

alone, and seven are being operated in cooperation with other countries, including four in Peru with the cooperation of the Instituto Geofísico de Huancaayo. The regular United States magnetic observatories are continuing to supply data to the World Data Centers during IGC-59. The special networks established during the IGY to study the equatorial electrojet and sub-audio signals and their relationships to magnetic storms are also continuing operations.

***Ionospheric physics.*** Thirty U.S. and 41 cooperative stations are being operated in the U.S. IGC-59 ionospheric-physics program. Vertical soundings are taken every 15 minutes with modern ionosondes, and more often on Regular World Days and during Special World Intervals. There will be continued studies of backscatter, transequatorial propagation, radio noise, whistlers, and ionospheric absorption of extra-terrestrial radio signals, and several groups will observe and analyze ionospheric effects upon satellite radio signals.

***Solar activity.*** Thirteen stations are being operated by the United States in this program, which includes continuation of optical patrols of the sun's corona, plagues, flares, sunspots, and active-region magnetic fields, supplemented by solar-radio-noise patrols and radio spectroscopic observation. Expeditions to Fuerteventura, in the Canary Islands, and to French West Africa, observed the total solar eclipse of 2 October 1959. The solar-activity program also includes special rocket experiments.

***Space science.*** The United States' contribution to IGC-59 in space science is being made by several agencies through the Space Science Board. Results of appropriate launchings are expected to be made available to the World Data Centers and to ICSU's Committee for Space Research. The U.S. space-science program has been placed on as broad a basis as possible. By the end of 1959, about 75 sounding rockets and several satellites and space probes will have been launched as a contribution to IGC-59.

The satellite and space-probe contribution is largely being made by the National Aeronautics and Space Administration.

Contributions to the rocket sounding program are being made by many public and private institutions. Emphasis is being placed upon experiments relating to atmospheric structure, electric and magnetic fields, astronomy, energetic par-

ticles, and the ionosphere. The coming World Rocket Week is part of this program.

#### **Earth's Shape, Crust, and Composition**

***Seismology.*** Most of the IGY network seismological stations have continued functioning during IGC-59. Two Benioff extensometers, or strain seismometers, are being operated in Chile and in Peru as cooperative programs; they are used to determine the strain pattern of the region. The program for studies of the structure of the earth's crust under the Andes is being extended to include a network for observations of local and regional earthquakes.

***Gravity.*** Gravity determinations by United States groups are assisting in completion of a world network; gravity measurements made at sea by means of the Graf sea gravimeter and pendulum equipment are also being continued.

***Longitudes and latitudes.*** During IGC-59 the U.S. Naval Observatory has continued to be the central agency for the moon-position program. Photographic observations of the moon, made with the dual-rate camera, and determination of astronomical longitudes and latitudes by means of the Danjon impersonal astrolabe are continuing at three stations—in Washington, D.C., in San Diego, and near Honolulu.

#### **Antarctica**

The United States program for scientific research in the antarctic during 1959 was developed by the NAS Committee on Polar Research in collaboration with various federal and private agencies in the United States. The program is being carried out under the direction and coordination of the National Science Foundation. Logistic support is furnished principally by the United States Navy. Coordination with international plans for continued cooperation in antarctic research has been effected through the National Academy's participation in the deliberations of ICSU's Special Committee for Antarctic Research.

The U.S. IGC-59 program in Antarctica includes projects in aurora, cosmic rays, geomagnetism, ionospheric physics, glaciology, meteorology, and oceanography. In addition, special programs are being conducted in geology, geodesy, cartography, and the biological and medical sciences.

Two United States antarctic stations, the Byrd and Pole stations, are staffed

fully by American personnel. Hallett Station and the Scott-McMurdo complex have joint New Zealand-United States staffs. Wilkes Station and Ellsworth Station have Australian and United States personnel, respectively.

#### **World Data Center A**

World Data Center A continues as one of the three data centers set up during the IGY. World Data Center B is in the U.S.S.R., and World Data Center C is in Western Europe, Australia, and Japan.

Center A was established in 11 institutions in the United States in accordance with the academy's belief that the interests of science would best be served by housing the data in institutions with histories of scientific interest and competence in particular geophysical disciplines. Data collected during the U.S. IGC-59 program will be collected in Center A and will be exchanged with the other World Data Centers.

#### **Moon Pictures Show "Monotonous" Other Side**

The Soviet Union has succeeded in taking a "considerable number" of photographs of the far side of the moon. The pictures were made during a 40-minute period when the satellite, Lunik III, was about 40,000 miles beyond the moon. After being processed in the satellite, the photographs were transmitted to the earth by what the Soviet news agency Tass called a "photo television" apparatus. The opinion of scientists on the value of the pictures released to date varies, but no one has questioned their authenticity.

The release of one of the moon pictures last week answers the questions that became current during the satellite's long first orbit of the earth and the moon. Although reports at the time of launching indicated that photographic equipment was being carried by the satellite, no confirmation or denial of this point was made by Soviet authorities. At the time, the suggestion was made that the Soviet Union was being cautious as usual, to avoid the possibility of having to acknowledge failure.

Exercising its prerogative, the Soviet Union immediately assigned a special committee of its Academy of Sciences to name the various features of the moon's far side revealed in the photographs. The surface, although generally

"monotonous," in the words of an official Soviet statement, had the following geographical features: a large irregular indentation which was named the Moscow Sea; two hills, named Lomonosov and Tsiolkovsky; a crater, named Joliot-Curie; the "Sea of Dreams," and the "Soviet Mountains." The far side seems to be a great deal smoother than the side facing the earth. Early comments by scientists indicate that this smoothness confirms a prediction made in past years by astronomers. In his announcement, Aleksandr Mikhailov, director of the Pulkovo Observatory, said that the monotony of the newly revealed surface was "beyond doubt associated with the question of the origin of the configuration of the moon."

Apart from the photographs themselves, the most remarkable aspect of the latest Soviet space effort is the degree of skill required to design the devices that exposed, developed, and transmitted the pictures.

### **Nobel Awards in Chemistry, Physics Go to Czech and Two Americans**

The first Nobel Prize ever to go to a citizen of Czechoslovakia has been awarded by the Swedish Academy of Sciences to Jaroslav Heyrovsky, a chemist who developed the polarographic method of chemical analysis. The lau-

reate, who is head of the Polarographic Institute in Prague, devised the method in 1922 and lectured on it in this country during a tour in 1933. It is a method for measuring voltage-current relationships in solutions by means of a polarized microelectrode. The system, used in microanalysis, has proved to be particularly useful in metallurgy.

When informed of the award, Heyrovsky said: "My happiness is twofold, since this is the first time in the history of the Nobel Prize that a citizen of the Czechoslovak Republic has received it. It is further evidence that new roads for still closer and more fruitful cooperation between scientists of both world systems now are opening up."

### **Two Americans Win Physics Award**

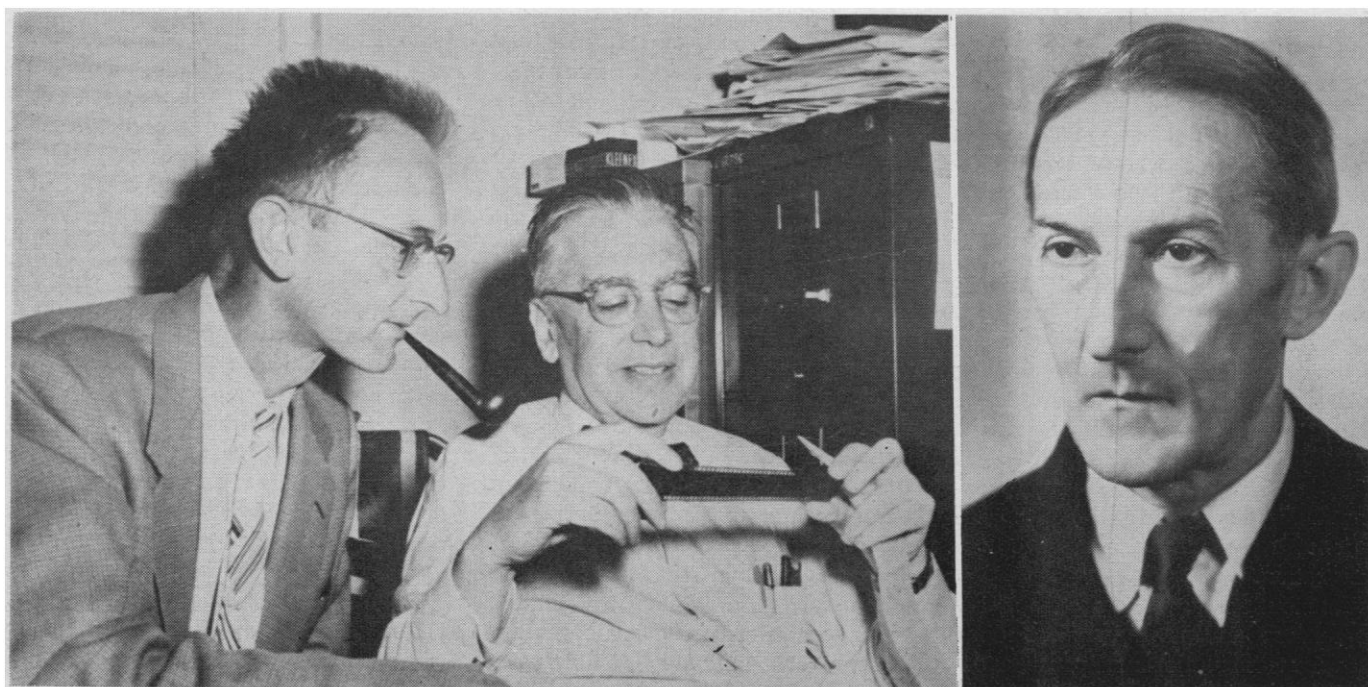
Simultaneously, the Swedish Academy announced that Owen Chamberlain and Emilio Segrè, both professors at the University of California, will share the Nobel Prize in physics for their demonstration of the existence of the antiproton. (Chamberlain is currently at Harvard University as a visiting lecturer.) The two men, who are 39 and 54, respectively, conducted their experiments in the bevatron at the university's Radiation Laboratory in Livermore, Calif. The award-winning work has contributed significantly to the understanding of the nature and construction of matter.

The Nobel prizes in chemistry and physics, and the physiology and medicine award announced earlier, each amount to \$42,606. The presentation ceremony will take place in Stockholm on 10 December.

### **Soviet Scientists Visiting United States Atomic Installations**

V. S. Emelyanov, head of the Main Administration for Utilization of Atomic Energy in the U.S.S.R., and a party of eight Soviet scientists yesterday began a 15-day tour of some of this country's major atomic-energy installations. The eight centers that are being visited are devoted to the peaceful uses of atomic energy; the group will see work in high-energy physics, controlled thermonuclear fusion, and civilian power reactor development. The trip will also include a visit to a uranium mine and a uranium mill. This tour for the Russian scientists is similar to one that was arranged last month in the U.S.S.R. for a team of American scientists headed by John A. McCone, chairman of the U.S. Atomic Energy Commission.

At the conclusion of the Russian visit, about 20 November, Emelyanov and McCone will discuss further ways of exchanging information and of col-



Nobel award winners. Three recipients of the 1959 Nobel Prizes are (left to right) Owen Chamberlain and Emilio Segrè, both of the University of California, who shared the physics award, and Jaroslav Heyrovsky of Czechoslovakia, who won that country's first Nobel award for his discovery of the polarographic method of chemical analysis.