SCIENCE

5 October 1956

Volume 124, Number 3223

Dr. Robert L. Fullman, B. Eng., D. Eng., Yale University, joined the staff of the General Electric Research Laboratory in 1948. His fields of specialization include studies of microstructure in metals and alloys, recrystallization, and grain growth. Since 1955 he has been manager of the *Materials and Processes Studies Section.*

Better ways to make modern metals

Dr. Robert L. Fullman of General Electric applies basic studies to improve the properties of materials

The most direct way to make a metal object in a desired shape is simply to melt the metal and then "freeze" it in a mold. And scientists now believe there is *no fundamental reason* why castings should not be as strong and ductile as wrought metal.

Dr. Robert L. Fullman of the General Electric Research Laboratory is the leader of a group that is relating *microstructure* to the properties of metals — and then seeking processing methods to produce the desired structure. The basic mechanism by which molten metals *begin* to "freeze" — nucleation — has been modified through the application of recently developed theories; work in this area already has resulted in practical new materials whose improved properties are attributed to smaller grain size.

Dr. Fullman believes that when it is possible to control the *growth* as well as the *nucleation* of crystals, many of tomorrow's superior metals — for applications ranging from appliances to aircraft — will be made by methods as simple as those now used for cast iron.

As we see it, providing scientists with freedom and incentive to extend the frontiers of knowledge is fundamental to the creation of better products, better jobs, and more opportunities for human satisfactions.

Progress Is Our Most Important Product

GENERAL ELECTRIC

5 October 1956, Volume 124, Number 3223

SCIENCE

AMERICAN ASSOCIATION
FOR THE
ADVANCEMENT OF SCIENCE

Board of Directors

PAUL B. SEARS, *President*
LAURENCE H. SNYDER, *President Elect*
GEORGE W. BEADLE, *Retiring President*
WALLACE R. BRODE
PAUL M. GROSS
GEORGE R. HARRISON
MARK H. INGRAHAM
PAUL E. KLOPSTEG
CHAUNCEY D. LEAKE
MARGARET MEAD
THOMAS PARK
PAUL A. SCHERER, *Treasurer*
DAEL WOLFLE, *Executive Officer*

DAEL WOLFLE, *Executive Officer*
GRAHAM DUSHANE, *Editor*
CHARLOTTE V. MEETING, *Assistant Editor*

Editorial Board

MARK H. ADAMS
WALLACE R. BRODE
BENTLEY GLASS
KARL LARK-HOROVITZ
EDWIN M. LERNER
WILLIAM L. STRAUS, JR.

Editorial Staff

SARAH S. DEES, OLIVER W. HEATWOLE, YUKIE KOZAI, JEAN MCCARTHY, ELIZABETH MCGOVERN, ELLEN E. MURPHY, ROBERT V. ORMES, BETHSABE PEDERSEN, MADELINE SCHNEIDER, JOSEPH TURNER, JACQUELYN VOLLMER, LENORE I. YODER

EARL J. SCHERAGO, *Advertising Representative*

SCIENCE founded in 1880, is published each Friday by the American Association for the Advancement of Science at Business Press, Lancaster, Pa. Entered at the Lancaster, Pa., Post Office as second class matter under the Act of 3 March 1879.

SCIENCE is indexed in the *Reader's Guide to Periodical Literature* and in the *Industrial Arts Index*.

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, book reviews, and illustrations, see *Science* 123, 714 (27 Apr. 1956).

Display-advertising correspondence should be addressed to SCIENCE, Room 604, 11 West 42 St., New York 36, N.Y.

Change of address: The notification should reach us 4 weeks in advance. If possible, please furnish an address stencil label from a recent issue. Be sure to give both old and new addresses, including zone numbers, if any.

Annual subscriptions: $7.50; foreign postage, $1; Canadian postage, 50¢. Single copies, 25¢. Special rates to members of the AAAS. Cable address: Advancesci, Washington.

The AAAS also publishes THE SCIENTIFIC MONTHLY.

Scientific Information in the U.S.S.R.

All scientifically advanced countries have to cope with the problem of distributing the enormous world-output of scientific and technical information to their own research workers and technicians. That more international cooperation in handling information might be helpful is recognized by the National Academy of Sciences, the National Science Foundation, and the American Institute of Documentation in their sponsorship of the 1958 International Conference on Scientific Information.

The international conference itself is still a long way off, but in the meantime it may be of interest to discuss the way information is handled in the Soviet Union. D. Yu. Panov, who was here to help plan the conference, is the director of the All-Union Institute of Scientific and Technical Information of the Academy of Sciences of the U.S.S.R. Before returning to the Soviet Union, Panov described the organization and activities of his institute in a talk at the National Academy of Sciences in Washington on 19 September.

The institute, which was established 3 years ago, has 1800 staff members and publishes 13 abstracting journals, which annually contain about 400,000 abstracts from some 10,000 journals. All journals are received by the institute and sent to appropriate sections where the individual papers are classified. If only one copy of a journal is available, it is photographed or taken apart so that appropriate papers can be sent to the editors of the proper abstracting journals. The editors then assign the papers to the 13,000 professional scientists and engineers who prepare the abstracts. Most of the abstractors are members of other specialized institutes or are employed in industry.

Panov pointed out one special advantage of the centralized operation of abstracting services. Selection of papers for abstracts in *Chemical Abstracts* in the U.S. involves search through some 6000 journals, relatively few of which are exclusively devoted to chemistry. The central operation in the Soviet Union permits classification of the chemical and nonchemical papers at the same time. Thus, for example, many papers in biology will be found in journals surveyed for chemical papers. By surveying a comparatively small number of additional journals, it is possible to obtain all of the papers needed for the preparation of biological abstracts as well.

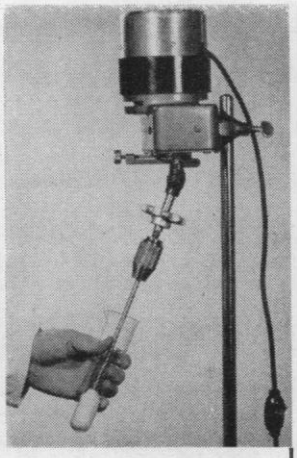
The preparation of abstracts is, in the Soviet Union, as it is elsewhere, a time-consuming process. To meet the needs of industry for up-to-date information, the institute publishes 20 series of "express" journals in the fields of mining, metallurgy, forging, and so on. These publish abstracts of articles within 2 to 3 weeks after receipt.

Among other additional activities, the institute compiles technical foreign language dictionaries (Russian-English, English-Russian, Chinese-Russian, Swedish-Russian, and so on) and is doing work on the mechanical search for information and mechanical translation. The institute also provides another service that must be of considerable help to scientists. It will, upon request, supply any recipient of the abstracts with a complete translation of any paper in any language.

American and other non-Soviet scientists uniformly report, sometimes with some expression of astonishment, that Soviet scientists are very much up-to-date in their information about scientific and technical work in other countries. There are no longer any grounds for astonishment.—G. DUS.

CON-TORQUE POWER UNIT

for TISSUE HOMOGENIZATION



Now you can homogenize tissue effortlessly for culture work as well as pathological and biological study. Eberbach's new variable-speed Con-Torque gives constant torque at all speeds providing continuous, effortless, positive grinding action. Full Torque eliminates possibility of tissue jamming the pestle in the grinding vessel. Delivers speeds from 0 to 350 r.p.m. Will take standard tissue grinding pestles.

Write for Bulletin 545 Z

Eberbach SCIENTIFIC INSTRUMENTS & APPARATUS CORPORATION
ANN ARBOR, MICH. ESTABLISHED 1849

FOR

EPINEPHRINE

Bitartrate

AND

ARTERENOL

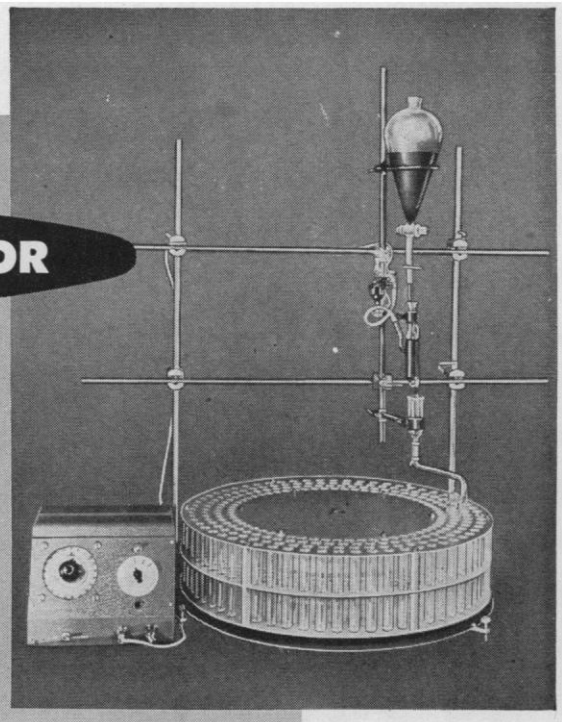
(Norepinephrine)

Bitartrate

Winthrop LABORATORIES
Special Chemicals Department
1450 Broadway, New York 18, N.Y.

for chromatography . . .

NEW RINCO 2-Way FRACTION COLLECTOR



Automatically Collects by Either "Timed-Flow" or "Volumetric" Method

This precision apparatus is a valuable aid to accurate fraction measurement and collection in chromatographic analysis. Operated by a heavy-duty capacitor motor, the RINCO Fraction Collector provides completely automatic operation for any desired period. NO MERCURY, CHEMICALS OR ELECTRIC CURRENT COME IN CONTACT WITH YOUR SAMPLE. When utmost accuracy is required, fractions are measured with manometer assembly, as in diagram.

3 Receiver Tables Available — Interchangeable with One Indexer

24" Diameter—holds 237 tubes (18 mm. x 150 mm.)
18" Diameter—holds 60 tubes (25 and 29 mm.)
14" Diameter—holds 120 tubes (1 to 5 ml, 10 ml, 20 ml, and 50 ml.)

Complete Units, with a variety of attachments and supplementary equipment, from $265.50 to $433.50

For Routine Work or Critical Determinations

For complete details, write for Bulletin No. 755 today!

SCHAAR AND COMPANY *Complete Laboratory Equipment*
754 West Lexington Street • Chicago 7, Illinois.