

New **DIFCO** Antisera

**BACTO - C PROTEIN
ANTISERUM**

for detection and quantitation of
inflammatory diseases.

**BACTO - GROUP A STREPTOCOCCAL
ANTISERUM**

for detection of Group A Streptococci

**BACTO - E. COLI OB and O
ANTISERA**

for identification of Enteropathogenic
E. Coli serotypes

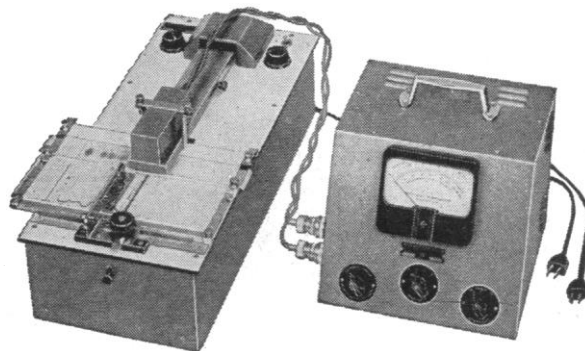
Specify Difco Antisera
POTENT • SPECIFIC • RELIABLE

Literature available on request

DIFCO LABORATORIES
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PHOTOVOLT Densitometer

**for Partition Chromatography
and Paper Electrophoresis**



**A photoelectric precision instrument for the rapid
and convenient evaluation of strips and sheets
of filter paper in partition chromatography and
paper electrophoresis.**

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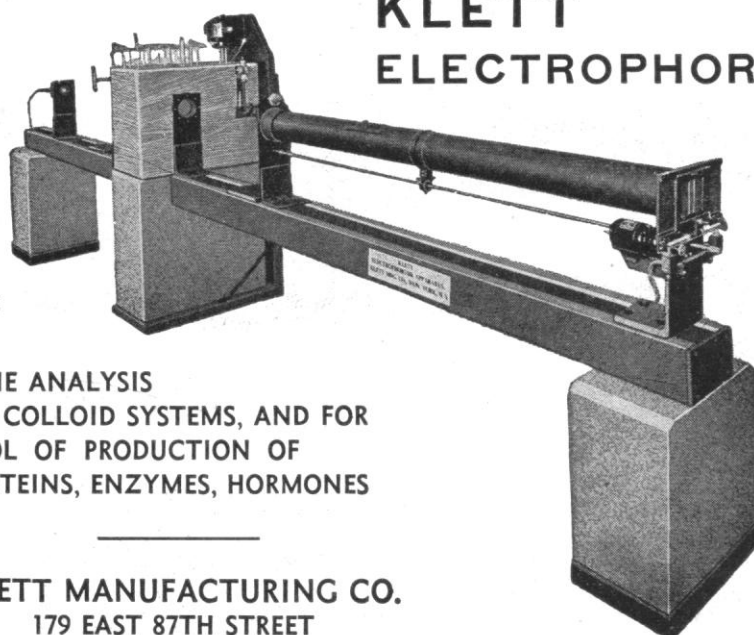
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CUSTOM MADE

**TOOL FOR THE ANALYSIS
OF COMPLEX COLLOID SYSTEMS, AND FOR
THE CONTROL OF PRODUCTION OF
PURIFIED PROTEINS, ENZYMES, HORMONES**

KLETT MANUFACTURING CO.
179 EAST 87TH STREET
NEW YORK, N. Y.

EQUIPMENT NEWS

All inquiries concerning items listed here should be addressed to Science, Room 604, 11 W. 42 St., New York 36, N.Y. Include the name(s) of the manufacturer(s) and the department number(s).

■ **VOLTAGE REFERENCE SOURCE** provides an output voltage from +111.112 to -111.112 v at essentially zero impedance, selectable in steps of 1 mv at an accuracy of ± 0.01 percent. Five decade switches select the desired output; a sixth output control may be used to interpolate to the nearest 0.1 mv. (Epsco, Inc., Dept. S98)

■ **HUMIDITY-SENSING ELEMENT** is usable over the temperature range from -5° to 80°C and has a repeat accuracy of 3 percent for measurements of relative humidity. The resistance of the plastic element varies as the logarithm of the relative humidity; 67 percent of a change in relative humidity registers within 30 sec. in standard models. (El-Tronics, Inc., Dept. S99)

■ **ELECTRODYNAMIC RECORDER** is a direct-inking, nonresonant recording milliammeter usable over the range from direct current to 200 cy/sec. Critical acoustic damping is built into the vibrating system to eliminate resonant peaks, overshoot, and ringing. (Massa Laboratories, Inc., Dept. S100)

■ **SPECTRUM ANALYZER** will continuously analyze complex electric waveforms within a specified frequency range between 500 cy/sec and 20 kcy/sec. The instrument will provide a graphic record of the frequencies included in the waveform and the amplitude of each. Waveforms may be either continuous or discontinuous, and the analysis is performed over successive 10-sec periods. The following types of analysis may be selected: (i) integrated volt-seconds per epic period for each of the component frequency bands; (ii) peak voltage of each of the component frequencies per epic interval; (iii) average voltage in any one of the bands; and (iv) peak voltage in any one of the bands. (Edin Co., Inc., Dept. S102)

■ **POWER SUPPLY** is designed to provide either constant current or constant voltage for such applications as paper electrophoresis, coulometric titrations, and semiconductor and electronics research. On constant current, the output is 0 to 130 ma with the voltage automatically adjusting itself between 0 and 400 v. On constant voltage, the output is 0 to 200 ma and 0 to 500 v. (Matthew Laboratories, Dept. S107)

21 DECEMBER 1956

An invitation to engineers who can qualify for large, liquid propellant Rocket Engine development

Engineers and Scientists:

PRELIMINARY DESIGN. Opportunity to conceive, analyze, and evaluate highly advanced concepts in large, liquid-propellant rocket engines, advanced propellants, feed systems, principal components and parameters. Advanced military proposals. Market studies. Operations Research and long-range programming. Advanced degrees preferred.

SYSTEMS ANALYSIS. Unusual challenges for the analytical or theoretical engineer in the analysis of complete engine systems. Heavy emphasis on advanced Systems Engineering concepts, particularly in thermodynamics, gas dynamics, heat transfer and fluid flow, some phases of which are yet unknown in general industry. Prediction of engine performance, by means of advanced mathematical concepts, under extreme environmental operating conditions.

COMBUSTION DEVICES. Important professional growth opportunities for engineers heavy on thermodynamic and heat transfer background, as it may pertain to high temperature, high stress components such as thrust chambers, gas generators, injectors, and heat exchangers. Unusual challenges available in work on high-rate heat transfer, pyrotechnics, spark-initiated and hypergolic ignition, combustion mechanics, droplet formation and flame propagation.

ENGINE DEVELOPMENT. Opportunities for research engineers at the focal point of intensive activity associated with engine testing and data evaluation. Involves the design of experiments, specification of test methods and procedures, including instrumentation, as well as the processing and evaluation of data. Problems and studies encountered fall into all branches of engineering, and the ability to comprehend highly complex systems, engines and engine programs is of paramount importance.

RESEARCH. Rocketdyne Research, a section of the Engineering department, has several staff openings for scientists and engineers with advanced abilities. Fundamental studies are being made in thermodynamics, fluid mechanics, combustion kinetics, fast-transient measurement techniques, propellant chemistry and many other fields.

**For detailed information, please fill out and mail the coupon below.
There is no obligation, and all replies are strictly confidential.**

Mr. A. W. Jamieson, Engineering Personnel Dept. 12-S
ROCKETDYNE, 6633 Canoga Avenue, Canoga Park, California

Dear Mr. Jamieson:

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And _____ years actual engineering experience
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I am not enclosing a resume

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POSITIONS WANTED

Endocrinologist, Ph.D., 1956. Postdoctoral experience, background in physiology of reproduction, publications. Desires academic or research position with responsibilities in Midwest or East. Box 284, **SCIENCE**. X

Mathematician, M.A. Later training: 13 years laboratory experience; physics, engineering problems, analysis, machine computation, statistics, reports; preference, research for civilian industry. Box 281, **SCIENCE**. X

Microbiologist, Ph.D. Experienced; interested in biochemical analysis, cytochemistry, photomicroscopy, infectious diseases, and drugs. Publications. Box 282, **SCIENCE**. X

Vertebrate Zoologist, research and teaching experience; Ph.D. 1952. Will teach wildlife management, conservation, general or vertebrate zoology, ornithology, entomology. Full-time research considered. Box 283, **SCIENCE**. X

Virologist, Bacteriologist, Ph.D.; 5 years of varied experience in research, development, and production of biological products. Primary interest veterinary vaccines. Presently in management position. Would like return to active research. Box 264, **SCIENCE**. X

POSITIONS OPEN

Biochemist. Leading New York City biological manufacturing organization requires chemist fully experienced in producing bovine albumin suitable for Rh testing. Excellent opportunity; good salary; permanent position. Box 273, **SCIENCE**. X

Immunological Technician, full time; animal research experience, M.A. preferred. Allergy research. Time toward Ph.D. Annual salary, \$4200. Write or call Dr. Bret Ratner, 50 East 78 Street, New York 21; BU 8-2182. X

(a) **Medical Director;** important pharmaceutical company; duties include supervising clinical trials; \$15,000-\$20,000; East. (b) **Assistant Supervising Biochemist, Ph.D.,** able administrator, capable of conducting productive investigative program; important insurance company, East. (c) **Scientists interested in endocrinology;** new endocrinology laboratory, famed research institution; large city, Midwest. (d) **Physiologist-Biochemist;** research involving metabolism of perfused isolated kidney; well-known research institution; Pacific Coast. (e) **Medical Science Writer;** duties include surveying literature for technical staff and promotional department, pharmaceutical company; man required; \$7000-\$10,000, S12-4 Medical Bureau, Burneice Larson, Director, 900 North Michigan Avenue, Chicago. X

POSITIONS REQUIRING DEGREES IN MEDICINE OR SCIENCE: (a) **Physiologist;** research associate trained in biochemistry; principal project metabolism of perfused isolated kidney, intermediary metabolism of human tissue; excellent opportunity for imaginative investigator to join three-man team; \$6000-\$7500; research institute affiliated with well-known California hospital. (b) **Biochemist (M.S.) and Bacteriologist (B.S. or M.S.);** outstanding clinical laboratory, 600-bed general hospital; university medical center; Midwest. (c) **Biochemist; M.S.,** recent Ph.D.; full-time research appointment, studies in microbial metabolism, nutrition and physiology of roundworms, certain aspects of biochemical genetics; 500-bed general hospital; \$6200; South. (d) **Pharmacologist; M.D. or Ph.D.,** research facility, well-known eastern pharmaceutical concern; \$7500-\$10,000 or more. Woodward Medical Personnel Bureau, 185 North Wabash, Chicago. X

POSITIONS OPEN

ENDOCRINOLOGISTS

Research division of established, expanding eastern pharmaceutical manufacturer has excellent opportunities in modern research facility for endocrinologists with experience and training in these areas:

A. Biochemical aspects of endocrinological research with particular emphasis on hormonal interrelationships and metabolic activity.

B. Biological aspects involving the development of effective bioassays in different species of animals, and the determination of site and nature of activity.

Candidates should have Ph.D. degree in biochemistry, some knowledge of pharmacology desirable but not essential and preferably 2 or 3 years' experience in either academic or pharmaceutical research. Will also consider outstanding recent graduates.

Comprehensive benefit program includes initial moving expenses, group health and life insurance, and noncontributory pension plan. Please send complete personal data including approximate salary requirement. Reply to:

BOX 267, SCIENCE

EXPLORATORY DEVELOPMENT

IMMEDIATE OPENING FOR Ph.D. in a biological science such as pharmacology, physiology, or biochemistry with 2 to 3 years' experience in the pharmaceutical industry or equivalent time in teaching or research in a medical school.

Excellent post in progressive, expanding pharmaceutical industry in the East. Applicant should have flair for conceiving good ideas, knowledge of screening technique and familiarity with pharmacological action of drugs.

IMMEDIATE OPENING FOR B.S. with background in biology or chemistry to serve as project administrator in coordinating scientific activities of exploratory development project team. Industrial experience highly desirable but not essential.

Company benefit program provides broad coverage. Applicants should submit full information outlining education and experience and an indication of desired salary. Address replies to:

Box 268, SCIENCE

Microbiologist, experimental. To participate in medical school group research activity and to pursue personal interests in virology and immunology; full time. Salary dependent on qualifications and experience. Box 280, **SCIENCE**. X

Physiologist, Ph.D. in physiology with orientation in neurophysiology, some knowledge of clinical application of neuropharmacologic agents preferred; 2 to 3 years of teaching experience highly desirable. Team participation in the development of new agents in the field of mental illness. Eastern pharmaceutical manufacturer; liberal benefits. Send complete résumé. Box 272, **SCIENCE**. X

SCIENCE WRITER

Smith, Kline & French Laboratories, Philadelphia, is looking for a man—a college graduate—with a scientific background plus writing ability. Job involves editing manuscripts, designing clinical studies on new compounds, contacting physicians. To find out more about advantages including salary, talk to our representative at the

**HOTEL STATLER
(New York City)**

... during the 26-29 December AAAS meeting.

POSITIONS OPEN

MICROBIOLOGIST—IMMUNOCHEMIST

Ph.D. in microbiology for development of biologicals. Qualified in techniques of bacteriology and virology with background in chemical and biophysical procedures related to immunity. Give background of experience and education in letter to Personnel Dept., Wyeth Laboratories, Box 8299, Philadelphia 1, Pa.

PHYSICIST

Permanent position with prominent manufacturer of building products for man to lecture on subject of heat and vapor transmission to college, professional, and other audiences. Also, to perform other duties of varied and interesting nature. Please reply, in confidence, stating background and starting salary. Box 279, **SCIENCE**.

GRANTS

Fellowships for Graduate Training in Pharmacology providing waiver of tuition and an annual stipend of \$1200 to \$2000. Inquire Department of Pharmacology, Medical Units, University of Tennessee, Memphis, Tennessee. X

The Market Place

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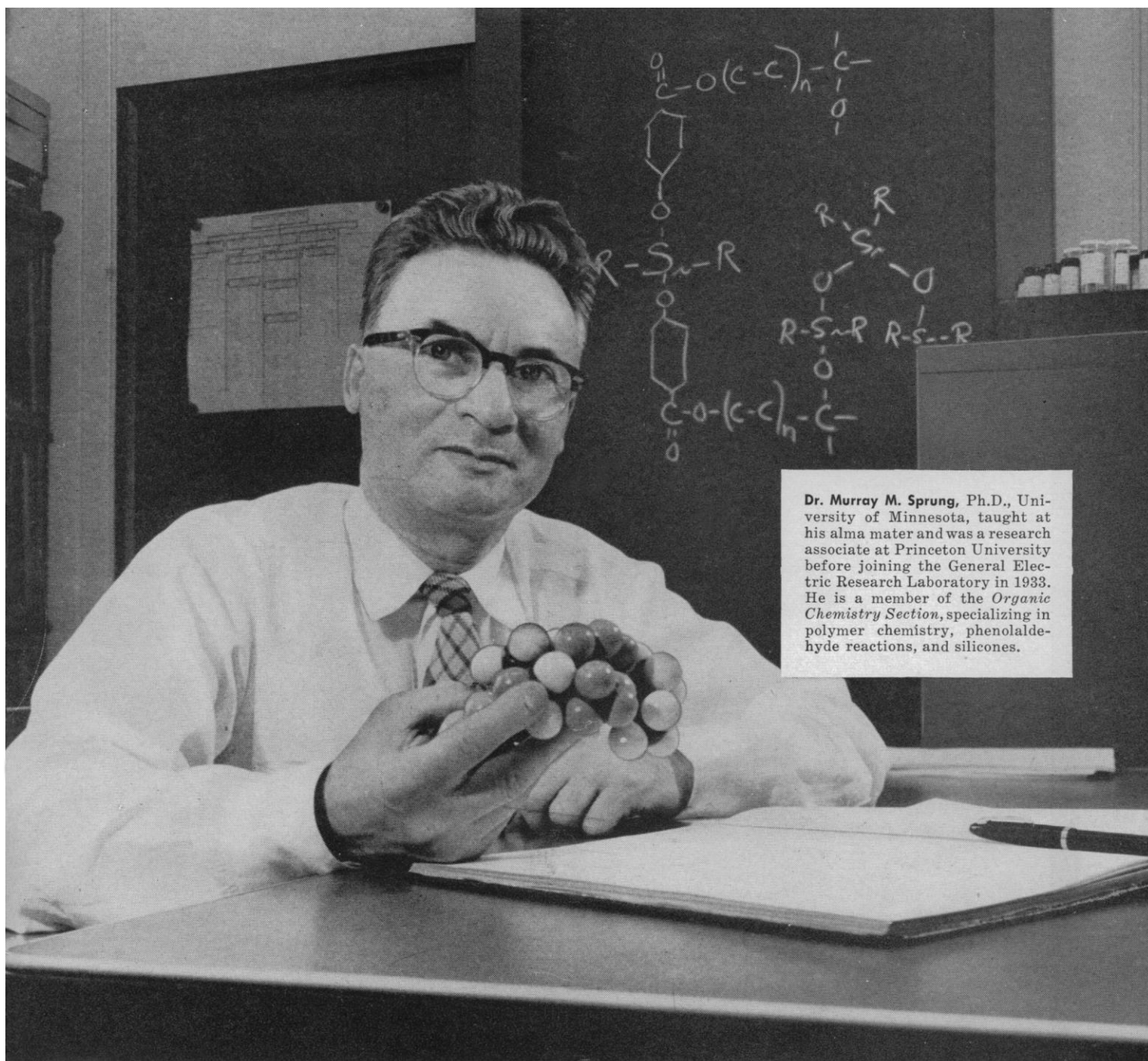
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P. O. BOX 2217-V • MADISON 1, WISCONSIN



Dr. Murray M. Sprung, Ph.D., University of Minnesota, taught at his alma mater and was a research associate at Princeton University before joining the General Electric Research Laboratory in 1933. He is a member of the *Organic Chemistry Section*, specializing in polymer chemistry, phenolaldehyde reactions, and silicones.

Product progress through creative chemistry

General Electric's Dr. Murray M. Sprung designs polymers

The *creative chemist* seeks knowledge from which he—or others—can build new materials. Among the aims of the creative chemist are the design and synthesis of specific structures in which requirements such as strength, elasticity, heat resistance, and insulating properties are carefully balanced.

Man-made materials—particularly plastics—have come into their own during the past few years, and one of the chemists who have made key contributions is Dr. Murray M. Sprung of the General Electric Research Laboratory.

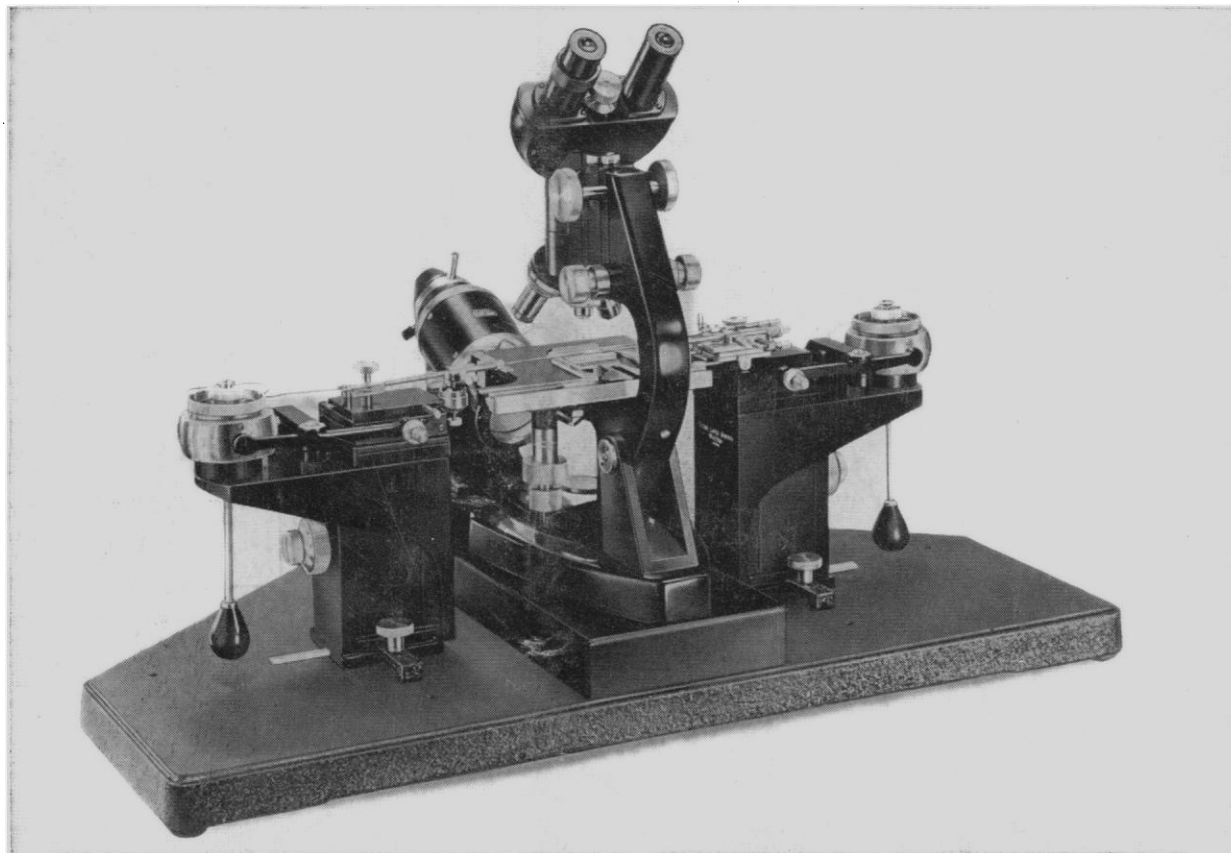
Dr. Sprung's studies of phenolics, vinyls, and other polymers have been reflected in greatly improved

insulating materials for electrical equipment. His early and continuing work in silicones has helped in the creation of entirely new products which today are widely used both in industry and the home.

At General Electric, research is motivated by a belief that providing scientists with the tools, the incentives, and the freedom to seek out new knowledge is the first step toward progress for everyone.

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Horizontal and vertical movements of this mechanically operated instrument are independent, but can be adjusted simultaneously. Adjustable ratio of movement enables micro knives, needles, pipettes, etc., to be kept within a field of 0.1 mm. Single and double needle holders are available. Positive control of micro-instruments, without backlash, drift, or thermal expansion assured.

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