

SCIENCE | The weekly magazine of research

December 28, 1956

TO RESEARCH DIRECTORS AND COMPANY EXECUTIVES

The Monsanto Chemical Company color spread which appears in this issue represents a bold new trend in industrial advertising. Monsanto Chemical Company, long a leader in developing new ideas, has ushered in a whole new concept in the advertising field in this advertisement. It is their hope that by presenting pertinent facts about their new chemicals to Science readers, they will stimulate the development of new applications for their products. At the same time, they are performing a service to research men in all fields by providing them with information about new materials.

It is this marriage of mutual interests which is so unique in the advertising field. We sincerely hope that other companies will follow Monsanto's lead.

If you are a RESEARCH DIRECTOR, you probably have some voice in your company's advertising policies. Since you know best the prestige and coverage of Science and its audience, it would be to your advantage to suggest such a campaign for your company.

If you are a COMPANY EXECUTIVE, suggest to your Advertising Manager that he investigate Science further. A new booklet entitled "Facts About Science" gives complete information on coverage, rates and editorial. Send for your copy to:

Science
11 West 42nd Street
New York 36, New York

Sincerely yours,

Earl J. Scherago

Earl J. Scherago
Advertising Manager

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).

■ **POLARIZING SPECTROMETER**, the Quantum ellipsometer, can be used to measure directly the thickness of films that can be deposited on suitable substrates in thicknesses in the range between molecular dimensions and many hundred angstroms. Both visual and photometric readings are presented. (Quantum, Inc., Dept. S106)

■ **GLYCERINE** is the title of a booklet that defines terms, describes tests, and presents technical data on various grades of glycerine. The booklet includes detailed specifications covering classification, physical and chemical requirements, test procedures, packaging, storage, and use. (Glycerine Producers' Association, Dept. S109)

■ **X-RAY MICROSCOPE** consists of an electron gun, accelerating anode, condenser lens, objective lens, aperture, target, and associated equipment for shadow-projection microscopy. The electron beam is focused on the target, a thin beryllium window that is ordinarily coated with tungsten, where the electrons produce an x-ray source less than 1 μ in diameter. The remainder of the instrument is a shadow-projection microscope. Magnification up to 1500 diameters is attainable. (General Electric Co., Dept. S110)

■ **SOUND-LEVEL METER AND ANALYZER**, the Soundscope, combines the functions of a sound-level meter, an octave-band analyzer, and a narrow-band analyzer. The sound-level meter, in combination with an over-all attenuator, has a range from 24 to 150 db. The analyzer section consists of an octave-band filter set for measuring sound levels in each of the seven octaves from 75 to 9600 cy/sec. A multiplier-dial arrangement that actuates continuously variable high- and low-bandpass filters permits analysis of noise within any octave band to determine noise peaks. (Mine Safety Appliances Co., Dept. S111)

■ **HIGH-VACUUM PUMPS** are described in a new catalog, "Stokes Microvac pumps for high vacuum." In addition to the specifications for the pumps, catalog No. 752 includes formulas, constants, and conversion factors used in vacuum processing; solutions to problems of pump selection; and information on maintenance procedures for high-vacuum pumps. (F. J. Stokes Corp., Dept. S114)

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:

Please tell me more about a career at ROCKETDYNE.

My name is _____

Home Address _____

I have a _____ degree from _____

And _____ years actual engineering experience

I am

I am not enclosing a resume

ROCKETDYNE

A DIVISION OF NORTH AMERICAN AVIATION, INC.

BUILDERS OF POWER FOR OUTER SPACE

ANTIMETABOLITES AND CANCER

AAAS Symposium Volume

6" x 9", 318 pp., 54 illus.,
clothbound, 1955

Price \$5.75,

AAAS Members' prepaid
price \$5.00

"This volume presents the great variety of techniques and disciplines being brought to bear on the problem of cancer therapy and the vitality of the chemotherapeutic approach to cancer. This is an important book and merits the careful consideration of cancer investigators, biochemists, pharmacologists and general biologists."

Cancer, Jan-Feb 1956.

"All who are concerned with the problems of chemotherapy in malignant disease and those who wish to broaden their knowledge of the challenging subject of antimetabolites will find a wealth of information in this edition. . . .

"The text is clearly written and readily understandable by those who have a good working knowledge of biology and chemistry and are familiar with terms which are currently used in the medical sciences; it is particularly recommended to the attention of those engaged in research, teaching, and treatment of cancer, and in study of the problems of growth." *American Journal of Public Health*, Feb 1956.

**American Association
for the
Advancement of Science**

1515 Mass. Ave., NW
Washington 5, D.C.

PERSONNEL PLACEMENT

CLASSIFIED: 18¢ per word, minimum charge \$3.60. Use of Box Number counts as 10 additional words.

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

DISPLAY: Rates listed below — no charge for Box Number. Monthly invoices will be sent on a charge account basis — provided that satisfactory credit is established.

Single insertion	\$22.00 per inch
13 times in 1 year	21.00 per inch
26 times in 1 year	20.00 per inch
52 times in 1 year	19.00 per inch

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

POSITIONS WANTED

Bacteriologist, Ph.D., 33; 3 years' industrial microbiology research, 2 years' director analytical chemistry laboratory. Desires more challenging research or teaching position. Box 275, SCIENCE. 12/28

Bacteriologist, Ph.D.; 4 years, associate professor of microbiology, medical school; 5 years, senior scientist, pharmaceutical company. Medical Bureau, Burnice Larson, Director, 900 North Michigan Avenue, Chicago. X

Biochemist; 12 years' experience in fermentations and isolation of antibiotics, enzymes, growth factors. Strong background in mycology, bacteriology, and plant sciences. Presently employed in supervisory capacity. Box 287, SCIENCE. X

POSITIONS OPEN

(a) Medical Director; newly created department, major pharmaceutical company; pediatrician, anesthesiologist or surgeon; experienced fluid therapy might be interested; Midwest. (b) Toxicologist; although Ph.D. in pharmacology preferred, one with doctorate in biochemistry acceptable; industrial toxicology laboratory large company; experience in industrial toxicology advantageous; \$10,000. (c) Biochemist; 28-man clinic; new clinic building, university city, Midsouth. (d) Biochemist; duties principally dental research; research department, large organization; Midwest; \$7000. S12-5 Medical Bureau, Burnice Larson, Director, 900 North Michigan, Chicago. X

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.

Physician board eligible or with boards in gastroenterology to become full-time assistant professor in a California medical school. Teaching and research facilities in county hospital. Box 285, SCIENCE. X

SCIENCE WRITER

We believe that this opening is an unusual opportunity for a man who can bring to the advertising field the characteristics of science writing:

An appreciation of the value of precise statement.

An acquaintance with the physical sciences and engineering.

Skill in writing.

The opening is the first of its kind with a nationally known Los Angeles electronics company. If you are interested, please submit a complete résumé, including references to published material. All replies will be held in confidence. Box 286, SCIENCE.

POSITIONS OPEN

ENGINEER, EE, ME

Nuclear Reactor Design for Aircraft

A long-range well-paid career position in the highly promising new field of aircraft nuclear propulsion, is now open with General Electric. This position will appeal to the qualified engineer whose creative fluency keeps him abreast of the many unusual design problems that he will encounter.

Requirements include a B.S. or advanced degree in electrical or mechanical engineering, plus familiarity with fluid flow, heat transfer, stress, etc. Some knowledge of fabrication processes and techniques is preferable.

Publication of research results in the appropriate classified or open literature is encouraged.

Openings at Cincinnati, Ohio
and Idaho Falls, Idaho

Address replies to location you prefer.

J. R. Roselot
P.O. Box 132
Cincinnati, Ohio

L. A. Munther
P.O. Box 535
Idaho Falls, Idaho

GENERAL ELECTRIC

Organic Research Chemist with some experience in the synthesis of organic pharmaceutical compounds wanted by small but steadily developing and progressive Canadian company located in a suburb of Montreal. Language is no problem and we will look after necessary immigration permit. Salary in accordance with qualifications of applicant. Please state in first letter age, nationality, marital status, qualifications, references, and all other pertinent information, possibly also photograph. Delmar Chemicals Limited, 50 Victoria Street, Lachine, Quebec, Canada. X

POSITIONS REQUIRING DEGREES IN MEDICINE OR SCIENCE. (a) Research Scientist; M.D. trained in biochemistry, physiology, interested in endocrinology; department of obstetrics-gynecology, important midwestern university medical school. (b) Chemist; also serve as assistant laboratory administrator; perform chemistry procedures, supervise and train new technicians, full administrative responsibility; \$5500; city health laboratory, East. (c) Instructor; M.D. or Ph.D. physiologist; liberal arts department to be incorporated new university medical school; excellent potential advancement, rank, and salary; \$6000; East-central. (d) Biochemist; M.S. or recent Ph.D., experienced clinical laboratory work; approved 150-bed general hospital; \$6000 up; lovely southern city, Woodward Medical Personnel Bureau, 185 North Wabash, Chicago. X

GRANTS

WEIZMANN INSTITUTE OF SCIENCE
Chaim Weizmann Memorial Fellowships,
1957-1958

Notice is hereby given that the application period stated in the announcement published in the 30 November 1956 issue of Science has been extended by 1 month, until 25 January 1957.

For further information and application forms please apply to the Academic Secretary, Weizmann Institute of Science, Rehovoth, Israel. X

NOW COMMERCIALY AVAILABLE THE VARIAN E-P-R SPECTROMETER

(ELECTRON PARAMAGNETIC RESONANCE)

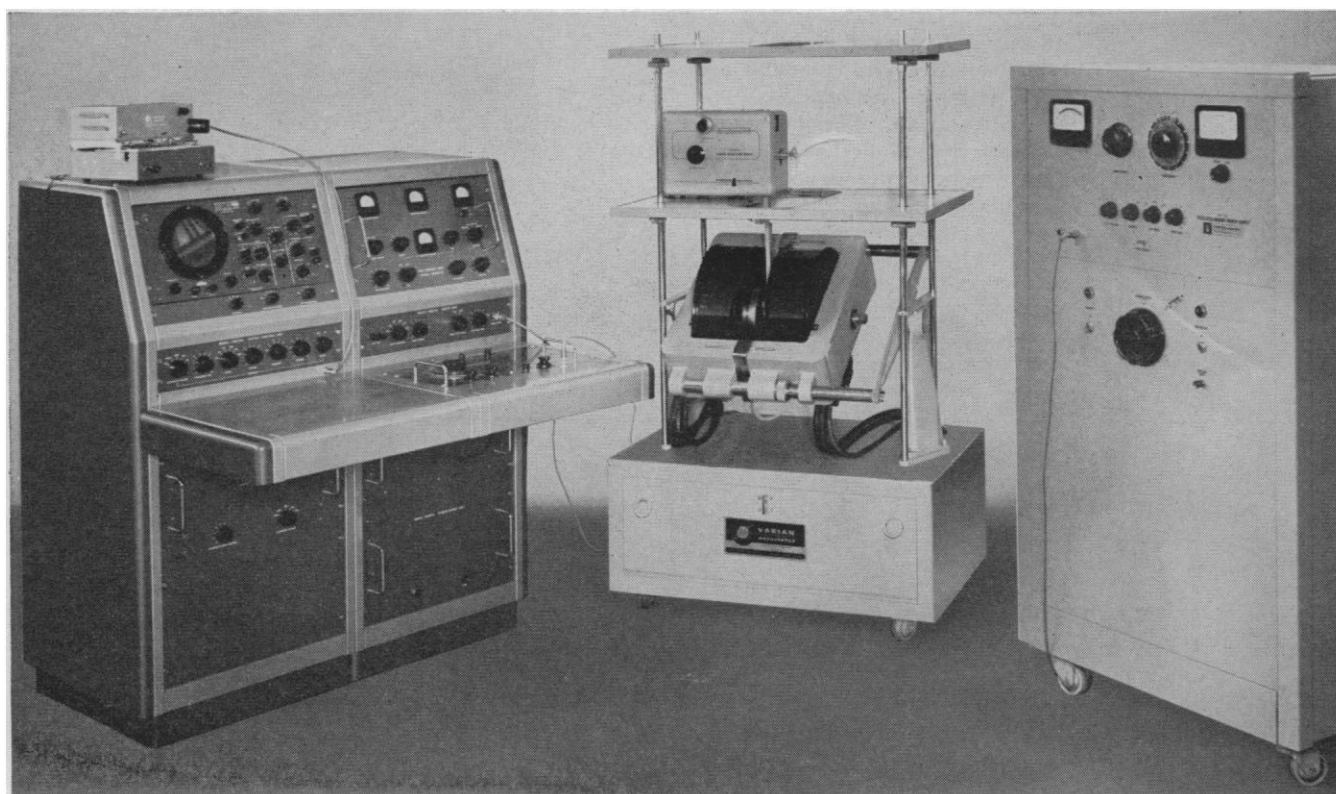
An E-P-R Spectrometer of high sensitivity is now in regular production at Varian Associates. No longer must the physicist, chemist or biologist vitally interested in use of this powerful technique expend his own time and thought on building, testing and perfecting such an instrument.

The Varian V-4500 E-P-R Spectrometer is a basic laboratory instrument capable of inducing and observing E-P-R signals from substances possessing a resultant electronic magnetic moment. Its performance is well defined. It reflects Varian's full understanding of the scientist's needs and benefits through Varian's closely related experience in fabrication of precise laboratory magnets and N-M-R (Nuclear Magnetic Resonance) Spectrometers.

E-P-R leads to the identification of: odd molecules and free radicals—bi-radicals—triplet electronic states—radiation damage sites—transition element ions—impurities in semi conductors—and color centers.

It aids in the determination of: chemical kinetics—electron exchange rates—molecular structures—microscopic electrostatic fields at transition element ion sites—characteristics of conduction band and trapped electrons in metals and semi-conductors—and free radical constituents and kinetics in biochemical reactions.

Varian Associates has physicists and chemists competent to assist the scientist in applying E-P-R spectrometry to his particular field of research.



Varian V-4500 E-P-R Spectrometer shown with 6-inch magnet system.

BASIC CHARACTERISTICS OF THE V-4500

OPERATING FREQUENCY: X-band (nominally 9.5 kmc).	EXTRAPOLATED SENSITIVITY: $5 \times 10^{-12} \times \Delta H$ moles of electron spins (ΔH is the full width of the absorption line in gauss at half maximum).	COMPATIBILITY: Compatible with the detection and display components of the Varian Wide Line N-M-R Spectrometer (12-inch magnet system recommended).
FREQUENCY STABILITY: Locked to sample cavity to better than one part in one million.		

Write for technical information bulletin and data sheet

watch for "THIS IS E-P-R AT WORK"
...a coming series



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COMPLETELY **NEW** LINES BY AMERICAN OPTICAL COMPANY



MICROSTAR

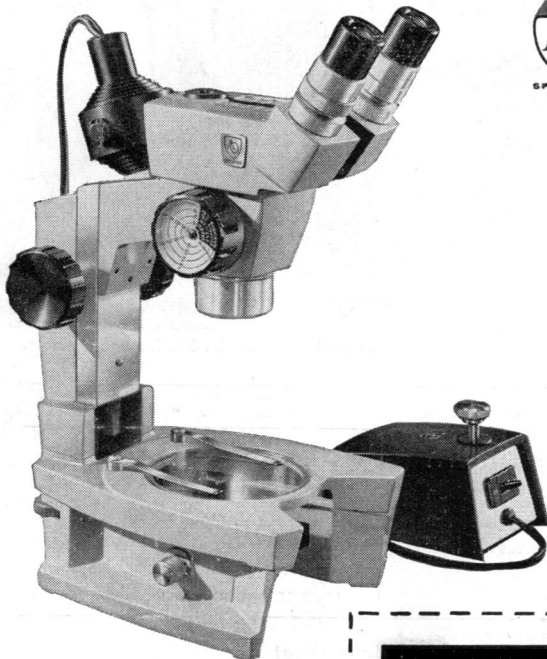
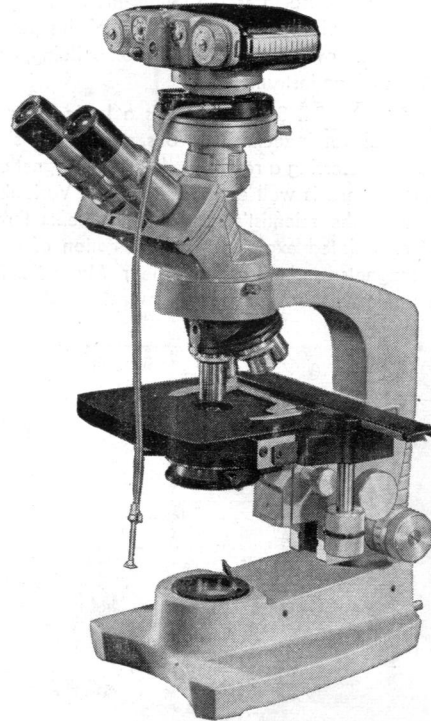
LABORATORY MICROSCOPES

Outstanding Features:

- Advanced styling and design
- Interchangeable and reversible bodies
- Rigid, well balanced arm
- Focusable stages... Variable autofocus
- Wide selection of mechanical stages
- Dual cone revolving nosepieces
- Zone of convenience
- Built-in base illuminator
- Top quality optics
- New EPOXY finish

Plus-

Wide variety of accessories and alternate parts
... readily interchangeable to meet future needs.



CYCLOPTIC

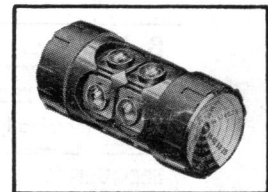
STEREOSCOPIC MICROSCOPES

Outstanding Features:

- True three-dimensional erected image
- Top quality optics... low reflection coated
- Reversible and inclined body
- Long working distance
- Large field of view
- Wide range of magnifications
- Broad selection of models
- Dove-gray EPOXY finish
- New Cyclospot Illuminator
- LOW PRICE

Plus-

Revolutionary **MAGNI-CHANGER**
... desired magnifications simply
"dialed in"!



American Optical Company

INSTRUMENT DIVISION, BUFFALO 15, NEW YORK

Dept. L4

Gentlemen:

- ☐ Please rush new CYCLOPTIC brochure SB 56
☐ Please rush new MICROSTAR brochure SB 124

Name _____

Address _____

City _____ Zone _____ State _____

DEFENSE PRODUCTS PLANT • KEENE, NEW HAMPSHIRE