held on college campuses, will last from 6 to 8 weeks. The foundation's grant will meet expenses of the host institutions and provide board, room, tuition, traveling expenses, and a stipend to the teachers to help compensate for loss of summer earnings.

The in-service institute will enroll 100 public, private, and parochial school teachers in a metropolitan area university for a course of 27 Saturday sessions. The foundation's grant will meet the expenses of the university and provide a stipend to each teacher to help offset the loss of part-time employment. This project, based on strong recommendations from high-school and college educators, is a pilot operation and may be extended to other cities.

In both of these programs, teacher selection will be exclusively in the hands of the participating colleges. In order to encourage development of up-to-date instructional materials, support may be given to a project on the use of films or television for science teaching.

At the college undergraduate level, unrestricted funds will be provided to science and engineering departments. These might be used to purchase books and laboratory equipment and to permit faculty members to attend meetings, visit plants and scientific projects, prepare papers for publication or as teaching material, and conduct special research. The latter might include summer vacation projects, which could thus be conducted without loss of income otherwise obtainable from outside employment.

Capital grants to assist in the construction of new science buildings will be made to certain institutions that have undertaken such building programs. These grants will be in addition to capital grants usually made by the Esso Education Foundation.

At the graduate level, unrestricted grants will be made to departments of science and engineering. College authorities will have complete responsibility for selecting specific activities and individuals and otherwise directing disposition of the grants.

NSF Earth Science Grants

The Earth Science Program of the National Science Foundation is now receiving proposals for research grants that will be made in February and March 1958. Deadline for the receipt of proposals for work to begin in the fall or early winter is *20 Sept.* There are no formal application blanks, but an NSF pamphlet that describes the method of making application may be obtained by writing to the Earth Sciences Program, National Science Foundation, Washington 25, D.C.

Swedish Scientists Visit U.S.

Twenty-six members of the Swedish Association of Young Scientists spent August visiting U.S. research laboratories on a study tour sponsored by the National Academy of Sciences and the American-Scandinavian Foundation in New York. The decision to come to the United States was an abrupt change from previously announced plans. For some years the group had been making annual exchange visits with scientists of other European countries. In 1957 a trip to the U.S.S.R. was scheduled, to be followed by a return visit from the Soviets in 1958. However, after the events of the Hungarian uprising, the Swedish Association canceled the original plans.

While the Swedish scientists have themselves raised the funds for transatlantic passage and insurance, their expenses over here were financed by private contributions. Cosponsorship of the study tour was undertaken by the National Academy as part of its continuing program of facilitating U.S. participation in international science organizations and encouraging professional cooperation among scientists of all nations.

New Electronic Devices

Two new electrochemical devices which may rival the vacuum tube and the transistor in electronic technology have been announced. They are the "solion," developed by the Naval Ordnance Laboratory in Washington, D.C., and the "spacistor," developed by a team of physicists of Raytheon Manufacturing Company of Waltham, Mass.

The "solion" depends on the movement of ions in a solution, instead of in gas or a vacuum, as in the vacuum tube, or in a solid, as in the transistor. The ions flow between electrodes in an iodine solution. The device is highly sensitive to changes in outside conditions. The electric flow of ions, for example, can be stimulated and varied by changes in temperature, pressure, light, sound, and acceleration. In certain applications, it promises to be more selective, sensitive, and efficient than the vacuum tube or the more recently developed transistor. It is expected to make possible less expensive, smaller, and simpler electronic control systems.

The "spacistor" operates on what is described as "a wholly new principle." It is a semiconductor device, as tiny as the transistor, that operates electrically like a vacuum tube. It is said to "combine many of the best properties of the vacuum tube and the transistor" and thus to be "a major step forward in the art of amplifying electric energy." The spacistor promises two major advantages over today's best transistors: it will probably amplify as much as 50 times higher than transistors; also, because spacistors can be made from materials unsuited for transistors, they are expected to operate at temperatures more than double the temperatures at which today's germanium or silicon transistors can operate.

Teacher Exchange Program

More than 500 teachers from the United States and 37 other countries will participate in the 1957–58 program of exchange teaching arranged by the U.S. Office of Education. The teacher exchange program is now in its 12th year. It began in 1946–47 with an exchange of 74 American and 74 British teachers. With this year's exchange, 4273 teachers from the United States and 57 other countries will have participated in the program, which is part of the United States International Educational Exchange program of the Department of State.

The teacher exchange program is the forerunner of another program of international education arranged by the Office of Education. Under this latter plan more than 475 additional teachers and school administrators will be arriving during the fall months. They will participate in the International Teacher Education Program of the Technical Assistance Program, which is administered by the Office of Education in cooperation with the International Educational Exchange Service and the International Cooperation Administration, respectively, in the Department of State.

Mathematics Teaching Essay Contest

During the school year 1956–57, Kappa Mu Epsilon, honorary mathematics fraternity, and the AAAS Science Teaching Improvement Program sponsored an essay contest for teachers of mathematics and prospective teachers. Thousand-word essays on "Opportunities in teaching mathematics in secondary schools" were submitted by contestants. Prizes were awarded to Sister Mary Neal Moran, Mundelein College, Chicago, Ill.; Rose Mary Kotesa, College of St. Francis, Joliet, Ill.; and Cathleen Real, Davenport, Ia.

The winning essays will appear in the fall issue of *Pentagon,* official publication of Kappa Mu Epsilon. It is hoped that the contest and the resulting published essays will encourage undergraduate and graduate students in mathematics to consider the advantages of a career in secondary-school mathematics teaching.