IAEA FILM LIBRARY

Most of the scientific and technical films shown during the Second Geneva Conference for the Peaceful Uses of Atomic Energy were donated to IAEA by the producing countries at the end of the Conference. They will form the basic stock for the Agency's loan service intended to provide atomic energy institutions in Member States with film material.

A detailed catalogue of the films, classified according to subject and giving conditions of loan or purchase, is now being prepared. In addition to this, information on all films produced in Member Countries dealing with the peaceful uses of atomic energy is being assembled.

Mr. Robert Mc.Kinney, permanent U.S. representative to IAEA (resigned October) presents a roll of film, a symbol of 45 films depicting different aspects of the U.S. Atomic Energy Programme, to Mr. Sterling Cole, Director General, who accepted it on behalf of IAEA

The documentary information contained in the films in IAEA's possession relates to the following subjects: national programmes; nuclear physics; accelerators; plasma and fusion; reactors (power, research, material testing and experimental); prospecting and mining; ore dressing; metallurgy; production of fuel elements; treatment of irradiated fuel elements; protection against radiation; detection and counting; uses of radiation in medicine, biochemistry, agriculture and industry; industrial application of nuclear explosions.

Most of the commentaries are in the language of the producing country. A few films are available in a choice of two languages.

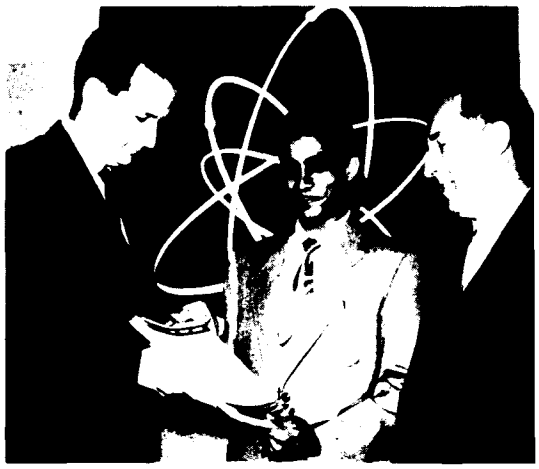
The films donated to the Agency total 82, two of which have been produced in Canada, 13 in France, one in India, one in Romania, one in Spain, 14 in the United Kingdom, one in the Union of South Africa, 47 in the United States of America and two in the USSR: they are mostly illustrations of papers presented at the Second Geneva Conference.

In arranging for the circulation of scientific and technical films IAEA wishes to help meet some of the training and information needs of Member States. It is hoped that all organizations producing films on the peaceful uses of atomic energy will entrust copies to the IAEA with a view to their widest possible circulation.

In the meantime, the Agency's films have been given daily showings at the IAEA's headquarters as an initial phase of a staff educational programme.

NUCLEAR SCIENCE FELLOWSHIPS

Left: The Agency has received 275 applications for fellowships from 28 countries. It has already selected 200 fellows. The booklet, a page of which is illustrated, describes the various types of fellowships available



Right: Quasi Nuruddin, from Hydarabad, Pakistan, has been awarded an IAEA fellowship for reactor physics at the Institute of Atomic Energy, Kjeller, Norway. On either side of him are two of the Deputy Directors General. Left: M. de Laboulaye, right: Mr. Migulin

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agricultural installations in Latin America. A training centre like this might provide an excellent model upon which to base training centres in other areas."

Recommendations

The report recommends that:

1. The Agency should meet the requests of Latin American universities by, for example, supplying equipment and sending experts;

2. At least one specialized training centre should be established as soon as possible. "Taking as an example the field of radio-botany, such a centre would provide trained specialists in radio-botany to agricultural institutions throughout Latin America and also provide basic research results vital to agriculture. . . ." The cost of new facilities might be of the order of $ 7,500,000, with an annual budget of approximately $ 650,000. Staff required: 40 scientists and 175 employees;

3. Whenever it appears feasible to gather necessary staff of high creative ability and established productivity and when funds can be made available for facilities, equipment and operating costs, at least one integrated atomic energy training centre should be established completely equipped with all the special facilities which are characteristic and essential to such an establishment." Approximate cost of the facilities $ 40,000,000; annual budget $ 7,500,000. Staff required: 250 scientists and engineers, approximately 500 supporting personnel and possibly 450 administrative and operating personnel.

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As previously noted, heavy water is sold by the U.S.A.E.C. for $ 28 per pound. Before sales are made, however, agreement is required as to the proposed use, and controls are imposed for assuring that use will be for purposes specified. It is presumably because of these restrictions that there is a "free market" price that is much higher than $ 28 per pound. Whether such a "free market" price will hold cannot be predicted. Since restrictions of the U.S.A.E.C. are at present considered unacceptable by some countries, and since there is an important current interest in research and development reactors moderated by heavy water, there is apparently a considerable "free market" sale for heavy water as well as intensive research activity on heavy water production. As regards the long term future, it seems probable that the world price for heavy water is likely to be at or near that set by the U.S. Government, which owns productive capacity adequate to support a large power expansion based on heavy water moderated reactors.

(e) PLANS FOR THE EFFECTIVE EXECUTION OF THE PROJECT

The proposed heavy water plant is to be located at and integrated with the fertilizer plant now under construction at Aswan. This plant is on the east bank of the Nile River about 400 miles up river from Cairo, near the present Aswan dam.

The fertilizer plant will supply all raw materials and services needed for the heavy water plant.

All contracts have been placed for the fertilizer plant. No contracts have as yet been placed for the heavy water plant.

The fertilizer plant is scheduled for completion late in 1959. About two years would be required for construction of the heavy water plant after placing of contracts.

(f) TECHNICAL PERSONNEL AVAILABLE

Technical personnel for the fertilizer plant have been assembled and are located either at the site or in training with European firms supplying the equipment. This training program appears adequate. Since the heavy water plant will be, in effect, part of the fertilizer plant, only a minor extension of the present personnel program would be needed for the heavy water plant. In fact, it is probable that a lessening of start-up problems of the fertilizer plant by the time the heavy water plant is ready would permit the same personnel to handle the heavy water plant.

(g) FINANCIAL RESOURCES

Egyptian Chemical Industries is a privately organized corporation. Officials of the corporation state that they are prepared to finance the heavy water plant as part of their normal business.

(h) HEALTH AND SAFETY PROBLEMS

Health and safety problems encountered for the heavy water project will be the same as for the fertilizer project, and may be considered those for "normal chemical industry". No radiological hazards are involved.

(j) POSSIBLE ASSISTANCE THAT MIGHT BE SUPPLIED BY THE IAEA

As regards possible assistance to the U.A.R. heavy water project by the IAEA, it should be noted that Egyptian Chemical Industries (Kima) expect to contract for the heavy water plant on the basis of firm contract prices for delivery of equipment and firm performance guarantees as to quantity of hydrogen processed, quantity of power used, and quantity of heavy water produced by that equipment. If, however, the suppliers who have made preliminary offers for such equipment should find that due to unforeseen technical developments or for other reasons they are not in a position to offer firm contracts at acceptable prices, then the Egyptian Atomic Energy Authority and Egyptian Chemical Industries

might wish to have assistance in re-evaluating the whole question of heavy water production in the U.A.R. It is suggested that the matter of such assistance be left to the judgment of the U.A.R. people.

Quite aside from the problem of producing heavy water, it is suggested that the Egyptian Atomic Energy Authority could use assistance from the Agency in training people in the analysis, handling, and general research technology of heavy water. Specifically, it is suggested that assistance could be given in placing one or more technical people at research institutions where this technology is available.

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Useful knowledge about various aspects of fission product behaviour in the biosphere has already been obtained, but many important questions remain unanswered.

Considering the large increase in the construction of reactors planned for the near future, which will lead to a corresponding increase in the amount of fission products to be handled, it is necessary to intensify the efforts in this direction. In May 1958 a research project on "the factors controlling the distribution of fission products in the biosphere" was started at the First Chemical Institute of the University of Vienna under a contract with the International Atomic Energy Agency. The First Chemical Institute is headed by Professor Hans Nowotny. The project is carried out within the Department of Radiochemistry headed by Professor Engelbert Broda.

The project will contribute to one of the objectives of the IAEA - the establishment of standards of safety for protection of health and minimization of danger to life and property. Various methods of investigation are already being applied or are in preparation as part of this research project. The distribution of some fission products, present throughout the biosphere from nuclear test explosions, is being determined to elucidate the factors governing this transport and enrichment. Further data on the uptake of fission products by certain organisms or mineral substances may later be obtained by experiments on a laboratory scale or by release of small amounts of fission products into a certain ecological environment under controlled conditions.

Detection methods of high sensitivity are required for determining the fission products in the biosphere. At the First Chemical Institute in Vienna gamma-spectrometry has been employed since the beginning of the investigation and a low-level beta-counter will soon be completed. With a gamma-spectrometer (supplied by IAEA) samples from the biosphere, such as plant ashes or residues from the evaporation of river water are measured directly. Since gamma-rays of different energies are registered separately with this instrument, gamma-emitting radioisotopes are detected individually through the characteristic energies of their radiations.

The essential feature of a low-level beta-counter is that the background count due to cosmic rays and to the radioactivity of the surroundings is a low one. This is achieved by heavy shielding against radiation coming from the outside and by cosmic ray counters arranged around the beta-counting tube itself. With the help of these counters and a so-called "anti-coincidence" circuit, some counts in the beta-counter are automatically recognized as due to cosmic rays and are not registered. The low background value obtained in this manner permits the detection of very small activities in the material under investigation. The sensitivity of such a counter surpasses that of a gamma-spectrometer considerably. However, measurements are more difficult, since each radioelement to be determined must first be isolated by chemical techniques. Radiochemical separation methods suitable for the samples to be investigated by the research project are now being selected and checked.

In the project under way at the First Chemical Institute in Vienna particular attention is being paid to fission products with half-lives of several months. These have so far been investigated much less thoroughly than the long-lived isotopes caesium 137 and strontium 90. First results about the distribution of some of these fission products - zirconium, ruthenium and rare earths - in rivers and lakes and in vegetation have been obtained.

WASTE DISPOSAL EXPERTS MEET

Problems connected with the disposal into the sea of radioactive wastes from peaceful uses of atomic energy are being examined by a panel of experts, convened by the International Atomic Energy Agency. These experts from eight different countries held a first meeting at IAEA headquarters in Vienna from 4 - 9 December 1958, under the chairmanship of Dr. Harry Brynielsson, Director General of the Swedish Atomic Energy Company (seated at head of table). The countries represented are: Canada, Czechoslovakia, France, Japan, Netherlands, United Kingdom, and United States. The group will meet again in 1959.