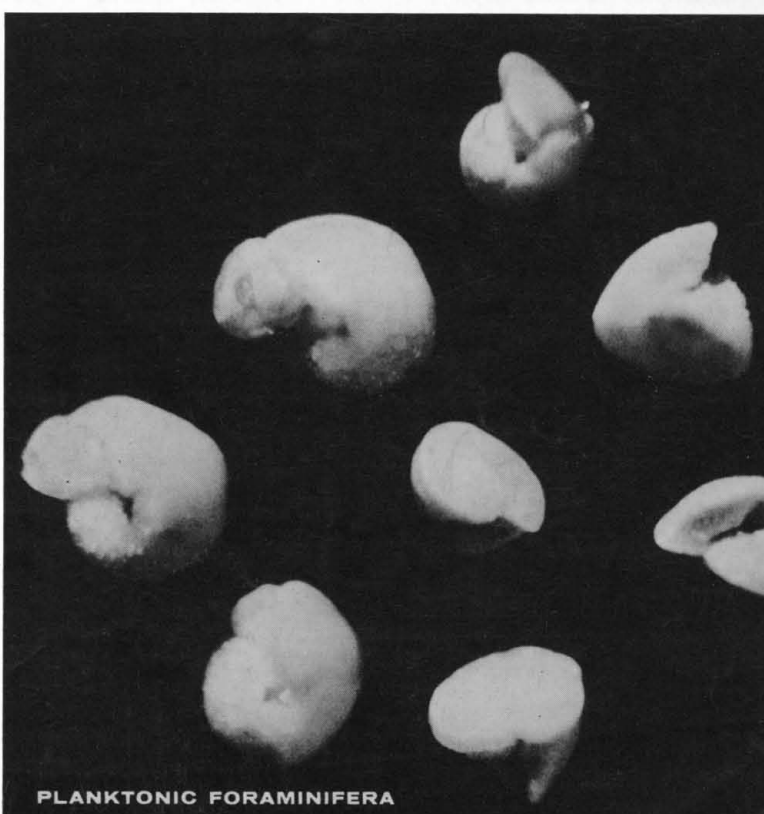
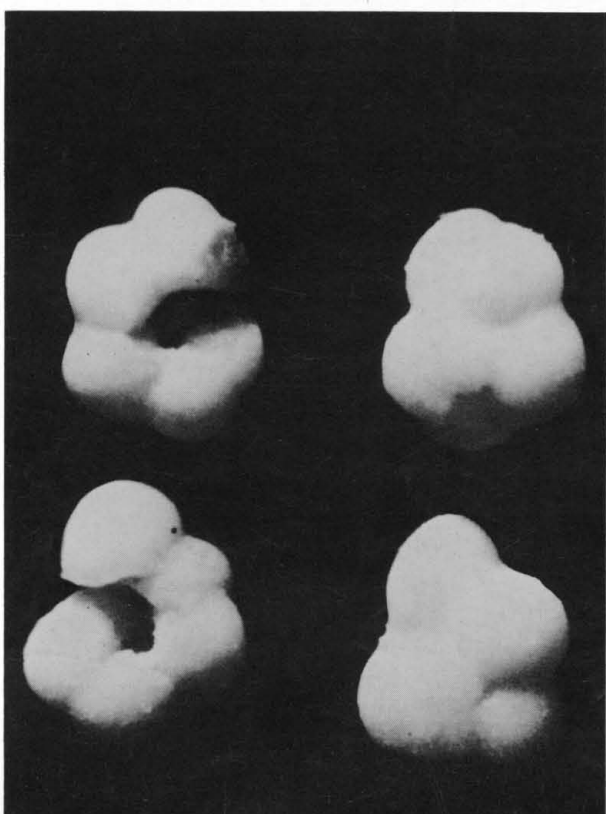
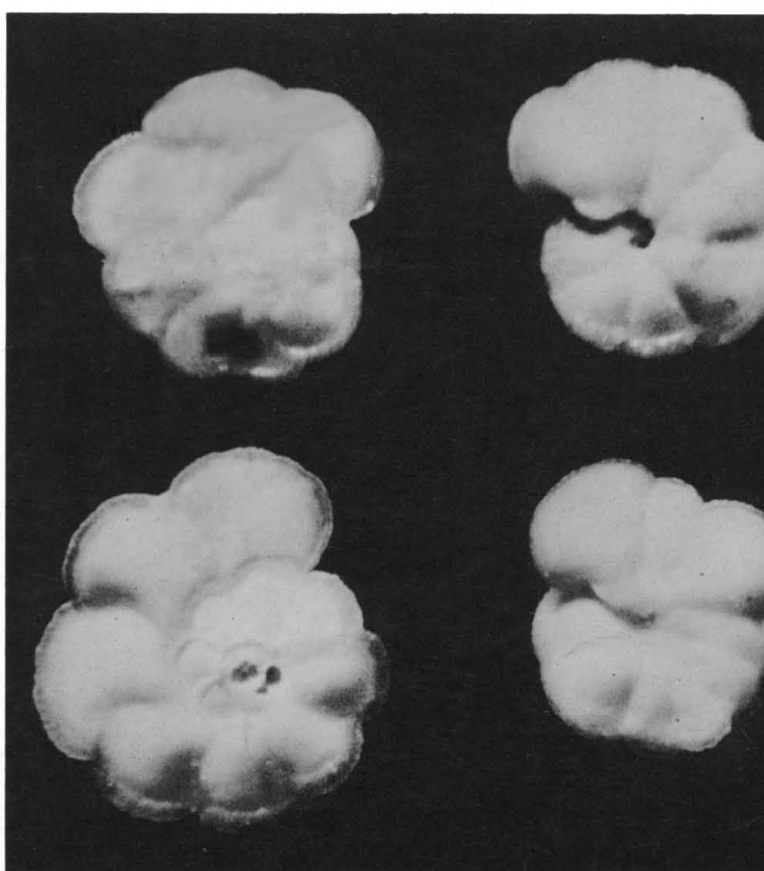
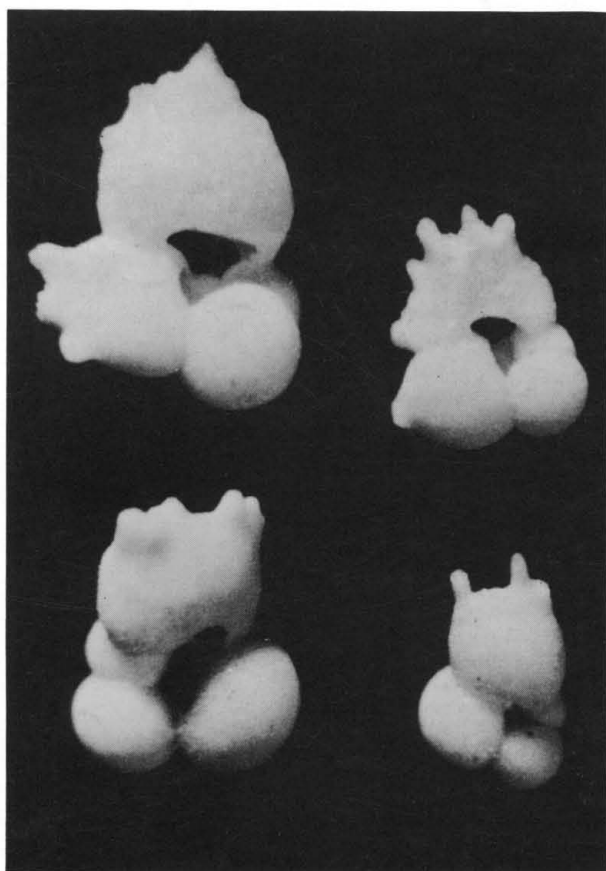


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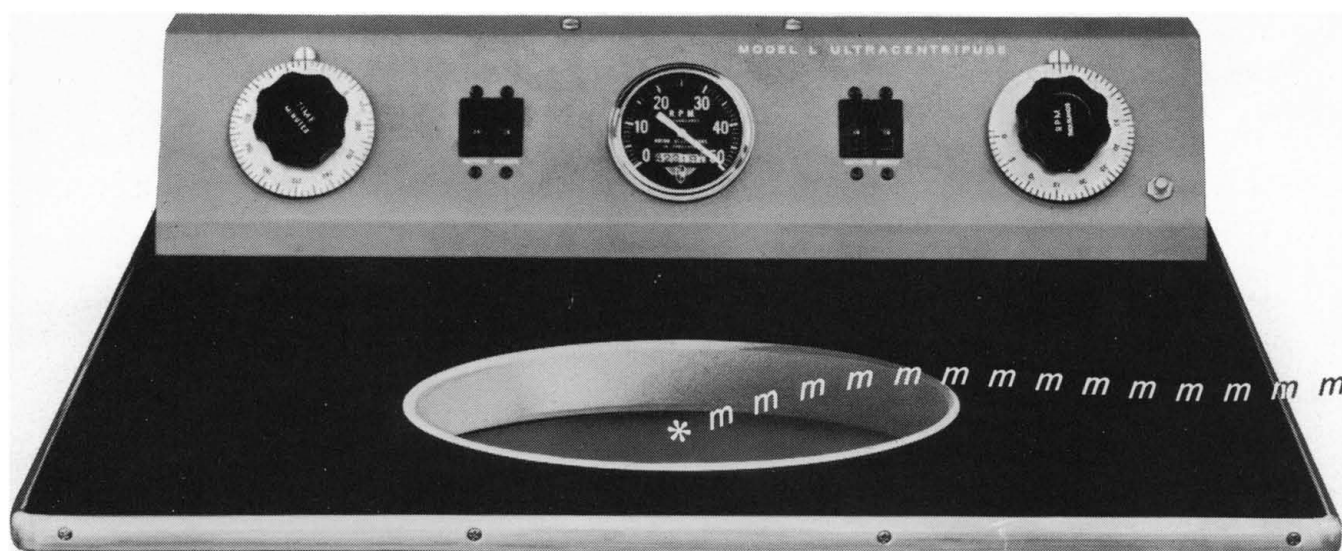
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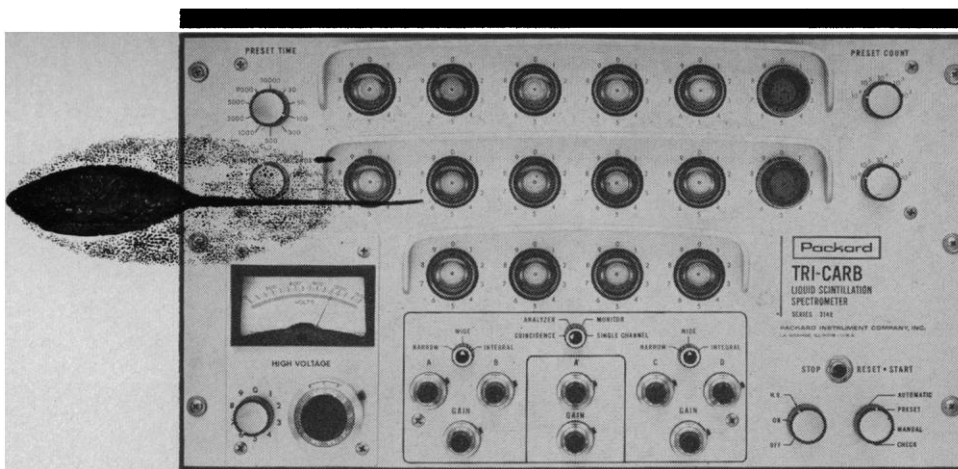
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COVER

Four species of planktonic Foraminifera in cores taken from ocean sediments. Three occur in the older sediments but not in the younger ones. One occurs rarely in the older sediments but is abundant in the younger ones. The change in the faunal assemblage takes place within a sediment thickness of 10 to 15 centimeters and marks the Pliocene-Pleistocene boundary. *Globigerinoides fistulosa* (top left), *Globorotalia menardii multicamerata* (top right), and *Sphaeroidinella multiloba* (bottom left) survived from the Miocene through the Pliocene and became extinct at the onset of the first ice age of the Pleistocene. *Globorotalia truncatulinoides* (lower right) is abundant above the Pliocene-Pleistocene boundary (about X 27). See page 727.

The Honeywell Visicorder oscillograph

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records forces in circuit breaker bushings

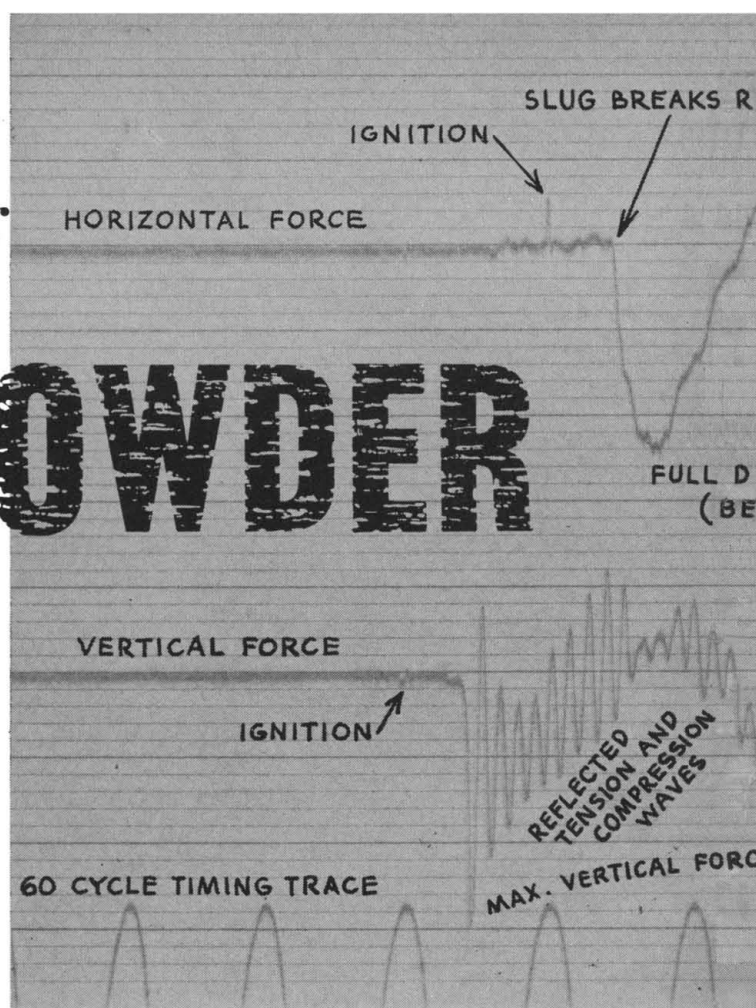
What forces are imposed on the bushings of oil-filled circuit breakers during operation—particularly during short circuit interruption? No one had been able to measure them until Ohio Brass engineers in Barberton, Ohio, developed a circuit that could be shielded from the high voltage and heavy currents during actual breaker tests.

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The high frequency response of the Visicorder (DC to 5,000 cps), its record speed range (.2"/hr. to 50"/sec.), and its fast writing speed (over 50,000"/sec.) produce clear, immediately readable traces of high resolution as shown in the record above, which was traveling at 50"/sec.

These circuit breaker tests can now be duplicated in the laboratory using gunpowder to fire projectiles from a dummy interrupter on the bushing. And the Honeywell 906 Visicorder produces the oscillograph record for comparison of the simulated forces to the ones found in actual operation.

Thus the Visicorder helps to make pos-

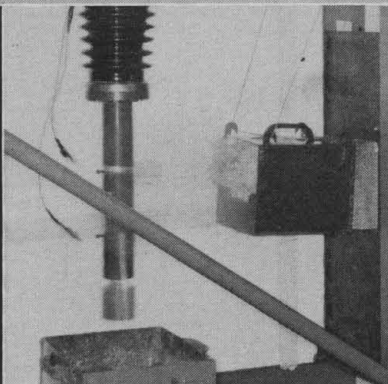
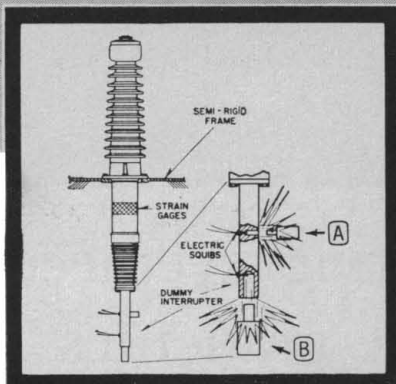
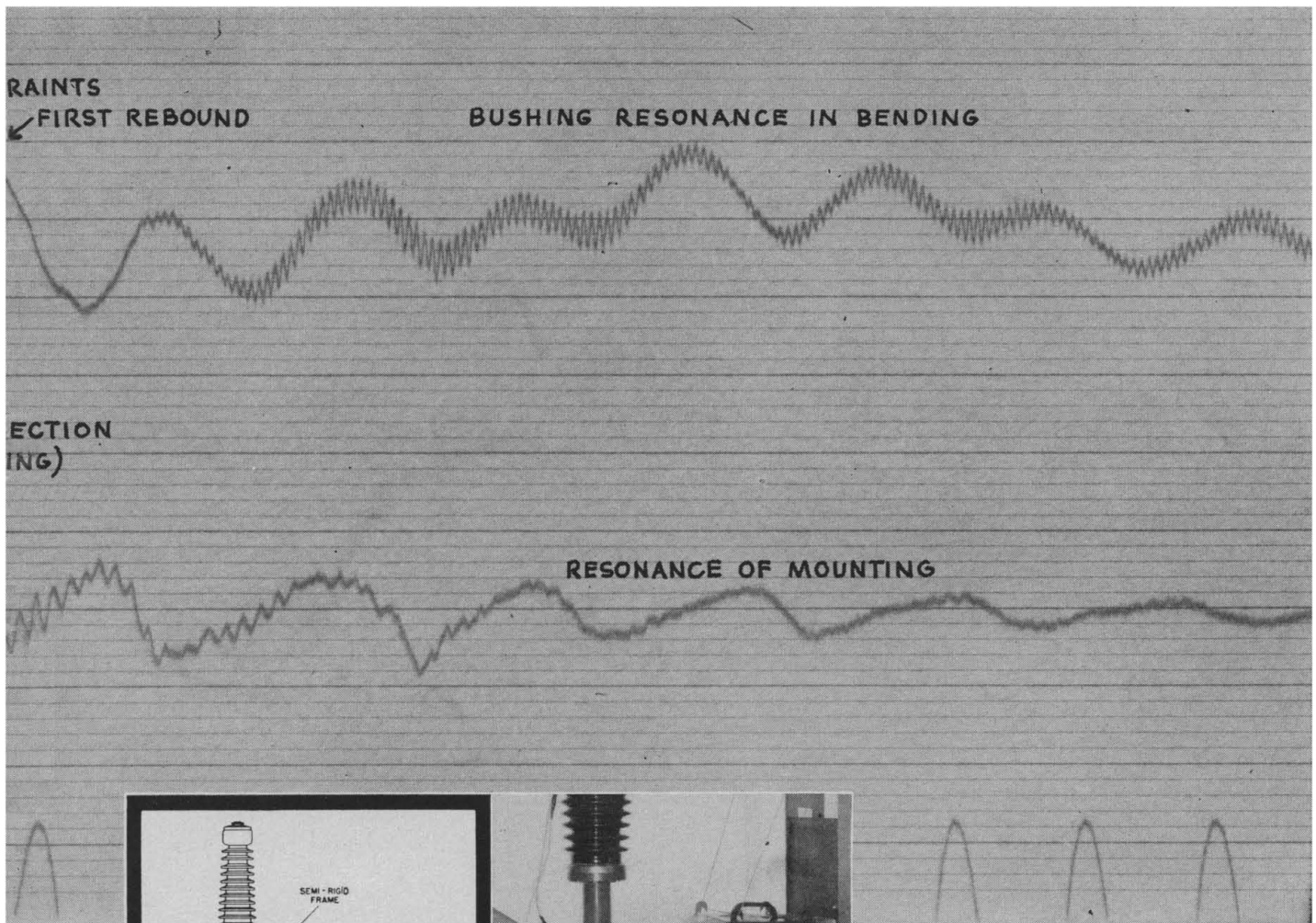


sible the time- and money-saving evaluation of the mechanical performance of bushings without actual breaker tests. This test program has opened the way for standards of dynamic loads*—all of which can be recorded by Honeywell.

Your test program requirements may be far removed from this example, but the versatility of the Visicorder merits your consideration as a basic research, test and development tool. Six different models provide record capacity from 1 to 6 up to 1 to 36 data channels. Paper speeds from .1 inch per hour to 13 feet per second in the several models mean that data can be recorded and presented on the time base most meaningful to your test.

* For complete report see AIEE Papers No. 60-107 "Mechanical Loadings on Circuit Breaker Bushings by E. F. Huston and E. B. Rietz and No. 62-153 "Considerations in Establishing a Standard of Mechanical Loads on Oil Circuit-Breaker Bushings" by W. E. Harper and E. F. Huston.

For full details on all Visicorder Oscillographs, tape systems, and signal conditioning equipment, write Honeywell, Heiland Division, Denver 10, Colorado, or phone 303-794-4311.



Drawing above is a schematic of method for duplicating bushing loads during short-circuit interruptions. Note that two projectiles are used: (A) to produce lateral forces at right angles to the bushing axis, and (B) to produce an axial load on the bushing terminal. In photo at right, electric squibs have just detonated charges which have propelled projectiles toward dashpot boxes. Below, the Honeywell Model 906 Visicorder Oscillograph—with a Honeywell Model 119 Amplifier—records circuit breaker bushing tests for Ohio Brass.



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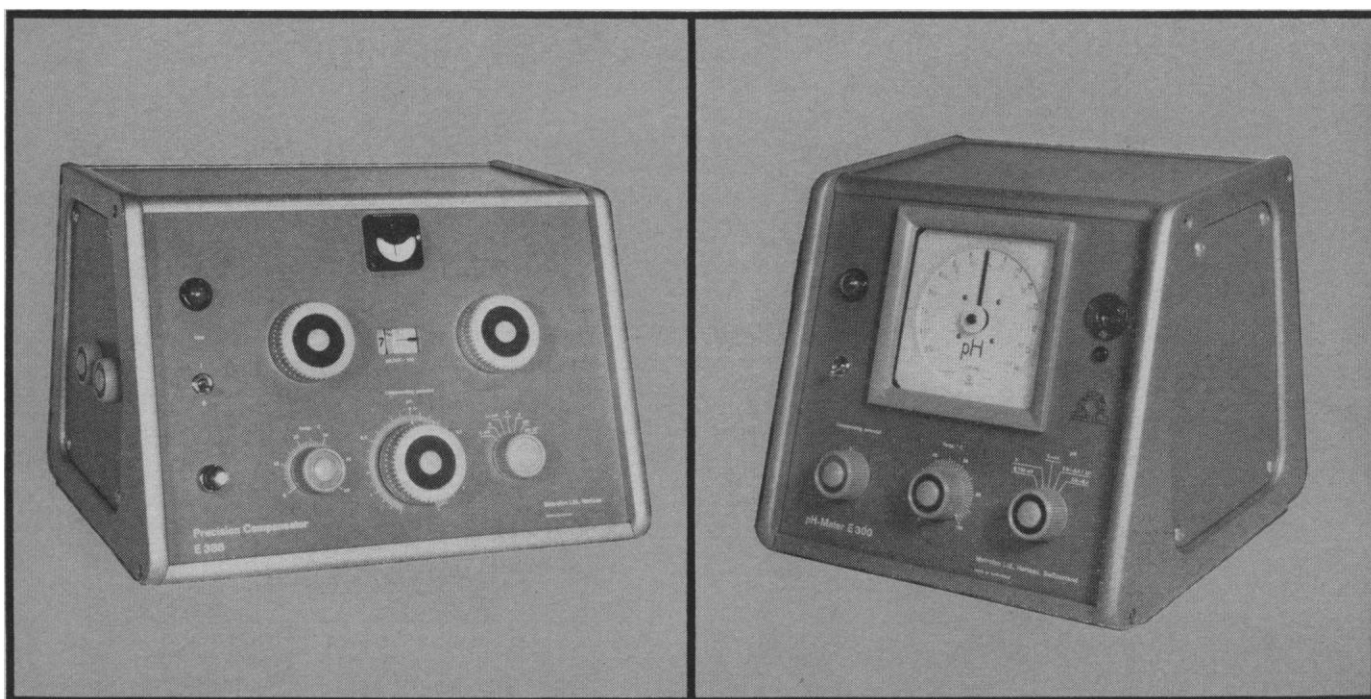
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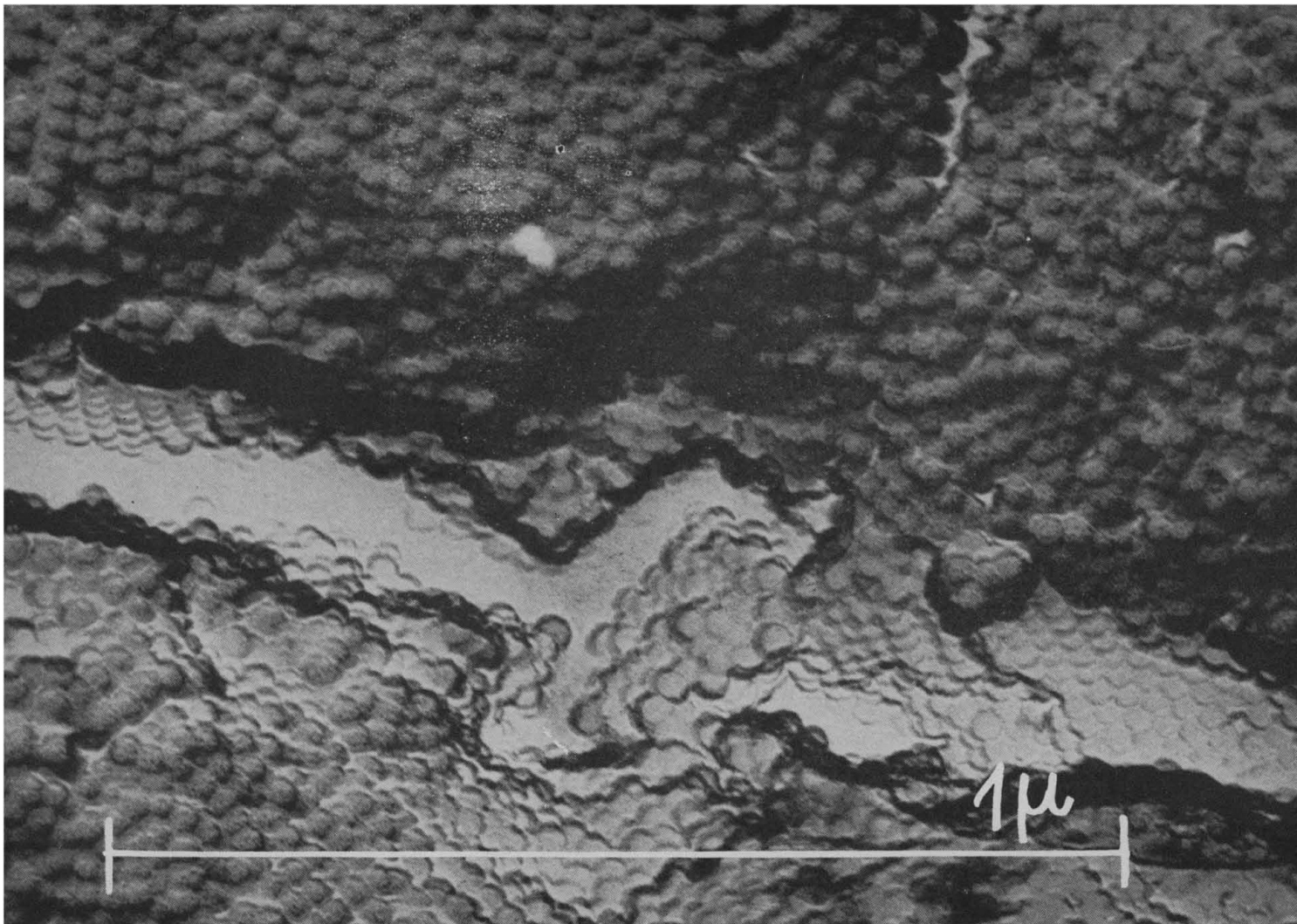
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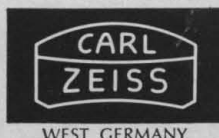
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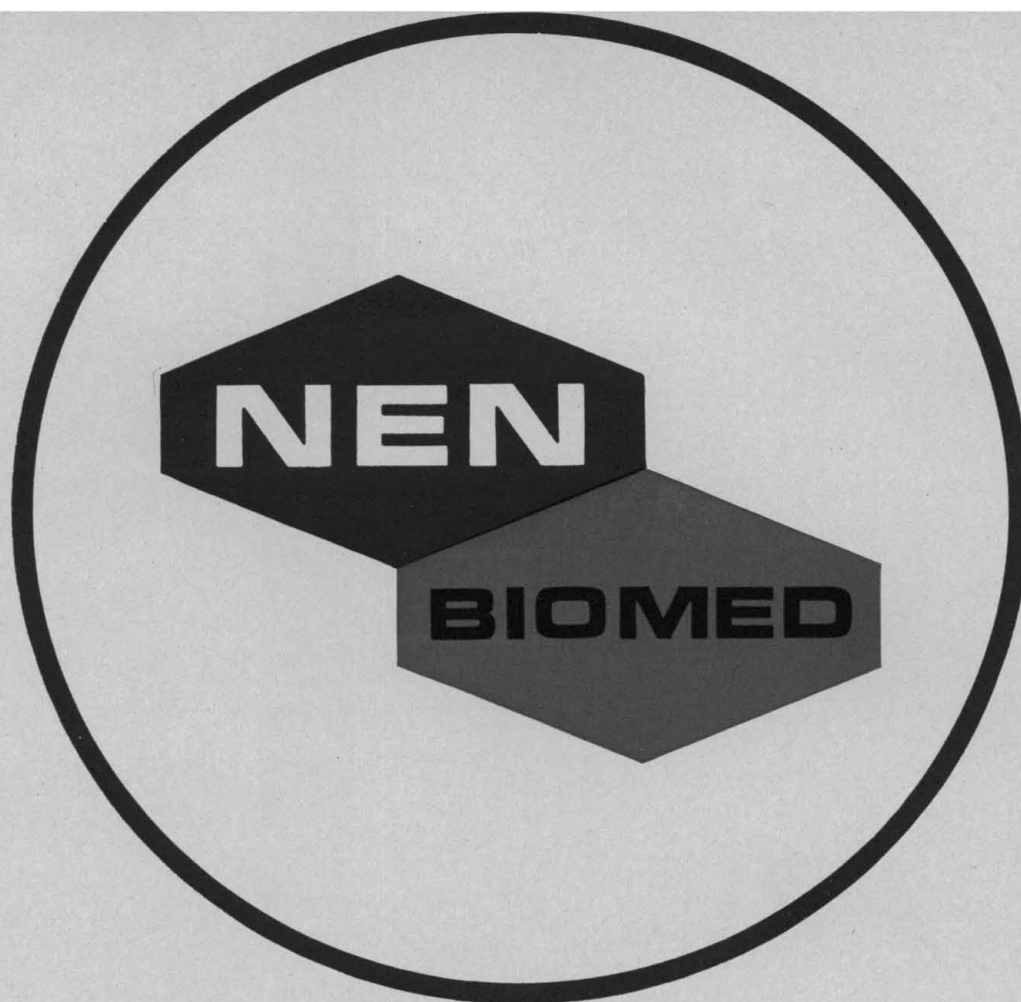
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Dual Monochromator		DK/U	DK/U	DK/U	DK/U		DK/U	DK/U	
Modes	Single-beam	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U
	Double-beam Time-shared			DK/U	DK/U		DK/U	DK/U	DK/U
	Double-beam Space-shared				DK/U	DK/U	DK/U		
Light Intensities Recorded as Function of:	Wavelength	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U
	Time	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U	DK/U
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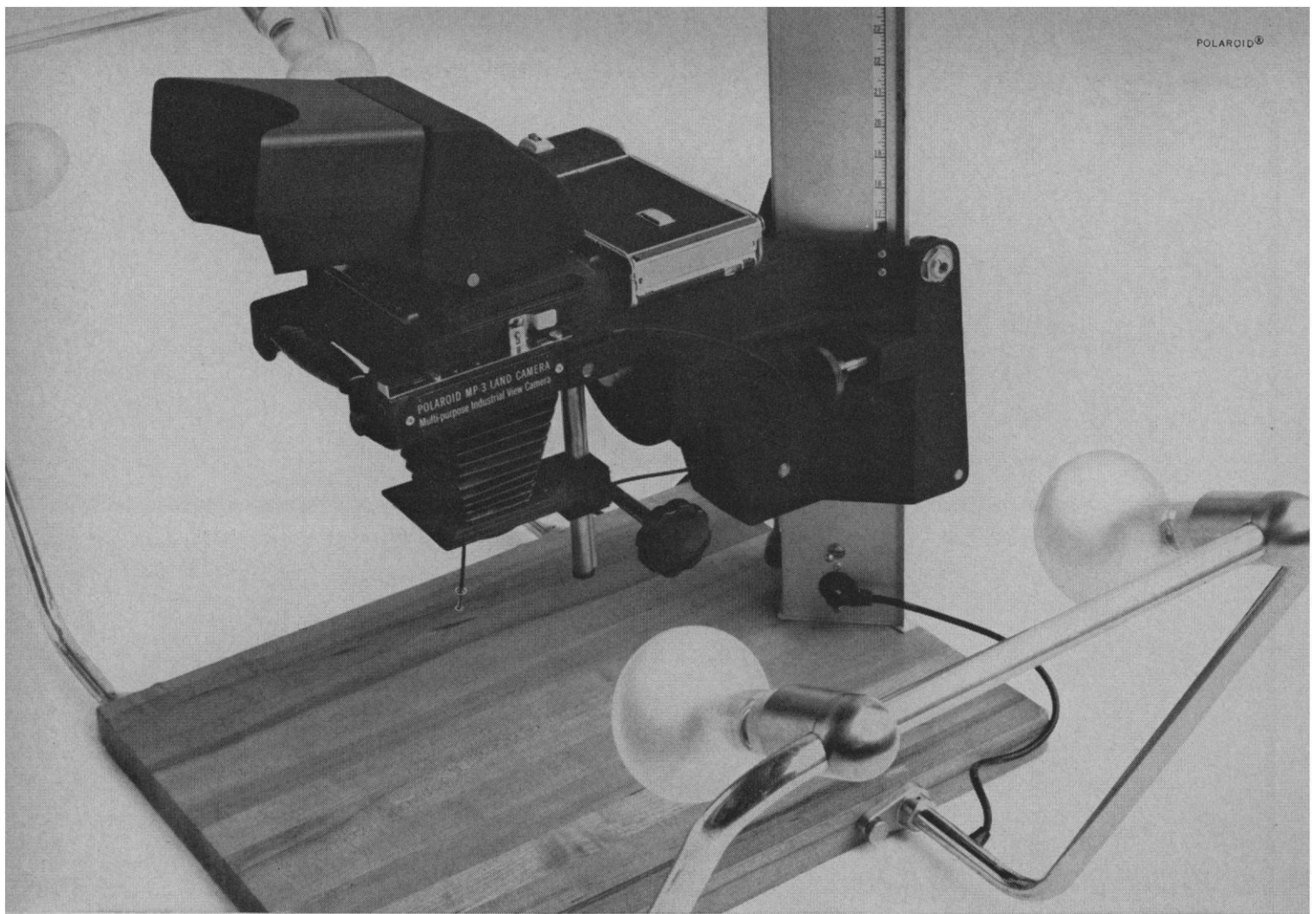
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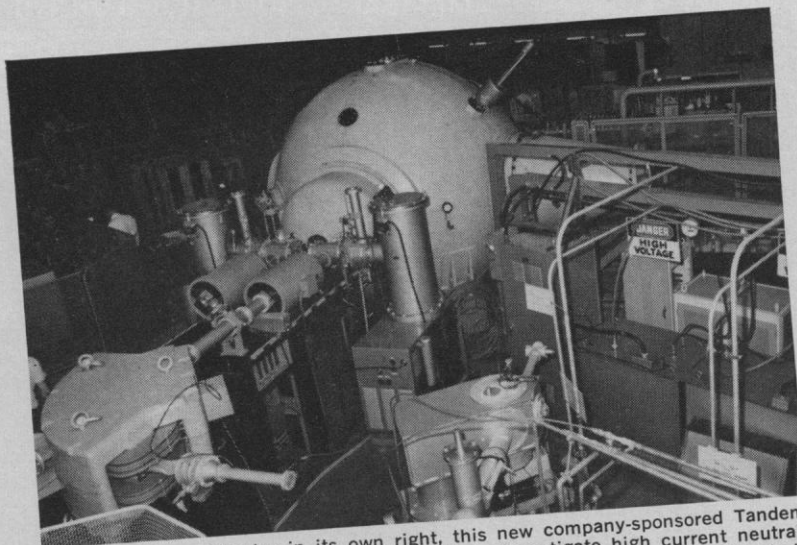
Nuclear-Structure Research

Initial work with the 12-Mev Tandem Van de Graaff has confirmed beyond expectations our early conviction that this accelerator system would greatly extend areas of useful research. A previously "dark" area, in fact the whole upper half of the periodic table, can now be investigated with precision. The range now beginning to be explored with extremely stable monoenergetic particle beams includes many isotope-rich elements and the important domain of fissionable materials. Current research indicates the Tandem has increased the number of resolvable energy levels by an order of magnitude. In constructing a theory of the nucleus, the precision we speak of is every bit as important as the extension in energy. Tandem ion beams permit discrimination between closely associated energy levels and reveal new subtleties in the fine structure of heavier elements.

The Tandem Van de Graaff's external ion source at ground potential is a boon to experimenters. There are at least seventeen stable nuclei up to oxygen that may be used as bombarding particles. With multiple stripping and two-stage acceleration, oxygen ions have been accelerated to 60 Mev.

A characteristic of truly new research tools is evident in the way the Tandem is shaping the direction and objectives of physics research programs. As a result, nine laboratories with machines installed and performing to specifications, and others awaiting Tandem delivery, are planning to undertake work that is new and challenging.

At High Voltage, a vigorous engineering and development program is extending the basic Tandem principle to higher energies and beam currents. Already in the process of construction are several "King-Size" Tandems (7.5 million-volt terminal potential) pro-



A formidable accelerator in its own right, this new company-sponsored Tandem development facility is designed specifically to investigate high current neutral, negative, and positive ion sources. It is an important empirical tool in the study of beam dynamics, pulsing techniques, and acceleration tube design.

viding 15 Mev protons, and much higher energies with multiply-stripped heavy ions. The new "Emperor" Tandem design will generate 10 million-volts for two-stage acceleration of 20 Mev protons.

The concept of heavy-ion acceleration opens up a new area to the experimenter. The acceleration of 200 Mev bromine ions, while retaining control in energy and homogeneity to a few kev, is feasible. The implications for nuclear structure research are quite profound. Certainly, new aspects of multiple coulomb excitation and nuclear-fission processes are among the realms that can be advantageously explored.

Three-stage Tandem acceleration extends the Proton energy capability of the Tandem principle to well over 30 Mev. The new Research Tandem at High Voltage is being pressed to develop ion sources with outputs that are orders of magnitude greater than currently available.

"Low-Energy" Physics

As we address ourselves to this subject, more elegantly called nuclear-structure physics, the reader

may conclude we have an axe to grind, and we admit it. We believe a great deal of research remains to be done on light nuclei. There is, for example, time-consuming but rewarding precision nuclear spectroscopy to fill in gaps in existing energy level data, as well as new research related to the conservation of isotopic spin, excitation energies of low excited states and direct interaction mechanisms.

Because much nuclear-structure research can be accomplished with standard Van de Graaffs in the 1-6 Mev energy range, equipped with ion sources for hydrogen, helium or heavy elements, these machines represent ideal research instruments for the university physics laboratory of modest proportions. We are presently compiling information on exactly where machines of moderate cost and energy can make significant contributions in illuminating concepts of nuclear structure and would be happy to discuss this subject with you.

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The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

More Paper Work, Less Research

Scientists in all fields should be concerned about a sequence of events during the past year which has adversely affected the grants program of the National Institutes of Health and could be repeated with other agencies. For many years NIH enjoyed a favored status. Congress was against cancer, heart disease, and other ailments and for curing them. The management of NIH has consistently been first class and through the mechanism of Study Sections the organization has effectively utilized the best judgment of the scientific community.

Policies with respect to grants were excellent and involved minimum paper work. The program was successful. It attracted the very best talent and led to many practical accomplishments. In addition, fundamental research was successfully fostered, and biology in this country is in the midst of its most flourishing epoch.

The program owed its success to the fact that NIH selected and supported the best investigators and then trusted them. Unfortunately a small minority of scientists betrayed that trust. These few rendered NIH vulnerable to attack by a committee of Congress.

The operations of NIH are monitored by the Intergovernmental Relations Subcommittee of the Committee on Government Operations, House of Representatives. Congressman Fountain is Chairman. One of the activities of this committee is to hold hearings at which testimony is elicited from James A. Shannon and his staff. One of the crucial sets of hearings occurred on 28, 29, and 30 March 1962. The Subcommittee had uncovered a situation in which advantage had been taken of the NIH system.

This unfortunate slip was used by the Subcommittee to subject Shannon and his aides to an extremely unpleasant three days. One instance of mismanagement was given great emphasis, and the excellence of the overall NIH program was overlooked.

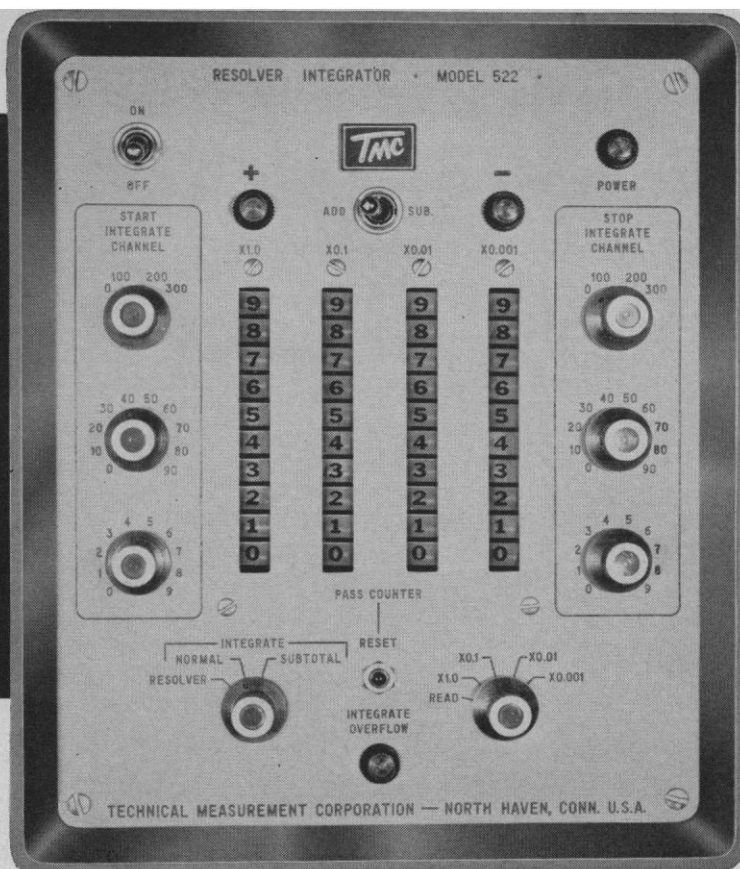
The hearings forced an acceleration in changes in NIH policies toward closer control of its grants. The paper work required for yearly continuations has been substantially increased. Grantees report that they must spend from 1 to 7 days in obtaining information and filling out the form. Since many senior investigators are involved, work on this form will cost the nation millions of dollars in time lost from research.

Moreover, grantees now must make a special justification to Washington whenever budgetary changes involving items costing over \$1000 are made. To handle this paper work more bureaucrats must be recruited. Previously the NIH program was staffed with knowledgeable scientists. The new posts can only be filled with administrative types who will not be able to handle scientific problems with confidence. They can only run scared, go by the book, and introduce all kinds of excuses for delay.

The changes will increase inefficiency and delays substantially. If no further demands are made on NIH this price might be justifiable. However, if further controls are required the nation's health research program could be severely handicapped. It is unfortunate that in order to chastise a few, regulations must be imposed which penalize the many, including some of this nation's most valuable and productive scientists.—P.H.A.

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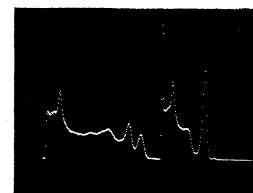
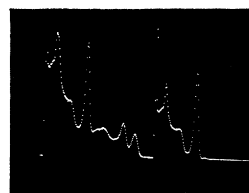
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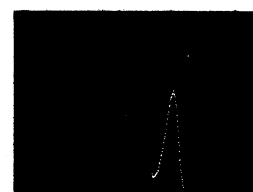
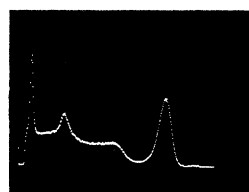
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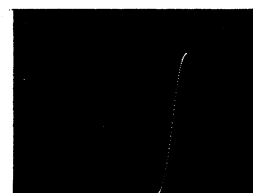
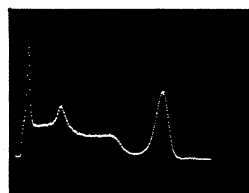
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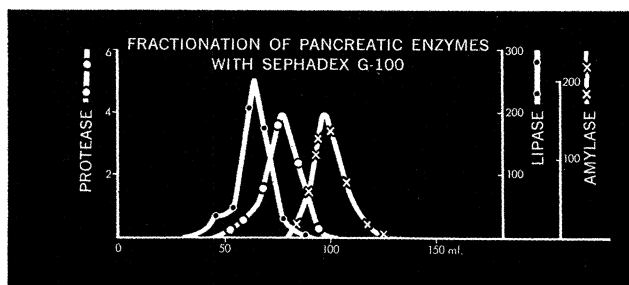
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orbit, also discovered and mapped the artificial radiation belt produced by the high altitude nuclear explosion of 9 July 1962.

In the afternoon session on the observatory generation of satellites, John W. Townsend, Jr. (Goddard Space Flight Center), who acted as chairman, pointed out that this class of omnibus satellites has been adopted by NASA as a means for economically accommodating a variety of related scientific experiments in the same vehicle. Obvious advantages exist in making a large number of simultaneous observations and in reducing the total cost for each experiment, but disadvantages and limitations resulting from mutual interference or incompatibility of experiments must also be considered. Thus, there will still be room for the individual, special purpose unmanned scientific satellite for special cases.

Three pairs of technical papers were presented, dealing first with the mission and then the engineering design aspects of NASA's current observatory satellite programs. All of these projects are still in the design and qualification stage.

The mission of the Orbiting Geo-

physical Observatories, discussed by Wilfred E. Scull (Goddard Space Flight Center), includes the measurement of magnetic fields, energetic particles, interplanetary dust, atmospheric structure, electron and ion densities in the ionosphere, solar monitors, astronomy surveys, and certain meteorological measurements. In addition, the OGO's may be used to test planetary instrumentation, vehicle support systems, and certain biological experiments. Two major orbits are contemplated in the program—the Eccentric Orbiting Geophysical Observatory (EGO), scheduled for late 1963, and the Polar Orbiting Geophysical Observatory (POGO), scheduled for 1964 launch. The engineering design, described by George J. Gleghorn (Space Technology Laboratories), features active thermal and attitude control, and extended booms for experiments requiring isolation from the body of the satellite.

Although the first Orbiting Solar Observatory (OSO) has been successfully orbited and has yielded much useful information, NASA's Advanced Orbiting Solar Observatory program is necessary to meet more demanding requirements in the period beyond 1966. John

C. Lindsay (Goddard Space Flight Center) pointed out that improved stabilization and instrumentation will enable detailed study of the energy storage phenomena in the pre-flare active regions of the sun and also the flare mechanism and manifestations of energy release from solar flares. Optical measurements from such a spacecraft also may detect solar streamers and other evidences of energy transport from the sun to earth. A. J. Cervenka's (Goddard Space Flight Center) discussion on important engineering design features of the AOSO included orbit selection, stabilization requirements, orientation, data capacity, thermal control, power supply, command subsystem, and weight limitations imposed by the launch vehicle.

Glimpses of astronomical observations outside of the earth's atmosphere have been obtained recently from balloons and rockets, but only an orbiting observatory can produce the continuous and high quality observations that are required. A flexible, highly stabilized, and controlled OAO satellite concept was described by Robert R. Ziemer (Goddard Space Flight Center). Specific objectives include a new sky map in the ultraviolet portion of the spectrum, photometric systems capable of determining stellar energy distribution and emission line intensities in the spectral region from 3000 to 800 angstroms, and absolute spectrophotometric measurements of stars and nebulae in the ultraviolet. Another experiment will observe the absorption lines of interstellar gas in the far ultraviolet region. The engineering requirements of the 3600-pound OAO satellite were discussed by Walter H. Scott (Grumman Aircraft Engineering Co.). The stabilization and control system must be capable of orienting and maintaining the satellite in a stable attitude within 15-arc seconds over a 50-minute period. Using the experiment as an error source, the fine momentum wheels will then be able to hold the optical axes to 0.1-arc second. The structural and thermal design characteristics and the usual satellite support systems were also included in this final paper.

This symposium was organized by J. G. Stephenson for the American Astronautical Society, and AAAS and NASA co-sponsored it.

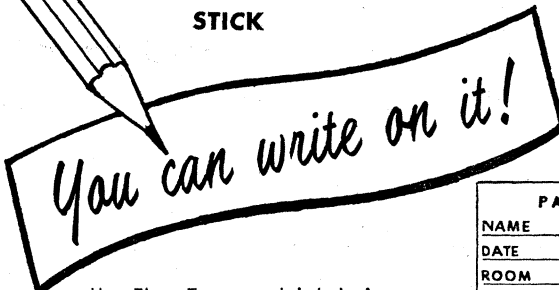
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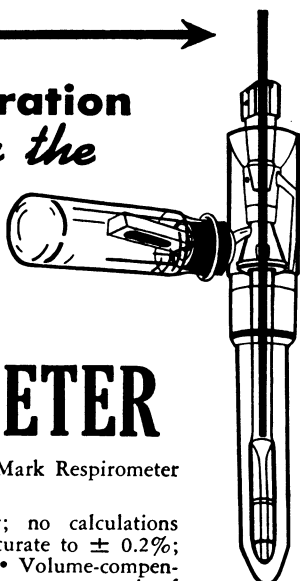
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Intelligent Life in the Universe

by I. S. Shklovskii. Authorized translation.

This book, by a brilliant, maverick Soviet astronomer, was heralded in the U.S.S.R. It is one of the first sweeping modern discussions of the entire panorama of evolution—the universe, galaxies, stars, planets, life, intelligence, and technical civilization. It discusses the origin of the solar system, the origin of life on earth, modes of contact among galactic civilizations—and the author's hypothesis that the moons of Mars are actually satellites launched by an ancient Martian civilization.

While acknowledgedly speculative in part, it is an excellent summary of scientific knowledge in these areas of research. Written for the popular audience, the book also has detailed material of interest to specialists. Technical addenda to every chapter—prepared by Dr. Carl Sagan of Harvard University and the Smithsonian Astrophysical Observatory—relate the material to other research and give references for further reading.

Variational Methods in the Study of Non-Linear Operators

M. M. Vainberg. Amiel Feinstein, Trans.

General theory of non-linear operators, existence and uniqueness theorems for solutions of non-linear equations, applications to operators and functionals of special type and to non-linear integral equations. With a chapter on Newton's Method by L. V. Kantorovitch and G. P. Akilov, and a supplement by the translator containing a résumé of the Banach space concepts which are assumed by the author.

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Forthcoming Events

March

12-13. Ecological Implications of Changes in the Amount of **Carbon Dioxide** in the Atmosphere, New York, N.Y. (Conservation Foundation, 30 E. 40 St., New York 16)

13-15. **Goddard Scientific Satellite Symp.**, Washington, D.C. (C. P. Boyle, Code 200.3, Goddard Space Flight Center, Greenbelt, Md.)

14. **Assoc. of Vitamin Chemists**, Chicago, Ill. (H. C. Spruth, Abbott Laboratories, 14th and Sheridan, North Chicago)

14-15. **Advanced Air-Cooled Reactor**, symp., London, England. (Secretary, British Nuclear Energy Soc., 1-7 Great George St., London, S.W.1)

14-15. **Central Neuropsychiatric Hospital Assoc.**, annual, Chicago, Ill. (American Psychiatric Assoc., 1700 18th St., NW, Washington 9)

14-15. **Psychotherapy Teaching**, Philadelphia, Pa. (Temple Univ. Medical Center, Broad and Ontario Sts., Philadelphia 40)

15-16. **Pacific Computer Conf.**, Pasadena, Calif. (E. Schubert, Systems Div., Beckman Instruments, 2400 Harbor Blvd., Fullerton, Calif.)

17-24. **Military Medicine and Pharmacy**, 17th intern. congr., Caracas, Venezuela. (Organizing Committee, c/o Dirección del Servicio de Sanidad Militar, Hospital Central de las Fuerzas Armadas Urbanización San Martín, Caracas)

18-22. **American Soc. for Metals**, western metal exposition and congr., Los Angeles, Calif. (W. J. Hilty, ASM, Metals Park, Ohio)

18-22. **Driving Simulation** as a Research Tool, Columbus, Ohio. (B. W. Stephens, U.S. Dept. of Commerce, Bureau of Public Roads, Washington 25)

18-28. **International Astronomical Union**, 20th symp., Canberra and Sydney, Australia. (D. H. Sadler, c/o Royal Greenwich Observatory, Hertsmonceux Castle, Hailsham, Sussex, England)

19-21. **Bionics**, 2nd symp., Dayton, Ohio. (Lt. Col. L. M. Butsch, Jr., Aeronautical Systems Division, ASRNEB-3, Wright-Patterson AFB, Ohio)

20-22. **Bone Dynamics**, intern. symp., Detroit, Mich. (H. M. Frost, Dept. of Orthopaedic Surgery, Henry Ford Hospital, Detroit 2)

20-29. **Quantitative Spectroscopy** at Elevated Temperatures and Selected Applications in Space Science. Pasadena, Calif. (D. L. Wennersten, Air Force Office of Scientific Research, Washington 25)

21-24. **International Assoc. for Dental Research**, 41st annual, Pittsburgh, Pa. (J. Muhler, 1120 W. Michigan St., Indianapolis 2, Ind.)

21-24. **International College of Applied Nutrition**, Pasadena, Calif. (D. C. Collins, 7046 Hollywood Blvd., Suite 503, Los Angeles 28, Calif.)

24-28. **Institute of Radio Engineers**, intern. convention. New York, N.Y. (G. W. Bailey, 1 E. 79 St., New York)

25-27. **High Frequency Communication**, convention. London, England. (Secretary, Institution of Electrical Engineers, Savoy Pl., London, W.C.2)

25-28. American Assoc. of **Petroleum Geologists**, 48th annual, Houston, Tex. (J. M. Parker, Kirby Petroleum Co., 518 Patterson Bldg., Denver 2, Colo.)

25-28. Society of Economic **Paleontologists and Mineralogists**, Houston, Tex. (L. C. Pray, Ohio Oil Co., Box 269, Littleton, Colo.)

26-28. Japan **Atomic Industrial Forum**/United Kingdom Atomic Energy Authority, nuclear power symp., Tokyo, Japan. (UKAEA, 11 Charles II St., London, S.W.1, England)

27-28. **Drugs and Animal Behaviour**, symp. (by invitation only), London, England. (Ciba Foundation, 41 Portland Pl., London, W.1)

27-29. **Photochemistry**, intern. symp., Rochester, N.Y. (W. H. Wyatt, Air Force Office of Scientific Research, Washington 25)

28-29. Evolution of the **Atherosclerotic Plaque**, intern. symp., Chicago, Ill. (Miss M. Brookes, Chicago Heart Assoc., 22 W. Madison St., Chicago 2)

28-30. Natl. Soc. for **Programmed Instruction**, annual, San Antonio, Tex. (NSPI, Trinity University, 715 Stadium Dr., San Antonio 12, Texas)

29-31. American **Ethnological Soc.**, Ithaca, N.Y. (E. Friedl, Queens College, Flushing 67, N.Y.)

29-31. American Soc. of **Internal Medicine**, annual, Denver, Colo. (ASIM, 3410 Geary Blvd., San Francisco 18, Calif.)

31-4. National **Science Teachers Assoc.**, natl. convention, Philadelphia, Pa. (R. H. Carleton, NSTA, 1201 16th St., NW, Washington 6)

31-5. American **Chemical Soc.**, natl., Los Angeles, Calif. (A. T. Winstead, National Meetings Dept., ACS, 1155 16th St., NW, Washington 6)

31-5. National Assoc. of **Recreational Therapists**, annual, Norman, Okla. (American Psychiatric Assoc., 1700 18th St., NW, Washington 9)

April

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

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

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

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

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

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

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

3-5. **Streamflow Regulation** for Quality Control, symp., Cincinnati, Ohio. (J. E.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

15-16. American Soc. for **Artificial In-**

ternal Organs, annual, Atlantic City, N.J. (B. K. Kusserow, Medical College of Vermont, Burlington)

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

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

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

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

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

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

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

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

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

(See 15 February issue for comprehensive list)

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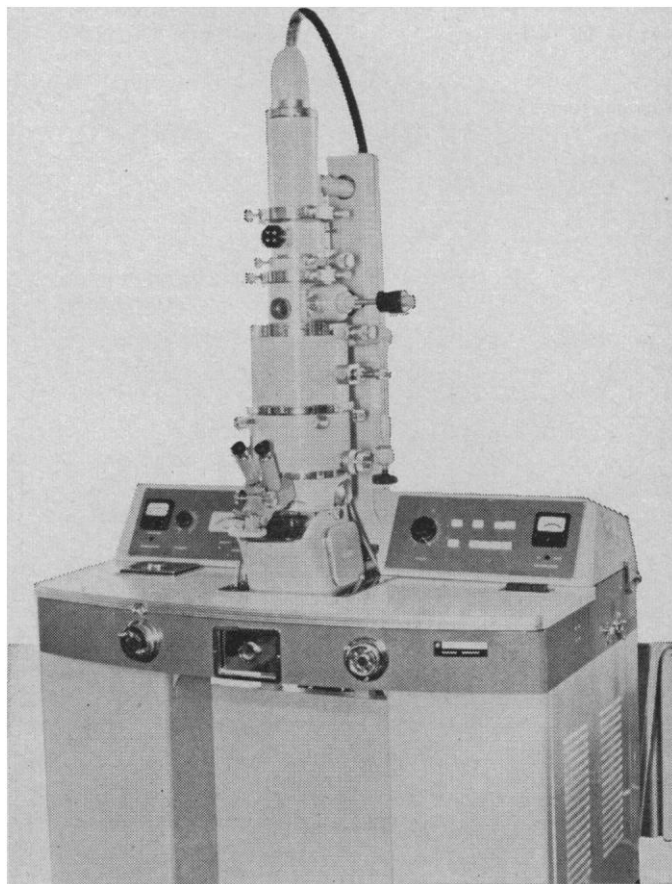
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This journal, founded in 1908, is the world's oldest genetic periodical and has followed the development of genetics as an exact experimental science from the very beginning. Originally genetics was concerned almost exclusively with the quantitative analysis of the hybrid progeny of higher organisms; at present it is one of the most important disciplines of molecular biology. Today, not only plants and animals but also fungi, bacteria, bacteriophages and all kinds of viruses are the objects of genetic research. Fortunately, the ever-growing compartmentalization and specialization encountered nowadays in many fields of science does not apply to genetics. Here, biochemistry and biophysics meet with biology (including botany, zoology, bacteriology and virology) in genetic research, particularly since the rise of molecular genetics. This journal appeals, therefore, to the general audience of modern biologists, to botanists and zoologists, as well as to bacteriologists, virologists and, above all, to biochemists and biophysicists.

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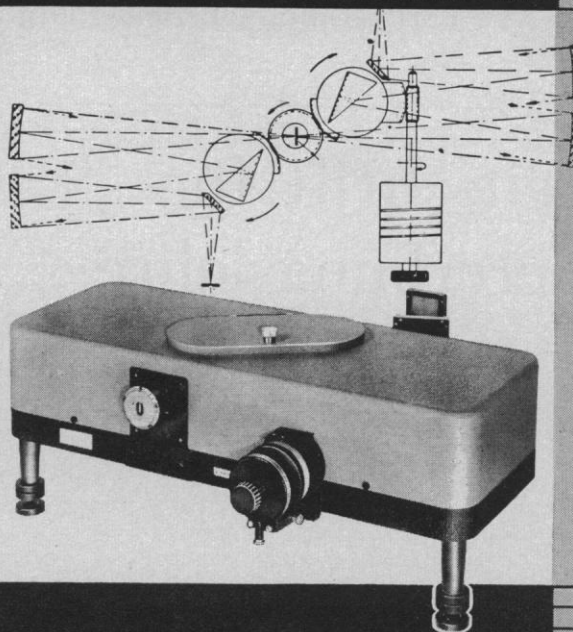
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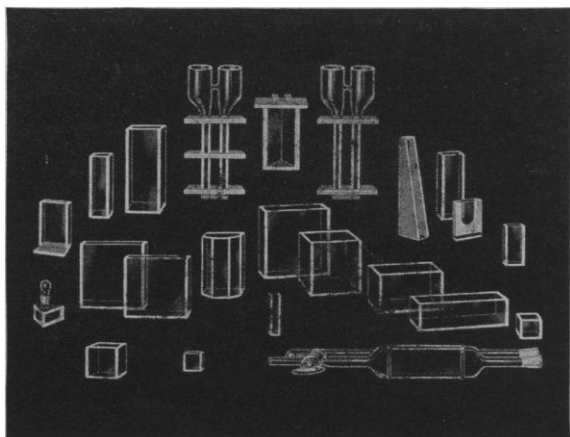
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NEWS AND COMMENT

(Continued from page 744)

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Scientists in the News

Five scientists were recipients of the 1963 Arthur S. Flemming Awards, presented this month. The awards are for "outstanding contributions to the federal government." Those who received them included:

George M. Low, director of space craft and flight missions, NASA.

Edgar M. Cortright, Jr., deputy director of the Office of Space Sciences, NASA.

Joseph F. Saunders, head of the Medicine and Dentistry Branch, Naval Research Office.

Norman J. Doctor, supervisory physicist at the U.S. Army's Diamond Ordnance Laboratories.

Charles M. Herzfeld, director of Ballistic Missile Defense, Defense Department.

Paul E. Klopsteg, professor emeritus, Northwestern University, has been named treasurer of AAAS, replacing **Paul A. Scherer**, who has resigned the post.

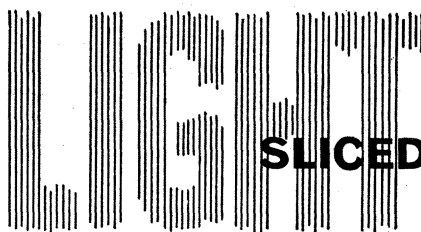
At Pennsylvania State University, **William R. Bitler**, formerly at Carnegie Institute of Technology, has become associate professor of metallurgy.

Gerhard R. Barsch, experimental physicist from Germany, has been named senior research associate in applied physics, college of mineral industries.

Morton J. Stoller, head of NASA's Office of Applications, has been awarded the NASA leadership medal. He was cited for "outstanding and dynamic leadership in planning, developing and directing a complex scientific organization" for the research, development, and application of space technology.

Roy C. Weidler, formerly with the Advanced Research Projects Agency, U.S. Department of Defense, has been named head of electro-optical research projects at the Martin Company's Orlando (Florida) division.

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Richard C. Greulich, professor of anatomy and oral biology in UCLA's health center, will receive the International Association for Dental Research award for basic research in oral science. The \$1000 award honors his research in "the development and application of modern histophysical and histochemical techniques to the study of growth differentiation and mineralization of dental and osseous tissues."

The University of Maryland's department of physics and astronomy has announced the following appointments:

William C. Erickson, formerly at Convair Astronautics, San Diego, Calif.; associate professor of astronomy.

Charles A. Misner, formerly at Princeton; associate professor of physics.

H. L. Woltjer, on leave from the University of Leiden, Holland; visiting professor of astronomy.

Frank B. McDonald, of Goddard Space Flight Center, part-time visiting professor of physics.

A. A. Jaffe, formerly at the University of Manchester, England; visiting associate professor of physics.

The new executive director at the University of Oklahoma Research Institute is **Archie M. Kahan**, formerly executive director of the research foundation, Texas A&M College.

The American Physical Society last month presented its Oliver E. Buckley prize in solid-state physics to **William M. Fairbank**, physics professor at Stanford University. The medal and \$1000 honorarium were presented to Fairbank "for his part in the experimental discovery of flux quantization in superconductors."

Samuel C. Bukantz, medical and research director of the Jewish National Home for Asthmatic Children and the Children's Asthma Research Institute and Hospital, Denver, has been named senior clinical investigator at the Schering Corporation, Bloomfield, N.J.

Alfred C. Redfield, emeritus senior oceanographer at Woods Hole Oceanographic Institute, has been elected president of the Bermuda Biological Station for Research.

Bernard Keisch, formerly with the Phillips Petroleum Company atomic energy division, has been named senior scientist at Nuclear Science and Engineering Corp., Pittsburgh.

Anders S. Lunde, former head of Gallaudet College's department of sociology, has become chief, Natality Statistics Branch, in the U.S. Public Health Service's National Vital Statistics Division.

George W. Hinman, associate professor of physics and mechanical engineering, Carnegie Institute of Technology, has been named chairman, department of experimental physics, General Atomic Division of General Dynamics Corp., San Diego, Calif.

David Minard, chief of the stress physiology division, National Naval Medical Center, Bethesda, Md., has been appointed professor and head of the department of occupational health in the University of Pittsburgh's graduate school of public health.

Recent Deaths

Barnum Brown, 89; curator emeritus of fossil reptiles, American Museum of Natural History, New York; 5 Feb.

Melvin DeGroot, 67; retired vice president of research, developments, and patents, in the Petrolite Corp., St. Louis, Mo.; 3 Feb.

Edgar H. Dix, Jr.; retired assistant research director, Aluminum Company of America; 29 Jan.

Jackson B. Hester, 58; owner, Hester Agricultural Research Laboratory, Elkton, Md.; 28 Nov.

John H. Keating, Sr.; past president, New York Heart Association; 21 Jan.

Harold P. Knauss, 62; former head, physics department, University of Connecticut; 1 Jan.

Robert H. Leach, 84; metallurgist, retired vice president, Handy and Harmon Company, Bridgeport, Conn.; 26 Jan.

Ralph A. Liddle, 66; petroleum geologist; 16 Jan.

Herbert E. Merwin, 84; retired Carnegie Institution geologist; 28 Jan.

Paul Rosbaud, 66; scientific adviser to Wiley, North-Holland, Oliver & Boyd, Allen and Unwin, and Viewig publishing houses; 28 Jan.

Roscoe L. Sensenich, 80; former president, American Medical Association; 18 Jan.

Winfrey Wynn, 54; associate research professor of physiology, Emory University; 26 Jan.

William P. Yant, 69; research activities director, Mine Safety Appliances Co., Pittsburgh, Pa.; 29 Jan.