SCIENCE EDUCATION

Summer Study

Applications should be filed by April 1 for the 1961 International Summer Course in Science sponsored by the Netherlands Universities Foundation for International Cooperation. The course, organized with the help of a grant from the North Atlantic Treaty Organization, will be held August 1–16 at Nyenrode Castle, Breukelen, the Netherlands, and will deal with fundamental problems in statistical mechanics.

About forty lectures will be given, all in English. Among the lecturers will be N. G. van Kampen, K. Huang, N. M. Hugenholtz, E. G. D. Cohen, L. Van Hove, H. Wergeland, P. Mazur, and G. E. Uhlenbeck. Although the course is primarily intended for the benefit of advanced students, the organizers have indicated that applications from young scientists actively engaged in physics or chemical physics will be welcomed. Participation will be limited to fifty persons. There will be no tuition, but participants will be charged 250 Dutch guilders (about $67) to cover the cost of accommodations, meals, and excursions.

Applications must contain the usual vital statistics, including degrees held (with date and university specified), present professional activity, publications, and other such pertinent remarks as whether the applicant intends to bring his family. A note from a university professor of physics or chemical physics, testifying to the candidate's qualifications and interest in the course, should be included. Applications should be mailed to the Registrar, Netherlands Universities Foundation for International Cooperation, 27 Molenstraat, the Hague, the Netherlands.

Brandeis University has announced plans for a Summer Institute in Theoretical Physics consisting of two consecutive three-week sessions from June 26 through August 4. Courses and seminars will be offered for graduate students and postdoctoral students, with greatest emphasis on high-energy physics and elementary particles. Some fellowships and grants-in-aid will be available.

Among the visiting faculty will be R. Eden, of Cambridge University, England; R. Glauber, of Harvard University; G. Källén, of the University of Lund, Sweden; J. C. Polkinghorne of Cambridge University, England; J. J. Sakurai, of the University of Chicago; A. Salam, of Imperial College, London; and E. C. G. Sudarshan, of the University of Rochester.

Inquiries about the Summer Institute should be directed to the Summer School Office, Brandeis University, Waltham 54, Mass.

A short course on solid-state mechanics will be given at Pennsylvania State University from June 11 to 23. Primarily planned for research, design, and materials engineers, it is also expected to be of interest to metallurgists, physicists, and chemists engaged in materials science. Joseph Marin, head of the Department of Engineering Mechanics, is chairman of the course. The fee is $175. Further information can be obtained from the Conference Center, The Pennsylvania State University, University Park, Pa.

Oak Ridge Institute of Nuclear Studies is preparing to hold its tenth training session of the Oak Ridge Science Demonstration Lecture Program (June 19 to September 15). The program, supported by a grant from the National Science Foundation and organized with the cooperation of the Atomic Energy Commission, is designed to improve science-teaching techniques and to encourage the construction of effective and economical demonstration equipment. Some twenty secondary-school science teachers and administrators will participate in the three-month session. Further information about the program can be obtained by writing to the University Relations Division, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tennessee.

Educational Placement Services

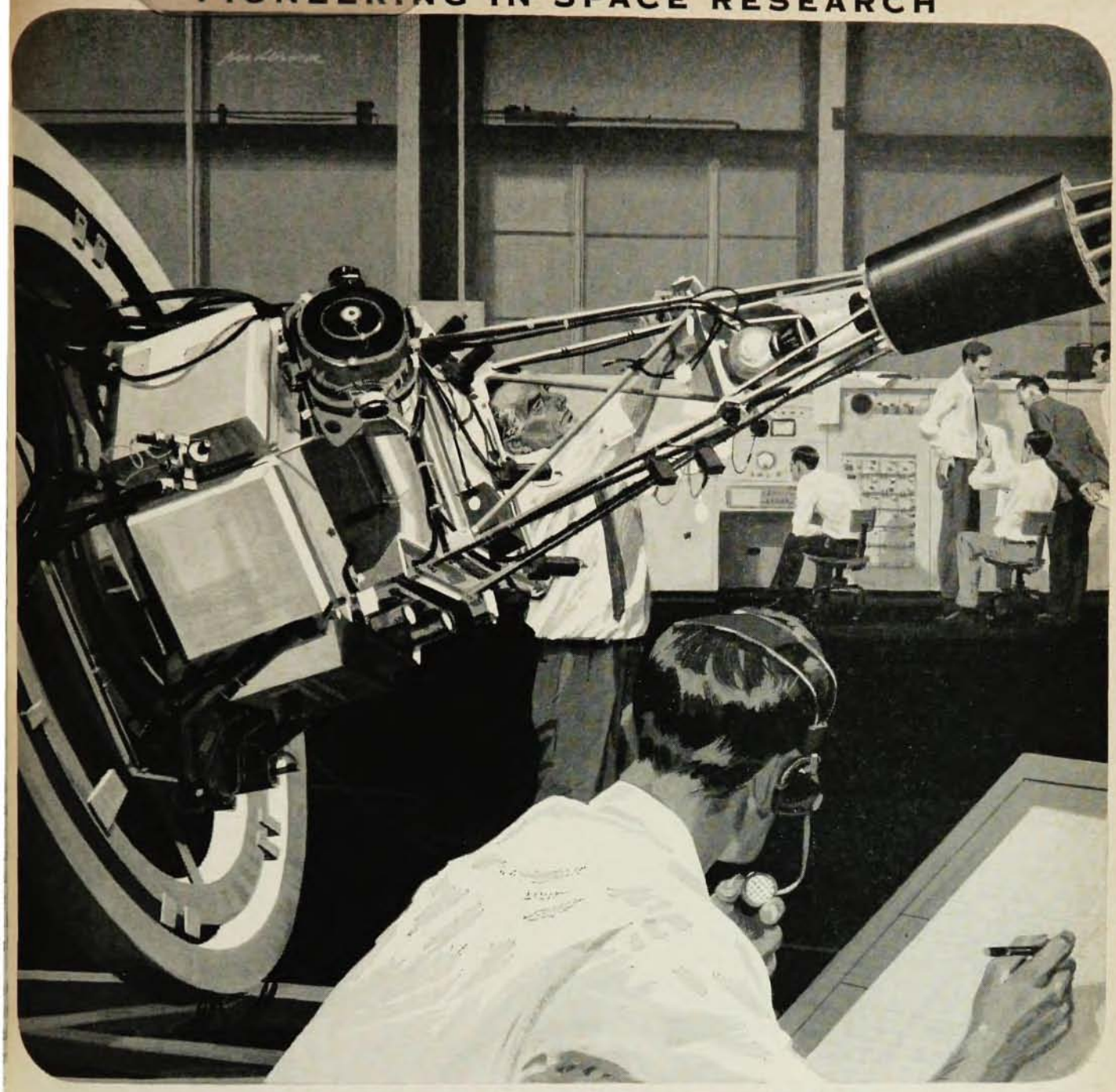
A study aiming to survey the nature and extent of placement services for higher education offered by privately supported organizations in the United States is being conducted by the US Office of Education under the direction of Robert Poppendieck, specialist for teacher education in the USOE. The study, which is intended to cover placement for all academic and administrative positions, was conceived jointly by the Office of Education and the American Council on Education as a move toward defining the complex network of higher educational placement facilities.

In the initial phase of the study, questionnaires were sent to some 200 private organizations concerned with higher education, and it is intended that the findings be published as a directory of their various placement services. Organizations wishing to be included in this listing should direct their inquiries to Dr. Poppendieck (Rm. 3760, US Office of Education, Washington 25, D. C.).

Facilities and Programs

Completion of the first spiral ridge cyclotron, a new addition to the family of proton accelerators, was announced recently by the University of California at Los Angeles. The design of the 49-inch instrument, a spiral cloverleaf shape which keeps the protons in step with the dee voltage, permits continuous acceleration up to 50 Mev. In addition, spiral iron shims have been placed at intervals in the magnetic gap, altering the magnetic field in such a way as to focus the protons in a beam without putting them out of phase with the

PIONEERING IN SPACE RESEARCH



DEVELOPMENT OF LUNAR SPACECRAFT

The "Ranger" series of spacecraft, designed first to explore the environment and later to land instrument capsules on the Moon, are now being developed and tested at Jet Propulsion Laboratory.

Illustrated is a "Ranger" proof-test model undergoing design verification testing at the Laboratory. Here design features are tested and proved, operational procedures developed and handling experience gained for the actual construction of the initial flight spacecraft.

This is one phase of JPL's current assignment from the National Aeronautics and Space Administration—to be responsible for the Nation's unmanned lunar, planetary and interplanetary exploration.

An advanced program such as this provides numerous objectives and incentives for qualified engineers and scientists who are eager to help solve the complex problems of deep space exploration.

Such men are welcome at JPL.

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alternations of the electric field. The beam produced is 1000 times as intense as that achieved by the old 20-Mev Lawrence cyclotron at UCLA. It is expected that the energy potential can be extended to 600 Mev without introducing any new principles of design.

The new cyclotron, which will be housed in a special addition to the Cyclotron Building, will replace the present 41-inch machine, the world's first cyclotron, which was built at Berkeley in the early 1930's by the late Ernest O. Lawrence, and which will be moved back to the Berkeley campus to become a permanent memorial to him in the future Lawrence Hall of Science.

The spiral ridge cyclotron was designed by three UCLA physicists, J. R. Richardson, Byron T. Wright, and Kenneth R. MacKenzie. Its construction took two and one half years and cost $75 000, of which a third was supplied by the Office of Naval Research and the rest by the University.

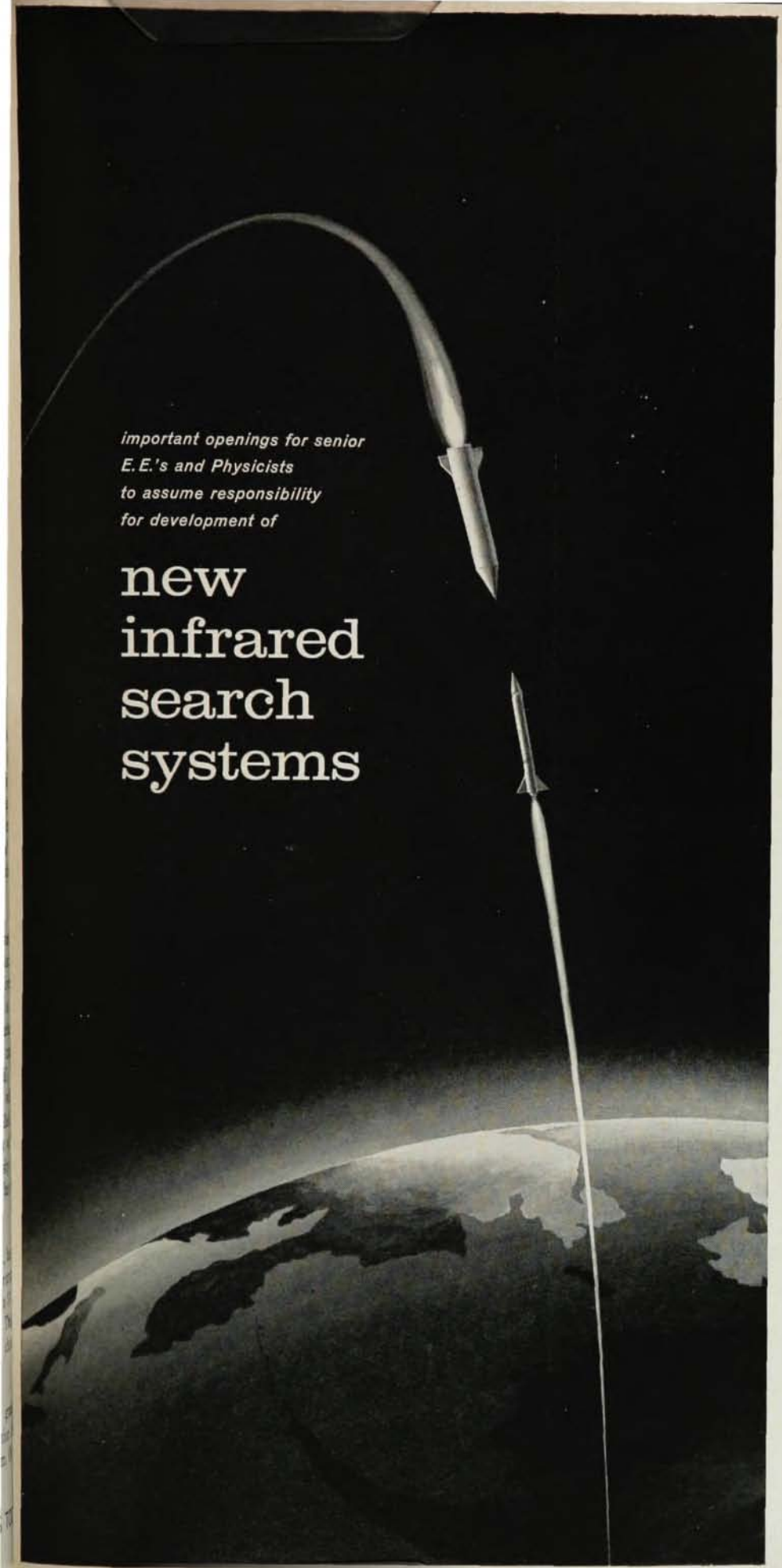
A compact cyclotron, measuring approximately 3×5 feet, was unveiled by Pomona College as part of its 73rd Founder's Day ceremonies in October. The small accelerator, designed by Byron Wright and Kenneth MacKenzie of the University of California at Los Angeles, was built by Hughes Aircraft Company and was donated to Pomona by alumnus and trustee Frank Seaver of Los Angeles.

It is intended that the machine will be the backbone of nuclear physics instruction at Pomona and that every physics major will eventually have an opportunity to do individual work on it. The small unit, capable of producing either 2-Mev protons or 4-Mev deuterons at currents up to 25 microamps, is designed and will be maintained strictly for undergraduate instructional purposes.

Pennsylvania State University has been issued an Atomic Energy Commission license for a nuclear research reactor which has been given to the University by the Curtiss-Wright Corporation. Located at the firm's Research and Development Center at Quehanna, Pa., it is a water-moderated pool-type reactor capable of power levels up to 4000 kilowatts (thermal). The reactor and associated laboratory equipment will be used for research and training and will be called The Curtiss-Wright Nuclear Research Laboratory of the Pennsylvania State University. The University also owns a 200-kilowatt pool-type reactor, which has been in operation since August 15, 1955.

St. Peter's College of Jersey City, N. J., has announced plans to initiate an undergraduate program in nuclear and reactor physics with the help of a $19 339 grant from the Atomic Energy Commission. The program will be directed by Cornelius Gavin, chairman of the Department of Physics.

Columbia University has received a grant of $247 000 from the National Science Foundation to aid its Nuclear Engineering and Science Program. Of that



important openings for senior E.E.'s and Physicists to assume responsibility for development of

new infrared search systems

Progress of the Hughes Infrared Systems and Guidance Heads Department reflects Hughes' overall growth. In the past ten years, employment has risen from under 2,000 to over 30,000 in semi-autonomous divisions concerned with Engineering, Research, Commercial Products, Ground Systems, Communications and Manufacturing. The infrared activity includes these typical projects:

1. **Air-To-Air Missiles**
2. **AICBM**
3. **Air-To-Air Detection Search Sets**
4. **Satellite Detection & Identification**
5. **Infrared Range Measurement**
6. **Detection Cryogenics**
7. **Detector Application Physics**
8. **Optical Systems Design**

These activities have created a number of new openings for graduate engineers and physicists with analytical and inventive abilities.

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amount, $200 000 will be used to purchase an experimental, water-moderated reactor, and the remainder will be spent on equipment for the handling of radioactive materials.

The reactor, which will have a continuous rating of ten kilowatts and the capability of "flashing" for a few milliseconds to a relatively higher power level, will be installed in the basement of the University's new Engineering Center in New York City, now under construction at 120th Street and Amsterdam Avenue. It will be the fourth nuclear reactor system on the Morningside Heights campus, the previous three being subcritical assemblies employed in nuclear training programs. The new reactor is intended to serve primarily as a research tool for faculty members and graduate students at Columbia, although on occasion it is expected to be available for use by qualified personnel from other institutions in the New York area.

It was also announced that for the first time Columbia will offer the "degree of Nuclear Engineer" for persons who continue their studies for one year beyond the master's degree but do not intend to complete a full doctoral program.

The New York City Board of Estimate authorized a $35 000 bond issue in December to provide facilities for the installation of an 800-kev cyclotron in the basement of Stuyvesant High School in Manhattan. The school's Cyclotron Club, with a membership of some two dozen students working under the direction of Alfred Bender, an electronics teacher, has been meeting before school hours to assemble the proton accelerator. The project has been aided by a grant of $10 000 provided by the Hebrew Technical Institute of New York. Alexander Efron, head of the Physics Department, has indicated that efforts will be made to establish a separate nuclear physics course at the high school when the cyclotron is completed.

NSTA Programs

The National Science Teachers Association has commenced a study of school science facilities to determine the physical setting and tools necessary to a good science program from kindergarten through junior college. The principal investigator is Fred R. Schlessinger, associate professor of education at The Ohio State University at Columbus, who will have the assistance of an eight-man steering committee.

Supported by a grant from the Laboratory Equipment Section of the Scientific Apparatus Makers Association, the NSTA study is based on three major hypotheses: that laboratory experience is the central method of science teaching at all grade levels, that science will have an increasingly important place in the curriculum, and that secondary-school science programs will develop into "multi-track patterns with homogeneous grouping".

A new organization for science-interested high-school students, "Future Scientists of America", has