mination of first motion also depends on whether the seismographic station is at a site which is relatively free of noise from other factors. If the size of the wiggle on the seismogram showing the direction of the first motion is quite small, and if there is substantial background noise at the seismographic station, then the direction of the first motion might be extremely difficult to determine correctly. Signals that cannot be definitely determined as coming from earthquakes, according to the Geneva conclusions, must be subject to on the spot inspection.

"The scientists at Geneva also thought that if five seismographic stations recorded some compressional waves as first motions and some dilatational or rarefaction first motions that this was a definite sign of an earthquake, and, therefore, probably need not be investigated. However, if all or most of the seismographic stations recorded the direction of the first motion as compressional then this was to be regarded as suspicious evidence that a nuclear test has occurred. An investigation would then be permissible. According to the report of the panel of scientists who studied the results of the recent underground tests, the new data do not change this conclusion.

"The number of stations recommended by the Geneva Conference of Experts was based on identifying about 90 percent of the earthquakes equivalent to a nuclear explosion of five kilotons and thus eliminating them as suspicious events. The capability of the control system devised at Geneva to identify underground events of less than five kilotons would depend on: 'a) the small fraction of earthquakes that can be identified on the basis of data obtained from the posts alone; b) the fraction of earthquakes that can be identified with the aid of supplementary data obtained from existing seismic stations; and c) the fraction of events still left unidentified which could be suspected of being nuclear explosions and for which the international control organ carries out inspection. . .'

"The control organization would also have a capability to deter a potential violator so long as there existed the right of spot checking the source of signals which appeared suspicious. In other words, the right of inspection would exist even though it would not be practical to investigate the source of every signal that could not be identified as coming from an earthquake."

Number of Earthquakes Still Uncertain

"In deciding the number of earthquakes that would need to be identified and, therefore, eliminated from inspection control the Conference of Experts was somewhat vague. The reason for this vagueness in part stems from a difference of view between the Western and Soviet scientists as to how many earthquakes of a given size occur each year. The difference of opinion over this matter appears to be not unusual. Seismologists and geologists have not heretofore been concerned with small earthquakes and have, therefore, not concentrated on devising seismographs or seismographic sites to record them. They have been primarily concerned with the larger earthquakes which could be a danger to cities and populations.

"The number of earthquakes that occur each year of various sizes, therefore, is at present a mathematical calculation or an extrapolation downward of what has been known about the number of large earthquakes. The number of earthquakes is not yet determined as a result of close and persistent scientific observation. For this reason, a great deal more research must be done before scientists have reliable knowledge in this field.

"The new data presented to the President's Science Advisory Committee indicate that since an underground test might give off a weaker signal than previously believed by Western and Soviet scientists, that therefore, the control system will have more earthquake signals to cope with and thus have more of a burden placed upon it than had previously been thought. And, to repeat, the fact that some nuclear explosions give off weaker signals makes the determination of the direction of the first motion more difficult. But again to repeat, many of the scientists who have studied these results feel that through improvements in scientific instruments and further research, the capabilities of the control system can be increased. In fact, the President's Science Advisory Committee has so indicated."

Implications

"The new data do not indicate that nuclear tests will definitely be more difficult to detect. Actually, the data appear to indicate that in some respects it may be easier to detect nuclear tests than the Conference of Experts at Geneva had concluded. This is so because the Geneva conference thought that the determination of the direction of the first motion was about the only way that earthquakes could be distinguished from nuclear explosions. The new data appear to show that surface waves from a nuclear explosion are weaker than those from earthquakes of a comparable size and that, therefore, analysis of surface waves may be used to distinguish between the two.

"In addition the Geneva Conference thought that at certain distances, from about 620 miles to 1240 miles from the source of an event, seismic signals would be very weak. The new data indicate that stations in this 'shadow zone' as it is called pick up signals somewhat stronger than had been estimated. The size of the zone is now considered somewhat larger; the signals are delayed, and determination of first motion is not usually considered possible, but the strength of the signals is greater."

Rockefeller Institute Press

The Rockefeller Institute and the Oxford University Press in New York have jointly announced the establishment of the Rockefeller Institute Press to publish books on science and related subjects. Editorial responsibility for the books will rest primarily with the institute, while Oxford will be chiefly responsible for design, printing, and distribution. It is expected that the first books will be issued in the fall of 1959. While many of the books and monographs will be the work of institute faculty members, works by other scholars will also be published.

In announcing the new press, Detlev W. Bronk, president of the institute, said:

"The functions of a university include not only the advancement of knowledge and its communication to a new generation of scholars but also the dissemination of new knowledge far and wide. It is appropriate, therefore, that The Rockefeller Institute, having become a graduate university of science in 1954, should now follow the example of its sister institutions throughout the world in establishing a university press.

"Among the objectives of the press will be to provide an additional and needed outlet for scientific books of highest quality, carefully selected for their excellence. Further, during this time of rapidly increasing scientific knowledge paralleled by ever-mounting costs of publication, The Rockefeller Institute Press, because of its nonprofit nature, will make possible the publication of books at costs which will enable the

Charles I. Campbell

individual to purchase them for his personal library."

The Rockefeller Institute Press will be under the direction of Charles I. Campbell, administrative associate for information services at the institute. Production and distribution of the institute's journals will continue to be managed by Florence M. Stewart as head of the journals' department of the press. The institute publishes the *Journal of Experimental Medicine, the Journal of General Physiology,* and the *Journal of Biophysical and Biochemical Cytology.*

Overseas Agricultural Research

Foreign scientists will work in the interest of American farmers, as well as for the agriculture of their own countries, through a recently announced program of foreign research directed by the U.S. Department of Agriculture. An article in the current issue of the department's publication *Foreign Agriculture* states that benefits from the new program may include expanded markets for U.S. farm output, new uses of agricultural products, and the development of new crops.

Payment for the research will be made in the form of both grants and contracts. The money will come out of foreign currencies accruing from the sale of surplus farm commodities under the Agricultural Trade Development and Assistance Act of 1954. The research will be done at foreign scientific institutions in four general fields—marketing, utilization of farm products, farm production, and forestry.

Canadian Aeronautical Establishment

The Canadian National Research Council has announced the creation of a new division to be known as the National Aeronautical Establishment. The formation of the National Aeronautical Establishment, which consists of the aeronautical research facilities of the NRC Division of Mechanical Engineering, was authorized initially in 1951. The scale of operations has reached a point at which it becomes more practicable administratively to separate the Establishment from the Division of Mechanical Engineering and form a new division. The resources of the new division will consist of the Flight Research Hangar and Laboratories now at Uplands Airport, the new 5-foot supersonic wind tunnel now being constructed at Uplands Airport, and the Aerodynamics and Structures Laboratories in the NRC's Montreal Road Laboratories.

The Establishment will work closely with the Canadian Defence Research Board on defense problems in aeronautical science, and will also be responsible for meeting the aerodynamic and structural research needs of civil aviation and of the aircraft industry. Acting director of the new unit is Frank R. Thurston, head of the Structures Laboratory of the Division of Mechanical Engineering.

Baby Tooth Survey

Plans to collect 50,000 baby teeth a year to provide a record of the absorption of strontium-90 by children in the St. Louis, Mo., area have been announced by the Greater St. Louis Citizens' Committee for Nuclear Information. Parents and children in the St. Louis area are being asked to participate in this project by mailing deciduous teeth to the Baby Tooth Survey. Public interest in the strontium-90 problem in the St. Louis area has been stimulated by reports that among five areas tested, milk from the St. Louis milkshed contains the highest strontium-90 levels for 1958.

In announcing the survey, the committee cited an article that appeared in *Nature* [**182**, 283 (2 Aug. 1958)] by Herman M. Kalckar, a biochemist at Johns Hopkins University, calling for the establishment of a program of tooth collection for strontium-90 analysis throughout the world. In this article Kalckar states, "Such an International Milk Teeth Radiation Census would contribute important information concerning the amount and kind of radiation received by the most sensitive section of any population, namely, the children. At present important although rather erratic data exist, based on autopsy of bone samples derived mainly from adults."

In establishing the Baby Tooth Survey, the committee said that, as far as it knows, it is the first group to initiate a large-scale collection of deciduous teeth.

International Federation of Operational Research Societies

The International Federation of Operational Research Societies came into existence on 1 January. Its objects are "the development of operational research as a unified science and its advancement in all nations of the world." The initial membership of IFORS consists of the Operations Research Society of America, the Operational Research Society (United Kingdom), and the Société Française de Recherche Opérationnelle. Membership is open to other national societies whose primary object is the advancement of operational research and whose membership includes qualified scientists working in this field.

The federation will be governed by a board of representatives, one representative coming from each member society. According to the statutes, the voting power of each representative is proportional to the square root of the size of the membership, a formula designed to give the right weight to size.

One of the first activities of IFORS will be to sponsor the second international conference on this subject, following the successful first conference held in Oxford in 1957. The second conference is provisionally planned to take place at Aix-en-Provence in southern France in early September 1960.

Sir Charles Goodeve has agreed to act as the first secretary of IFORS, and Donald Hicks as treasurer. The address of the new federation is 11 Park Lane, London W.1, England.

German Physicists Oppose Atom Weapon Research

The 3000-member Union of German Societies for Physics met on 5 October in Essen, West Germany, and issued a statement condemning the nuclear arms race. The text of the statement and a report of the meeting as it appeared in the October newsletter of the Society for Social Responsibility in Science, follows:

"German physicists are deeply concerned at the increase of nuclear armaments everywhere. The Union of German Societies of Physics therefore once more warns the public that the use of these weapons in war will inevitably lead to the annihilation of millions of people and to complete devastation through radioactivity.

"The physicists, who desire their work to benefit mankind, repeat their previous warning as to the consequences which a criminal misuse of the results of their research might have. They wish to state with all possible emphasis that nuclear weapons are capable of the wholesale destruction of all races and will expose to the horrors of death by radiation even those nations which are not involved in the conflict.

"On behalf of its 3000 members, the Union of German Societies of Physics again urgently appeals to the public, and in particular to responsible politicians in all governments and parliaments, to give unceasing and constant support to any attempts at a peaceful settlement between the States and at last bring to an end the atomic arms race, including nuclear tests."

The meeting unanimously agreed to appoint a special committee to look after the interests of those scientists who "suffer disadvantages" as a result of adhering to the pledge in clause 2 of the Union's constitution "to bear in mind that those who work in sciences are re-