in 1962 and 1963. Surveys are underway to determine favorable locations for the high-frequency, low-power installations, each of which will be designed to have extremely accurate tracking and antenna-pointing capabilities.

Project Relay, the first part of the cooperative program, will involve a low-altitude, active repeater satellite weighing less than 100 pounds, which is to be launched next year. In addition to its communication equipment, the Relay satellite will carry instrumentation for detection of radiation damage and other environmental effects on components.

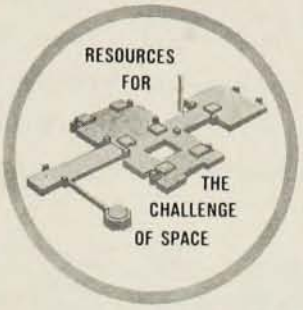
In Project Rebound, the second stage of the program, several inflated spheres will be placed in orbit from a single launching vehicle. Project Rebound will represent a continuation of NASA's passive-reflector program Echo, and is scheduled to launch its first three spheres in 1963. The cooperating agencies of the three nations have announced that they will welcome participation in the program by other countries desiring to provide additional ground facilities for the experiments.

Laboratories and Equipment

The central facility of the new Space Radiation Laboratory at Northrop Corporation's Norair Division in Hawthorne, Calif., will be a General Atomic Triga Mark-F "pulsing" reactor, which is scheduled for completion by early next year. The reactor will be capable of being pulsed to peak power levels of about 1.2 million kilowatts for fractions of a second at repeated intervals and will be used to study the behavior of vehicle components, materials, and electronic subsystems exposed to intensive bursts of neutrons and gamma radiation. An oversized pool of demineralized water surrounding the reactor core will permit immersing capsules containing full-size missile and space-vehicle components for exposure to radiation. Other studies will be conducted in a dry exposure room to be constructed adjacent to the reactor pool. Operating at its steady-state energy level of 100 thermal kilowatts, the reactor will also be used for neutron-physics research and for the production of radioisotopes.

A new radiotelescope intended for the study of radiations from the planet Jupiter has been constructed at Yale University's Bethany Observatory. Consisting of two grids, each 110 feet high, 110 feet wide, and 200 feet long, it will be used to observe 108 simultaneous frequency channels—eight times as many as are covered by the university's present equipment. Monitoring connections also bring in Jovian signals received by stations at Pomfret School and Wesleyan University in Connecticut, and by a radio station on the Yale campus ten miles away. Financed by grants from the Research Corporation, the National Science Foundation, and the National Aeronautics and Space Administration, the new telescope is manned, maintained, and was partially built by several dozen Yale

General Electric's MISSILE & SPACE VEHICLE DEPT. Adding to its Aerophysics Staff



New multimillion dollar Space Technology Center now being constructed near Valley Forge Park.

The Space Sciences Laboratory of the Missile & Space Vehicle Department is a research oriented organization probing the sciences related to extra-atmospheric vehicle and advanced missile development. This expanding group of highly qualified scientists will be a part of the new MSVD multimillion dollar Space Technology Center now under construction on a 132 acre site near Valley Forge Park, 17 miles from Philadelphia.

● THEORETICAL & EXPERIMENTAL PLASMA INVESTIGATIONS

Opening for Physicists with Ph.D. degree or equivalent experience in physics or any of the related fields of electro-magnetic phenomena or gaseous electronics. He will perform theoretical and experimental investigations associated with the generation and diagnosis of plasmas. And, he will be offered the opportunity to study the interactions of plasmas with magnetic fields and microwave radiation.

● THEORETICAL GAS DYNAMICS

Scientists with Ph.D. degree or equivalent in aerodynamics, gas dynamics, or the physics of fluids at high temperature and high altitude regimes are sought. These scientists will perform theoretical investigations of the following areas of gas dynamics; magnetogasdynamics, non-equilibrium effects in gas dynamics at high altitudes, mass transfer and heat transfer, boundary layer theory and flow field analysis.

● MAGNETOHYDRODYNAMIC POWER GENERATION

Experimental and theoretical physicist and research engineer to perform fundamental research on magnetogasdynamics in conjunction with direct energy conversion. Problems include:

kinetic theory and statistical plasma mechanics / electron physics and ionization phenomena / plasma measurements and diagnostics / magnetogasdynamic flows / boundary layers in plasmas / magnetohydrodynamic power generation / systems study and applications.

PhD or equivalent in physics, aerodynamics, fluid mechanics, or combustion is required.

Send a brief summary of your background to:

Mr. F. J. Wendt, Div. 462-F, Missile & Space Vehicle Department,
General Electric Company, 3198 Chestnut Street, Philadelphia 4, Pa.

All qualified applicants will continue to receive consideration for employment without regard to race, creed, color or national origin.

GENERAL ELECTRIC

students under the supervision of James N. Douglas, instructor in radio astronomy, and Harlan J. Smith, associate professor of astronomy.

The Martin Company has formed a new department to integrate the activities in nuclear chemistry which are carried out at the firm's laboratories in Baltimore, Md., and Quehanna, Pa. The Nuclear Chemistry Department is headed by Charles E. Crompton, who served previously as director of advanced development for the Auxiliary Power Systems Department of Martin's Nuclear Division. Among the facilities available to the new group are an automated laboratory for processing nuclear materials and a series of hot cells for remote handling operations. The department will provide technical support for those groups within the company which produce auxiliary power systems, reactor power plants, and reactor fuel elements.

Research Grants

The American Academy of Arts and Sciences is again offering grants-in-aid for research in any recognized scientific field. The usual range is between $500 and $1500 per grant. In general, applications from individual scientists rather than from institutions are favored and projects dealing with explorations of the frontiers of scientific knowledge, whether interdisciplinary or within a single discipline, are preferred. Support is not ordinarily given for work aimed primarily at fulfilling the requirements for an academic degree. Applications for the grants must be received before September 1 by the American Academy of Arts and Sciences, Committee on Research Funds, 280 Newton Street, Brookline Station 46, Boston, Mass. That office will supply the necessary application forms on request.

Nuclear test detection studies are being furthered with a grant of $110 000 by the Defense Department's Advanced Research Projects Agency to Rensselaer Polytechnic Institute in Troy, N. Y. The grant will support a two-year study under the direction of Samuel Katz, associate professor of geophysics at RPI, and will form part of the Air Force Project Vela-Uniform. The group will investigate a proposed method of differentiating between disturbances in the earth caused by explosions and those arising from earthquakes by observing the behavior of water in deep wells. According to the Rensselaer announcement, this depends upon the fact that an explosion initially produces a compressive wave radiating from the center, while an earthquake, caused by shearing, gives rise to waves which are compressive in one direction and decompressive in the other. They have a syringe-like effect on water in deep wells: the water level rises in wells experiencing compression and falls in those under decompression. If two wells at opposite points on a circle around an observed center of disturbance both register a rise in water level, there is evidence of an explosion, whereas in the case of an earthquake the water level may be expected to rise in one well and to fall in the other.