tion was less than one-third of the peak amplitude in the first pulse and at 1000 kilometers less than one-fifth. Consequently, it is now estimated that the first motion must exceed the background noise, or natural unrest of the earth, by at least a factor of 3 to 1 instead of the previous estimate of 2 to 1 if the direction of first motion is to be reliably determined.

Summary

The method for distinguishing earthquakes from explosion by direction of first motion is less effective than was previously estimated; the number of earthquakes equivalent to a given kiloton yield is about double the previous estimate. As a result of these two conclusions, the annual number of unidentifiable continental earthquakes equivalent to 5 kilotons or more will be greater than that previously estimated by the Geneva conference of experts by a factor of 10 or more.

Graphs and Recordings Provided

In addition to a report, the following graphs and copies of recordings were transmitted to the United Kingdom and U.S.S.R. delegations:

1) Copies of 36 seismographic recordings made of the three Hardtack II underground explosions.

2) A curve showing the response characteristics of the Benioff seismograph.

3) A table of estimates of Blanca, Logan, and Rainier magnitudes as estimated from various individual station recordings.

4) A curve showing the estimate, prior to and following Hardtack II, of the world's total number of earthquakes per year versus kiloton yield equivalent.

5) A curve showing the amplitude of the longitudinal waves as a function of the distance from the origin and also the amplitude of first motion as a function of the distance from the origin.

6) Curves showing the estimated total annual number of continental earthquakes as a function of kiloton yield equivalent.

Copies of these graphs and recordings are available for study. It is expected that the complete technical information will be made available to scientific journals in the near future.

The members of the panel that produced the conclusions presented were as follows: Carl Romney, U.S. Air Force, chairman; Billy G. Brooks, chief seismologist, The Geotechnical Corporation; Perry Byerly, director of the Seismographic Stations, University of California; Dean S. Carder, chief seismologist, U.S. Coast and Geodetic Survey; Frank Press, director, Seismological Laboratory, California Institute of Technology; Jack Oliver, professor of geophysics, Columbia University; James T. Wilson, chairman, department of geology, University of Michigan; Hans A. Bethe, Cornell University; D. T. Griggs, University of California, Los Angeles; Kenneth Street, University of California Radiation Laboratory; and Carson Mark, Los Alamos Scientific Laboratory.

East-West Scientific Exhibits

The United States and the All-Union Chamber of Commerce of the Soviet Union have reached agreement on the regulations and procedures to govern the exchange of national exhibitions of science, technology, and culture to take place next summer. The agreement, signed on 29 December, confirms earlier exchange agreements worked out in Moscow in October and November and in Washington in December.

The U.S. exhibit will occupy two buildings in Sokolniki Park in Moscow. The Soviet exhibit will be shown on two floors of the Coliseum in New York City for 4 weeks beginning 21 June.

This latest agreement makes the point that the success of the exchange of exhibitions requires "a substantial degree of flexibility and discretion" for each party to determine the scope, nature, and content of its exhibition as well as "a high degree of trust and cooperation." Further, each party may show "such motion pictures . . . as it deems appropriate which would be cultural and nonpolitical in character, devoted to an objective presentation of various aspects of its science, technology, or culture." Explanatory publications relating to the various displays may also be distributed by each party.

Rocket Development at Los Alamos

A method of propelling a rocket by a series of small nuclear explosions is being studied by a group of theoretical physicists and mathematicians at the University of California's Los Alamos (N.M.) Scientific Laboratory. This method was first outlined in 1947 by Stanislaw Ulam, research adviser at the laboratory and codeveloper of the hydrogen bomb. It was later taken up and extended by T. B. Taylor, former staff member at Los Alamos, who is now with General Atomic.

Studies at Los Alamos will determine how effectively blasts from explosions can be directed to get the maximum push on the rocket from given masses of exploding materials. Each explosion would give the rocket an extra push forward. Care has to be taken to avoid subjecting the rocket structure to excessively high pressures and temperatures, but Ulam believes this method might give several times more push for each pound of propellant than the reactor method.

If studies are successful, they will point the way to a possible method of propelling space ships through the solar system. In development of this concept, the laboratory will share ideas and information with the group at General Atomic, which has a contract to consider the possible structure and operation of such a space ship.

Science Information Council

The National Science Foundation has announced the appointment of scientists, leaders in the field of scientific documentation, and representatives of the public to the newly constituted 19-member Science Information Council. These members will serve with four ex-officio members as consultants to the foundation's Science Information Service, which was established in December [*Science* **128**, 1616 (26 Dec. 1958)].

The council will provide the Science Information Service with a broad range of technical skills and experience on problems in the dissemination of scientific information and the communication needs of scientists. The Science Information Service was set up to make scientific literature in all languages more readily available in order to shorten the time spent by scientists and engineers in searching for needed information. The service also seeks to bring about effective coordination of the various scientific information activities within the Federal Government and to improve cooperation between government and private scientific information programs.

Council members are as follows: William O. Baker, vice president of Bell Telephone Laboratories, Inc.; Graham P. DuShane, editor of *Science*; John M. Fogg, director of the Morris Arboretum, University of Pennsylvania; Elmer Hutchisson, director of the American Institute of Physics; Merritt L. Kastens, assistant director of the Stanford Research Institute; H. W. Russell, technical director of Battelle Memorial Institute; Verner W. Clapp, president of the Council on Library Resources, Inc.; E. J. Crane of Chemical Abstracts, Ohio State University; W. T. Knox, director of the Technical Information Division of Esso Research and Engineering; William N. Locke, head of the department of modern languages and director of libraries at Massachusetts Institute of Technology; John W. Mauchly, director of the Univac Applications Research Center of the Remington Rand Univac Division, Sperry Rand Corporation; Donald R. Swanson of the Infor-