UNESCO AND ATOMIC ENERGY

This article has been contributed at our request by the Unesco Press Division. A relationship agreement between IAEA and Unesco came into force on 1 October 1958.

Atomic energy has been of particular concern to Unesco virtually since the founding of this United Nations agency with the mission of promoting the advancement of science along with education and culture. Not only has Unesco been involved in the scientific aspects of nuclear physics - notably prior to the creation of the International Atomic Energy Agency - but it has also focussed its attention upon the educational and cultural problems of the atomic age.

Unesco's sphere of action was laid down by its 1954 General Conference which authorized its Director-General to extend full co-operation to the United Nations in atomic energy matters, with special reference to "the urgent study of technical questions such as those involved in the effects of radioactivity on life in general, and to the dissemination of objective information concerning all aspects of the peaceful utilization of atomic energy; to study, and if necessary, to propose measures of international scope to facilitate the use of radioisotopes in research and industry."

Unesco's first action under this resolution was to call a meeting of a committee of experts from twelve nations to study the establishment of a system of standards and regulations for the preparation, distribution, transport and utilization of radioactive isotopes and tracer molecules.

Conference on Radioisotopes

Unesco's main activity in this field was undoubtedly the calling of an international conference on the use of radioisotopes in scientific research, which met in Paris in September 1957. It was attended by 1 200 scientists from sixty-one countries and twenty-five international organizations, and it discussed 230 research papers during its twelve days of meetings. Its forty scientific sessions covered every possible use of radioisotopes, ranging from the structure of planets to the mysteries of the living cell, from meteorology to photo-synthesis, and from dating of archaeological finds to the chemistry of antibiotics. The president of the conference was Sir John Cockcroft of the United Kingdom; vice-presidents were Willard F. Libby of the United States Atomic Energy Commission, Prof. Topichev of the USSR Academy of Sciences; Prof. Kenjiro Kimura of Japan and Prof. Louis Camille Bugnard of France. In addition to scientific sessions, nightly lectures were presented by leading participants to familiarize the general public with practical applications of these new man-made substances.

This conference and the creation of the European Organization for Nuclear Research (CERN) are among the main landmarks of Unesco's work in atomic energy for nearly a decade. The seed of CERN was planted at the Unesco General Conference held in 1950 at Florence where delegates authorized the Director-General to "assist and encourage the formation and organization of regional research centres and laboratories in order to increase and make more fruitful the international collaboration of scientists in the search for new knowledge in fields where the effort of any one country in the region is insufficient for the task." Professor Isidor Rabi, Nobel prizewinner for physics and a member of the United States delegation to the Conference, proposed that the first of these centres be established in Western Europe to work in the field of nuclear research. Then, at a meeting of delegates from twelve European states at Geneva in 1952, the European Council for Nuclear Research came into being. The countries participating in CERN are Belgium, Denmark, the Federal Republic of Germany, France, Greece, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and Yugoslavia. The foundation stone of CERN's research centre was laid at Meyrin near Geneva in June 1955, and it is now functioning on an autonomous basis with a budget virtually as large as the present total budget of Unesco. Its synchrocyclotron has already gone into operation and the construction of the world's most powerful proton synchrotron is under way. By combining their resources into a single institution, these twelve European nations have been able to make available to their research professors and students costly modern equipment for the study of very high-energy nuclear particles, the structure of the nucleus and the nature of cosmic rays. Such studies, it should be stressed, have no direct connexion with power reactors or with the present use and application of nuclear energy, but are explorations on the frontiers of science.

Technical Assistance

Unesco has also aided nuclear research in other regions of the world through its participation in the United Nations programme of technical assistance for economic development. It helped bring about joint cosmic ray research by two Latin American nations, Bolivia and Brazil, at Mount Chacaltaya in Bolivia, the world's highest cosmic ray observatory. It was also able to offer help to the Brazilian National Physics Research Centre at Rio de Janeiro.

Elsewhere in Latin America, Unesco has sent specialists in the teaching of nuclear physics to Argentina.

However, the world-wide interest in atomic energy and its probable economic benefits make demands far beyond the scope of scientific research and university studies. One of the first steps required is a stimulus to scientific education in primary schools and to technical training in many parts of the world. Even in the industrialized nations, there is already a grave shortage of competent science teachers. The sudden coming of a nuclear age is creating an emergency demand for vocational training, for science teaching in secondary schools and for the education of teachers. The improvement of science teaching in schools is part of Unesco's normal programme and it is also one of the services rendered by Unesco's technical assistance missions. Unesco regional Science Co-operation Offices are organizing refresher courses, training courses and symposia in the basic sciences. A Latin American Mathematics Centre has been inaugurated at Buenos Aires, and, to cite only a few examples, refresher courses and symposia have been held in Syria, Honduras and Uruguay.

Co-operation with IAEA

In problems of direct concern to the training of nuclear technicians, Unesco and the International Atomic Energy Agency have already collaborated fruitfully. Typical of this collaboration was the joint organization of a seminar in July 1959, at the French Centre for Nuclear Research at Saclay, to discuss educational problems in connexion with the development of the peaceful uses of atomic energy. The seminar was attended by eighty scientists from nearly forty countries and, in separate sessions, it dealt with the role of universities, engineering colleges, nuclear research centres and international organizations in the education of nuclear scientists and technicians. The need for stimulating interest among university and technical college faculty members in nuclear science and technology was brought out in panel debates, while other panels dealt with the need for training more health physicists and introducing nuclear science at the secondary school level. A final session dealt with international fellowship and training programmes.

This seminar brought out the pressing need for specialists and research workers. Scientists meeting at Saclay stressed that universities must work closely with nuclear research centres, where the required costly apparatus is available, in training students. They emphasized, however, that there are no cheap short-cuts to a solution of the problem at any level because, in nuclear energy, the safety factor is so important that there can be no compromising on standards of training.

Atomic energy is so vast a field, however, that it cannot be compartmented into Unesco's activities in education and science alone. In September 1958, for example, scientists and sociologists from ten countries met at Unesco House to study the social and moral implications of the peaceful uses of nuclear energy. They discussed three main points: the uses of atomic energy which are liable to have social, moral and cultural consequences; the repercussions of the peaceful uses of atomic energy on social structure and development; and, finally, the research which is required to shed light on these problems. Economists and science writers had their say here as well as nuclear physicists and sociologists.

"Domestication" of Atomic Energy

Meetings of this sort illustrate the basic part which Unesco has to play in the "domestication" of atomic energy. In many nations, nuclear power with all its consequences may come so fast that there will be no time to wait for school children to be trained as the atomic technicians of the future. Public support is required as of now for the large expenditures which atomic energy implies. The fruitful application of the results of nuclear research to medicine, agriculture and industry also require public understanding. Most of all, the economic and social consequences of atomic energy demand foresight in government and a broad incorporation of science into local culture. Otherwise, a forced acceleration of the uses of atomic energy might have dangerous repercussions upon local cultures which have lagged behind in the past.

This means a need for the education of the adult public as well as of school children of many nations, at least in the elements of scientific thinking. Unesco has long been engaged in the scientific education of the public by means of travelling science exhibits, by promoting out-of-school science activities, and through articles and discussions in the press, the radio and on the film and television screens. Nuclear energy was given a prominent part in the highly successful Unesco travelling science exhibit, "Energy and its Transformation", which included a Geiger counter and a model of a power reactor. Special issues of the "Unesco Courier" have featured atomic energy, and two booklets have been published, one on "Nuclear Energy and its Uses in Peace" and the other on "European Co-operation in Nuclear Research."

These are the highlights of Unesco's work in atomic energy over the past ten years. They have been made possible by a solid foundation of international relations among educators and men of science. It is perhaps this foundation, upon which all of Unesco's activities must be necessarily built, which represents the most lasting contribution of this United Nations agency to the encouragement of the peaceful uses of atomic energy.