



CANADA

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CANADA AT THE ATOMFAIR

(An article by R.A. Frigon, Chief, Engineering and Equipment Division, Department of Trade and Commerce, in "Foreign Trade", May 9, 1959.)

Since the advent of the nuclear age, Canada has been regarded as one of the major nuclear nations. She was one of the original "big three", with the United Kingdom and the United States, who participated in the joint effort leading to the first practical applications of atomic energy. Since then, Canadian enterprise in nuclear developments has not lagged behind. The Chalk River establishment, Canadian universities and Canadian industry have a world-wide reputation, and the counsel of their scientists and engineers is heard with respect wherever nuclear experts meet. Applications in the power field thus far have followed Canada's needs and capabilities for financing development. In the application of radioisotopes to medicine and industry, Canadians have been in the vanguard. Design and construction know-how have been acquired as a result of reactor construction and operation over many years.

TWENTY-SIX PARTICIPATED

It was therefore a significant moment when Canadian industry for the first time displayed at a trade fair nuclear products and services available for export. The place was the AtomFair, held at Cleveland, Ohio, April 5 to 10, 1959. At the concurrent Nuclear Congress, Canadian nuclear experts presented important technical papers that had a bearing on some of

the products and services exhibited.

Twenty-six Canadian firms participated in the display, showing products and services in the nuclear energy field, including power reactors and reactor components, fuel elements, uranium compounds, radioactive isotopes, irradiation equipment, scintillation phosphors and scintillometers, and design and research facilities.

Some 3,000 nuclear engineers from the United States, Canada and overseas visited the exhibit during five days and 3,000 high school students, their parents and teachers came during a special showing on Sunday, April 5.

The Canadian exhibit attracted attention both because of its size--the largest at the fair, covering 1,300 square feet--and the range of highly developed products displayed. The design featured a skilful interplay of Mondrian-like panels of colour and of varied lighting effects, which helped in the primary purposes of displaying and selling nuclear products.

IMPORTANT CONTACTS MADE

The 30 representatives of Canadian firms in attendance were unanimous that the exhibit had not only achieved its purpose of stimulating U.S. interest in Canada as a source of supply for nuclear products, but had also prompted a number of serious inquiries that could lead to important contracts for research and the sale of products. It helped Canadian firms to make contact with a number of potential European,

Asian and Latin American customers, as the AtomFair and the Nuclear Congress brought visitors from many overseas countries, including France, Germany, Italy, the United Kingdom, Greece, Japan, Burma and Brazil. France was represented by a 25-man mission from French industry and the Commissariat à l'énergie atomique. The Canadian group paid particular attention to meeting all members of the French mission because of the traditional ties between France and Canada and the possibility of developing further trade links in the atomic energy field....

Equipment and services shown fell into three broad groups: power reactors and reactor components; uranium compounds; radioisotopes and equipment utilizing radioisotopes, and radiation detection equipment.

Among the power reactors was the NPD-2 (Nuclear Power Demonstration) 20,000 kw. reactor, a three-way co-operative effort between industry, public utilities and Atomic Energy of Canada, at present under construction at Rolphton, Ontario, near the Des Joachims plant of Ontario Hydro, about 15 miles from Chalk River. A model of NPD-2, prominently located in a section of the exhibit, was the object of many questions dealt with by company representatives.

In addition to the power reactor now under construction, there were three proposed and privately-sponsored reactor designs on display: a model of a horizontal tube, heavy water-cooled and moderated 185 thousand kw. reactor; a model especially built for the exhibit showing OADR, an organic liquid-cooled heavy water moderated 150 thousand kw. reactor offering reduced capital and operating costs; and a well illustrated graphic display explaining a nuclear steam generator employing helium gas for cooling and graphite as a moderator to produce 400 thousand kw. electrical output. The two latter were discussed in technical papers presented at the Nuclear Congress by Canadian authors.

REACTOR EQUIPMENT AND SERVICES

The requirements of the Chalk River research establishment in control equipment, fabricated components, and reactor construction have given a number of Canadian firms an opportunity to develop useful know-how, fabricating facilities and engineering services. Several such suppliers displayed by means of charts the equipment and services available. In the main, it was not possible to have actual equipment on hand because it is specially made and any spares must be kept at the reactor in case of operating failures. However, lack of equipment was in part made up by attractive graphic displays, photographs and take-away literature. The reactor components exhibited included a neutron-flux control system for the Canada-India reactor, a xenon gas computer installed at Chalk River, reactor control consoles, beta monitors, an

aluminum calandria--to mention a few of the items that to the layman's ear will sound exotic and fortunately need no explanation here....

DISPOSING OF ATOMIC WASTES

Closely allied to the reactor component group were the experiments undertaken on behalf of the Atomic Energy of Canada research establishment at Chalk River in the disposal of radioactive waste through incorporation in glass. The exhibit centering around this experimental work aroused much interest, not only in reactor-waste disposal but also in other possible applications of the special glass. A high volume air sampler, a device developed by the same organization (a research institute) for the collection of large samples of air-polluting substances, was examined closely by a number of visitors who felt that it might solve some of their air-contamination problems. Another exhibitor--a consulting engineering organization--with a close relation to reactor supply showed graphically the special services available in the field of reactor-construction inspection, a task requiring experts because of the high precision and close tolerances needed.

URANIUM COMPOUNDS

Uranium compounds were simply but effectively displayed with a model of the Port Hope refinery where they are produced. This model served to illustrate the design and construction services available in Canada from the engineering firm responsible for it. By its size and intriguing detail, the model also drew attention indirectly to the availability of the uranium compounds that otherwise might have been difficult to display. Questions about both were effectively answered by staff from the refinery and the engineering firm.

Canada produces a wide range of uranium compounds of high purity at competitive prices. These compounds include sodium diuranate, uranyl nitrate hexahydrate, triuranium octoxide, uranium dioxide ceramic, and uranium metal--a range matched by few other suppliers in the world....

RADIOISOTOPES OFFERED

Because of Canada's early start in the atomic field, we have developed an active industry--one of the most active anywhere--based on the production and use of radioisotopes. Canada has been in the unique position of offering radioisotopes of extra-high activity because of the facilities available at the NRX and NRU reactors at Chalk River. (The latter is the most powerful of its type in the world today.) These isotopes are used in therapy units for the treatment of cancer and in industrial irradiation units. Such high-intensity radioisotopes permitting sources approaching point size--an important feature in cancer therapy--were offered by one

of the firms. This company announced at the Fair the availability of middle-range intensities from 5 to 40 curies per gram in bulk or, to use a term of the trade, kilocurie quantities. The Canadian firm is one of the few in the world able to offer an assured supply in any desired range. The same firm displayed a gammacell, an industrial irradiation unit permitting the treatment of laboratory-size specimens. The exhibit, in colloquial style, urged prospective purchasers to consider the advantages of "doing it yourself" because the gammacell unit is self-contained, requiring no additional shielding, and small enough to make possible transportation to any desired part of the plant. This equipment aroused considerable interest and several serious inquiries resulted.

Other equipment featuring radioisotopes included apparatus used by a firm offering piping inspection *in situ* while the plant is in operation and without disturbing production. The inspection technique employs patented equipment developed by the firm and is used to inspect for corrosion and build-up within the piping, as well as to inspect newly erected piping. This service is now being exported and several further contracts were developed in the course of the AtomFair.

Process control is a further application of radioisotopes. A firm showed a unique measuring-head for incorporation into equipment for the automatic control of production of paper, rubber, etc., without contact with the material being measured. The head is an original Canadian design and exports are being promoted for use in Canadian or foreign-built production-control equipment.

RAILWAY-CAR SORTING

Everyone loves a model train--especially boys of all ages. An attraction to schoolboys (privileged visitors on a Sunday) and nuclear engineers alike was a model railroad consisting of three model trains on a track system. This was set up to demonstrate railway-car identification and sorting by a skilful combination of radioactivity and electronics.... Trains passing a check point were automatically identified by number on the control tower in the center of the photograph and automatically routed onto the proper siding. The system is quite simple in both theory and application: on the underside of the car there is a pattern of radioactive dots read by geiger tubes located under the track and interpreted by an electronic circuit. The system has obvious practical applications for the railway industry and already several major railway systems--some as a result of the exhibit--are interested in the possibility of using it in freight-yard operations and other railway applications.

RADIATION DETECTION EQUIPMENT

A range of radiation detection equipment and components was on display. This equipment, which may serve to monitor for harmful radiations or the detection of radioactive ores, uses either geiger tubes or a combination of photoelectric tubes and materials that phosphoresce when irradiated. Geiger tubes of Canadian design and constructed to close tolerances were exhibited, as well as scintillation plastics and chemicals in a variety of shapes for inclusion in instrumentation. A number of visitors to the Canadian display examined these components, with specific applications in mind. Among the scintillometer-type instrumentation was a newly developed beryllometer for the detection of beryllium. This new device, the first portable-type ever developed, was shown for the first time at Cleveland. In fact, it had just come off the production line. Also shown was a fully transistorized detection meter incorporating some of the latest advances in such instrumentation.

The prominent role played by the Chalk River establishment in the development and sustaining of Canada's nuclear industry was symbolized by a large model of the NRU reactor, one of the most advanced--and the largest--of its kind in the world today....

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AIR AGREEMENT WITH U.K.

The Minister of Transport informed the House of Commons on May 13 that discussions had taken place in Ottawa between the aeronautical authorities of the United Kingdom and Canada, with a view to bringing the air agreement of August 1949 between the two countries up to date.

Mr. Hees went on to say:

"The problems confronting the two Governments on the next phase of international transport were examined, and it was decided that the traffic rights under the present bilateral should be broadened to meet the new situation.

"The United Kingdom granted Canada the right to originate flights in Toronto destined for Hong Kong; to originate flights in Western Canada destined for the U.K.; the rights in Europe between London and Brussels, Dusseldorf, Zurich and Vienna. Canada granted the United Kingdom rights in Toronto on the North Atlantic service. The airlines of both countries will be able to exercise the new rights on March 1, 1960.

"I am very pleased with the outcome of the discussions with the United Kingdom and expect that the new services will greatly contribute to the convenience of the travelling public".

THE QUEEN'S CANADIAN STAFF

The Prime Minister, Mr. John G. Diefenbaker, has announced that Her Majesty the Queen has appointed Lieutenant-General H.D. Graham, C.B.E., D.S.O., to act as her Canadian Secretary during the period of her tour in Canada this summer. Lt-Gen. Graham is now the Commissioner in charge of arrangements for the tour, and will join Her Majesty's Household on her arrival in Canada on June 18th.

In addition to Lt-Gen. Graham, the Queen will have four other Canadians on her personal staff when she is in Canada. Mr. Esmond Butler, who, for the past year and a half, has been Assistant Press Secretary to the Queen at Buckingham Palace, will be Acting Press Secretary during the Canadian tour, and Lieutenant-Commander Ian A. MacPherson, C.D., RCN, Major R.A. Reid, M.C., C.D., Royal 22nd Regiment, Canadian Army, and Squadron-Leader R.M. Edwards, A.F.C., RCAF will act as Equerries.

Also in attendance on the tour will be Petty Officer Rosalee Auger, Secretary to Mr. Butler, and two officers and fifteen ratings of the Royal Canadian Navy serving on board H.M.Y. "Britannia".

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THE QUEEN'S GUESTS

Her Majesty the Queen, as Queen of Canada, will be the hostess at a dinner-party at Government House in Ottawa on July 1. The following people, representing different fields of Canadian life, have been invited, on behalf of the Queen, by His Excellency, the Governor General.

The Prime Minister and Mrs. Diefenbaker;
The Leader of the Opposition and Mrs. Pearson.

Industry: Mr. Fraser Bruce, President of the Aluminum Company of Canada and Mrs. Bruce, Montreal, P.Q.; Mr. A.E. Grauer, Chairman and President of the British Columbia Power Corporation Limited and Mrs. Grauer, Vancouver, B.C.; Mrs. G. Penny, owner of John Penny & Sons, Ltd., Fish Packers, Ramea Island, Newfoundland.

Universities: Dr. C.T. Bissell, President of the University of Toronto and Mrs. Bissell, Toronto.

Painting: Mr. Lawren Harris and Mrs. Harris Vancouver, B.C.

Press: Mr. James McCook, President of the Press Gallery, Ottawa and Mrs. McCook, Ottawa.

Letters: Mr. Robertson Davies, author and editor, and Mrs. Davies, Peterborough, Ontario.

Labour: M. Claude Jodoin, President of the Canadian Labour Congress and Mme. Jodoin, Ottawa.

Theatre: M. Gratien Gélinas, Directeur, La Comédie Canadienne, Inc. and Mme. Gratien Gélinas, Montreal.

Medicine: Dr. J.B. Jobin, Dean of Medicine, Laval University and Mme. Jobin, Quebec, P.Q.

Sport: Miss Anne Heggveit, Skiing Champion, Ottawa. M. Maurice Richard, star of Montreal Canadiens of the National Hockey League and Mme. Richard, Montreal, P.Q.

Science: Dr. David A. Keys, Scientific Adviser to the President of Atomic Energy of Canada Limited and Mrs. Keys, Deep River, Ontario.

The North: Révérend Père J. Binamé, OMI, Mission Catholique, Fort Norman, Territoire du Nord-ouest. The Right Rev. T. Greenwood, D.D., Bishop of the Yukon and Mrs. Greenwood, Whitehorse, Yukon Territory.

Music: Miss Lois Marshall, soprano, Toronto.

Ballet: Miss Celia Franca, Director of the National Ballet of Canada, Toronto.

Farming: Mr. Howard Hymas, mixed farming and Mrs. Hymas, Rosebud, Alberta.

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AGRICULTURAL PRICE SUPPORTS

The Minister of Agriculture made the following announcement in the House of Commons:

EGGS

"The Agricultural Stabilization Act provides for the announcement of support prices on an annual basis ... the existing price basis of 44 cents a dozen for Grade A Large eggs delivered to Montreal, will continue in effect for another twelve-month period ending May 5, 1960.

"The volume of eggs marketed through registered grading stations to date this year is seven per cent more than for the same period last year. However, this does not correctly represent the actual increase because of the steadily growing movement of eggs from large-scale producers direct to retail outlets. Because of this, a greater percentage of the eggs marketed through registered grading stations are offered to the Agricultural Stabilization Board.

"From January to June, 1958, the Board purchased 354,412 cases. Up to April 27 of 1959, the Board had purchased 503,073 cases, and shell eggs are still being offered in unprecedented volume. With many countries of the world developing larger surpluses of shell eggs, the disposal of the surplus accumulated by the Stabilization Board is creating an extremely serious problem.

"The continued expansion in egg production can be largely attributed to the growth in numbers and size of large commercial producers. Because of integration in this industry and technological developments, the present support programme is providing an incentive to commercial operators to increase production.

"I have, therefore, directed the Stabilization Board to develop as soon as possible a method of providing price support for shell eggs by means of a payment to producers -- commonly described as a deficiency payment --

rather than to continue the present method of offer to purchase. The payment to producers would be calculated on the difference between the actual market price for shell eggs for the period concerned and the prescribed support price. This method, as in the case of the arrangement proposed with respect to hogs, would make it possible to withhold payments from commercial organizations operating under the so-called vertical integration plan, or to restrict payments to a specific volume of eggs delivered by any one producer in a given period.

"I wish to assure the House that every effort will be made to have an alternative plan ready to put into operation at the earliest possible date."

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CATTLE AND LAMBS

The base prices and mandatory support levels for cattle and lambs, effective from April 1, 1959, have been announced by Mr. L.W. Pearsall, Chairman of the Agricultural Stabilization Board.

The Board's basis of support for cattle is on Good quality steers and the ten-year average, or base price, for Good steers, live, Toronto market, is \$22.28 per cwt. The mandatory support of 80 per cent is calculated as \$17.80 per cwt. In 1958 Good steers averaged \$22.90 per cwt., Toronto market, and the effect of this high price on the ten-year average has been to increase the support by 30 cents per cwt. over last year.

The base price for Good lambs, live, Toronto market, is \$24.43 per cwt. The mandatory support level of 80 per cent is \$19.55 per cwt. The mandatory support level of 80 per cent is \$19.55 per cwt. - the same as last year. Good lambs at Toronto averaged \$22.35 per cwt. during 1958.

The Board Chairman pointed out that these grades of both steers and lambs are now selling at about \$25 on the Toronto market.

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POPULATION DETAILS

Canada's population at June 1, 1957 was estimated at 16,558,000, of whom 11,126,900 or 67.2 per cent were 15 years of age and over, according to the Dominion Bureau of Statistics. Males 15 years of age and over were estimated at 5,627,200 and females at 5,499,700.

Of the number of males 15 years of age and over, some 1,733,300 (30.8 per cent of the total) were single, 3,683,900 (65.5 per cent) were married, and 210,000 (3.7 per cent) were widowed or divorced. Of the females in this age range, 1,289,100 (23.4 per cent) were single, 3,655,500 (66.5 per cent) were married, and 555,100 (10.1 per cent) were widowed or divorced.

The rise in the proportion of the population married since 1951 was most marked in the age group 15-24 years, where the percentage increased from 13.3 per cent in 1951 to 16.9 per cent in 1957 for males, and from 30.1 per cent to 34.1 per cent for females. Another interesting fact revealed by these figures relates to the relative degree of widowhood among males and females. There were an estimated 555,100 widowed and divorced women in Canada in 1957 as compared to 210,000 men in this category. This marital group of women has increased by 80,000 or 16.8 per cent since 1951 as compared to a rise of 11,000 or 5.5 per cent among men.

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WORLD FISHING BOAT CONGRESS

The second World Fishing Boat Congress was held in Rome from April 5 to 10, 1959.

In addressing the opening session, Mr. B.R. Sen, Director-General of FAO, (Food and Agriculture Organization) said, in part:

"The first Congress played an important part in drawing the attention of governments to the contribution that naval architects and gear technologists could make to the efficiency and prosperity of fishing industries. It is perhaps true to say that until a few years ago government activity at the production end of the fishing industry has been mainly in the hands of biologists. In 1950, when FAO employed a naval architect, naval architects were employed only by the governments of Norway and Japan. The situation has somewhat improved since then, and a few other governments, such as those of Newfoundland, Turkey and India have appointed naval architects. In Germany, United Kingdom, United States and Canada, naval architects have been employed in semi-government research institutions engaged in fishing boat development work, but on the whole naval architects are still the exception rather than the rule in national fishery administrations. Nevertheless, as a result of the work of the 1953 Congress, a great deal of interest has been created in this subject in many countries. In some colleges and universities, fishing boat design has been added to the curriculum for teaching naval architecture. The Congress stimulated the testing of fishing boat models in tanks in the United States, United Kingdom, Norway, Sweden, Germany, the Netherlands, Japan, Turkey, India and elsewhere. Several other governments, realizing that fishing boat design and construction could be immensely improved, are now considering the setting up of fishing boat departments so that naval architects will be able to take their place with biologists, economists, processing technologists, etc., in promoting the development of the fishing industry. The last congress also showed interesting possibilities of improving hull shape in order to reduce

resistance, lower fuel consumption, improve sea-kindliness and increase the sustained sea speed.

"The importance of designing and building more efficient fishing boats will be realized if we consider our lack of knowledge regarding fishery resources in all the seas of the world. We know as yet very little about the location, movement and spawning of fish in the vast oceanic regions which remain uncharted. It has been said that fisheries, as compared to agriculture, are in a primitive hunting stage. The extent of fish culture in enclosed waters is still very limited. This important field of fish resources remains to be explored, and this cannot be done except through international co-operation in designing efficient vessels, and financing research. Comparatively little research has been devoted to the exploration and utilization of fish resources, and when we consider the extent of under-nourishment that exists in the world today, there seems to be no justification for being indifferent towards developing such a vast source of nutrition."

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MANITOBA ELECTION

The Conservative Government of Premier Duff Roblin was returned with a working majority in the provincial election in Manitoba on May 14.

The results were as follows:

Conservatives	-	34
Liberal Progressives	-	11
CCF	-	<u>10</u>
TOTAL	-	55

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SEAWAY FULFILLS "PROMISE"

A Seaway cargo reached Montreal on May 15 in the record time of five straight days and nights from the Lakehead, in the holds of the giant Upper Laker, "John E.F. Misener", the St. Lawrence Seaway Authority has announced. She carried 740,895 bushels of grain.

The 654-foot-long bulk-cargo vessel of Scott Misener Steamships Ltd. lost several hours in fog off Port Colborne at the Lake Erie end of the Welland Ship Canal. In spite of this and the congestion at the "Welland", she still made the run in at least two full days and nights less than the pre-seaway passage time of ships that could navigate the old canals. Thus is fulfilled the prediction of Authority officials made as long ago as 1957, that much-shortened times could be achieved on the Seaway by fast ships under experienced officers.

After discharging her cargo of oats and grain at No. 1 elevator in the Montreal harbour, the "John E.F. Misener" proceeded to

Seven Islands for a cargo of iron ore which she will take back through the Seaway to the Lake Erie port of Ashtabula, Ohio. The laker is sailing on a draught of 22 feet two inches, (although she can be loaded to 25 feet) because of the limited depth of water in the St. Mary's River between Lake Superior and Lake Huron.

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PAKISTAN HIGH COMMISSIONER

The newly-appointed High Commissioner for Pakistan, His Excellency S.M. Burke, paid his first call on the Prime Minister of Canada, Mr. John G. Diefenbaker recently. The High Commissioner was accompanied by Mr. Syed Tayyeb Husain, Counsellor of his Office, and was introduced by the Chief of Protocol, Mr. H.F. Feaver.

Mr. Burke, a career diplomat, has held several senior posts in the Pakistan foreign service. He was Minister to Sweden, Norway, Denmark and Finland from 1953-56. Before coming to Canada, he was concurrently Ambassador to Thailand, Minister to Laos and Cambodia and Pakistan's Representative on the SEATO Council. He led special Pakistan missions to the Dominican Republic and to Mexico in 1952, and was a member of the United Nations Committee on Contributions from 1953 to 1956. Mr. Burke is a Fellow of the Royal Society of Arts in London.

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ATOMIC ENERGY AGREEMENT

An agreement between Canada and Pakistan on the peaceful uses of atomic energy was signed on May 14 by the High Commissioner for Pakistan and Prime Minister Diefenbaker.

The agreement provides a framework for co-operation between the two countries in the development of atomic energy programmes which will include the exchange of technical information, the provision of equipment and materials, and the supply of uranium.

Like other international agreements in this field to which Canada is a party, this agreement covers only the peaceful uses of atomic energy. Its provisions reflect the mutual concern of Canada and Pakistan to ensure that information and materials exchanged will serve to harness the resources of the atom for economic development and more generally for the benefit of the peoples of Canada and Pakistan.

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NEW AIR TERMINAL

The new international air terminal at Gander, Newfoundland, will be officially opened by Her Majesty the Queen, on June 19.

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