

SCIENCE

10 October 1958

Volume 128, Number 3328

Editorial	The New Mathematics	807
Articles	Atmospheres of Other Planets: <i>S. L. Hess</i>	809
	Much has recently been discovered about the atmospheres of the planets, but some puzzles remain.	
	Protein Hydration and Behavior: <i>I. M. Klotz</i>	815
	Many aspects of protein behavior can be interpreted in terms of frozen water of hydration.	
	The Conservation of Intellectual Talent: <i>D. L. Thistlethwaite</i>	822
	The reasons why some able students do not attend college and use of scholarships are assessed.	
News of Science	NASA Absorbs NACA; other events	826
Book Reviews	D. C. McClelland <i>et al.</i> , <i>Talent and Society</i> , reviewed by <i>L. J. Cronbach</i> ; other reviews	832
Reports	New Property of the Crystalline Style of <i>Crassostrea virginica</i> : <i>D. Dean</i>	837
	New Excited State of Chlorophyll: <i>S. S. Brody</i>	838
	Immunogenetic Dissection of the T5 Bacteriophage Tail: <i>F. Lanni</i>	839
	Vulcanization with Tetramethylthiuram Disulfide: <i>E. M. Bevilacqua</i>	840
	Hydrothermal Recrystallization of Molybdenum Trioxide: <i>J. L. Callahan, R. H. Petrucci, C. A. Brown</i>	841
	Effect of Deafferentation on a Conditioned Avoidance Response: <i>H. D. Knapp, E. Taub, A. J. Berman</i>	842
	Restoration of Tryptophan Synthetase Activity in <i>Escherichia coli</i> by Suppressor Mutations: <i>C. Yanofsky</i>	843
	Occurrence of Substances with Juvenile Hormone Activity in Adrenal Cortex of Vertebrates: <i>I. Gilbert and H. A. Schneiderman</i>	844
	Action Spectrum for Triphosphopyridine Nucleotide Reduction by Illuminated Chloroplasts: <i>A. San Pietro et al.</i>	845
Departments	Meetings; Letters; Equipment	846

DISPERSE
ACCELERATE
EMULSIFY
DIFFUSE
DISINTEGRATE
DECOMPOSE

RAYTHEON
SONIC
OSCILLATORS

now in 4 out of 5 research laboratories

Scores of valuable services are performed for researchers by this versatile tool. In fact, the utility of Raytheon Sonic Oscillators is continually increasing in laboratory projects such as seed germination, bacteria growth, acceleration of chemical reactions, diffusion of gases in liquids, disintegration of bacteria, and others.

The only low-frequency magnetostriction units available, Raytheon Sonic Oscillators offer outstanding advantages in trouble-free construction, simple operation, long life and low cost. The treatment cup may be autoclaved, temperature and pressure controlled. "Plug-in" installation.

**YOURS—WITHOUT
COST OR OBLIGATION!**



Raytheon Manufacturing Company
Commercial Equipment Division—Medical Products Department
Waltham 54, Massachusetts

Please send the following Sonic Oscillator material:

- ☐ Comprehensive application bibliography
- ☐ Summary of applications (from more than 500 users)
- ☐ Complete specification sheet

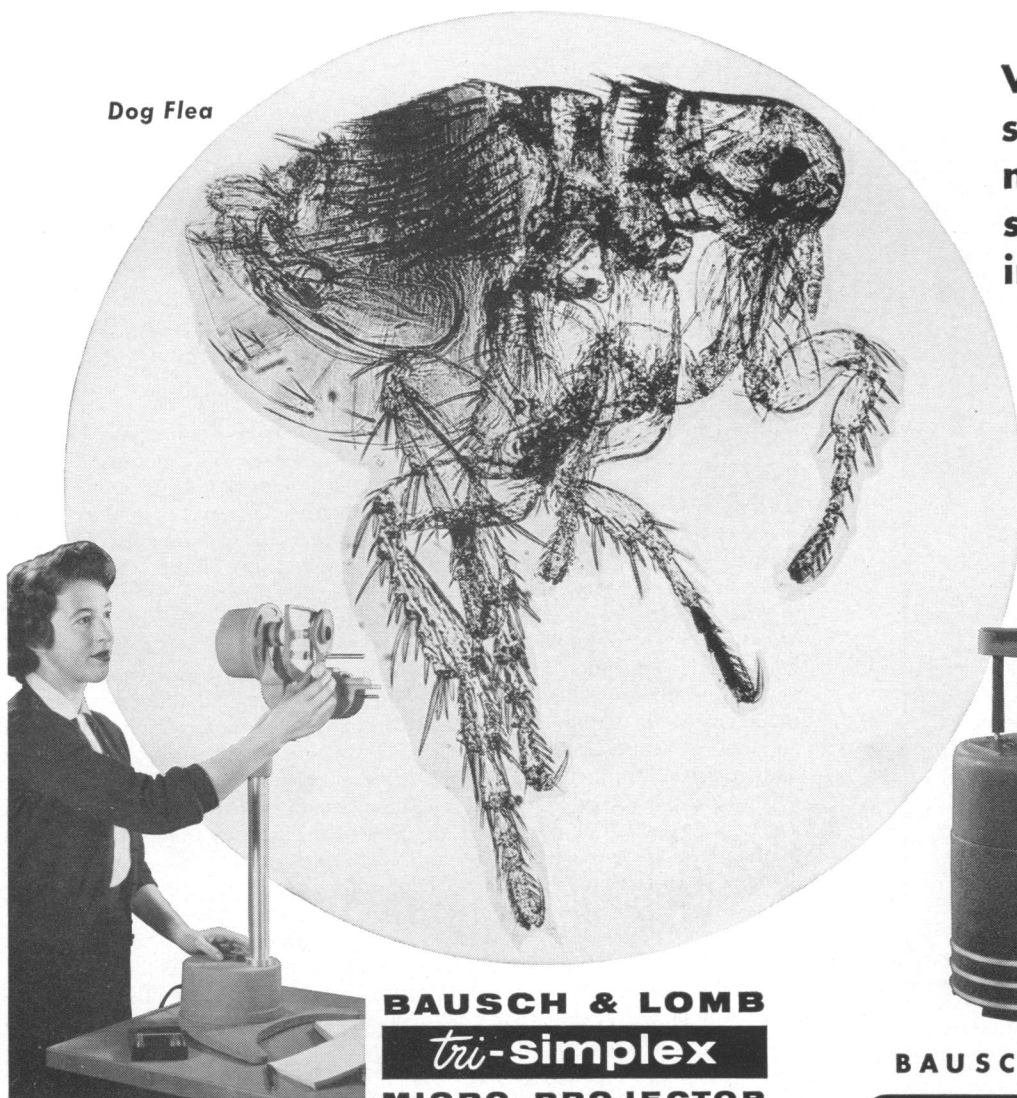
Name _____

Address _____

City _____ Zone _____ State _____

Bausch & Lomb Micro-Projectors Give You MORE TEACHING TIME PER CLASS HOUR

Dog Flea



BAUSCH & LOMB *tri-simplex* MICRO-PROJECTOR

For science instruction . . . clearest views, easiest to use
Fills screen with sharply magnified images of fixed or live specimens. Also projects directly onto tracing pad. Magnification range from 75 \times to 1500 \times at 10 feet.

MAIL COUPON FOR DATA AND DEMONSTRATION

BAUSCH & LOMB OPTICAL CO.
64234 St. Paul St., Rochester 2, N. Y.

- ☐ I'd like Tri-Simplex Folder E248 . . . ☐ and demonstration.
☐ I'd like SpeedMatic Folder E246 . . . ☐ and demonstration.

NAME TITLE

SCHOOL OR
COMPANY

CITY ZONE STATE

**Vivid screen-
sized views of
micro-specimens
speed group
instruction**



BAUSCH & LOMB *SpeedMatic* MICRO-PROJECTOR

**For advanced studies—critical
detail, automatically!**

Fully achromatic objectives and matching condensers are automatically synchronized to give you the best light for every magnification—20 \times to 3000 \times at 12 feet—with a single lever control.

BAUSCH & LOMB



Meetings

Human Ecology

The results of several inquiries into the Hungarian Revolution of 1956 were reported before an interdisciplinary group attending the second seminar on Hungarian Studies, sponsored by the Society for the Investigation of Human Ecology of Forest Hills, N.Y. The meeting was held 6 June at Columbia University, with Adolf A. Berle, Jr., professor of law at Columbia and a director of the society, presiding. Papers were presented by re-

search workers from Cornell University Medical College; Columbia, Rutgers, and McGill universities; and Radio Free Europe.

Lawrence E. Hinkle, Jr., reported the results of an interdisciplinary study undertaken by the New York Hospital-Cornell Medical Center human ecology study program, an inquiry into factors influencing the health and behavior of Hungarian refugees, with emphasis on why they fought and fled. Cornell research workers found no support for the idea that the revolt and the exodus that followed were simply the results of unpremeditated action of people swept up

in a wave of mass emotion. "On the contrary," Hinkle said, "those who participated in these events had deep-seated, realistic, and highly personal motives for their actions." This was true of nearly every refugee studied.

Motives for revolt in the Hungarians studied fell into two general categories. The first was a long-standing and insurmountable feeling of personal insecurity. The refugee believed that no matter what he did or how high a position he attained, his family could be ruined at any time by the actions of others or by events beyond his control. The second was a profound sense of frustration. There was a deep conviction, Hinkle said, that in communist Hungary there was no way for the individual to live out his life as he wanted to and in a manner that would satisfy his needs. These motives persisted, even among refugees who knew they were economically better off than they might have been had the precommunist regime continued to govern.

Paul Zinner, of Columbia University, reporting on the political background of the rebellion, said that a massive discontent and, more important, the disintegration of the Communist Party in Hungary made the revolution possible. The party disintegrated visibly over a 3-year period, beginning with 1953. "The party was not a monolithic block of like-minded people coming from the same background, thinking the same thoughts, and liking each other immensely," he said. "The social composition of the party made it less than unified in its purposes and contained the seeds of future conflict that were to help make the revolt possible."

Richard Stephenson, of Rutgers University, presented the results of a sociological study of Hungarian refugees, focusing on evasive tactics that enabled them to function effectively within communist controls. Some Hungarians, he said, capitalized on special technical skills desperately needed by the communist regime, thereby reaping rewards without conforming to party requirements. Some moved from city to city to disrupt bureaucratic files, and others closed out businesses or left professional roles to provide an approved "worker" background for their children. In the matter of completing work norms, the Rutgers study shows it was common practice for the worker at the bench, the foreman, and the works manager to connive and to lie about and disguise actual production rates. Often strategic industrial positions were filled with political functionaries who lacked the technical competence to detect such practices. When evasive tactics were not practical, Hungarians would pursue tabooed practices covertly. They attended church in a parish other than their own and went from the city into villages to have their children baptized. By such measures as

*Are you up to date on
the latest Russian work in . . .*

BIOLOGY — MEDICINE — PHARMACOLOGY

This information is at your fingertips in these leading Soviet journals—published in cover-to-cover English translation . . .

Bulletin of Experimental Biology and Medicine

This important professional journal features stimulating articles, written by the Soviet Union's foremost authorities, on *physiology, pathology, immunology, biophysics, pharmacology, oncology, morphology*, and other related fields. Published monthly, each issue contains more than 20 papers in over 100 pages. Translation began with the 1956 volume, and is published by special arrangement with the *National Institutes of Health*. (Annual subscription: \$20.00).

Biochemistry

Acknowledged as the most comprehensive Soviet biochemical journal in the fields of plant and animal biochemistry. Published bimonthly; each issue averages more than 20 papers in over 100 pages. Translation, by special arrangement with the National Institutes of Health, began with the 1956 volume. (Annual subscription; 6 issues: \$20.00)

Pharmacology and Toxicology

Farmakologiya i Toksikologiya, long recognized as the outstanding Soviet periodical in this field, is published bimonthly and averages more than 600 pages per year. Translation began with the 1957 volume, and is published by special arrangement with the American pharmaceutical industry. (Annual subscription; 6 issues; \$25.00)

C.B. translations by bilingual scientists, include all integral tabular, diagrammatic and photographic material. Books and journals are clearly reproduced by multilith process from easy-to-read IBM "cold" type. Write for free catalogs.



CONSULTANTS BUREAU, INC.

227 W. 17th St., NEW YORK 11, N. Y.

these, Stephenson said, the Hungarians were able to achieve many of their goals within the rigors of communist control and without accepting communism.

Probably the most important factor in the immigrant's success or failure to adjust to a new environment is the position he enjoyed in the old society, reported A. F. Meszaros, psychiatrist from McGill University. "Class status" often determines the immigrant's reasons for leaving his homeland, Meszaros said, and it also colors his ideas of the position he hopes to find in his newly adopted country. Meszaros reported on a study of 64 Hungarian refugees, 44 men and 20 women, drawn from middle and worker classes. Workers were a favored group in Hungary, the study reveals, while the middle class occupied only a marginal or "tolerated" position and received very few benefits from the communist sociopolitical system. Because they lived under a system of supervision and suspicion, because their livelihood often depended on the whims of party bosses and their every movement was controlled, members of the middle class as a group held an attitude of subdued hostility to the regime. The worker, to whom communism promises most, viewed the regime with mixed feelings. His job continuity and security were assured, and he was encouraged to associate with members of his own class. But he could not change jobs, and his share of material goods remained small because his income remained at a controlled low level. Meszaros believes that the Hungarian worker immigrant, to adjust successfully in North America, must sacrifice his ideas of job security and social prestige, which were automatic under communism, for the greater independence of job mobility and the opportunities to acquire material goods previously denied him. These new attitudes will represent a complete reversal of values for him and will temporarily increase the difficulty of successful adjustment. Adjustment for the middle-class immigrant is not so difficult, Meszaros maintains, because the North American value system does not differ fundamentally from his own value system.

In other papers presented at the seminar, Alexander Dallin, of Columbia University, discussed the "Uniqueness of the rebellion," and Edmund O. Stillman, of Radio Free Europe, discussed interclass attitudes in Hungary, especially as they applied to the relocated agricultural proletariat. Bela C. Maday, executive secretary of the Coordinated Hungarian Relief Association, told of the problems of immigrant Hungarians' adapting to life in the United States.

The society's interest in the Hungarian uprising began when the influx of thousands of refugees into this country created an unprecedented opportunity to study the effects of sudden environmen-

Are You Interested in Vitamins too?



If *you* are interested in vitamins, you'll like the Coleman Photofluorometer. It offers the fastest and easiest way to find and measure Thiamine and Riboflavin in foods, beverages, cereals, pharmaceuticals, animal feeds, plant and animal tissues as well as for metal complexes, and a number of other fluorophors of special interest to medical science.

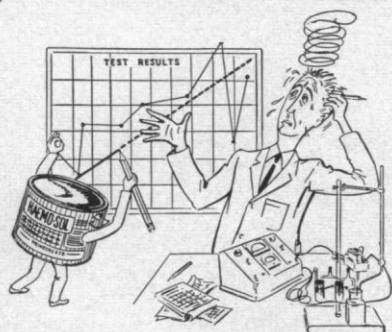
The Coleman Electronic Photofluorometer (Model 12C) is direct-reading, AC line operated, stable and reproducible with a *sensitivity range capable of encompassing both trace quantities and concentrates of fluorescing constituents*. It is a typical COLEMAN instrument—sound in science—eminently practical in use and low in cost.



Ask for New Bulletin B-245.

COLEMAN PHOTOFLUOROMETER

COLEMAN INSTRUMENTS, INC., DEPT. S, MAYWOOD, ILLINOIS



TOO MANY VARIABLES?

It's time to draw a line.
Straighten out your cleaning
problems with

HAEMO-SOL

There's nothing like Haemo-Sol's unique cleansing power and positive rinsing . . . it's completely safe! No etching! No corroding of metal parts! Immediate Haemo-Sol bath for valuable volumetric and optical equipment prevents soil etching!

Haemo-Sol guarantees clean laboratory glassware and apparatus—

- removes the full range of laboratory soils
- effectively digests protenoid materials . . . other types of polymeric materials
- assures free draining pipets . . . burets
- gives sparkling clear surfaces for quartz and glass absorption cells
- provides chemically clean reaction and titration flasks
- leaves the clean surfaces that are a must for the smooth operation of fractionating columns and other pieces of laboratory equipment.

And, just as important as its unique cleaning power, is Haemo-Sol's *high solubility* and powerful solubilizing action. Haemo-Sol washed glassware rinses completely clean . . . nothing remains behind but a chemically clean, free draining glass surface.

Write
TODAY for
Sample and
Literature.



Distributed by

MEINECKE & CO., INC.

225 Varick Street
New York 14



tal change on the health and attitudes of a large immigrant population. The first seminar was held in Forest Hills, N.Y., a year ago; it brought together representatives of various agencies to exchange views on Hungarian immigration, discuss preliminary findings, and outline plans for coordinating further research.

At the conclusion of the second seminar, preliminary plans were announced for integrating data from all Hungarian studies and making these available for future research.

The society has published the seminar proceedings, including full texts of the papers presented. Copies may be obtained by writing to the Executive Secretary, Society for the Investigation of Human Ecology, Forest Hills 75, N.Y.

JAMES L. MONROE
*Society for the Investigation of
Human Ecology, Forest Hills, New York*

Spectroscopy

The tenth annual Symposium on Spectroscopy of the American Association of Spectrographers is to be held at the Conrad Hilton Hotel in Chicago, 1-4 June 1959. Original papers of emission, x-ray, visible, ultraviolet, near-infrared, and Raman spectrometry and in flame photometry are invited. The meeting will also feature an instrument exhibit by leading manufacturers in the field of spectroscopy. Authors are requested to submit titles *before 1 January 1959* to the program chairman, G. W. Bailey, Borg-Warner Research Center, Des Plaines, Ill.

Forthcoming Events

November

6-7. Lead Hygiene Conf., Chicago, Ill. (M. Bowditch, Lead Industries Assoc., 60 E. 42 St., New York, 17.)

6-7. Nuclear Science, 5th annual, San Mateo, Calif. (H. Pratt, IRE, 1 E. 79 St., New York 21.)

6-8. Geochemical Soc., St. Louis, Mo. (K. B. Krauskopf, Stanford Univ., Geology Dept., Stanford, Calif.)

6-8. Geological Soc. of America, St. Louis, Mo. (H. R. Aldrich, 419 W. 117 St., New York 27.)

6-8. Gerontological Soc., 11th annual scientific meeting, Philadelphia, Pa. (N. W. Shock, Baltimore City Hospitals, Baltimore 24, Md.)

6-8. Paleontological Soc., St. Louis, Mo. (Miss K. V. W. Palmer, 109 Dearborn Pl., Ithaca, New York.)

6-8. Society of Economic Geologists, St. Louis, Mo. (H. M. Bannerman, U.S. Geological Survey, Washington 25)

8. Society for the Scientific Study of Sex, 1st annual, New York, N.Y. (R. V. Sherwin, 1 E. 42 St., New York 17.)

10-12. American Petroleum Inst., 38th annual, Chicago, Ill. (API, 50 W. 50 St., New York 20.)

10-12. Physics and Medicine of the At-

RADIATION PROTECTION SERVICES

from



Environmental Radioanalyses and Radioactivity Surveys

Collection and radioanalysis of environmental and biological samples of

Air particulates	Vegetation
River water	and algae
and effluents	Fish
Soil and silt	

Gross radioactivities and/or specific radionuclides determined.

Urinalyses

The most comprehensive urinalysis commercially available including analyses for

Gross activities	Radium
Total uranium	Fission products
Enriched uranium	Plutonium
Beryllium	Strontium
Thorium	

Film Badge Service



Unique features include
extreme sensitivity,
cumulative quarterly
and annual data
reports, tamper-proof

badge, combination security-photo and film-badge holder.

Write for brochures giving
detailed information on
these services.



**controls
for
radiation**
I N C.

130 ALEWIFE BROOK PKWY., CAMBRIDGE, MASS.

mosphere and Space, intern. conf. (by invitation), San Antonio, Tex. (Southwest Research Center, 331 Gunter Bldg., San Antonio.)

10-13. American Dental Assoc., Dallas, Tex. (H. Hillenbrand, 222 E. Superior St., Chicago, Ill.)

12-14. Society for Experimental Stress Analysis, annual, Albany, N.Y. (W. W. Murray, P.O. Box 168, Central Square Sta., Cambridge 39, Mass.)

12-15. Society of Naval Architects and Marine Engineers, 66th annual, New York, N.Y. (W. N. Landers, SNAME, 74 Trinity Pl., New York 6.)

16-21. Radiological Soc. of North America, Chicago, Ill. (D. S. Childs, 713 E. Genesee St., Syracuse, N.Y.)

16-23. Scientific Information, intern. conf., Washington, D.C. (Mrs. M. Sheppard, Intern. Conf. on Scientific Information, Natl. Acad. of Sciences-Natl. Research Council, 2101 Constitution Ave., Washington 25.)

17-19. Association of Military Surgeons of the U.S., Washington, D.C. (R. E. Bitner, Suite 718, New Medical Bldg., 1726 Eye St., NW, Washington 6.)

17-20. Conference on Magnetism and Magnetic Materials, Philadelphia, Pa. (H. B. Callen, Dept. of Physics, Univ. of Pennsylvania, Philadelphia.)

17-22. Radiological Soc. of North America, Chicago, Ill. (D. S. Childs, Sr., 713 E. Genesee St., Syracuse 2, N.Y.)

18-20. Air Pollution, 1st natl. conf., Washington, D.C. (Dept. of Health, Education, and Welfare, U.S. Public Health Service, Washington 25.)

18-20. Standards, 9th natl. conf., New York, N.Y. (American Standards Assoc., 70 E. 45 St., New York, N.Y.)

18-21. Weather Radar Conf., 7th, Miami Beach, Fla. (K. C. Spengler, American Meteorological Soc., 3 Joy St., Boston 8, Mass.)

18-22. Pan-American Dental Cong., Mexico City, Mexico. (Association Dental Mexicana, Sinaloa 9, Mexico 7, DF, Mexico.)

19-21. Electrical Techniques in Medicine and Biology, 11th annual conf., Minneapolis, Minn. (O. H. Schmitt, Univ. of Minnesota, Minneapolis.)

20-22. Acoustical Soc. of America, 56th meeting, Chicago, Ill. (K. Kramer, 3839 Grand Ave., Western Springs, Ill.)

20-22. American College of Cardiology, New Orleans, La. (P. Reichert, Empire State Bldg., New York 1.)

20-22. International Symp. on Tuberculosis, Philadelphia, Pa. (M. J. Schwartz, Deborah Sanatorium & Hospital, 642 Widener Bldg., Philadelphia 7.)

20-23. American Anthropological Assoc., Washington, D.C. (W. S. Godfrey, Jr., APA Logan Museum, Beloit College, Beloit, Wisc.)

20-23. European Confederation of Agriculture, Vienna, Austria. (M. H. Abegg, Confédération Européenne Agriculture, Brougg (Argovie), Switzerland.)

21-22. American Soc. of Animal Production, annual, Chicago, Ill. (H. H. Stonaker, Animal Husbandry Dept., Colorado State Univ., Fort Collins, Col.)

24-26. Fluid Dynamics, division of American Physical Soc., San Diego, Calif.

(R. J. Emrich, Dept. of Physics, Lehigh Univ., Bethlehem, Pa.)

24-26. Mechanisation of Thought Processes, symp., Teddington, Middlesex, England. (The Secretary, Natl. Physical Lab., Teddington, Middlesex.)

24-6. Plant Specialists, 4th Latin American conf., Santiago, Chile. (R. Cortazar, Departamento de Investigaciones Agrícolas, Ministerio de Agricultura Casilla 4088, Santiago, Chile.)

27-29. Central Assoc. of Science and Mathematics Teachers, 58th annual, Indianapolis, Ind. (N. G. Sprague, Indianapolis Public Schools, 1644 Roosevelt Ave., Indianapolis 18.)

(See issue of 19 September for comprehensive list)

Letters

Blood-Group Nomenclature

The correspondence regarding blood-group nomenclature published in the 23 May issue of *Science* [127, 1255 (1958)] calls for amplification and clarification, so that readers may not be misled.

The original Rh factor was discovered by Karl Landsteiner and Alexander S. Wiener in 1937. This blood factor is now designated Rh_0 . When the related blood factor rh' was discovered by Wiener in

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

and

THE NATIONAL SCIENCE FOUNDATION

announce the publication of revised editions of two popular booklists prepared by The Traveling High School Science Library Program:

THE TRAVELING HIGH SCHOOL SCIENCE LIBRARY, 1958, an annotated catalog of the 200 books included in a special loan collection that is being sent to over 1300 schools this year, 25¢ a copy.

AN INEXPENSIVE SCIENCE LIBRARY, 1958, a selected list of over 300 paperbound science and mathematics books suitable for high school students and the nonspecialist adult reader, 25¢.

A discount of one-third is offered on orders for 25 or more copies of either list. We pay postage if remittance accompanies order. *Do not send postage stamps in payment.*

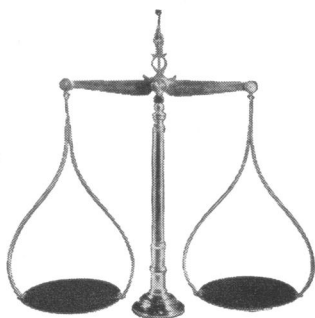
Address orders to:

SCIENCE LIBRARY PROGRAM, AAAS

1515 Massachusetts Avenue, N.W.

Washington 5, D.C.

*There Is a
Delicate
Balance...*
between
**QUALITY and
ECONOMY**



NUTRITIONAL BIOCHEMICALS CORPORATION always assures you the economy of lowest possible prices . . . yet never sacrifices their proudest asset — quality of product.

A COMPLETE SELECTION OF
MORE THAN 300 AMINO ACIDS AND PEPTIDES

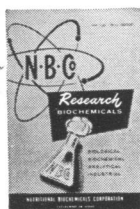
Typical Amino Acids

Glutamine	Valine, D, DL, L
Phenylalanine, D, DL, L	Ornithine, DL, L
Homoserine	Dopa, D, L, DL
Homocysteine	Asparagine, D, L, DL
Histidine	Serine, D, L, DL



**NUTRITIONAL
BIOCHEMICALS
CORPORATION**

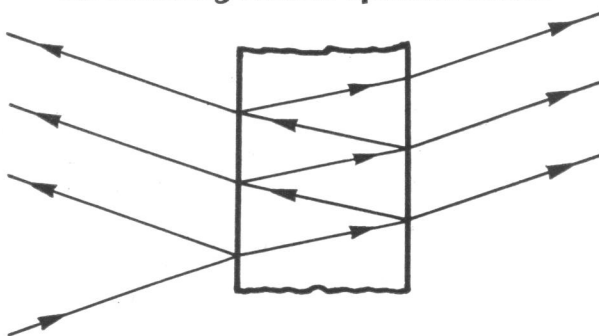
21010 Miles Avenue . . . Cleveland 28, Ohio



Write For
New Catalog
July 1958
Over 2300 Items
Write Dept. 102

INTERFERENCE FILTERS

for isolating narrow spectral bands



Spectral Range: 340-900 millimicrons

Peak Transmission: 40%

Half Peak Width: 8-12 m μ

Size: 2" x 2"

For

**Colorimetry
Fluorimetry
Flame Photometry**

also microscopy, photomicrography, microcolorimetry, refractometry, polarimetry, light scattering measurements, and for many other applications requiring monochromatic light in the visible, near-ultraviolet, and near-infrared range.

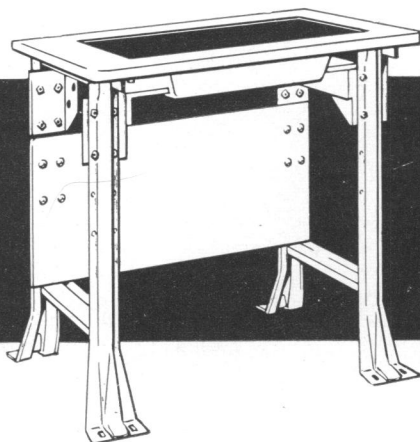
Write for Bulletin #180 to

PHOTOVOLT CORP.

95 Madison Avenue

New York 16, N.Y.

NO MORE VIBRATIONS



**TEST
TRY
FREE**

THE NEW BRINKMANN-SARTORIUS BALANCE TABLE

Your vibration troubles with analytical and micro balances are over — or greatly reduced with the Brinkmann-Sartorius Anti-Vibration Balance Tables or Wall Brackets.

★ EASILY INSTALLED ★ REASONABLY PRICED
★ SINGLE AND MULTIPLE UNITS

Your local laboratory supply house will arrange for free trial delivery or write:

Brinkmann Instruments, Inc., Cutter Mill Road, Great Neck, L. I., N. Y.

NOW TITRATIONS by AUTOMATION



Make titrations a routine function for lab assistants! Cenco's new Color-Matic Endpoint Detector and Volumatic Syringe enable quick, successive determinations — just push a button and read a number. Eliminates human element and drainage errors. Precise to within a few parts per thousand. Write for Bulletin 285.

No. 20925 Color-Matic Endpoint Detector. \$595.00
No. 20926 Volumatic Syringe. \$295.00



CENTRAL SCIENTIFIC CO.

1718-Mirving Park Road • Chicago 13, Illinois
Branches and Warehouses — Mountainside, N. J.
Boston • Birmingham • Santa Clara • Los Angeles • Tulsa
Houston • Toronto • Montreal • Vancouver • Ottawa