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One example, shown above, is the 150 watt electrostatic generator — developed by I P C scientists. This machine, spinning in high vacuum, confirmed the theory of variable capacitance machines. At present, a 1 KW electrostatic machine is being tested at 10,000 rpm, again spinning in high vacuum. A 5 KW machine is in an advanced state of design. Vacuum electrostatic generation concepts are aimed at the development of compact power converters for space applications.

In addition to electric field studies dealing with space environment, company-sponsored research has led to many developments in the areas of particle accelerator technology, ion source development, and the production of solid-state devices employing advanced ion implantation.

Career opportunities are available for engineers and scientists in the following areas:

Ion Beam Devices
Energy Storage
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Electrostatic Power Conversion
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cerned with reactor physics or engineering. The 16-mm, black-and-white films will be made available for free loan through the AEC's domestic and overseas film libraries. All inquiries should be directed to the Audio-Visual Branch, Division of Public Information, US Atomic Energy Commission, Washington 25, D. C.

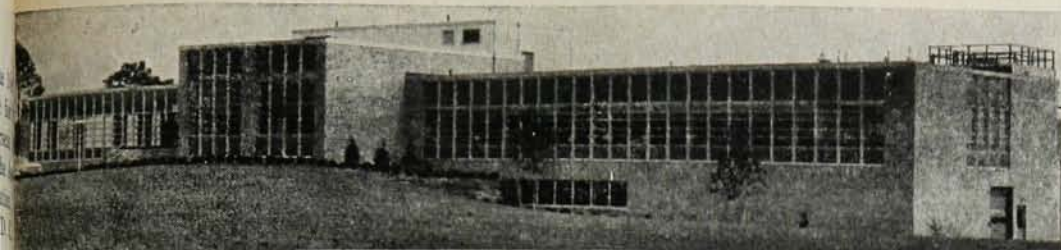
Research Grants

Carnegie Institute of Technology has received a one-year grant of \$400 000 from the Advanced Research Projects Agency for the support of research in areas of information processing that include computer programming, languages, the theory of programming, artificial intelligence, the interpretation of natural languages, man-computer reaction, and the design of computing machines. In addition to providing partial support for senior research personnel, the grant will be used for six research assistantships for graduate students and postdoctoral fellows. A considerable portion of the funds will go towards the purchase of advanced equipment for use with Carnegie Tech's computer.

The University of Wisconsin has received a grant of \$700 000 from the National Aeronautics and Space Administration for the establishment of an Institute of Theoretical Chemistry on the University's campus in Madison. The new facility, under the direction of Joseph O. Hirschfelder and Charles F. Curtiss, will undertake a broad program of research in theoretical chemistry with emphasis on molecular quantum and statistical mechanics, directed toward the determination of the physical and chemical properties of materials, the relation of these properties to the characteristics of individual molecules, and determination and structure of individual molecules. Initially, methods will be developed for obtaining satisfactory solutions to the molecular quantum-mechanical equations with the aid of high-speed computers. The solutions will then be applied to a wide variety of problems, including properties of gases and liquids, rates of chemical reactions, the structure of free radicals, ions, and excited species, and problems involving extremely high pressure and temperature.

The Institute will feature an extensive graduate and postdoctoral teaching program with a special PhD degree to be offered in theoretical chemistry. Suitable research assistantships and postdoctoral appointments are available to qualified individuals. All inquiries should be sent to Prof. Joseph O. Hirschfelder, Director, Theoretical Chemistry Institute, University of Wisconsin, 1112 West Johnson Street, Madison 6, Wisconsin.

The California Institute of Technology has been awarded a \$94 000 grant by the Air Force Office of Scientific Research to establish a new professorship in geophysics. According to AFOSR, the grant was made



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VISCOELASTIC AND MECHANICAL PROPERTIES—Ph.D. Physical Chemist or Polymer Physicist for work in basic viscoelastic behavior of plastics and rubbers. Work at advanced scientific level and opportunity to develop new theoretical and experimental methods for studying basic mechanical properties of polymers.

SOLID STATE STRUCTURE OF POLYMERS—Ph.D. Physical Chemist for studies in solid state structure of polymers. Must have good background in scattering and diffraction of x-rays and light by solids, and interest in applying these methods to the structure of polymers in the solid state. NMR experience desirable but not essential.

Qualified candidates are invited to explore these challenging assignments in our new Research Center. Modern personnel program. All inquiries will receive prompt replies.

For further information, please write:

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The Aerodynamic Research Department of Cornell Aeronautical Laboratory has several openings for qualified scientists and engineers

The Department is engaged in fundamental research, both theoretical and experimental, covering a wide range of scientific and technical interests. Some particular problem areas emphasized are: Fluid dynamics of hypervelocity flight—including inviscid and viscous aerothermodynamic phenomena with coupled thermal-chemical nonequilibrium effects; Physics of high temperature gases—including air radiation and plasma ionization phenomena important to re-entry flight; Propulsion—including combustion and nonequilibrium flow phenomena.

Candidates should have academic backgrounds (PhD preferred) in appropriate disciplines, 3-10 years of experience in areas allied with those above, and demonstrated abilities for conducting original research.

Salary commensurate with experience.

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"to meet an urgent need for basic research relevant to underground nuclear test detection". Stewart W. Smith, assistant professor of geophysics at Caltech for the past year, has been appointed to the new post with the title of Air Force Office of Scientific Research Professor of Geophysics. For the first ten years, the Air Force grant will finance the professorship, after which Caltech will continue it without further assistance. In awarding its first such long-term grant, AFOSR said that it will "consider establishing positions at other universities where basic research advances required for Air Force technological progress are severely limited by short-term support and can be attained only by long-term support".

Fellowships

The fall announcement of *Fellowship and Research Opportunities in Mathematics*, prepared by the Division of Mathematics of the National Academy of Sciences—National Research Council, calls attention to the availability of specific fellowships and support programs for basic research in mathematics at both the predoctoral and postdoctoral levels to be awarded during 1962–63. Copies are available from the Division of Mathematics, National Academy of Sciences—National Research Council, 2101 Constitution Avenue, Washington 25, D. C.

Additional sources of support in mathematics and the sciences are included in the bulletin, *A Selected List of Major Fellowship Opportunities and Aids to Advanced Education*, which is available from the NAS-NRC Fellowship Office.

Two fellowships for women holding doctoral degrees are being offered by the American Association of University Women. The Marie Curie fellowship in radiology, physics, or chemistry carries a stipend of \$5000 and is open to women who are French or American citizens. The Sarah Berliner fellowship in physics, chemistry, or biology also carries a \$5000 stipend and is open to women of any country represented in the International Federation of University Women. The deadline for applications is December 1. Prospective applicants should write to the Fellowships Office, AAUW Educational Foundation, 2401 Virginia Ave., N.W., Washington 7, D. C.

Fourteen students have been named recipients of Daniel and Florence Guggenheim Fellowships for graduate study during 1962–63 in jet propulsion, spaceflight sciences, and flight structures. The awards provide full tuition and stipends (up to \$2000) for study at Princeton University, the California Institute of Technology, and Columbia University. The fellowships are awarded annually by the Daniel and Florence Guggenheim Foundation of New York City to students who are residents of the United States or Canada and who are interested in rockets, jet propulsion, flight structures, or astronautics.