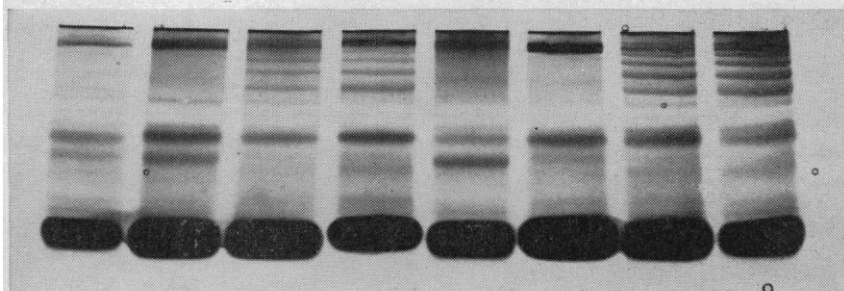


**Get all this . . .
just for being lazy!**

(and using the EC 470 Vertical Gel Electrophoresis Apparatus)



UNRETOUCHED PHOTOGRAPH
Eight normal serum samples on a single acrylamide gel—Reproducible and Intercomparable.

WORKING TIME = 10 MINUTES

Whether you are lazy or not, you will enjoy saving up to two hours daily conducting electrophoresis research. Using the EC 470 Apparatus, here is how it is done:

1. Cell locks itself together—no further manipulation
 2. Pour in *single* gel solution—no further manipulation
 3. Apply samples directly—no further manipulation
- After running for one hour, remove gel slab.
4. Stain together, destain together, and evaluate together.

CIRCLE READER SERVICE CARD FOR DATA SHEETS AND BIBLIOGRAPHY

E-C APPARATUS CORP.

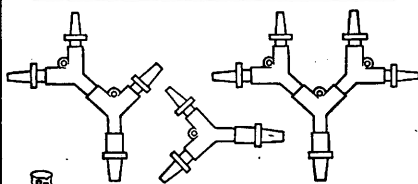
220 So. 40th St., Phila. 4, Pa.
Phone: Area Code 215-382-2204

versatile•unbreakable MANIFOLD-Y CONNECTOR



Pioneer's new Manifold-Y Connector greatly simplifies complicated set-ups. Used with the versatile Q-D Connector, the Manifold-Y permits multiple connections of flexible tubing—even of different sizes!

Pioneer Manifold-Y Connectors are made of polyolefin . . . freeze proof, light in weight and, of course, unbreakable.



AVAILABLE THROUGH YOUR LABORATORY SUPPLY HOUSE . . .
FOR COMPLETE SPECIFICATIONS AND PRICES ON ALL PIONEER
QUALITY PRODUCTS, REQUEST OUR SIXTEEN PAGE BULLETIN.

Specify PIONEER

Pioneer Plastics, Inc.
DEPT. S, BOX 8066, JACKSONVILLE, FLORIDA — 32211

AAAS

Symposium Volume

SYSTEMS OF UNITS— NATIONAL AND INTERNATIONAL ASPECTS

Edited by Carl F. Kayan

A look at the growing problems in the conflict between international usages and our own national system of units. This volume considers them both subjectively and objectively in order to alert the technologist to the clamor, needs, and proposals to ameliorate the confusion of measurement. . . \$6.75
AAAS members discount price, \$5.75

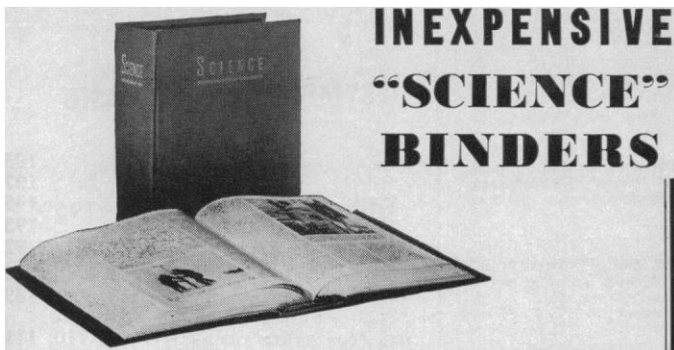
Order from

AMERICAN ASSOCIATION FOR THE
ADVANCEMENT OF SCIENCE
Room 103
1515 Massachusetts Ave., NW
Washington, D. C. 20005

INDEX TO ADVERTISERS

10 July 1964

Ace Glass Inc.	105
Ainsworth, Wm., & Sons, Inc.	107
Air Products and Chemicals Inc.	199
American Edelstaal, Inc.	195
ANS, Inc.	92
Baird-Atomic, Inc.	94
Bausch & Lomb Inc.	189
Beckman Instruments, Inc., Scientific and Process Instruments Div.	110, 111
Blickman, S., Inc.	208
Borden Chemical Co.	210
Brush Instruments	86
Chemical Rubber Co.	200
Consolidated Electrodynamics	196
Cooke, Troughton & Simms, Inc.	196
Coors Porcelain Co.	212
Denominator Co., Inc.	198
Dimco-Gray Co.	209
Durrum Instrument Corp.	211
E-C Apparatus Corp.	209, 216
Edmund Scientific Co.	191
Elgeet Optical Co., Inc.	90
Falcon Plastics, Div. of B-D Laboratories, Inc.	214
Four Continent Book Corp.	194
Gilford Instrument Laboratories, Inc.	195
Glas-Col Apparatus Co.	113
Hacker, William J., & Co., Inc.	204
Hamilton Co.	95
High Voltage Engineering Corp.	114
Honeywell Photographic Products, Denver Div.	200
Instrumentation Specialties Co.	198
Instruments for Research and Industry	211
International Equipment Co.	93
Jarrell-Ash Co.	96
Klett Manufacturing Co., Inc.	213
LaPine Scientific Co.	194
London Co.	102
Maryland Plastics Inc.	213
Matheson	203
Mechanical Enterprises, Inc.	210
Millipore Filter Corp.	194
Nalge Co., Inc.	208
New Brunswick Scientific Co., Inc.	209
Nuclear-Chicago Corp.	220
Nuclear Data, Inc.	101
Ohaus Scale Corp.	219
Pennsylvania Fluorocarbon, Inc.	192
Perkin-Elmer Corp.	99, 215
Pharmacia Fine Chemicals Inc.	97
Phipps & Bird, Inc.	217
Photovolt Corp.	215
Pilot Chemicals, Inc.	196
Pioneer Plastics, Inc.	216
Polaroid Corp.	108
Pyrodyne, Inc.	198
Sage Instruments, Inc.	214
Savant Instruments, Inc.	213
Scientific Industries Inc.	193
Sigmamotor, Inc.	198
Sorvall, Ivan, Inc.	100
Standard Scientific Supply Corp.	210
Statham Instruments, Inc.	188
Technical Measurements Corp.	116
Technicon Chromatography Corp.	91
Texas Instruments Inc.	205
Tektronix, Inc.	190
Thermolyne Corp.	212
Thermoplastic Processes, Inc.	204
Tracerlab	191
U.S. Stoneware	188
Varian Associates, Recorder Div.	106
White, S. S., Industrial Airbrasive	197
Wilnot Castle Co.	87
Yellow Springs Instrument Co., Inc.	192
Zeiss, Carl, Inc.	206



Keep your copies of **SCIENCE** always available for quick, easy reference in this attractive, practical binder. Simply snap the magazine in or out in a few seconds—no punching or mutilating. It opens **FLAT**—for easy reference and readability. Sturdily constructed, this maroon buckram binder stamped in gold leaf will make a fine addition to your library.

Starting with January 1962, **SCIENCE** Binders hold one three-month volume of **SCIENCE**. They now have a 3-inch back and 13 flat fasteners. \$3.25 each. Four binders, \$12.00.

For six-month volumes, through December 1961, **SCIENCE** binders with 4-inch back and 26 flat fasteners are available. \$3.25 each.

Add 50¢ for orders outside the U.S. Name of owner, 75¢ extra; year of issues, 50¢ extra.

SCIENCE • 1515 Massachusetts Ave., NW,
Washington, D.C. 20005



**PHIPPS & BIRD NEW IMPROVED
RESPIRATOR FOR SMALL ANIMALS**

The new 70-886 Animal Respirator is designed to produce artificial breathing in small animals. This is a single piston, positive pressure reciprocating pump, recommended for use with rats, rabbits, guinea pigs, hamsters, and cats. Here are some features of this instrument:

- Wide Rate Range—5 to 100 strokes per minute.
- Continuously Variable Rate While Operating.
- Variable Volume—5 to 80 cc per stroke.
- Adjustment to Eliminate Dead Air Space.
- Provision for use in a Closed System.
- Allows introduction and collection of gases.
- Constructed of aluminum and stainless steel 7" x 7" x 10".

Catalog No. 70-886, Animal Respirator

PHIPPS & BIRD, INC.
Manufacturers & Distributors of Scientific Equipment
6th & Byrd Streets — Richmond, Virginia

Personnel Placement

CLASSIFIED: Positions Wanted. 25¢ per word, minimum charge \$4. Use of Box Number counts as 10 additional words. Payment in advance is required.

COPY for ads must reach **SCIENCE** 2 weeks before issue date (Friday of every week).

DISPLAY: Positions Open. Rates listed below—no charge for Box Number. Rates net. No agency commission allowed for ads under 4 inches. No cash discount. Minimum ad: 1 inch. Ads over 1 inch will be billed to the nearest quarter inch. Frequency rate will apply only to repeat of same ad. No copy changes. Payment in advance is required except where satisfactory credit has been established. Send copy for display advertising to **SCIENCE**, Room 1740, 11 West 42 St., New York 36.

Single insertion \$65.00 per inch
4 times in 1 year 60.00 per inch

For **PROOFS** on display ads, copy must reach **SCIENCE** 4 weeks before date of issue (Friday of every week).

Replies to blind ads should be addressed as follows:

Box (give number)
SCIENCE
1515 Massachusetts Ave., NW
Washington, D.C. 20005

POSITIONS WANTED

A **Public Information Specialist** in bridging gap between scientists and nonscientists seeks new challenge; skilled, mature writer-editor-administrator; press, industrial, federal, institutional experience; distinguished achievement record. Box 456, **SCIENCE**. 7/10

CIVIL SERVICE OF CANADA

AGRICULTURAL RESEARCH Canada Department of Agriculture UP TO \$12,300

The Research Branch has a number of vacancies for agricultural scientists in

- Animal Science
- Plant Science
- Soil Science
- Entomology
- Microbiology
- Food Science
- Chemistry

Applicants must have postgraduate training and be interested in a career in research.

REFERENCE 64-1350

SENIOR GENETICIST \$10,900 - \$12,300

Canada Department of Agriculture
OTTAWA

To assist in the formulation and development of national breeding policies and programmes for livestock and poultry.

A doctorate degree in animal or poultry genetics and a number of years' experience in research or in the development and application of breeding programmes is required.

REFERENCE 64-1350-G

SCIENTISTS

Food and Drug Directorate
OTTAWA

\$7680 to \$12,300

To develop methods for the identification, evaluation and determination of the effectiveness of drugs and chemical agents.

To conduct original studies in physiology, endocrinology, pharmaceutical analysis, formulation, mode of action and toxicological aspects of drugs.

Applicants should possess a Doctorate degree in pharmacology, immunochemistry, endocrinology, biochemistry, physiology or related science and demonstrated research ability.

REFERENCE 64-1401-S

For details regarding the above positions write **IMMEDIATELY** to the **CIVIL SERVICE COMMISSION OF CANADA, OTTAWA 4, ONTARIO**. Please quote reference number as indicated.

POSITIONS WANTED

Academic: M.S. Chemistry, experienced teacher; desires position in liberal arts or junior college. Professional references on request. No geographical limitation. Box 463, SCIENCE. X

Fishery Biologist, American, age 40, with demersal, pelagic and crustacean research background. Many publications. International commission and foreign technical assistance, teaching and administrative experience. Speaks three languages, reads others. M.S. Zoology. Available from second semester 1964 for position anywhere in world. Box 448, SCIENCE.

Ph.D. Pharmacologist, physiology, bacteriology minors; teaching, research experience. Box 462, SCIENCE. X

Vertebrateology, Ph.D., 5 years of teaching, research. Seeks position with research possibilities. Box 461, SCIENCE. X

POSITIONS OPEN

BIOCHEMIST OR PHYSIOLOGIST

To develop a research program pertinent to the manipulation of the fishery resource to complement others in progress on hormones, fish and shellfish diseases, and nutrition.

Appointment will be made in a salary range \$7600 to \$11,600, commensurate with qualification and experience. Applicants should send curriculum vitae and two references to **Director, Fisheries Research Board of Canada, Technological Research Laboratory, P.O. Box 429, Halifax, Nova Scotia, Canada.** 7/10

Biochemist-Clinical Opening in 165-bed hospital. Nineteen man group practice clinic. Full-time pathologist. Near Rochester and Syracuse for educational advancement. Close to Finger Lakes, Lake Ontario, and Adirondacks for recreation. Salary commensurate with education and experience. Apply:

Administrator
Clifton Springs Hospital and Clinic
Clifton Springs, N.Y.

CLINICAL INVESTIGATORS, M.D.

World-leading midwestern pharmaceutical house has immediate openings for medical investigators on its Clinical Investigation staff for the following specialties:

INTERNAL MEDICINE

Board eligibility necessary, Board certification desirable. Special interest and/or training in cardiovascular or renal physiology required.

PHARMACOLOGY

Advanced degree in basic science necessary. Clinical training or Board certification desired with emphasis on development of methodology and coordination of experimental drug studies.

Reply with complete résumé including salary requirements to Box 457, SCIENCE.

An Equal Opportunity Employer

HISTOCHEMIST

Experimental morphologist, Ph.D. or equivalent. Active research program in enzyme and electron histochemistry. Opportunity for training in electron microscopy. Salary commensurate with qualifications. Hospital-affiliated research institute, New York.

Box 460, SCIENCE

PHARMACOLOGISTS — Excellent opportunities for applicants expecting Ph.D. within next few months or preferably Ph.D. applicants with 1 to 5 years of experience, to inaugurate and expand chemical screening program and methods design in research department of ethical drug manufacturing subsidiary of large chemical manufacturer. Write to **Mr. A. G. Worton, Warren-Teed Pharmaceuticals Inc.** (Subsidiary of Rohm & Haas Company), 582 West Goodale Street, Columbus, Ohio 43215.

POSITIONS OPEN

DEPARTMENT OF BIOLOGY UNIVERSITY OF SASKATCHEWAN

Assistant Professor of Mycology with interest in physiology or morphogenesis of fungi—from September 1964. Teaching and research. \$7500 to \$9500 for Ph.D. Send curriculum vitae, names of three referees, to **Dr. M. Shaw, Department of Biology, University of Saskatchewan, Saskatoon, Sask., Canada.**

Position for Biologist at the University of Hawaii, Hilo Campus. Two-year campus with student enrollment of 359 and 30 faculty.

Salary depends on experience. Ph.D. recent graduate preferred. Position to start 1 September 1964. Partial teaching load in microbiology.

Please send full record of experience, all academic transcripts and at least three letters of recommendation on first inquiry. Cost of moving and transportation tax deductible, but not borne by University.

Apply to: **Beatrice G. Markey, Academic Chairman, University of Hawaii, Hilo Campus.**

FELLOWSHIPS

Postdoctoral fellowship in biochemistry department of large western university. Area of interest is metabolism and synthesis of collagen. Excellent research facilities in new building. Résumé to Box 446, SCIENCE. 7/17

The Market Place

DISPLAY: Insertions must be at least 1 inch in depth. Weekly invoices will be sent on a charge account basis—provided that satisfactory credit is established.

Single insertion	\$65 per inch
4 times in 1 year	60 per inch
13 times in 1 year	50 per inch
26 times in 1 year	50 per inch

PROOFS: If copy is to be set, and proofs submitted for approval, complete copy and cuts must be received 4 weeks in advance of issue date (Friday of each week); complete plates no later than 3 weeks in advance of issue date.

BOOKS AND MAGAZINES

Authors

Your book can be published, promoted, distributed by a reliable company on a subsidized basis. Fiction, non-fiction, poetry, scholarly, religious and even controversial manuscripts welcomed. Free Editorial Report. For Free Booklet write Vantage Press, Dept. SC, 120 W. 31 St., New York 1, New York.

SUPPLIES AND EQUIPMENT

1919 - 1964
LaMotte Chemical
Chestertown, Maryland, U.S.A.

Specialists in
Colorimetric Techniques
Reagents-Standards-Comparators
Send for illustrated
Controls Handbook Dept. H

SPRAGUE-DAWLEY, INC.

Pioneers in the development of the
STANDARD LABORATORY RAT.

P.O. Box 4220
Madison, Wisconsin
CE 3-5318

SYMPOSIUM ON BASIC RESEARCH

Editor: **Dael Wolfe** 1959

AAAS Symposium Volume No. 56

328 pages, cloth \$3.00

AAAS members' cash order, price \$2.50

Sponsored by the National Academy of Sciences, the American Association for the Advancement of Science, and the Alfred P. Sloan Foundation.

CONTENTS

J. Robert Oppenheimer, The Need for New Knowledge

Alan T. Waterman, Basic Research in the United States

W. O. Baker, The Paradox of Choice

Laurence M. Gould, Basic Research and the Liberal Arts College

C. A. Elvehjem, Basic Research and the State University

Lee A. DuBridge, Basic Research and the Private University

James R. Killian, Jr., Capsule Conclusions

Crawford H. Greenewalt, Basic Research: A Technological Savings Account

Dwight D. Eisenhower, Science: Handmaiden of Freedom

Allen V. Astin, Basic Research in Government Laboratories

James B. Fisk, Basic Research in Industrial Laboratories

Merle A. Tuve, Basic Research in Private Research Institutes

Paul E. Klopsteg, Support of Basic Research from Government

Robert E. Wilson, Support of Basic Research by Industry

Robert S. Morison, Support of Basic Research from Private Philanthropy

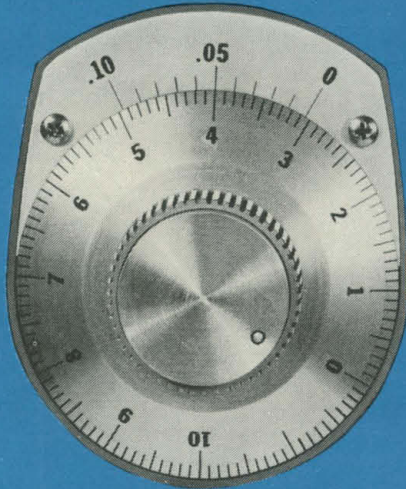
Dael Wolfe, The Support of Basic Research: Summary of the Symposium

British Agents: Bailey Bors. & Swinfen, Ltd.
Warner House,
48 Upper Thames Street,
London, E.C.4

American Association for the Advancement of Science

1515 Massachusetts Avenue, NW
Washington, D.C. 20005

OHAUS
®



Fastest Weigh Yet!

THE NEW

DIAL O GRAM
310™

To the already superlative Cent-O-Gram features we have now added the convenience of direct dialing and magnetic damping to give you the "Fastest Weigh Yet".

- EASY DIRECT-READING DIAL
10 GRAMS TO .01 GRAM
- FRICTION-FREE MAGNETIC DAMPING
LIFE-TIME PERMANENT ALNICO MAGNETS
- TRUE PRECISION SPRING FOR EXTREME ACCURACY
OVER LIFE OF BALANCE

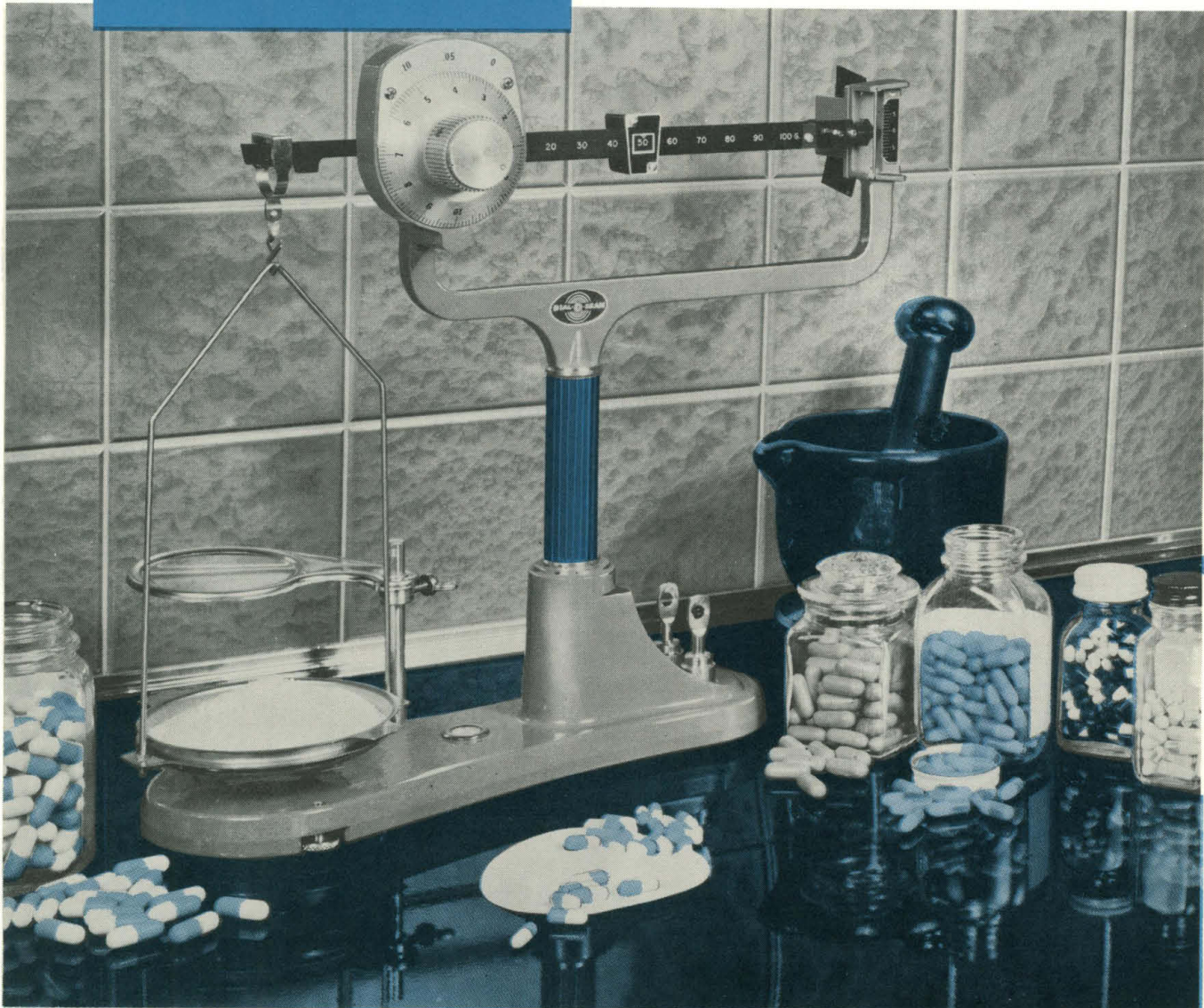
all for only \$49.75

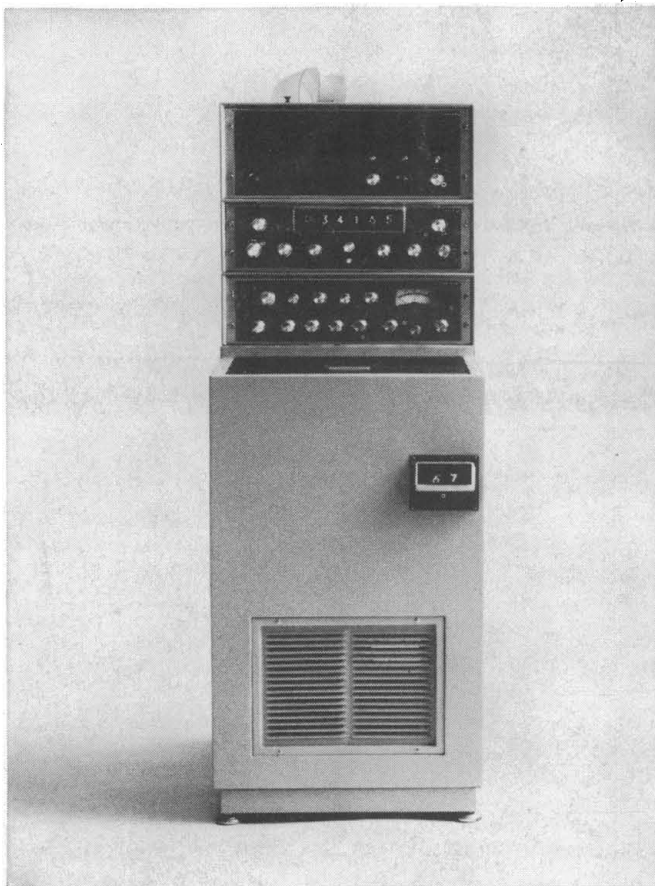
Write for Bulletin No. 3D.

OHAUS SCALE CORPORATION
1050 COMMERCE AVENUE • UNION, N. J.

Dept. GF

3





NOW COUNT 100 LIQUID SCINTILLATION SAMPLES AUTOMATICALLY AT ROOM TEMPERATURE WITH HIGH EFFICIENCY

Many users of liquid scintillation spectrometers are finding that room temperature counting offers certain advantages over refrigerated operation. One of the most significant is that the solubility

of the solutions encountered in normal sample preparation techniques is much better at room temperature. This means that more sample may be placed in the counting vial with less chance of quenching. The results are shorter counting times and better statistics.

Nuclear-Chicago ambient temperature liquid scintillation systems routinely deliver differential counting efficiencies of 37% for H^3 and 78% for C^{14} with backgrounds of 40 cpm and 32 cpm respectively—a very favorable comparison with refrigerated units. Now we have combined this proved performance with the convenience of large sample capacity to offer the user maximum value at lowest possible cost. Two automatic systems with 100 sample capacity are available:

Model 6801. Three channel sys-

tem with dual scaler and data lister for automatic printout of sample number, time, and counts.

Model 6804. Three channel system with dual scaler and data lister/calculator for automatic printout of cpm and scaler ratios in addition to sample number, time, and counts.

Both of these new systems also feature the same electronic and mechanical refinements that have contributed to the excellent reliability of all other Nuclear-Chicago liquid scintillation spectrometers. Please consult your Nuclear-Chicago sales engineer or write us for complete details and prices on Models 6801 and 6804.

NUC-B-4-215



NUCLEAR-CHICAGO

A DIVISION OF NUCLEAR-CHICAGO CORPORATION

349 Howard, Des Plaines, Illinois 60018