants will receive stipends of $750, plus NSF dependency and travel allowances. Applicants must be regular, full-time college or junior college teachers with teaching programs including at least one course dealing extensively with anthropological subject matter. Deadline for applications: *15 February*. (John Greenway, Summer Institute in Anthropology, Department of Anthropology, University of Colorado, Boulder)

A 3-week course, **Electronics for Scientists**, is scheduled 27 June to 16 July at Princeton University. Registration is open to college teachers and scientists in industrial and government research laboratories working in the fields of chemistry, physics, biology, and other physical sciences, and in medicine, engineering, and psychology. The program will stress individual experimentation leading to a working understanding of electrical measurements and electronic circuitry, as well as practical knowledge of the operation and application of servo systems, operational amplifiers, and digital timing and counting circuits. Tuition and support for

participants who are college and university teachers will be provided by a grant from the National Science Foundation. Deadline for applications: *8 February*. (P. L. Coddington, Administrative Director of Summer Studies, Princeton University, Princeton, New Jersey)

Utah State University will hold a 6-week Institute on **Animal Behavior**, 5 July to 14 August. The Institute is supported by the National Science Foundation and cosponsored by the Ecological Society's section of animal behavior and sociobiology and the American Society of Zoologists. The purpose of the program will be to instruct college professors of zoology, psychology, and other biologically related fields in the fundamentals of animal behavior. Participants will receive stipends of $450 and travel and dependency allowances. Deadline for applications: *15 February*. (A. W. Stokes, Director, Institute of Animal Behavior, Department of Wildlife Resources, Utah State University, Logan)

An Institute in **Contemporary Scientific Psychology** for college teachers of psychology is scheduled 11 July to 20 August at Beloit College, Wisconsin. Topics to be covered include psychology, including learning; physiological psychology; personality; social psychology; perception; and decision processes. Registration is open to members of psychology departments having six or fewer full-time (or equivalent) teachers, holding a master's degree in psychology or educational psychology. Stipends and travel allowances for participants and dependents are available. Participation will be limited to 30. Deadline for applications: *15 February*. (S. B. Stolz, Institute in Contemporary Psychology, Beloit College, Beloit, Wisconsin)

Scientists in the News

Former Naval Commander **B. F. Burgess, Jr.**, has become Director of Research at the Philadelphia General Hospital, Pennsylvania. Burgess was retired from the U.S. Navy on 30 November as director of the Aviation Medical Acceleration Laboratory at the U.S. Naval Air Development Center, Johnsville, Pennsylvania.

Milton Terris, former head of the chronic disease unit, division of epidemiology, at the Public Health Re-

search Institute of the City of New York, has become a professor in the department of preventive medicine at New York Medical College.

Frank K. Pittman, former director of the Atomic Energy Commission's division of reactor development, has received the Commission's Distinguished Service Award. The award is the highest recognition the AEC can bestow on its employees. Pittman, who resigned from the AEC on 21 November, was cited for his "outstanding service and exceptional contributions in the formulation and execution of major programs of the United States Atomic Energy Commission over the past sixteen years."

Emerson Day, director of the Strang Clinic for cancer detection and preventive medicine in New York, has been named president of the New York Academy of Sciences, and of its scientific council.

Bruce H. Sage, professor of chemical engineering at the California Institute of Technology, has been named editor of the *Journal of Chemical and Engineering Data*, a quarterly publication of the American Chemical Society. He succeeds **Rodney N. Hader**, who has been acting editor since 1963.

John W. Cahn has become professor of metallurgy at the M.I.T. School of Engineering. Cahn was formerly adjunct lecturer in metallurgical kinetics at Rensselaer Polytechnic Institute, and was chairman of the 1963–64 AAAS Gordon Conference on Physical Metallurgy.

Capt. **Patrick Leehey**, former head of the acoustics and vibration laboratory at the David Taylor Model Basin, Washington, D.C., has joined the faculty of M.I.T. as an associate professor in the departments of naval architecture and marine engineering and mechanical engineering.

Boris Pregel, president of Canrad Precision Industries, Inc., and chairman of the board of trustees and past president of the New York Academy of Sciences, has been awarded the title of *Doctor Honoris Causa* by the University of Toulouse, France, for his work in the fields of radioactivity, phosphorescence, and fluorescence. The title is the highest honorary award given to foreigners by the University.