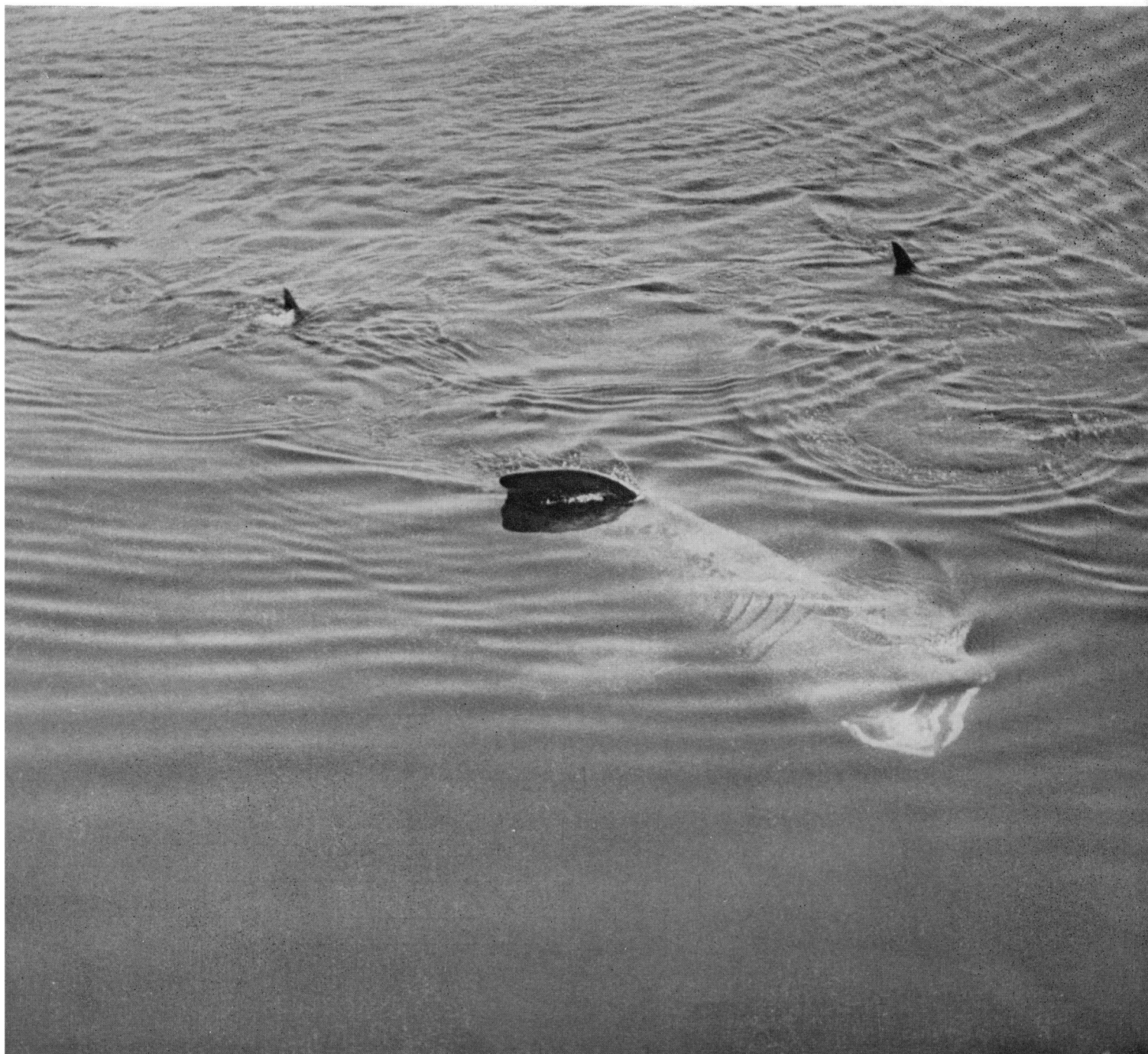


SCIENCE

5 August 1960

Vol. 132, No. 3423

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE





SATISFIES THE MOST EXACTING REQUIREMENTS

RESEARCH POLARIZING MICROSCOPE

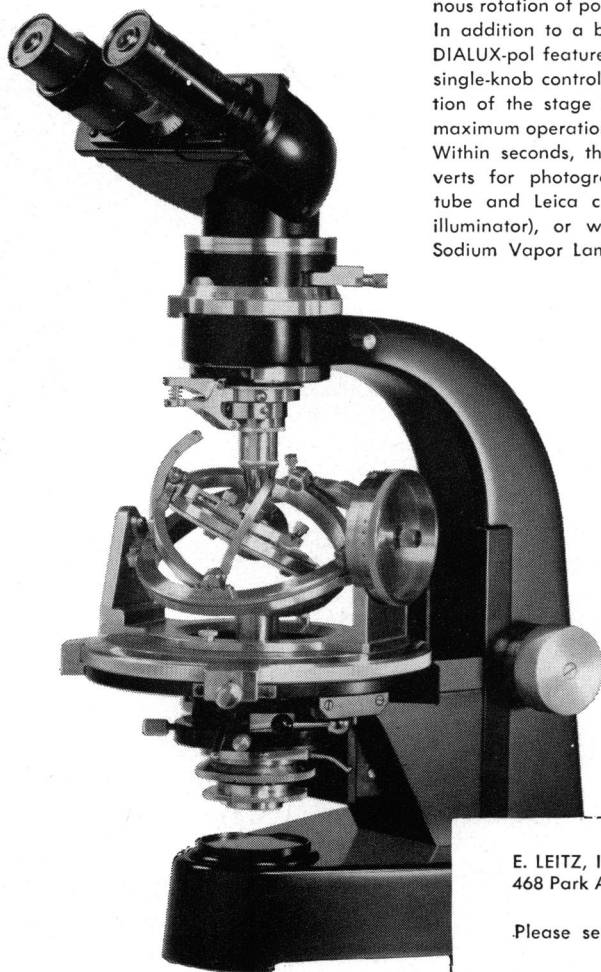
DIALUX-POL

The new *LEITZ* DIALUX-pol is the most advanced, universal polarizing research microscope ever manufactured. It was designed for the geologist, mineralogist, petrographer, paleontologist, and the industrial research microscopist.

The DIALUX-pol maintains the principle of interchangeability, famous with all *LEITZ* precision instruments, so that it is readily used for transmitted light as well as for reflected-polarized light. With the simple addition of a connecting bar, it provides synchronous rotation of polarizer and analyzer.

In addition to a built-in light source and condenser system, the DIALUX-pol features many other operational advantages: unique single-knob control of both coarse and fine adjustment by alteration of the stage height (and not the tube), thus focusing with maximum operational ease.

Within seconds, the DIALUX-pol, through *LEITZ* accessories, converts for photography (through combined monocular-binocular tube and Leica camera), for ore microscopy (through vertical illuminator), or will accommodate the *LEITZ* Universal Stage, Sodium Vapor Lamp, and other facilities.



- monocular or binocular vision
- combination tube FS for photography
- synchronous polarizer-analyzer rotation upon request
- dual coarse and fine focusing
- built-in light source; 6-volt, 2.5-amp, variable intensity
- vertical illumination for ore microscopy
- polarizing filters or calcite prisms
- adaptable to all universal stage methods

Send for the DIALUX-pol information bulletin—then see and examine this fine instrument for yourself.

E. LEITZ, INC.
468 Park Avenue South, New York 16, N.Y. SC-85

Please send me the *LEITZ* DIALUX-pol brochure.

Name _____

Street _____

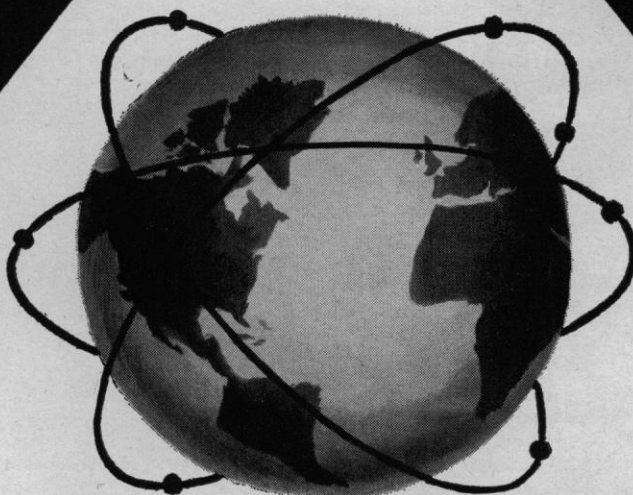
City _____ Zone _____ State _____

E. LEITZ, INC., 468 PARK AVENUE SOUTH, NEW YORK 16, N. Y.
Distributors of the world-famous products of
Ernst Leitz G. m. b. H., Wetzlar, Germany—Ernst Leitz Canada Ltd.
LEICA CAMERAS · LENSES · PROJECTORS · MICROSCOPES · BINOCULARS

25158

**WHEN
THE
WORLD
CAME
INTO A
FLASK...**

NBC



In this age of missiles, space ships and rockets, it is gratifying to see our biochemicals travel throughout the world. Leading research investigators from all over the globe have come to rely upon our high quality, low prices and speedy service. Our stocks include over 300 Amino Acids • Over 90 Peptides • Over 200 Nucleoproteins, Purines, Pyrimidines • Miscellaneous Biochemicals • Vitamins • Enzymes-Crystalline, Purified • Growth Factors • Steroid Hormones • Biological Salt Mixtures and Test Materials • Carbohydrates • Purified Proteins • Fatty Acids • Antibiotics • Alkaloids • Glandular Substances.

**NUTRITIONAL
BIOCHEMICALS CORPORATION**

21010 MILES AVENUE • CLEVELAND 28, OHIO

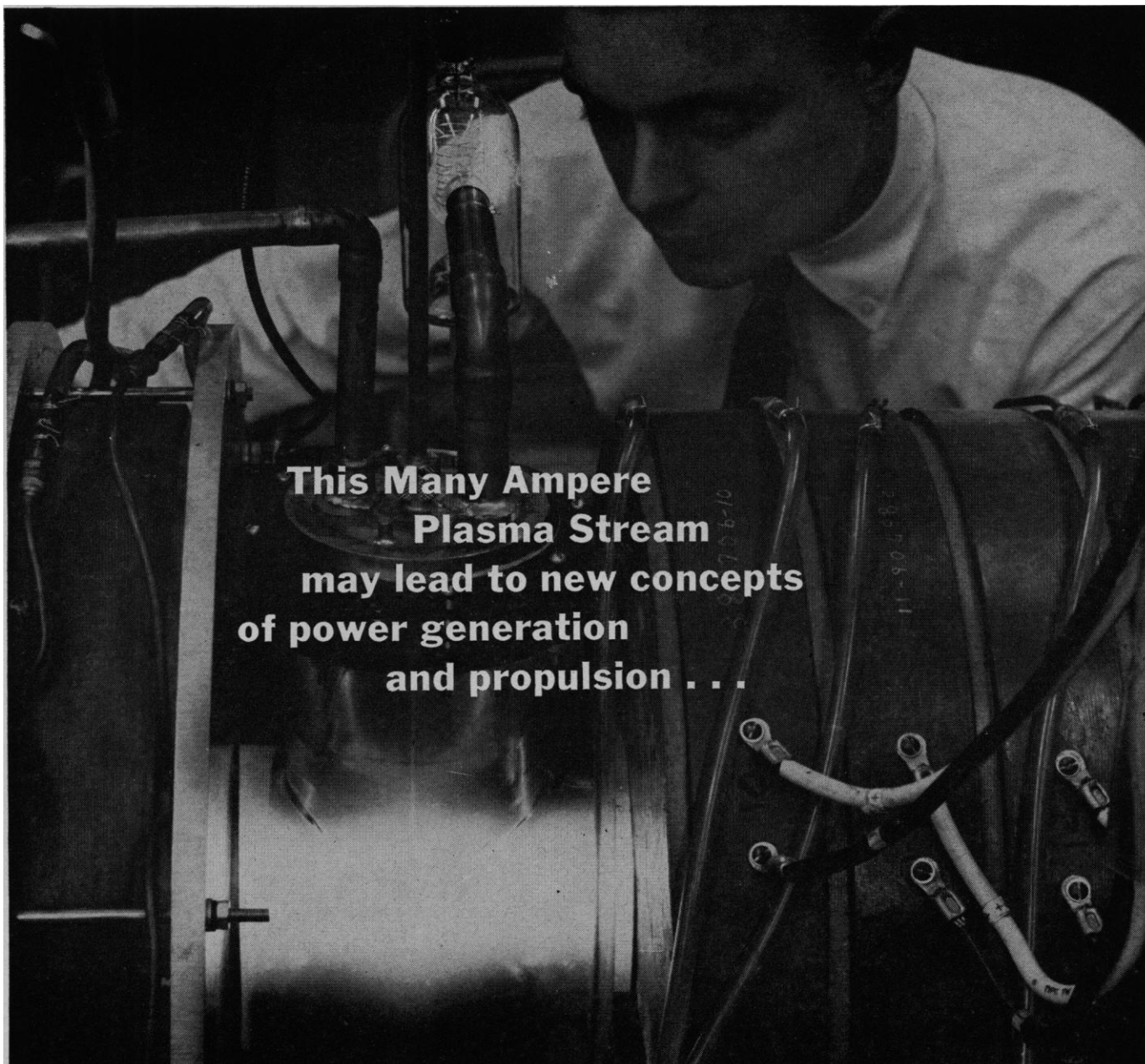


**SEND FOR OUR
FREE JULY, 1960
CATALOG**

Containing more than
2600 items. Fill out coupon and
mail today for your copy. sc

NAME _____
ORGANIZATION _____
ADDRESS _____
CITY _____
STATE _____ ZONE _____





**This Many Ampere
Plasma Stream
may lead to new concepts
of power generation
and propulsion . . .**

A many-ampere source of ions, this device is believed to be the most powerful in operation in any laboratory. Already it is providing new insight into thermonuclear fusion. It may lead to new concepts in propulsion including a method of producing thrust for missions beyond the earth's atmosphere.

Accomplishments like this are the result, we believe, of a unique research environment. Among other things, we encourage independence of scientific thought and action. And, we make determined efforts to free scientists from tedious routine — help direct their full mental powers towards scientific achievement.

Complex calculations, for instance, are handled by the nation's largest industrial computational facility. Unusual assistance — at operational and theoretical levels — is available from outstanding leaders in other disciplines.

We believe that this combination of facilities and services is unequalled. If you are interested in corporate-sponsored studies into the fundamental nature of matter in an environment where success comes easier, write today.

Please write to Mr. D. W. Walsh, or phone Hartford, Conn., JAcKson 8-4811, Ext. 7145.

**Research Opportunities
in many areas . . .**

**Chemical Kinetics
Fuel and Combustion Analysis
Thermodynamic Cycle Analysis
Space Mechanics
Electrical Propulsion
Plasma Physics
Gaseous Electronics
Vehicle Trajectory and
Performance Analysis
High Temperature Materials
Direct Conversion
Surface Chemistry
Nuclear Engineering**

RESEARCH LABORATORIES
UNITED AIRCRAFT CORPORATION

400 Main Street, East Hartford 8, Conn.



Editorial	Dreams and Visions	321
Articles	Shark Attacks during 1959: <i>P. W. Gilbert, L. P. Schultz, S. Springer</i>	323
	The conditions under which sharks attack man suggest what measures may be taken to reduce risk.	
	Biological Availability of Strontium-90 from Atomic Tests: <i>E. A. Bryant et al.</i>	327
	From 50 to 100 percent is available to the biosphere, depending on the immediate environment of the bomb.	
	Personality Attributes of Gifted College Students: <i>J. R. Warren and P. A. Heist</i>	330
	Gifted students are less authoritarian and show more esthetic and intellectual interest than other students.	
Science in the News	The Republican Convention: Nixon's "Progressive Conservatism" Is More Progressive than Conservative; Morse Appointed to <i>Science</i> Editorial Board	337
Book Reviews	<i>Automatic Language Translation and Automatic Translation</i> , reviewed by <i>P. L. Garvin</i> and <i>D. R. Swanson</i> ; other reviews	343
Reports	Competitive Exclusion: <i>L. C. Cole</i>	348
	Pupil Size as Related to Interest Value of Visual Stimuli: <i>E. H. Hess and J. M. Polt</i> ..	349
	Improved Chlorophyll Extraction Method: <i>D. J. Nelson</i>	351
	Effect of Reserpine on Release of Noradrenaline from Transmitter Granules in Adrenergic Nerves: <i>U. S. von Euler and F. Lishajko</i>	351
	Interhemispheric Effects of Cortical Lesions on Brain Biochemistry: <i>D. Krech, M. R. Rosenzweig, E. L. Bennett</i>	352
	Moisture Stress as a Requirement for Flowering of Coffee: <i>P. de T. Alvim</i>	354
	Two Forms of Chlorophyll <i>a</i> in vivo with Distinct Photochemical Functions: <i>Govindjee and E. Rabinowitch</i>	355
	Capacity Electrode for Chronic Stimulation: <i>A. Mauro</i>	356
	Age at Menopause of Urban Zulu Women: <i>J. H. Abramson et al.</i>	356
	Two <i>c</i> -Type Cytochromes from Light- and Dark-Grown <i>Euglena</i> : <i>J. A. Gross and J. J. Wolken</i>	357
Association Affairs	AAAS Financial Report for 1959	359
Departments	Forthcoming Events; New Products	362
	Letters from <i>G. H. Mangun; R. Rodale, J. W. McKay, F. H. Berry; A. A. Mullin; I. G. Sohn; I. Fatt and P. F. Scholander</i>	365
Cover	Basking shark (<i>Cetorhinus maximus</i>), its dorsal and tail fins above the surface and its mouth wide open, sieving plankton in the Firth of Clyde, Scotland. [J. H. Fraser, Marine Laboratory, Aberdeen, Scotland]	

Q is for QUALITY

FROM

Elgeet
OF ROCHESTER



Elementary Student
Model MIC
\$39.50
\$35.55 in lots of 5

Student-Teaching
Model S-2
\$110.50
\$99.45 in lots of 5

Medical Monocular
Model EC
\$316.50
\$284.85 in lots of 5

Medical Binocular
Model ECBi
\$472.50
\$425.25 in lots of 5

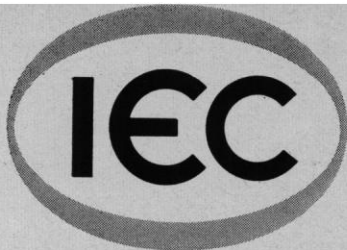
"QUALITY IS OUR WATCHWORD"

... and our slogan is BUILT-IN to Elgeet-Olympus microscopes and accessories
... quality and craftsmanship you can SEE and FEEL. Write today for specifications on models shown as well as on the complete Elgeet-Olympus QUALITY line.

WRITE DEPT. APS • 10 DAY FREE TRIAL • IMMEDIATE DELIVERY

Elgeet OPTICAL CO., INC. SCIENTIFIC INSTRUMENT AND APPARATUS DIVISION
838 SMITH STREET • ROCHESTER 6, NEW YORK

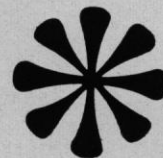
"Quality is our watchword... Precision Engineering our constant goal"



*brings you a great new formula
for general-purpose centrifuging:*

CS = CM + SB

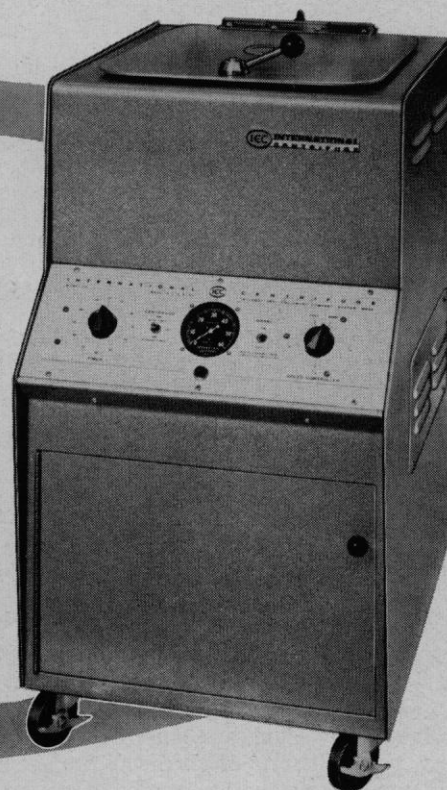
* *CS = International's all-new cabinetized centrifuge — a combination of CM economy plus SB speed and versatility*



**INTERNATIONAL
MODEL CS GENERAL-PURPOSE
CENTRIFUGE**

for popular-priced versatility

ADVANCED IN DESIGN!



Only the new International Model CS Centrifuge combines all these features at such a popular price:

- ★ **New motor delivers higher speeds and forces:** up to 5,500 rpm and 4,730 x G for routine centrifuging; up to 23,400 rpm and 37,950 x G with multi-speed attachment.
- ★ **Wide-range versatility:** capable of swinging all CM and most SB head and accessory combinations . . . horizontal, angle and basket.
- ★ **Modern cabinetized construction** with ample storage space for heads and accessories.

★ **Stainless steel guard bowl** for maximum safety, long life and easy cleaning.

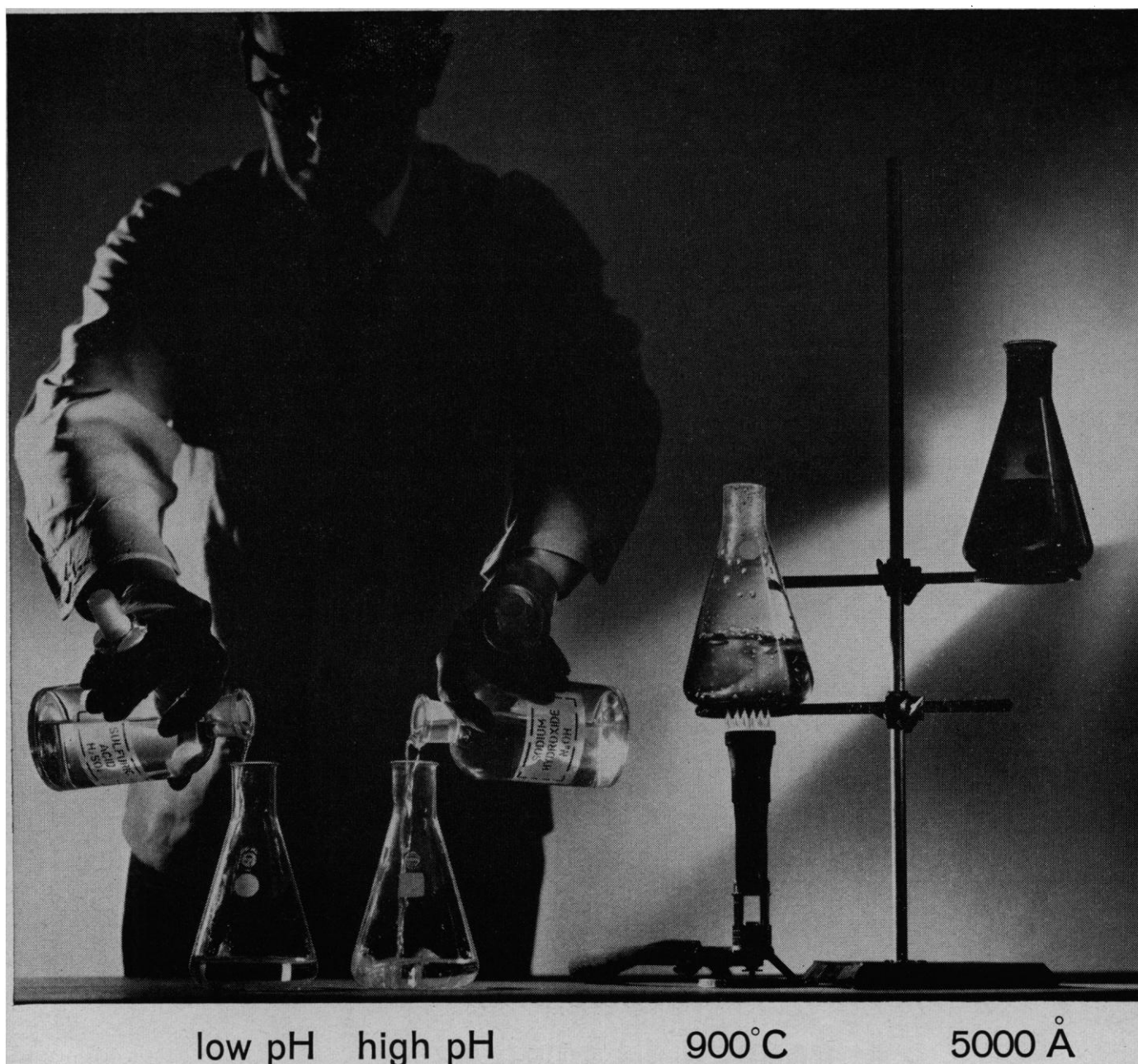
★ **Unitized control panel** with speed controller, tachometer, electric brake, automatic timer and pilot light . . . all conveniently located.

NO ADVANCE IN PRICE!

Because of the productive skills and experience of the world's largest manufacturer of laboratory centrifuges, you pay no more for this advanced design than you would for a time-tested Model CM with its separate cabinet stand. Get all the facts about the great new Model CS from your nearby authorized International Dealer or write:

INTERNATIONAL  EQUIPMENT CO.

BUILDING NO. 38, 1284 SOLDIERS FIELD ROAD, BOSTON 35, MASS.



We make a glass for each

Your laboratory glassware must be versatile. It must stand heating, resist all sorts of chemicals, be accurate and still be rugged enough to stand the bumps of everyday use. There is one glass, of the thousands we make, that does all these things better than any one of the others. This is our PYREX brand glass No. 7740. You will find labware made from this glass more than satisfactory for practically all your lab work.

Occasionally, you may have some unusually special requirements. We have also tried to anticipate these. We also make some standard labware from special glasses which you might find useful. For example:

For concentrated alkaline reagents, for methyl borate distillations, use alkali-resistant, boron-free (0.02%) CORNING brand labware. It is 50 times more resistant to strong alkalies than borosilicate ware.

For fusions, high-temperature combustions, or determinations in which the ware is suddenly quenched after heating, use our VYCOR brand labware. Its thermal expansion is 75% less than that of borosilicate ware. It will take a sudden tem-

perature change of 900°C, can be used intermittently up to 1200°C. VYCOR labware's resistance to acids and mild alkalies exceeds that of borosilicate ware, makes it a fine analytical tool.

For light-sensitive solutions — compounds of silver, oils, enzymes, vitamins — use PYREX low actinic labware. Its transparent red coloring is permanently fixed in the glass . . . absorbs all light waves shorter than 3000 Å, transmits 1% in the 4000 Å range, and only 4% at wave lengths up to 5000 Å.

All four types of laboratory glassware are included in your regular PYREX labware catalog, making it the source of the world's widest, deepest, most complete line of labware.

You can combine all four types for maximum quantity discounts. Laboratory Ware Sales Department, 75 Crystal St., Corning, N. Y.



CORNING GLASS WORKS

CORNING MEANS RESEARCH IN GLASS

SCIENCE, VOL. 132

AMERICAN ASSOCIATION
FOR THE
ADVANCEMENT OF SCIENCE

Board of Directors

CHAUNCEY D. LEAKE, *President*
THOMAS PARK, *President Elect*
PAUL E. KLOPSTEG, *Retiring President*
HARRISON BROWN
H. BENTLEY GLASS
MARGARET MEAD
DON K. PRICE
MINA REES
ALFRED S. ROMER
WILLIAM W. RUBEN
ALAN T. WATERMAN
PAUL A. SCHERER, *Treasurer*
DAEL WOLFE, *Executive Officer*

Editorial Board

KONRAD B. KRAUSKOPF H. BURR STEINBACH
EDWIN M. LERNER WILLIAM L. STRAUS, JR.
PHILIP M. MORSE EDWARD L. TATUM

Editorial Staff

DAEL WOLFE, *Executive Officer*
GRAHAM DUSHANE, *Editor*
JOSEPH TURNER, *Assistant Editor*
ROBERT V. ORMES, *Assistant Editor*

BETHSABE ASENJO, CHARLOTTE F. CHAMBERS, SARAH
S. DEES, NANCY S. HAMILTON, OLIVER W. HEAT-
WOLE, YUKIE KOZAI, HOWARD MARGOLIS, ELLEN
E. MURPHY, ELEANOR D. O'HARA, NANCY TEI-
MOURIAN, DAVID A. TEMELES, LOIS W. WOOD-
WORTH

EARL J. SCHERAGO, *Advertising Representative*



SCIENCE, which is now combined with THE SCIENTIFIC MONTHLY, is published each Friday by the American Association for the Advancement of Science at National Publishing Company, Washington, D.C. The joint journal is published in the SCIENCE format. SCIENCE is indexed in the *Reader's Guide to Periodical Literature*.

Editorial and personnel-placement correspondence should be addressed to SCIENCE, 1515 Massachusetts Ave., NW, Washington 5, D.C. Manuscripts should be typed with double spacing and submitted in duplicate. The AAAS assumes no responsibility for the safety of manuscripts or for the opinions expressed by contributors. For detailed suggestions on the preparation of manuscripts and illustrations, see *Science* 125, 16 (4 Jan. 1957).

Display-advertising correspondence should be addressed to SCIENCE, Room 740, 11 West 42 St., New York 36, N.Y.

Change of address notification should be sent to 1515 Massachusetts Ave., NW, Washington 5, D.C., 4 weeks in advance. If possible, furnish an address label from a recent issue. Give both old and new addresses, including zone numbers, if any.

Annual subscriptions: \$8.50; foreign postage, \$1.50; Canadian postage, 75¢. Single copies, 35¢. Cable address: Advancesci, Washington.

Copyright 1960 by the American Association for the Advancement of Science.

Dreams and Visions

What is to be the future of science? Extrapolation of history is impossible, perhaps in principle, certainly in practice. The equations of the present allow three possible types of solution for the future. Decline and catastrophe have been predicted on one ground or another, in spite of science, by overpopulation and starvation; or, through the agency of science, by wholesale destruction in nuclear warfare. Continued and accelerated progress have been confidently foretold, the curve sweeping upward faster and faster as each advance in knowledge multiplies the possibilities of further discovery, and as man more consciously assumes control of his own further evolution. Between lies the third and less spectacular solution, that the curve will level out or gently undulate. But the equations are insoluble, at least by any means we know. The uncertainty afflicts and inhibits some people, but their timidity is hardly justified or useful. There has seldom if ever in the world's history been a time when existence was not in some degree precarious, yet the right response to danger lies in action. Faith in the future has indeed a very great survival value. The better equipped are certainly more likely to survive than the worse equipped, and not only to save themselves but to save others.

The task of the men of science is therefore clear. It is to go ahead undeterred by any of the uncertainties. Faith in science is not incompatible with or exclusive of any other kind of faith. Indeed there would seem to be no inconsistency in believing that scientific knowledge is itself one of the great instruments of higher ends. However that may be, duty, expediency, and the zest of living unite their voices in calling for unrelenting effort, not in the certainty but in the hope and faith that knowledge may advance, mastery over environment increase, drudgery be abolished, sickness healed, the people fed and life made happier. If social and moral problems are raised they are not essentially new but part of an age-old drama, and should neither be allowed to cause despondency nor to justify obstruction or abstention. The ancient choice between good and evil is in principle unchanged by the scale or fulness of existence. Men have always had to struggle with their environment, with one another and with themselves. Not exemption from danger, hostility or temptation but the power to sustain their impact has made men what they are. The great weapons have been the things of the mind, and among the greatest of these is knowledge. While the old men dream dreams and the young men see visions we should go forward undeterred, that the dreams may become reality and the visions be fulfilled.—CYRIL HINSHELWOOD

[Excerpt from the tercentenary address presented at the formal opening ceremony of the tercentenary celebrations of the Royal Society, London, 19 July, by Sir Cyril Hinshelwood, president of the society.]

NEW

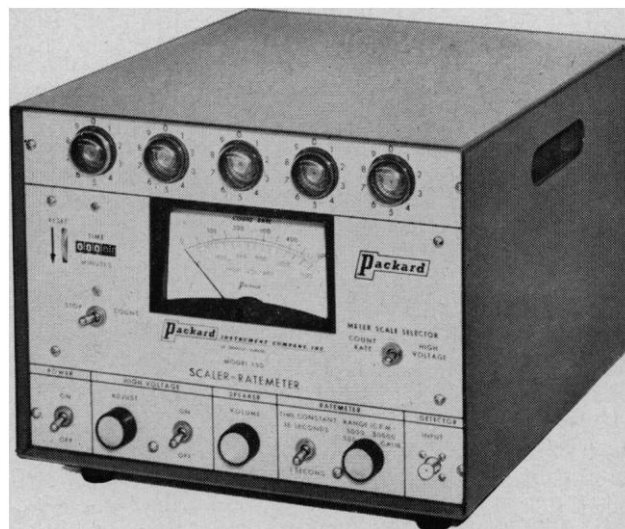
COMBINATION SCALER-RATEMETER

for laboratory or classroom . . .

* A versatile instrument for making precise measurements in general laboratory counting applications.

* An accurate laboratory monitor for checking hands, clothing, glassware, tools, etc., for radioactive contamination as well as for continuously monitoring processes.

* A rugged, all-purpose training instrument for both scaler and ratemeter demonstrations and experiments.



The Model 150 Scaler-Ratemeter is intended for general purpose laboratory work with both organic and halogen-quenched Geiger-Mueller counters. Beta or gamma activity is indicated in three ways—as a decimal scaler count, as a count ratemeter reading and as an audible sound.

The scaler utilizes five glow-transfer counting tubes to give an *all-electronic decimal scale of 10^5* . No mechanical register is used so that maximum reliability is achieved. Resolving time of the scaler is better than 200 microseconds for pulse pairs. The electric timer used with the scaler is a true odometer type, reading in hundredths of a minute to 1000 minutes. A single knob resets both scaler and timer.

The linear ratemeter has three ranges: 500, 5,000 and 50,000 counts per minute. Two time constants, 1 and 16 seconds, may be selected by

a front panel switch. An audio output from a 4-inch speaker is variable up to 10 watts.

The high voltage is continuously variable from 400 to 1500 volts positive. After initial warm-up, high voltage variation will not exceed five volts at any setting.

Line voltage variations of 5 volts, in the range of 95 to 125 volts, will result in high voltage changes of less than 0.2% of setting. Load regulation is better than 5% from 0 to 50 microamperes. Ripple is less than 50 millivolts (rms).

Ordering information:

Model 150 Scaler-Ratemeter \$495
F.O.B. Lyons, Illinois
Net 30 days

Complete accessories are also available.

Packard Instrument Company, Inc.

P. O. BOX 428-A, LAGRANGE, ILLINOIS

ATLANTA • BOSTON • LOS ANGELES • NEW YORK • PHILADELPHIA
SAN FRANCISCO • WASHINGTON, D. C. • ZURICH, SWITZERLAND

Kodak reports on:

new dimensional stability in recording film... tinging the stream

Kodak

He has always thought a pick was the tool with which the Erie Canal was dug.



He thinks "D Max" is the name of a guy who might have been called "Dave" but wanted a classier handle.

Dr. F. W. Spangler (left) meets R. C. Hilton, senior geophysicist in charge of geophysical data processing for Shell Oil Company, Houston. Purpose of the visit is to familiarize Dr. Spangler directly with the ideal characteristics which Shell desires in a polyester recording film for use in the Reynolds Plotter. Dr. Spangler is an assistant superintendent of Kodak's Film Emulsion Division.

With the switch to thin, rugged Estar Base that eliminates troublesome dimensional change, Fred Spangler had to decide what inherent maximum density to give the new **Kodak Linagraph Recording Film**. Dick Hilton needs more from a film than that it shouldn't be troublesome. He doesn't talk Fred's "D Max" language. He seeks a certain appearance to which his perceptual process best responds in picking a "pick" from the corrected cross-section of the deep geological formation which the Plotter puts on the film. Spangler

learned plenty from him and from others with other instrumentation and other perceptual patterns of translating photographic images into technical intelligence.

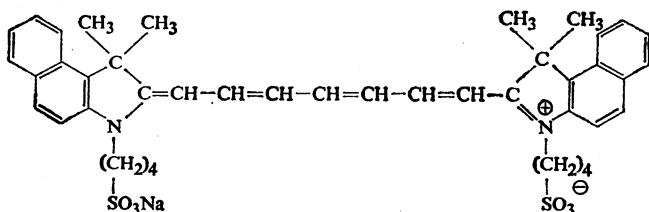
Eastman Kodak Company, Photorecording Methods Division, Rochester 4, N. Y., will be glad to write you a letter answering practical questions about the new Kodak Linagraph Recording Film (Estar Base), such as who sells it and how to handle it, but we see no purpose in spilling a lot more words about it when all you have to do, if you are interested, is get some and see whether it suits you.

Dye for the heart

We make a dye that has an absorption peak where the absorption curves cross for oxygenated and reduced hemoglobin. The strange consequence of this bit of trivia is that lives are being saved. Bad hearts are rebuilt.

Though the art of heart surgery is hard to teach through advertising columns, we hope some unforeseeable good might come from mentioning the dye to a wider scientific circle than knows it now.

Its molecule was constructed like this



by an interesting man who admires cats, writes warmly and well of the music of Brahms, and has supervised the synthesis of an average of one new dye a day during the 30-odd years we have enjoyed the good fortune to retain him in our employ.

When a certain distinguished medical investigator asked for a dye that peaks sharply at 8000A in the infrared, our man went to work and produced indocyanine green.

Before these heart men undertake a repair job, they must

know what's wrong with the way the blood streams. Dyes are sometimes used to trace underground streams of water. Blood is already colored. Moreover its color depends on where it has been last. To add another color at a given point in the circuit, to measure this color automatically at some other point, and to calculate blood volume from the dilution of the color require the heart men to back their incredibly talented fingers with a little optical physics and adult habits of mathematical thought. It was clever to simplify the equations and raise sensitivity by centering dye absorption and photocell response at a wavelength where arterial and venous blood absorb light equally and weakly—cleverer even than the previous choice of Evans Blue, which just *looks* different from blood.

Things happen fast. A quick shot of indocyanine green at safe dilution goes in. A few seconds later the 8000A absorption, as a galvanometer plots it on photorecording paper, changes for a few more seconds. The shape of the plot tells the story to a man who has learned how to figure it out.

No toxic penalties have been noted. The dye does not change color. The dye appears to be rapidly and completely bound to blood albumin. It is quickly taken up by the healthy liver and all excreted in bile. The unhealthy liver takes significantly longer. Therefore there is a prospect of eventually using it to detect unhealthy livers.

Under the trademark "Cardio-Green" our indocyanine green is prepared for medical use and distributed by the pharmaceutical house of Hynson, Westcott & Dunning, Inc., Baltimore 1, Md. If you ask us anything more, we shall just pass your inquiry on to them, so you might as well write direct.

This is another advertisement where Eastman Kodak Company probes at random for mutual interests and occasionally a little revenue from those whose work has something to do with science

GET YOUR ADVANCE COPY

of the General Program of the AAAS New York Meeting

by first class mail – early in December

The General Program of the 127th Meeting of the AAAS in New York, 26–31 December 1960, will be available to you, at cost, within the first week in December—whether you can attend the Meeting or not.

Program Content

1. The two-session AAAS General Symposium, "Moving Frontiers of Science V"—Speakers: Edward Anders, H. W. Magoun, George Wald, and H. H. Goldstine; Thomas Park, presiding.
2. The "Challenge to Science" evening with Sir Charles P. Snow, Theodore M. Hesburgh, and W. O. Baker; Warren Weaver, presiding.
3. On "AAAS Day," the three broad, interdisciplinary symposia—Plasma: Fourth State of Matter; Life under Extreme Conditions; and Urban Renewal and Development, arranged by AAAS Sections jointly.
4. The Special Sessions: AAAS Presidential Address and Reception; Joint Address of Sigma Xi and Phi Beta Kappa by Polykarp Kusch; the Tau Beta Pi Address; National Geographic Society Illustrated Lecture; and the first George Sarton Memorial Address by René Dubos.
5. The programs of all 18 AAAS Sections (specialized symposia and contributed papers).
6. The programs of the annual meetings of the American Astronomical Society, American Nature Study Society, American Society of Zoologists, History of Science Society, National Association of Biology Teachers, Scientific Research Society of America, Sigma Delta Epsilon, Society for General Systems Research, Society for the Study of Evolution, Society for the History of Technology, Society of Systematic Zoology, and the Society of the Sigma Xi.
7. The multi-sessioned special programs of the American Association of Clinical Chemists, American Astronautical Society, American Geophysical Union, American Physiological Society, American Psychiatric Association, American Society of Criminology, Association of American Geographers, Ecological Society of America, Mycological Society of America, National Science Teachers Association, New York Academy of Sciences—and still others, a total of some 90 participating organizations.
8. The four-session program of the Conference on Scientific Communication: The Sciences in Communist China, cosponsored by the AAAS, NSF, and ten societies.
9. The sessions of the Academy Conference, the Conference on Scientific Manpower, and the conference of the American Council on Women in Science.
10. The sessions of the AAAS Cooperative Committee on the Teaching of Science and Mathematics, and of the AAAS Committee on Science in the Promotion of Human Welfare.
11. Titles of the latest foreign and domestic scientific films to be shown in the AAAS Science Theatre.
12. Exhibitors in the 1960 Annual Exposition of Science and Industry—103 booths—and descriptions of their exhibits.

Advance Registration

Advance registration has these decided advantages: (1) You avoid delay at the Registration Center upon arrival; (2) You receive the General Program in ample time to decide, unhurriedly, which events and sessions you particularly wish to attend; (3) Your name is posted in the Visible Directory as the Meeting opens.

The following coupon may be used both by advance registrants and by those who wish only the advance copy of the General Program.

-----THIS IS YOUR COUPON FOR AN ADVANCE COPY OF THE GENERAL PROGRAM-----

- 1a. ☐ Enclosed is \$3.50 for my advance Registration Fee which brings me the General Program, Convention Badge, and all privileges of the Meeting (50¢ is for first-class postage and handling).
- 1b. ☐ Enclosed is \$2.50 for only the General Program. (It is understood that, if I should attend the Meeting later, the Badge—necessary for the privileges of the Meeting—will be secured for \$1.00 more.)
(check 1a or 1b)

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

3. ACADEMIC, PROFESSIONAL, OR BUSINESS CONNECTION

4. OFFICE OR HOME ADDRESS
(For receipt of General Program)
CITY ZONE STATE

5. FIELD OF INTEREST

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

Please mail this Coupon and your check or money order for the total amount to the
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
1515 Massachusetts Avenue, NW, Washington 5, D.C.

EXCEPTIONAL OPPORTUNITY
to acquire

LABORATORY AND PILOT PLANT

Convenient Long Island location. Ideally suited for many types of research and educational purposes.

49 LABORATORIES • 3 PILOT PLANTS • CONFERENCE ROOMS
LIBRARY • OFFICES • CAFETERIA
MODERN POWER PLANT
REFRIGERATING & AIR
CONDITIONING EQUIPMENT

23 ACRES
102,000 SQ. FT. FLOOR SPACE

Owner's plan provides for a full commission to the recognized broker, payable if and when title closes.

**DETAILED INFORMATION
ON REQUEST**

Acting as consultants

Joseph P. Day
BERNARD P. DAY, PRES. INC.

7 DEY ST., NEW YORK 7, N.Y.
DIGBY 9-2000

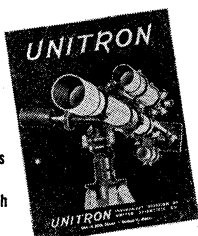
Get UNITRON's FREE Observer's Guide and Catalog on ASTRONOMICAL TELESCOPES

**This valuable 38-page book
is yours for the asking!**

With artificial satellites already launched and space travel almost a reality, astronomy has become today's fastest growing hobby. Exploring the skies with a telescope is a relaxing diversion for father and son alike. UNITRON's handbook contains full-page illustrated articles on astronomy, observing, telescopes and accessories. It is of interest to both beginners and advanced amateurs.

Contents include—

- Observing the sun, moon, planets and wonders of the sky
- Constellation map
- Hints for observers
- Glossary of telescope terms
- How to choose a telescope
- Amateur clubs and research programs



UNITRON

INSTRUMENT DIVISION of UNITED SCIENTIFIC CO.
204-206 MILK STREET • BOSTON 9, MASS.

Please rush to me, free of charge, UNITRON's new Observer's Guide and Telescope Catalog. 4F-1

Name _____
Street _____
City _____ State _____

d'Histologie, 20, rue de Pitteurs, Liege, Belgium)

4-9. Laurentian Hormone Conf., Mont Tremblant, Quebec, Canada. (Arrangements Committee, Laurentian Hormone Conf., 222 Maple St., Shrewsbury, Mass.)

4-10. International Soc. of Orthopaedic Surgery and Traumatology, 8th cong., New York, N.Y. (A. Bailleux, Société de Chirurgie Orthopedique et de Traumatologie, 34, rue Montoyer, Brussels, Belgium)

4-10. World Cong. of Anaesthesiologists, Toronto, Canada. (R. A. Gordon, 516 Medical Arts Bldg., Toronto 5)

4-14. International Societies of Hematology and Blood Transfusion, 8th cong., Tokyo, Japan. (S. Murakami, Blood Transfusion Laboratory, Japanese Red Cross Soc., Shibuya, Tokyo)

5-7. Society for Biological Rhythm, 7th conf., Siena, Italy. (A. Sollberger, Dept. of Anatomy, Caroline Inst., Stockholm 60)

5-8. Legal and Administrative Problems of Protection in the Field of the Peaceful Applications of Atomic Energy, intern. symp., Brussels, Belgium. (Communauté Européenne de l'Energie Atomique, rue Belliard 51-53, Brussels)

5-9. Chemical Engineering (Czechoslovak Chemical Soc.), Prague, Czechoslovakia. (Technická 1905, Prague-Dejvice, Czechoslovakia)

5-10. Microbiology of Non-Alcoholic Beverages, 5th intern. symp., Evian, France. (D. A. A. Mossell, Intern. Assoc. of Microbiological Societies, c/o Central Inst. for Nutrition Research, Catherinjesingel 61, Utrecht, Netherlands)

5-9. Medium and Small Power Reactors, conf., Vienna, Austria. (International Atomic Energy Agency, 11 Kärntner Ring, Vienna 1)

5-10. Operational Research, 2nd intern. conf., Aix-en-Provence, France. (International Federation of Operational Research Societies, 11 Park Lane, London, W.1)

5-12. International Soc. of Bioclimatology and Biometeorology, 2nd cong., London, England. (E. M. Glaser, Dept. of Physiology, London Hospital Medical College, Turner St., London, E.1)

5-15. International Scientific Radio Union, London, England. (R. L. Smith-Rose, Radio Research Station, DSIR, Ditton Park, Slough, Bucks, England)

5-17. Photogrammetry, 9th intern. cong., London, England. (J. B. P. Angwin, Intern. Soc. for Photogrammetry, 18 Cavendish Sq., London, W.1)

6-7. Some Fundamental Aspects of Atomic Reactions, symp., Montreal, Canada. (J. C. Polanyi, Dept. of Chemistry, Univ. of Toronto, Toronto 5, Canada)

6-8. Nuclear and Radio-Chemistry, symp., Chalk River, Ontario, Canada. (R. H. Betts, Atomic Energy of Canada Ltd., Chalk River, Ontario)

6-8. Society of General Physiologists, annual, Woods Hole, Mass. (J. W. Green, Rutgers Univ., New Brunswick, N.J.)

6-17. Use of Radioactive Isotopes in the Physical Sciences and Industry, conf., Copenhagen, Denmark. (International Atomic Energy Agency, 11 Kärntner Ring, Vienna 1, Austria)

7-8. Canadian Textile Seminar, 7th, Kingston, Ontario. (J. M. Merriman, Textile Technical Federation of Canada, 223 Victoria Ave., Westmount, P.Q.)

(See issue of 29 July for comprehensive list)

New Products

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither Science nor the writer assumes responsibility for the accuracy of the information. All inquiries concerning items listed should be addressed to the manufacturer. Include the department number in your inquiry.

■ **TRACKING ACCURACY CONTROL ACCESSORY** for the manufacturer's infrared spectrophotometer provides automatic speed control and automatic period control. The speed control comes into operation 1/5 sec after the appearance of a photometric signal and slows the scanning to a speed proportional to the absorption down to a minimum 1/10 that of normal scanning speed. The period control adjusts the period in response to photometric signals beyond preselected limits, thus producing a quiet curve in the transparent regions while preserving short-period response in the high-absorption bands. (Beckman Instruments, Dept. Sci678, 2500 Fullerton Rd., Fullerton, Calif.)

■ **PROJECTOR PRINTER** is capable of producing prints up to 34 by 48 in. An electrostatic process is used to provide a finished print in 40 sec. The semiconductor coated paper is electrostatically charged by means of a corona bar that travels back and forth across the paper. Exposure to light discharges the illuminated areas following which toning powders are attracted to the image areas. The print is fixed by heat. (Keuffel and Esser Co., Dept. Sci681, Hoboken, N.J.)

■ **VACUUM GAGE** series comprises four ionization gage models, two with range from 10^{-3} to 10^{-8} mm-Hg and two with range 10^{-3} to 10^{-10} mm-Hg. The gages employ electrometer-type amplifiers with negative feedback. Zero drift is said to be less than ± 2 percent in 24 hours. A protective circuit operates a relay that opens the filament circuit when pressure rises above a present value adjustable from 20 to 150 percent of full scale. (F. J. Stokes Corp., Dept. Sci684, 5500 Tabor Rd., Philadelphia, Pa.)

■ **PHOTOGRAPHIC PROCESSOR** for 35-mm film measures $3\frac{1}{2}$ by $14\frac{1}{2}$ by $36\frac{1}{2}$ in. and weighs 120 lb without solutions or film. Operation is completely automatic and loading can be performed in daylight. All tanks are stainless steel. A thermostatic control provides controlled temperatures adjustable between 68° and 150°F constant to $\pm 1^\circ\text{F}$. Processing rate is continuously variable from 0.5 to 6 ft/min. Up to 400 ft of film may be processed without replenishing solutions. (Fairchild Camera and Instruments Corp., Dept. Sci685, 300 Robbins Lane, Syosset, N.Y.)

■ **VOLTAGE MONITORING SYSTEM** contains a switch-type magnetic amplifier for each of eight sensing channels, a d-c voltage reference unit and a resistor assembly. Indication is provided by the instrument when a deviation from nominal voltage is greater than a preset value; the indication is held until the voltage being sensed has become less than that value. Operating power is 120 volts, 400 cy/sec. (Magnetic Controls Co., Dept Sci687, 405 Cambridge St., Minneapolis 26, Minn.)

■ **ALARM SCANNER** for millivolt and higher-level signals is said to be capable of scanning from 1000 to 20,000 points per second with provision for adjustment of setting and tolerance on each input. Signals are accepted from thermocouples, strain gages, or resistances. Minimum common-mode rejection at 60 cy/sec is 130 db. Input for each point consists of a winding on a magnetic amplifier. Scanning is effected by switching carrier power to each amplifier in turn by means of a solid-state matrix. Visible and audible alarms can be provided with alarm-point identification and memory. (San Diego Scientific Corp., Dept. Sci689, 3434 Midway Drive, San Diego 10, Calif.)

■ **CAPACITANCE BRIDGE** measures from 0.002 to 1,000 pf with accuracy said to be ± 0.2 percent. Operation of the completely self-contained instrument is based on a transformer ratio-arm bridge operating at 1 kcy/sec. The technique requires only one capacitive and resistive standard. (Marconi Instruments, Dept. Sci686, 111 Cedar Lane, Englewood, N.J.)

■ **FRACTION COLLECTOR** transfers fractions from the carrier gas of a gas chromatograph directly into an ultramicro cavity type infrared absorption cell. The fraction collector consists of a glass condenser, the bottom end of which opens into the neck of the infrared cell. In operation the lower portion of the collector is placed in a coolant such as solid CO₂ and acetone. The unit is designed to fit directly into standard 15/16 in. centrifuge tubes to permit small samples to be moved from the condenser to the cell. (Connecticut Instrument Corp., Dept. Sci691, Wilton, Conn.)

■ **MICROMINIATURE ELECTRIC LIGHT BULB** is an incandescent lamp 0.015 in. in diameter and 0.062 in. long. The bulb is furnished with axial platinum leads 0.003 in. in diameter. Operation is on 1.5 volts with current of 15 ma. (Kay Electric Co., Dept. Sci680, 14 Maple Ave., Pine Brook, N.J.)

JOSHUA STERN
National Bureau of Standards,
Washington, D.C.

5 AUGUST 1960

Letters

"Of Mice and Mangun"

About two years ago I set up a small laboratory and animal husbandry room in my barn in Mendham Township, New Jersey. It is back from a dirt road in a farming and residential area on an 18-acre farm. On a complaint from one neighbor, I was found guilty of "hiring employees and raising animals for the purpose of doing research." The area is also zoned to permit builders, contractors, physicians, surgeons, engineers, carpenters, hairdressers, and plumbers to conduct their offices and usual accessory activities.

I applied for a variance following the limited interpretation of the zoning ordinance, and it was rejected despite the fact that only one of the 12 neighbors within 500 feet of my property lines was opposed, and despite the fact that a petition for a variance or a change in the wording of the ordinance was signed by 150 township property owners while an opposing petition received only eight signatures.

At this point I decided to move elsewhere, and soon after I announced my decision, children began calling for free mice. Word spread, and a growing stream of children appeared. On Friday, 13 May, a reporter called. The conversation was quite short and in essence went as follows:

Reporter (convulsed with laughter): Dr. Mangun, is it true you are giving away white mice?

G.H.M.: Yes, about 20 kids have come around and picked up a couple of hundred mice.

Reporter: And is it true you are doing this for revenge against the township because they forced you to close your lab?

G.H.M.: Not at all. I've given away lots of mice before and helped the kids set up feeding and growth experiments in the hope of stimulating their interest in biology, science, and medicine. Some of the children have spent many hours in my laboratory helping to care for the animals and watching or assisting with experiments. I did once jokingly remark that it would be a jolly sight as I drove my trail herd down main street on my way West, and just maybe a few of the critters might get lost.

Reporter: Then is it definitely not true that you are doing this for revenge?

G.H.M.: Of course not! [Then, after contemplating the situation in this new light] My only "revenge" will be to turn their children into biologists so they will amount to more than this generation.

Reporter: Very good, Dr. Mangun. Goodbye.

The resulting story went critical the

A partially purified preparation from hog kidney, based on the method of Spackman, Smith, Brown, and Hill in *Biochemical Preparations* Vol. 6, page 35 (edited by C. S. Vesting and Published by John Wiley & Sons in 1958).

Sold as a lyophilized product, 5 mg. per vial, it is suitable for use in protein structure studies.

LEUCINE
AMINO
PEPTIDASE

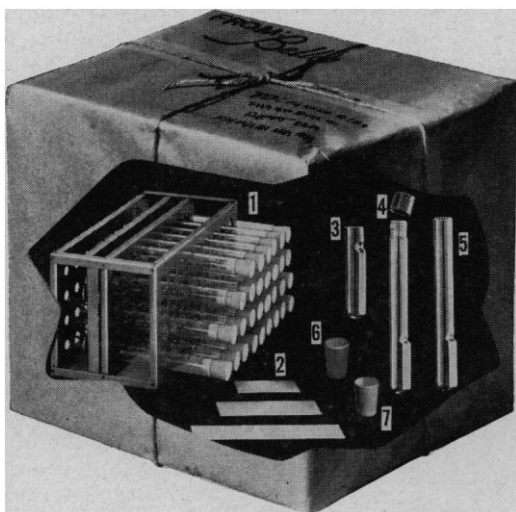
worthington

For information, write:

worthington
biochemical
corporation

FREEHOLD 1,
NEW JERSEY

A PACKAGE UNIT FOR TISSUE CULTURE TUBE STUDIES!

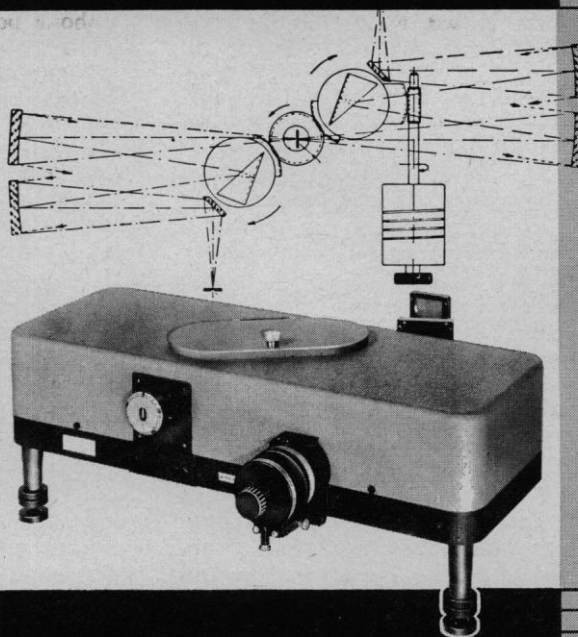


1. Self-locking rack
2. PRECUT cover slides
3. Short type tube
4. Screw cap tube
5. Rubber stoppered tube
6. Rubber stopper
7. Silicone rubber stopper

WRITE FOR COMPLETE DETAILS

BELCO GLASS INC.
DEPT. 55 — VINELAND, NEW JERSEY

Leiss SINGLE & DOUBLE MIRROR-MONOCHROMATORS



With exchangeable prisms for the visible, ultraviolet, infrared from 200 millimicrons to 20 microns.

Write for Bulletin #980 to

PHOTOVOLT Corporation

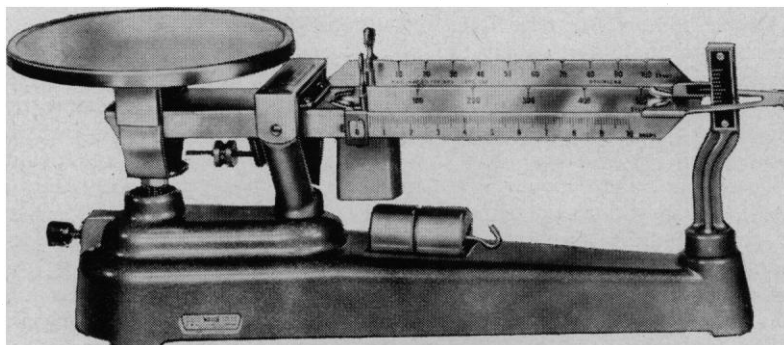
95 Madison Avenue

New York 16, N. Y.

Fast Accurate Weighing—Corrosion-Resistant—Economical

Welch **TRIPLE-BEAM TRIP-SCALE**

- Large Capacity - 1610 Grams (With Extra Weight - 2110 Grams)
- Sensitivity to 0.1 Gram



No. 4048

3 Graduated Scale Levels for easy reading. Riders move easily. Hard, Cobalite Knife Edges maintain true edge indefinitely.

Grooved Agate Bearings are protected against damage, yet highly resistant to corrosive action of laboratory fumes.

No. 4048 LOW FORM, PRICE, WITH TWO EXTRA WEIGHTS ... \$21.00
No. 4048C. PLASTIC COVER, For No. 4048 Each, \$0.90
No. 4048W. EXTRA WEIGHT. For increasing the capacity
of No. 4048 to 2110 grams Each, \$1.45

- Rugged,
Compact Construction

All Exposed Parts of
Stainless Steel

- Wide-Range
- Serviceable
- Dependable

One-Piece Beam Construction—Silver-Gray Hammerloid Finish
Rapid Zero Setting—Beam Arrest for faster weighing.

W. M. WELCH SCIENTIFIC COMPANY

DIVISION OF W. M. WELCH MANUFACTURING COMPANY

ESTABLISHED 1880

1515 Sedgwick Street, Dept. E Chicago 10, Illinois, U.S.A.
Manufacturers of Scientific Instruments and Laboratory Apparatus