fall. Dael Wolfle, executive officer of the association, will be the editor. Mark H. Ingraham, dean of the College of Letters and Science at the University of Wisconsin, was originally designated editor, but illness prevented his attendance at the conference. The volume, which is now in preparation, is expected to give wider distribution to the deliberations and suggestions of the conferees.

U.N. Space Group Establishes Scientific and Legal Committees

The United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space convened for its first meeting on 6 May. The committee consists of 18 member states: Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, France, India, Iran, Italy, Japan, Mexico, Poland, Sweden, the U.S.S.R., the United Arab Republic, the United Kingdom, and the United States. However, the delegations of Czechoslovakia, India, Poland, the United Arab Republic, and the U.S.S.R. did not attend the meeting. These countries have indicated that they would not participate in the work of the Outer Space Committee because they feel that its membership is unbalanced in favor of the West.

The committee is to report to the next session of the General Assembly on the following: (i) the activities and resources of the United Nations, of its specialized agencies, and of other international bodies relating to the peaceful uses of outer space; (ii) the area of international cooperation and programs in the peaceful uses of outer space that could appropriately be undertaken under United Nations auspices for the benefit of states, irrespective of the status of their economic or scientific development; (iii) future organizational arrangements to facilitate international cooperation in this field within the framework of the United Nations; and (iv) the nature of the legal problems that may arise in carrying out programs to explore outer space.

Subcommittees Established

At its opening session, the committee decided without objection and without a vote to form two subcommittees, one on the scientific aspects of the problem, the other on the legal issues involved. The establishment of the two subcommittees was proposed by Henry Cabot Lodge of the United States. The subcommittees will start work on 26 May and are expected to submit reports to the main committee by the middle of June. The *ad hoc* committee will consider the reports and then start drafting its statement for the forthcoming session of the General Assembly. It was agreed that the latter document should be completed by the end of July at the latest.

The committee also decided to request the Secretary General to report to the committee at an early date on the activities and resources of the United Nations, of its specialized agencies, and of other international bodies relating to the peaceful uses of outer space. It was agreed that consideration of another topic assigned to the committee by the General Assembly—future organizational arrangements—should be taken up by the committee only after submission of the reports of the two subcommittees and of the Secretary General.

Koto Matsudaira, permanent representative of Japan to the United Nations, was elected chairman of the *ad hoc* committee; Mario Amadeo, permanent representative of Argentina, vice chairman; and Joseph Nisot, permanent representative of Belgium, *rapporteur*. The United States has designated Hugh L. Dryden, deputy administrator of the National Aeronautics and Space Administration, as its representative on the scientific subcommittee, and Loftus E. Becker, legal adviser to the State Department, as its representative on the legal subcommittee. This country has prepared a series of documents on the topics to be studied by the committee.

U.S. Delegates Express Views

In an address in which he formally introduced a U.S. working paper, Dryden commented that the fields of application of satellites so far identified were those of meteorology and weather forecasting, long-distance communication, navigation, and geodetic measurements. Dryden felt that the three substantive areas which could most fruitfully be examined by the Scientific Subcommittee are space science, satellite application in other areas, and manned exploration of space. There is need for international cooperation in all three fields, he stressed. Joint efforts in the investigation of the ionosphere and the fundamentals of radio propagation through the upper atmosphere are required to obtain the world-wide coverage that alone can provide a complete picture, he added. "But most of all, space research needs to draw upon an entire world for its ideas," Dryden declared.

Among other things, Dryden mentioned that "in the near future" it would be possible to check the general theory of relativity by comparing the rate of a satellite-borne atomic clock with the rate of a similar clock on the ground. In the area of biosciences, he observed, "perhaps even more exciting is the possibility of finding life forms on other planets."

In the field of meteorology, Dryden said that satellites would open up the possibility of a world-wide system for observing the weather, with resulting benefits to agriculture, transportation, and other weather-dependent activities throughout the world.

A communications satellite, he said, might well lead "to vastly improved world-wide communications in terms of speed capacity, reliability and possible economy." Further, a navigational satellite might provide the basis for an all-

Henry Cabot Lodge (United States), Hugh L. Dryden (United States), and Sir Pierson Dixon (United Kingdom) converse after the opening session of the first meeting of the United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space. [United Nations]

weather, long-range navigational system for surface vehicles and aircraft.

Loftus E. Becker also addressed the committee. In describing "the initial thinking" of this government on the program for the subcommittee on legal problems of outer space, he stressed that it was "desirable to make explicit the essential understanding that the application of the U.N. Charter and the Statute of the International Court of Justice is not limited to the confines of the earth; these instruments are applicable to the relations of earthly states in outer space as well." He pointed out that the mandate given by the General Assembly to the committee was that "of constructing a rationally ordered framework within which are posed a series of questions calling for legal examination and investigation." The committee was thus not called upon to formulate immediate answers to these questions or to "study in depth" these legal questions with a view to proposing definite rules.

An "ordered catalogue of necessary legal questions," not the determination of substantive rules, was the task before the Legal Subcommittee, in his view. An effort to agree now on any comprehensive code, he believed, might "come to naught, yield a small set of maxims of extreme generality, or produce an unworkable regime which would be dangerous in its giving of a temporary illusion of certainty."

Most of the representatives at the meeting made a special point of mentioning their regret at the absence of the five delegations that had boycotted the session and expressed the hope that they would reconsider their decision. As leader of this group, the U.S.S.R. has said that the boycott will continue until the committee is reorganized so that the total number of Soviet-bloc and neutralist delegates equals the number of Western members. No definite action on any aspect of the outer space problem can be taken without the agreement of the nations that lead in space research.

Nuclear Development Agency

A compact providing for the establishment of a nuclear development agency to operate in 15 southern states of the U.S. has been approved by representatives of the states involved. Under the pact, an interstate agency would promote greater use of atomic energy in the South's industry, science, and agriculture.

The agency, which was proposed last October at the Southern Governors Conference, may eventually operate its own research installation for the benefit of the member states. In addition to the general promotional aim, the proposed agency would collect and disseminate information about civilian uses of atomic energy, conduct training programs, study health and safety standards, and act as a licensee of the federal government in the matter of conducting research activity.

The pact now goes to the conference's nuclear committee. It must also be approved by Congress and by the legislatures of the participating states. These are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Rockefeller Institute Establishes $10,000 Foreign Fellowships

The Rockefeller Institute has announced that four distinguished research fellowships will be awarded each year to young scientists in England, France, Denmark, and Sweden for study and investigation at the institute. The fellows will be appointed by the Royal Society of London, the French Academy of Sciences, the Royal Danish Academy of Sciences and Letters, and the Swedish Royal Academy of Sciences. Each fellow, who will carry the designation of his sponsoring society, will receive an annual stipend of $10,000, with an additional $1000 for travel in this country.

The new fellowships will be supported by income from a bequest to the institute of approximately $1 million from the estate of the late Sophie D. Fricke of New York, who died on 1 March 1958. Miss Fricke was born in Jersey City, but lived most of her life in New York, where she was confidential secretary to many prominent business executives. Through wise investment of her personal savings she amassed a fortune, which she left for the furtherance of human welfare through support of science. The trustees of the institute have authorized use of the income from the Fricke fund for the triple purposes of fostering international understanding, training scientists of exceptional promise, and supporting significant research. The first Sophie Fricke fellows appointed by the foreign academies will begin their work at the institute this coming autumn.

Program on Weather Modification

A program of research in weather modification was announced last month by the National Science Foundation. It consists of 13 grants for laboratory research, field experiments, evaluation of present theory and practices, and conferences on modern meteorological methods directed toward weather modification. The program has the objective of studying more intensively than has been attempted before the scientific basis of weather modification, through support of competent scientists working in cloud physics, atmospheric physics, and allied fields.

In the laboratory, freezing nuclei will be examined with the electron microscope to determine their nature and make-up. Tests will be made to find the most efficient freezing nuclei. In the field, numerous cloud-seeding experiments are planned, in which silver iodide and other agents will be used to find out more about how clouds form and grow, about the precipitation mechanism, and about variations in precipitation that may be attributed to cloud-seeding. Other means of modifying clouds and weather will be studied, including introduction of layers of lampblack and other heat-absorbing agents to change artificially the radiation balance of clouds, and inducing local changes in atmospheric electricity with probable resultant changes in the growth of cloud droplets and precipitation.

The program also includes study and improvement of the physical and statistical evaluation methods employed in determining the results of any seeding operation. Perhaps the greatest difficulty in this field is to differentiate clearly between man-caused rainfall and the rainfall that would have occurred if man had not intervened.

AAAS and Westinghouse Form Awards Managing Committee

The composition of the Science Writing Awards Managing Committee for the new AAAS–Westinghouse Science Writing Awards is now complete. The Westinghouse Electric Corporation has named Charles N. Fry, director of public relations, and Harry R. Gail, manager of research and development information in the public relations department, as its members; the National Association of Science Writers has named Jules Billard, an associate editor of *U.S. News and World Report,* and Nate Haseltine, science writer for the *Washington Post and Times Herald;* and the American Association for the Advancement of Science has named its executive officer, Dael Wolfle, and Hans Nussbaum, business manager.

In a meeting held on 3 March, it was also agreed that the AAAS would designate an administrator of the award competition, who will also serve as chairman of the managing committee. Graham DuShane, editor of *Science,* has agreed to accept this responsibility.