

SCIENTISTS and ENGINEERS

Dynamic new division of **Ford Motor Company** is now in initial stages of expanding military and commercial programs.

Positions are at Aeronutronic's new \$22 million Research Center at Newport Beach in Southern California. Work in an intellectual environment as stimulating as the location is ideal—close to most of Southern California's cultural, educational, and recreational centers.

Outstanding growth opportunities for qualified engineers and scientists are open in the following fields:

OFFICE OF ADVANCED RESEARCH

THEORETICAL RESEARCH—Hydrodynamic and radiation processes in tenuous gases at very high temperatures, ionization produced by soft X-radiation, hydrodynamics of solids at high pressures including studies of equations of state, infrared properties of the atmosphere and of hot gases, conversion of chemical energy into sound and the condensation rate of supersaturated vapors. Theoretical physicists are needed to work in these fields. Specific experience is not necessary. However, a general background in theoretical and mathematical physics is required.

You are invited to address inquiries to M. H. Johnson, Advanced Research Staff, at our Newport Beach address.

Other unusual opportunities are open for qualified engineers and scientists in the following areas:

SPACE TECHNOLOGY OPERATIONS

Astrodynamics • Space Environment • Theoretical Physics • Electronics • Radar • Information Links • Automatic Controls • Mathematics • Propulsion Research • Combustion • Materials • Aeromechanics

COMPUTER OPERATIONS

Input-Output Equipment • Storage Units • Display Devices

TACTICAL WEAPON SYSTEMS OPERATIONS

Aero-Thermodynamics • Aero-Chemistry and Propulsion • Astronautics

Qualified applicants for the above three divisions are invited to send resumes and inquiries to Mr. Jim Harris, Bldg. 21, Ford Road, Newport Beach, California. Telephone ORiole 3-2520.

AERONUTRONIC

a Division of FORD MOTOR COMPANY
NEWPORT BEACH,
SANTA ANA—MAYWOOD, CALIFORNIA

We hear that...

Recent additions to the Department of Physics at the Florida State University in Tallahassee include **Harry Adams** from the University of Minnesota, **Edward Desloge** from Yale University, **John Fox** from Brookhaven National Laboratory, **Th. V. Kanellopoulos** and **K. Wildermuth** of CERN, **John Nelson** from the University of Texas, and **Benjamin Roth**, on leave from Oklahoma State University.

Clifford E. Berry, formerly assistant director of research at Consolidated Electrodynamics Corporation, Pasadena, Calif., has been appointed director of engineering for the company's Analytical & Control Instrument Division. Other recent CEC promotions include the appointment of **Kenneth W. Gardiner** to the newly created post of assistant chief research chemist, and the appointment of **Charles F. Robinson** as associate director of research.

Edward E. Bickel has been promoted to the position of vice president for engineering at the Simpson Optical Manufacturing Company in Chicago.

Fitzhugh W. Boggs is among the first group of scientists to be promoted to the newly created position of research associate at the United States Rubber Company's research center in Wayne, N. J.

David F. Brower, formerly of General Atomic, has been appointed assistant manager of the Engineering Department of Rheem Semiconductor Corporation, Mountain View, Calif.

Robert S. Cohen, who has been acting chairman of the Department of Physics at Boston University's College of Liberal Arts and Graduate School since July 1958, has been appointed chairman of the department.

D. F. Cope, formerly deputy director of the Research and Development Division at the Oak Ridge National Laboratory, has been named director of the Laboratory's newly established Reactor Division. **Theodore A. Welton** of the ORNL Physics Division will spend the winter at the University of California's Lawrence Radiation Laboratory, where he will work on theoretical accelerator problems. The following physicists have recently joined the staff at Oak Ridge: **John H. Barrett**, formerly at the Louisiana State University, **Axel Meyer** from the University of Florida, **William L. Stirling** from Florida State University, and **Victor V. Verbinski**, formerly of the General Electric Research Laboratory.

Ernest F. Costello, Jr., formerly of Lehigh University, has been appointed assistant professor of physics at Merrimack College, North Andover, Mass.

Theodore E. Dinsmoor, formerly special assistant to the director of American Machine & Foundry Company's General Engineering Laboratories, has been appointed deputy director of AMF's Research and Development Division.

...NEWS IS HAPPENING AT NORTHROP 

How the Outer Edge of the Earth's Atmosphere Can Be the Training Ground for Man's First Landing on the Moon

by Norman V. Petersen, Chief of the
Astro Systems and Research Laboratories,
Norair Division of Northrop Corporation



One of our current studies at Norair shows that a manned capsule can be rocket-launched from the earth in a ballistic trajectory approximating an approach to the moon. A braking rocket blast fired from the capsule would push the vehicle into an earthward turn and place it in landing position above the earth's atmosphere — the same way a space ship would maneuver for a lunar landing. Such a maneuver would permit simulation of the lunar landing maneuver in near vacuum conditions as on the moon. It would utilize the blanket of air about the earth for safe recovery upon re-entry.

We base these particular studies on the use of conventional manned satellite capsules modified by the addition of a braking rocket as the lunar landing trainer and a ballistic rocket booster as the launching vehicle.

The capsule would be ejected at 50 miles altitude after traveling 100 miles from the launch site. Trajectory prior to ejection could be made to simulate either a close orbit approach to the moon, an intersecting elliptic trajectory approach or a vertical approach from a direct earth-moon trajectory. The guidance system would perform automatically during the initial approach, but would be fitted with an "override" feature allowing the pilot to take over the controls during braking maneuver.

For ten seconds the capsule would hover motionless above the atmosphere — supported by the reverse thrust of the rocket blast. Following the brief hovering period, the pilot and capsule would re-enter the atmosphere in a low-speed free fall. After re-entry, the descent would be completed by parachute.

This simulated lunar landing study is only one of our many current missile and space programs at Norair. Our range of activity allows the scientist and the engineer to work in research, design and development. He is active in the fields of close orbit, lunar and interplanetary flight regimes as well as in research in the many fields of space technology. These fields embrace astrodynamics, astronavigation, space physics, bio-astronautics, space electronics, space materials and processes, space propulsion and space structures.

Work in such challenging areas is stimulating, and the Norair environment is encouraging. For surrounding us are the finest facilities and the vast array of the entire Northrop Corporation's equipment.

The Norair scientist and the engineer enjoys deep professional satisfaction and a continuing chance to broaden his activities in space age developments. He is one of those important men who are making the news happen at Northrop.

Current papers by Northrop scientists and engineers include: A Simulator for Lunar Landings—Norman V. Petersen; The Influence of Launch Conditions on the Friendly Rendezvous of Astrovehicles—Robert S. Swanson and Norman V. Petersen.

For copies of these papers and additional information about Northrop Corporation, write:

NORTHROP CORPORATION

Department V4-1300-32, P.O. Box 1525
Beverly Hills, California



FOR LEPTONS, BARYONS or PHOTONS

Nuclear Enterprises Scintillators assist the nuclear physicist in his search for the elusive particles of modern physics.

OUR PRODUCTS INCLUDE:

- Plastic Phosphor NE102, with new efficient compacted powder reflectors. Available in any geometry including slabs for fast particle and annular anti-coincidence detectors. Boron Polyester ZnS(Ag) Thermal neutron detectors and hydrogenous fast neutron detectors with efficient light guides.
- Loaded Liquid Scintillators containing B, Cd, Gd, Pb and Sm.



1750 Pembina Highway
WINNIPEG 9, CANADA
Associate Co. Nuclear Enterprises
(G.B.) Ltd.
Sighthill, Edinburgh 11, Scotland

NUCLEAR INSTRUMENTATION

Permanent positions are available in our expanding Nuclear Physics Section for personnel with at least 2 years of nuclear instrumentation experience and a B.S. degree in Physics or Electrical Engineering. As a Foundation staff member you will have an opportunity to contribute to a wide variety of challenging industrial and military research programs.

In addition the Foundation offers a professional atmosphere, competitive salaries and liberal employee benefits including generous relocation allowance, an excellent vacation policy, insurance and retirement programs, and the opportunity for tuition-free graduate study.

Please send resume to:

A. J. Paneral

ARMOUR RESEARCH FOUNDATION
of Illinois Institute of Technology
10 West 35th Street Chicago 16, Illinois

Alexander J. Elwyn, formerly at the Brookhaven National Laboratory, and **Murray Peshkin** from Northwestern University have joined the Physics Division at the Argonne National Laboratory, Lemont, Ill.

Milan D. Fiske, who has been in charge of personnel and administration in the Metallurgy and Ceramics Research Department of the General Electric Research Laboratory, Schenectady, N. Y., has been named manager of the Laboratory's Research Personnel Section. British physicists **Moses Blackman** of the Imperial College of Science and Technology, London, and **Volker Heine** of the Royal Society Mond Laboratory, Cambridge, served during the summer as consultants to the Laboratory's Metallurgy and Ceramics Research Department. Also recently named as consultants to the Department are **Morrel H. Cohen** of the University of Chicago's Institute for the Study of Metals and **James A. Krumhansl** of Cornell University.

Sidney Golden of Brandeis University, Waltham, Mass., will spend the coming year in the Department of Theoretical Chemistry at Cambridge University, England, as a Fulbright research scholar and a Guggenheim fellow.

David M. Heinz, formerly at the General Electric Research Laboratory, has been appointed a senior scientist at Hoffman Electronics Corporation's new Science Center in Santa Barbara, Calif.

Harold K. Hughes has been appointed director of research in physics at Continental Can Company's Central Research and Engineering Division in Chicago, Ill.

Miguel C. Junger and **Richard V. Waterhouse** are the president and director of research and engineering, respectively, of the recently formed Cambridge (Mass.) Acoustical Associates, Inc., consultants in acoustics and vibrations.

Edward H. Kerner, **Henry Kraybill**, **Satoshi Ozaki**, and **John Russell** have joined the Physics Department at Brookhaven National Laboratory, Upton, N. Y.

Paul R. Klein, formerly of the Oak Ridge National Laboratory and Joseph Kaye and Company, has been named director of the Physics Department at the Nuclear-Chicago Corporation.

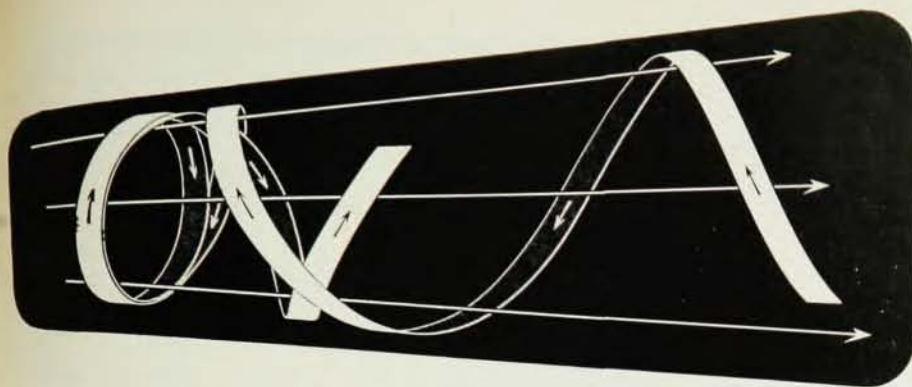
Charlton Lane, formerly chairman of the Physics Department at Florida Southern College, has joined the faculty of the New Mexico Institute of Mining and Technology in Socorro as an associate professor of physics.

Walter F. Leverton has been appointed engineering manager of the Raytheon Company's Semiconductor Division in Waltham, Mass.

Robert E. Lewis has joined Beckman & Whitley, Inc., San Carlos, Calif., as a senior optical engineer. Previously he was with the scientific bureau of the Bausch & Lomb Optical Company of Rochester, N. Y.

Kenneth G. McKay has been elected vice president in charge of systems engineering of the Bell Telephone Laboratories. **Morgan Sparks** succeeds Dr. McKay as the Laboratories' director of development of components and solid-state devices.

Lauriston C. Marshall, formerly director of research of the Link Belt Company, has been named associate technical director of the Varo Manufacturing Company's recently established Microwave Power Laboratories, located in Garland, Tex.



professional opportunities

We offer an academic environment in mid-Manhattan of superior technical standards and high professional calibre. The work involves development of systems concepts (particularly weapons systems) under prime Government contracts. Opportunities for rapid and orderly growth are exceptional.

Our associates already have distinguished records in these fields:

**Electronic Countermeasures; Air Defense Systems;
Air Traffic Control; Advanced Nuclear Weapons
Applications; Nuclear Physics; Digital Data
Processing; Project Program Analysis**

Your advanced degree in physics, electronic engineering or mathematics should be backed by demonstrated technical achievement... a thorough understanding of the laws of cause and effect, and sound application of scientific method.

Excellent Salaries

Tuition Plan

Three Weeks Vacation

Inquiries are invited from qualified scientists.

G. C. DEWEY & CO., INC., 202 East 44 St., New York, N. Y.

CBS LABORATORIES

227 High Ridge Road, Stamford, Connecticut

Telephone: DAVis 5-4321

Attractive openings are available at the new CBS Laboratories for Ph.D. and M.S. physicists, physical chemists, and semiconductor metallurgists. Opportunities are offered for stimulating research and development in the following fields of basic and applied physics for both recent graduates (Ph.D., M.S., B.S.) and scientists with relevant experience in the following areas:

Photoconductive Properties of Compound
Semi-conductors
Semi-conductor materials research
Ferromagnetism
Thin Film Semi-conductors
Plasma Physics
Electroluminescence
Transistor Physics
Thermoelectricity
Vacuum Tube Research
Acoustics and Magnetics
Electronic System Engineering
Optics

Write to:

Technical Placement Director

CURRENT INDICATOR AND INTEGRATOR

TWO instruments in ONE!



MODEL A309A

- Measures Currents from 1 Milliampere to 3 Milli-microamperes
- Integrates Input Current and Registers Accumulated Charge

The Model A309A Current Indicator and Integrator is a sensitive current indicator that also measures the total charge collected in a given length of time. Developed especially for use with high-voltage particle accelerators, such as the Van de Graaff generator, the instrument can be used in any application requiring the measurement of accumulated charge.

FEATURES

- Wide current range: 1×10^{-3} to 3×10^{-6} amp. in 12 switch settings.
- High accuracy: 1% of full scale.
- Internal calibrating current source to check proper operation.
- Front panel switch allows instrument to be used with current of either polarity.
- Pre-setting feature provides means of safeguarding against over-exposure.
- Permits many experiments with particle accelerators that would otherwise be extremely difficult if not impossible.
- Register readout gives digital accuracy on charge measurement.

COMPLETE
TECHNICAL
DATA AND
PRICES ON
REQUEST





unique source for ATOMIC LINE SPECTRA OF HYDROGEN

New gas discharge tube emits Balmer lines of Hydrogen of high intensity. Spectral lines are pure and sharp with low background. A useful source in refractometry, chromatic testing of optics, and student experiments in physical optics and atomic spectra. Simple, rugged construction with long life. Power supplies available. Literature on request.

ROBERT K. HASSLER CO.
P.O. BOX 177, ALTADENA, CALIF.

STATISTICIAN DU PONT

A professional opening exists for a statistician to act as a consultant on the application of statistics to the problems of research, development, engineering and production.

You will be dealing with management, research, development and engineering personnel in the fields of chemistry, physics and engineering. Large scale digital and analogue computers and programming assistance are available.

Excellent opportunity exists for individual study and development.

Experience in engineering, production or research is desired. Imagination and creative ability in applying statistical theory is required.

Write in confidence to:

Mr. T. J. Donovan
Engineering Department
E. I. du Pont de Nemours & Co., Inc.
Wilmington 98, Delaware

Lyman G. Parratt, professor of physics at Cornell University, has been named chairman of the Department of Physics, succeeding **Dale Corson**, whose appointment as dean of the College of Engineering was announced earlier this year. **Robert L. Sproull**, also professor of physics at Cornell, has been named director of the University's new Graduate Laboratory of Solid-State Studies.

William E. Plaisted, formerly a member of the faculty at the University of Rhode Island, has joined the Reconnaissance Systems Department of Ramo-Wooldridge, a division of Thompson Ramo Wooldridge Inc.

William Prager, professor of applied mathematics and chairman of the Physical Sciences Council at Brown University, Providence, R. I., has been elected as a foreign member of the Polish Academy of Sciences and has been named as one of four foreign editors of an Academy journal, *The Archives of Applied Mechanics*.

Francis W. Sears, who is currently serving as president of the American Physical Society, has been named chairman of the Department of Physics at Dartmouth College, Hanover, N. H.

Francis B. Silsbee retired on July 31 as chief of the Electricity and Electronics Division of the National Bureau of Standards after serving with the Bureau for 48 years. Recent appointments at NBS include **Arnold M. Bass** as chief of the Free Radicals Research Section, **Karl G. Kessler** as chief of the Spectroscopy Section, and **Chester H. Page** as acting chief of the Electricity and Electronics Division. NBS staff members recently awarded the US Department of Commerce Gold Medal for Exceptional Service include **Peter L. Bender**, **Raymond L. Driscoll**, and **Archibald T. McPherson**. **Joseph W. Motz** has been awarded the Commerce Department's Silver Medal for Meritorious Service.

Frank E. Swindells has been appointed as manager of research on photosensitive devices in the Electronic Tube Division of Allen B. Du Mont Laboratories, Inc., Clifton, N. J.

Russell G. Westberg, formerly with the Physics Department of the University of California at Berkeley, has joined the Gaseous Electronics Section of the Philips Laboratories, Irvington-on-Hudson, N. Y.

The following physicists are among the group of scientists to be honored this year by the Franklin Institute of Philadelphia in formal ceremonies to be held at the Institute on October 21: **Charles H. Townes**, professor of physics at Columbia University, who will receive a Stuart Ballantine Medal "for his conception and demonstration of the feasibility of securing amplification and generation of high frequency radio waves by stimulated emission of radiation and for his invention of the maser"; **Irving Wolff**, vice president of research of RCA Laboratories, who will be presented an Elliott Cresson Medal for his many contributions to the science of electronics and to microwave radar development and for his pioneering work in the centimeter wave field; and **Clarence Zener**, director of the Westinghouse Research Laboratories, who will be awarded a John Price Wetherill Medal for his contributions to solid-state physics and in particular to the physics of metals, and also for "his unusual ability to stimulate important work on the part of others".