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ATOMIC ENERGY OF CANADA AND INTERNATIONAL COLLABORATION

The annual report of Atomic Energy of Canada Limited for the fiscal year ended March 31 shows that international collaboration has played an important part in Canada's nuclear programme since its inception. The Canadian programme was originally a collaborative venture in which British and French scientists pooled their skills with those of their Canadian colleagues to build what have become the Chalk River Nuclear Laboratories and start Canada on the way to becoming a leading member of the international atomic energy community.

As the Canadian programme matured, broader collaboration was developed, so that at present, apart from those associations that have spanned more than two decades, there are some 11 countries and agencies with which there is active Canadian co-operation in the development of the peaceful uses of atomic energy.

U.S. AND BRITAIN

AECL directors and senior staff hold annual reviews with the United Kingdom Atomic Energy Authority and with the United States Atomic Energy Commission to review the various collaborative undertakings and discuss future programmes. Meetings were held with both agencies in Montreal in May 1967.

FRANCE AND JAPAN

In July 1967, senior officials of AECL met in Montreal with representatives of the French Commissariat à l'Energie Atomique to exchange views on their respective nuclear power programmes and discuss future collaborative work in heavy-water reactor systems and materials research. Further

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meetings and exchanges of technical staffs were planned. At the second annual meeting of Atomic Energy of Canada Limited and the Commissariat à l'Energie Atomique (CEA) of France held in Paris last month, atomic energy developments in the two countries were reviewed and it was agreed to increase Franco-Canadian collaboration, particularly in relation to heavy-water power reactors and research on nuclear fuels and materials.

In November, AECL directors and senior staff discussed atomic power developments and co-operative undertakings with senior officials of various Japanese atomic energy agencies.

SOVIET UNION AND AUSTRALIA

As in the past, scientific exchanges were held between AECL and the U.S.S.R. State Committee on the peaceful uses of atomic energy. Delegations from each country exchanged views on matters relating to nuclear physics and reactor materials science.

An agreement was reached with the Australian Atomic Energy Commission under which Australian nuclear scientists will be attached to Atomic Energy of Canada Limited for a two-year study and research programme. The programme will enable the Australians to become conversant with Canada's nuclear power system and will also provide an opportunity for AECL scientists and engineers to benefit from exchanges of views with their Australian colleagues.

INTERNATIONAL ORGANIZATIONS

AECL continued its collaboration with such international organizations as the European Nuclear Energy Agency, Euratom and the International Atomic Energy Agency through participation in advisory panels, symposia and conferences and through the secondment of staff members. Two AECL staff members joined the Secretariat of the IAEA for two-year postings, one in the Division of Scientific and Technical Information and the other in the Division of Safeguards and Inspection.

Dr. W.B. Lewis, Senior Vice-President, Science, AECL, continued to serve on the Scientific Advisory Committee of the International Atomic Energy Agency and also on the Scientific Advisory Committee to the Secretary-General of the United Nations.

A fruitful international conference on ion penetration and atomic collision studies was held at Chalk River in September 1967. Representatives from Canadian universities and industry and a number of visitors from other countries attended.

Some 100 scientists from 16 countries were attached to AECL sites for varying periods.

HOVERCRAFT FOR RESCUE WORK

The first air-cushion vehicle in the world designed especially for search-and-rescue operations was delivered recently to the Department of Transport in Vancouver.

The *Hovercraft* SRN-5, was built in England at a cost of \$350,000 by British Hovercraft Corporation, with modifications specified by the Department of Transport. Power is provided by a Rolls-Royce Bristol Siddeley *Gnome* gas-turbine engine.

The vehicle, which is equipped with special features for its role in search-and-rescue operations with the Canadian Coast Guard, will be based in the Vancouver area. Before it enters regular service, however, it will be tested extensively to determine its full capabilities and to enable operating crews to be trained. These tests also will help the Department of Transport to develop regulations and standards for the operation of air-cushion vehicles in Canada.

Canadian participation in the development of this new type of transportation is comparatively recent, although it has been used for some time to ferry passengers in Britain.

Interest in air-cushion vehicles has grown in Canada since Expo 67, where a *Hovercraft* was used to transport passengers across water. A Vancouver company, Pacific Hovercraft Limited, was recently granted a licence to operate a commercial air-cushion vehicle linking Vancouver with Victoria and Nanaimo. (See *Canadian Weekly Bulletin*, No. 23, P. 5.)

While the full scope of the vehicle's search-and-rescue abilities cannot be determined until tests are complete, craft of similar type and size can carry 20 passengers or two tons of freight at 60 knots. It is 38 feet long and 23 feet wide and, as fitted for Canadian Coast Guard work, will have side decks from which the crew can work in the course of search and rescue or other Coast Guard operations which require outside platform space.

In the Coast Guard service the craft will be equipped for fire fighting, fitted with pumps for assisting damaged vessels and will have fenders, scramble-nets and two 21-man inflatable life rafts for use in emergencies on water. The vehicle will be fitted with radar and other navigation and communications equipment of the latest type.

INTERNATIONAL EDUCATION MEET

The Canadian delegation which attended the thirty-first session of the International Conference on Public Education in Geneva from July 1 to 10, held under the joint auspices of UNESCO and the International Bureau of Education (IBE), was headed by Dr. G.N. Pery, Deputy Minister of Education for British Columbia, and included Dr. T.C. Byrne, Deputy Minister of Education for Alberta, Mr. Wesley H. Janzen of the Canadian Teachers' Federation, Mr. Jean-Gilles Jutras of ACELF (Association Canadienne des Educateurs de Langue Française), and as Special Adviser (political matters) to the Chairman of the delegation Mr. Jean-Louis Delisle, Permanent Representative of Canada at the Office of the United Nations in Geneva.

As usual with international conferences of this type, the Council of Ministers of Education for the Provinces was asked to suggest the names of persons who would join the delegation as representatives of the provinces.

The agenda for this year's conference included the subject of education for international understanding as an integral part of school curricula. Delegates also considered the study of environment, and reviewed reports by Ministers of Education of participating countries on developments in education within their countries during the year 1967-68.

COMPUTER FOR PAKISTAN

Canada has approved a \$450,000-grant to purchase and install a computer system at the Central Statistical Office in Karachi, Pakistan. The Centre supplies a full range of analysis and reporting services for all departments of the Pakistan Government.

In announcing the grant, Mr. Mitchell Sharp, the Secretary of State for External Affairs, said that the funds would be allotted from Canada's 1967-68 grant programme for Pakistan.

The Karachi office's present equipment is unable to cope with the volume of complexity of current or future statistical requirements. Under the new arrangement, an IBM 360 computer will be provided. Pakistani authorities have already instituted training schemes for programming and systems-design personnel and are preparing for installation of the unit. Full servicing facilities are available in Pakistan.

In the 1967-68 programme, Canada provided \$18 million in loans to Pakistan covering a nuclear power-plant project and other capital assistance, industrial parts and commodity aid, as well as \$10.5 million in grant aid.

EUROPEAN TRADE TALKS

Canadian trade commissioners from the countries of the European Economic Community met in Brussels on June 28 and 29 with senior officials of the Department of Trade and Commerce and with representatives of the Canadian mission to the EEC.

The meeting was held on the eve of full implementation of the EEC common external tariff and the elimination of remaining tariffs on trade as between the member countries. Mr. Paul Tremblay, Canadian Ambassador to Belgium and to the European Community, and Mr. J.H. Warren, Deputy Minister of Trade and Commerce, were co-chairmen of the conference. Later this month the Trade and Commerce Department will publish details of the access to the Common Market for Canadian goods which will result from the unified Common Market tariff as reduced by the Kennedy Round cuts. Because of these new developments within the community, the Trade and Commerce officials met to review trade prospects in Europe and to consider how best to assist Canadian exporters to expand sales to the European Community.

The European Common Market is second only to the United States in total production. It is the world's largest market for imports and is now Canada's third best export market. In 1967, Canadian exports to the EEC were \$677 million, an increase over the 1966 figure of 6.4 per cent.

The meeting in Brussels, which was part of the Trade Department's continuing programme of identifying export possibilities and establishing priorities, concluded that the EEC represented an outlet for substantially increased and diversified Canadian exports. It also concluded that Trade Department programmes oriented toward individual member countries of the EEC should be supplemented by approaches that are community-wide in their scope. A number of proposals were considered and will be developed further.

NRC ALTIMETER PROVED

Tests conducted recently in the tropical forests of Central America indicated that a radar altimeter that was developed in Canada could be of great value to the developing countries of Africa, Asia and Latin America in surveying their forest resources.

The forestry radar altimeter was developed by the Radio and Electrical Engineering Division of the National Research Council at the request of the Forest Management Institute of the Department of Forestry and Rural Development. It has been used successfully in Canada for forest surveying by means of low-level aerial photographs, taken at between 500 and 2,000 feet. Precise readings of altitudes above ground-level are a prerequisite for extracting quantitative information about a forest area from aerial photographs. For convenience, and to ensure perfect synchronization, the radar altimeter reading appears in the corner of each photo.

The altimeter, which also appears promising for use in magnetometer surveys and low-altitude topo-

graphic mapping, is now being manufactured by Leigh Instruments Ltd., of Carleton Place, Ontario. The outstanding feature of this instrument is its ability to measure actual flying height above the ground without being affected, like normal radar altimeters, by intervening vegetation, as well as being easy to install in light planes or helicopters.

TESTS IN GUATEMALA

At the invitation of the Food and Agricultural Organization of the United Nations, which became interested in the potential value of the Canadian radar altimeter and low-level aerial photographic technique for surveying the forest resources of developing countries, a Canadian team went to Guatemala in March to test the altimeter under tropical forest conditions.

Tests were conducted over a period of six days, from an FAO camp near the village of Sayaxché in northern Guatemala, an area of typically lush tropical rain forest.

The altimeter proved largely successful in penetrating the main tree canopy of the tropical forest, but some difficulties were encountered in penetrating the last 20 feet of short trees, palms, vines and shrubs, which are characteristic of such forests. The radar experts believe, however, that further modifications and adjustments to the altimeter can overcome most of these difficulties.

CANADA AT EXPO 70

President Taizo Ishizaka of Expo 70, marked Canada's hundred and first birthday on July 1 by turning the first sod on the site of the Canadian pavilion at Osaka.

The ceremonies, some 7,000 miles from the centennial flame on Parliament Hill in Ottawa, were attended by Mr. H.O. Moran, Canada's Ambassador to Japan, as well as leaders of Japanese industry and government.

Before the official sod-turning ceremonies got under way, a Shinto priest performed an ancient Japanese ritual in which he offered prayers to the spirit of the land. These ceremonies are considered essential by the Japanese workmen who will erect the Canadian pavilion at a cost of some \$2 million.

LES FEUX-FOLLETS IN EUROPE

The Department of External Affairs announced recently that les Feux-Follets, a Montreal dance company, would tour France, Belgium, Switzerland and Luxembourg in the autumn as part of the Canadian programme of cultural exchange with French-speaking countries. The company will receive a grant from the Canadian Government to help towards the cost of the tour during which they will give a total of 29 performances in Paris, Tours, Lyon, Bordeaux, Marseille, Montpellier, Grenoble, Nice, Brussels, Liège, Antwerp, Luxembourg and Geneva.

The programme, which was created mainly for this tour, will allow the European public to see the dances of several regions of Canada.

AUSTRALIAN PARKS VISITOR

An Australian parks officer has begun a six-month tour of Canada to compare wallabies with beavers, British Columbia spruce trees with eucalyptus and Pacific coral beaches with Rocky Mountain ski areas.

John Erskine, Superintendent of Ku-ring-gai Chase National Park, New South Wales, who is participating in an exchange programme entered into by Canada and other countries, will visit national parks and field offices across Canada after discussions in Ottawa with officials of the Department and of the Canadian Wildlife Service. The purpose of his visit is to swap ideas on the management of the wildlife habitat and other resources of Canadian and Australian national parks.

BREEDING HARDIER TOMATOES

Because of mechanization, ten years from now round tomatoes may be as outdated as the horse and buggy.

High labour costs in the Ontario tomato industry are forcing growers to look to machines to harvest their crops but, because machines are harder on fruit

than human hands, the shape of the tomato is being changed to withstand the rough handling. Round tomatoes cannot withstand the beating of a machine which may slit them open or squash them.

Research scientists are engineering new shapes that won't squash when the tomato is dropped, breeding new toughness into the skin so it won't split and they are changing the interior structure of the fruit to withstand rough handling.

L.H. Lyall, chief of the horticulture section at the Canada Department of Agriculture Research Station in Ottawa, is one of the men working on the problem. Although he is experimenting with different shapes of fruit and some other characteristics of the plant, he is mainly concerned with skin toughness and disease resistance.

Mechanization could change far more than the tomato plant. Through mechanization, farmers may begin to compete with the \$4-million worth of tomato paste imported annually from Portugal, California, Italy, Spain and Greece, which is used to make pizza, spaghetti and similar products.

Tomatoes are a \$20-million-a-year crop in Canada. Changes in the fruit shape, the plant, disease-resistance and harvesting methods could make it a much bigger crop in the future.