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## POWER PROJECT ON SCHEDULE

The bright promise of first power from the international St. Lawrence Power Project in 1958 grows daily closer to fruition as over 5,200 workers push advanced-stage construction on the Ontario Hydro section of the impressive development.

"Ontario Hydro News" reports that the project, now approximately two-thirds complete, is to go into operation in about one year. It is expected that, at that time, at least four of the 16 generators in the Robert H. Saunders-St. Lawrence Generating Station will be placed in service. Ultimate completion of the project is scheduled for 1960.

Actually, work on the development is being carried out over a 40-mile area on both sides of the river between Cardinal and Cornwall. A wide range of equipment from house-moving machines to giant dredges is engaged full-time. Hundreds of heavy trucks and earth-movers shuttle back and forth at many points, literally changing the topography of the countryside.

Construction, however, is concentrated at the powerhouse site near Cornwall where the Robert H. Saunders station is being built adjacent to its United States counter-part. The two massive power structures will span the river between Barnhart Island in the U.S. and the Ontario shore, spectacular evidence of the mutual co-operation between Ontario Hydro and the Power Authority of the State of New York, partners in the 1,640,000-kilowatt St. Lawrence Project.

When the development is completed in 1960, these two agencies will share this new power source, each taking 820,000-kilowatts of hydro-electric power.

A survey of progress to date shows that approximately 70 per cent of the concrete scheduled to go into the Ontario Hydro powerhouse has been placed. This work is going ahead at such a rapid pace that by the end of this year, authorities say, concrete placing in the powerhouse will be 90 per cent complete. Meanwhile, turbine imbedded parts for 11 of the 16 units have been installed, and work is progressing steadily on the installation of other mechanical parts.

In May of this year, work on a new phase of the powerhouse construction programme was launched when workmen began the placing of structural steel for the erection bay and administration building which will surmount the Canadian powerhouse at the northern end. Some 210 feet long and 120 feet wide, this building will be the "nerve centre" of the powerhouse -- the point from which the operators will control the eventual 16 generating units. Containing more than 1,000 tons of structural steel, the building will consist of six floors, with an observation platform on the roof.

### "BUILT-IN" FACILITIES

One interesting feature of the building will be its "built-in" facilities for visitors. A penthouse or observation roof, surmounting

(Over)

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six storeys of control, maintenance and office facilities, will provide an excellent vantage point for viewing the powerhouse area.

North of the powerhouse site another busy work area pinpoints the 3½-mile Cornwall dyke, which will abut the powerhouse and extend in a northwesterly direction. Compacted glacial till "borrowed" from the immediate area is being placed in the dyke, which will help to contain the headpond for the development. With favorable weather during the past few months, approximately two-thirds of the work in this area has been completed.

Two important structures being built in association with the twin powerhouses are the Long Sault Dam, situated between Barnhart Island and the United States shore, and the Iroquois Control Dam, located approximately 35 miles up-river. Both these concrete structures are in late stages of construction under the direction of the Power Authority of the State of New York, the last "pour" of concrete at the Iroquois dam having been completed during August.

#### CHANNEL IMPROVEMENT

Ontario Hydro is responsible for channel improvement work in several important areas along the river. Excavation and dredging being carried out at Iroquois Point, near the Iroquois Control dam, is progressing favorably with more than half the excavation completed. Good progress is also being made at nearby Point Three Points.

Other channel improvements include work at the Spencer Island pier, which has been completed. Dredging is underway upstream from Galop Island where the dry excavation has been completed, with the exception of the removal of the cofferdams. Excavation work on Canada Island and dredging in the Cardinal area have also been started.

At the new St. Lawrence Transformer Station which will receive 230,000 volt power from the Ontario Hydro powerhouse next year, approximately 65 per cent of the work involved in the 1957 construction stage has been finished. This large transformer installation will carry the power from the new Robert H. Saunders -- St. Lawrence Generating Station into the Ontario Hydro system, and work designed to handle this aspect of the development is already ahead of schedule.

One unique aspect of the project is the relocation and rehabilitation programme, which has been made necessary to clear land required for flooding purposes. The relocation of 40 miles of Canadian National Railways track on the main line between Montreal and Toronto is essentially finished, and for more than four months freight trains have been operating over the new double-track sections. Late in July passenger traffic was also diverted to the new line marking the turning-over of this new section of line to the C.N.R.

Work is being completed also on five new stations, which will serve Cornwall, Morrisburg, Iroquois, Ingleside and Long Sault, all of which are on the new section of track.

A similar relocation operation is underway over about 35 miles of Highway 2 between Cornwall and Iroquois. Some sections of this road have been completed, including paving, and work is proceeding favorably on the remainder.

The rehabilitation programme itself calls for the relocation of the homes, businesses, churches and schools of some 6,500 people situated, for the most part, in seven small villages and in one section of Morrisburg. This project is now in an advanced stage, and Hydro engineers estimate the work to be 70 per cent completed.

Iroquois has now been almost completely relocated in an entirely new townsite, 1½ miles north of the old village. Demolition of buildings in the old town is under-way.

Also virtually completed are Ingleside and Long Sault, to which residents of six smaller communities are being moved. Meanwhile, Morrisburg is undergoing a major change with the main business section being relocated on the north-east side of the municipality. Project Director Gordon Mitchell has stated that virtually all work in connection with the rehabilitation will be completed by the end of this year.

The entire construction area, from Cornwall to Cardinal along the river, remains today a vast scene of activity. But already there are signs indicating that the pieces in this complex project are beginning to fall into place.

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**MUSEUM METHODS COURSE:** The first in a series of training courses in museum methods that the National Museum of Canada will offer to Canadian museum staffs is being held in Ottawa this week.

Attending the first seminar on museum methods are 15 representatives of federal, provincial and local museums in Eastern Canada and five National Historic Park museums of the Department of Northern Affairs and National Resources.

Irving G. Reimann, of Ann Arbor, director of the University of Michigan Exhibit Museum, and consultant on museum methods to the National Museum, is directing the seminar. He is assisted by staff members of the National Museum, the National Gallery, the Public Archives, the Royal Ontario Museum, and the New York State Historical Association.

The seminar is the first event in a programme through which the National Museum of Canada hopes to assist local and provincial museums throughout Canada by providing professional advice from authorities in the various fields of museum activity.



**MINISTER ELECTED:** Mr. Sidney E. Smith, Secretary of State for External Affairs, was elected member of Parliament for Hastings-Frontenac in a by-election held in the Ontario constituency November 4. He was opposed by Mr. Ross Dawson, of Toronto, who ran as a Labour candidate.

Mr. Smith's election raised to 112 the number of Progressive Conservatives in the 265-seat House of Commons.

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**NEW ROYAL VISIT:** Buckingham Palace has confirmed a report that H.R.H. Princess Margaret will visit Canada during 1958, primarily to attend British Columbia's centenary celebrations. It is expected that the Princess will also visit Ottawa and other cities.

There has as yet been no announcement as to dates.

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**NATO PARLIAMENTARIANS MEET:** A 14-member delegation is representing the Canadian Parliament at the Third Annual North Atlantic Treaty Organization Parliamentarians' Conference in Paris from November 11 to November 16, inclusive.

The delegation is composed of: John C. Pallett, M.P. (Chairman), Honourable Senator Léon Methot, and Messrs. H.F. Jones, R.H. McGregor, G.W. Montgomery, Roland English and R.P. Vivian, Members of Parliament, representing the Progressive Conservative Party; Honourable Senator A.L. Beaubien, and Messrs. Charles A. Cannon, Auguste Maltais, N.C. Schneider, and George E. Nixon, Members of Parliament representing the Liberal Party; Mr. Ray Thomas, M.P., representing the Social Credit Party, and Mr. Erhart Regier, M.P., representing the C.C.F. Party.

Mr. Alcide Paquette, Office of the Prime Minister, is Secretary of the Delegation.

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**NEW RAILWAY LINE:** A 161-mile branch line of the Canadian National Railways providing railway transportation facilities to the Chibougamau region of Quebec was opened officially on November 6 by Mr. George Hees, Minister of Transport.

In an address at the opening ceremony, the Minister said, in part:

"Today's ceremony draws attention to two vital factors in our national economy. First, that much of our natural resources still await transportation before they can be developed, and secondly, that our railways remain ever to the forefront in opening up new districts where the economic possibilities of development can be demonstrated.

"It is evident to me that the partnership of transportation and development will play just as important a role in the next hundred years

as it has in the last, and further, that railways still remain the backbone of transportation in Canada. While aircraft and even trucks may lead in the search for new natural resources to be developed, the mass transportation of natural resources can be most economically carried by rail or by water.

"Today we find the railways extending out to the areas where natural resources await to be developed and where bulk traffic requires mass transportation. An instance of this natural expansion of our transportation facilities is before us here today where the 161-mile branch line of the Canadian National Railway between Beattyville and Chibougamau has been completed well within the scheduled date. The railway will be able to handle a volume of traffic which will permit great expansion of existing mines and bring into operation additional mines in adjoining areas.

"The skill of the modern railroad builder would astound some of his forefathers, on this new branch line which we open to traffic today, track-laying on the prepared roadbed was carried out at a sustained rate of around 4,000 feet a day. Bridge building on this line was likewise carried out in record time.

"The mining industry has contributed greatly to the development of Canada, and I am confident that the indicated mineral wealth of this area plus the transportation facilities being provided will result in new opportunities for our development as an industrial empire."

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**AT FAO CONFERENCE:** The Canadian Delegation to the Conference of the Food and Agriculture Organization of the United Nations which opened in Rome on November 2 is headed by Mr. Douglas S. Harkness, Minister of Agriculture. Dr. J.F. Booth, Head of the Economics Division of the Department of Agriculture is the Alternate Delegate. Mr. Harkness and Dr. Booth are assisted by advisers from various government departments.

The Food and Agriculture Organization was created in 1945 to assist countries in raising their standard of living by increasing the production and improving the distribution of agricultural, forestry and fisheries products throughout the world.

The conference, which is attended by representatives of 74 member countries is considering, among other matters, the world food and agricultural situation; reports of FAO committees on commodity problems; proposals for raising the fertility of the Mediterranean region by reforestation and soil improvement; problems of raising productivity in agriculture, forestry and fisheries; measures for the improvement of marketing; nutrition and food policies, including education and home economics; and the establishment of a forest research centre in Venezuela for Latin America.



### "THE NEW ALEXANDRIA"

As the importance of the Mediterranean Sea route gave cause to the location and growth of the City of Alexandria, which from its first beginning in the year 332 B.C. has played a significant role in commerce, traffic and learning, so the growing importance of the Polar Sea air route is influencing the development of Frobisher in Canada's Northwest Territories.

At present Frobisher consists of merely an airport, two Eskimo villages, a Hudson's Bay store, some Department of Northern Affairs installations such as a district office, a small hospital and some houses for the officials, and the ever present R.C.M.P. But it will soon grow; plans are laid and money is available for a large power station, a 20-bed hospital, a new school, a rehabilitation centre and numerous dwellings to house the staff required for such activities.

The airport is at present merely a fair landing field with inadequate runways and not enough buildings to meet requirements. But this is all changing. The Department of Transport has nearly completed a new modern staff house for 60 men; an airline is building a new hangar; the runway will be lengthened to 9,000 feet and resurfaced; a new 6,000-foot taxi-strip is nearly completed, and other improvements are on the drawing board.

Situated half-way between the larger cities on the American West Coast and the capitals of Northwest Europe, Frobisher is in an excellent position to serve trans-Polar flights, which require only one refuelling stop. Also, weather conditions are more favourable at Frobisher than at any other airport in all of Northern Canada and Greenland. Weather records kept for the airport for 14 years show an average of only 74 hours per year of weather under the 200-foot limit.

There is also a possibility of an excellent harbour with a deep water dock at Frobisher. It is the nearest Canadian Arctic deep sea harbour to Montreal, the roadstead is large with good sheltered anchorage and, when a dock is constructed in the near future, it will become still more important as a point for transshipment. For three months every summer large tankers and freighters, some 10,000 tons or more, dock and unload at Frobisher, bringing in all the materials and equipment needed to live comfortably. Also every week a large aircraft arrives from Montreal, the biggest part of its load being mail, which is distributed from Frobisher by other aircraft to many weather and radio stations in the Northwest Territories, and fresh fruit and vegetables and other foods to add variety to the daily meals for the people there.

The climate and living conditions in Alexandria are not ideal, nor are they at Fro-

bisher. While Alexandria is very hot, Frobisher is very cold. Egypt is subject to sand storms; Baffin Island to snow drifts. Alexandria is built on wet and unstable soil; Frobisher is based on rock and permafrost. At Frobisher people seldom have a cold, any kind of food can be kept clean and pure, and there is an abundance of excellent drinking water.

Of course it is a guess or prophecy to say that Frobisher will be the Alexandria of the North. It will never have the teeming population of its counterpart on the Mediterranean, but its location on the crossroad of the world, its possibility of being in a small way the centre for culture and learning for the corner in which it is located is obvious.

Sometimes twice a day and at least eight times a week, a large airliner, which six hours before left Vancouver or Copenhagen, stops for twenty minutes or half an hour, long enough to gulp some thousand gallons of fuel and get a weather report for the rest of the trip. It also brings in a few newspapers printed in Vancouver or Copenhagen the same day, sooner than the same issue reaches some of the regular subscribers.

There are two DC-4's, two DC-3's and four other aircraft stationed at Frobisher. They fly supplies to other airfields, weather and radio stations, mining prospectors and settlements in the Northwest Territories, but come home to roost on Frobisher ramp every night. Besides this there are numerous other aircraft dropping in for fuel.

The number of takeoffs per month at Frobisher is well over 2,500. That gives a daily average of eighty or more aircraft and the refuelling crews are kept busy.

It is hard to believe that only thirty years ago a white man and two Eskimos took three years to travel from the vicinity of Frobisher to Point Barrow in Alaska, with a few side trips, travelling by dog sleigh. Today the trip can be made in one day, returning the next.

However, the dog sleigh is not obsolete - the Eskimos, the Mounted Police and the explorers and prospectors still use them. There are also many good dog teams at Frobisher, should one like to take a Sunday jaunt. In the olden days, it was the only means of transportation. That and ships, but the ships can be used for only about three months of the year.

The airport at Frobisher was started in 1942 and completed the following summer. In 1946 the airport was turned over to R.C.A.F. During the war Frobisher proved to be one of the most important and most used link in the chain of airports from Canada to Europe. Although interest and use of the airport diminished after the war, the importance of the location and the high percentage of usability



of Frobisher Airport made it the main air traffic support and supply base for the weather and radio station which, established during the war, was found to be important enough to continue its function.

Scheduled airline flights have been making increasing and steady use of the airport. This part of Frobisher's importance started some years ago when Scandinavian Airline System began a regular series of test runs with passenger aircraft from Copenhagen to San Francisco. Many of the test flights turned around at Winnipeg and other Canadian airports, as it was conditions over the Arctic which were being investigated; in fact a number of scheduled flights (without passengers) were run from Iceland to Frobisher and Churchill only. When sufficient information and results showed that a route over the polar region was not only shorter but easier to navigate, and had a tremendous appeal to the public because it was only one-third over water and only 600 miles over the longest water crossing, S.A.S. started a regular passenger run between Copenhagen and Los Angeles.

and Canadian Pacific Airlines soon followed with one from Vancouver to Amsterdam. Up to the present the airlines have made more use of Sonderstrom Airport on Greenland as a refuelling stop, but Sonderstrom is slightly off the direct path and closer to Europe than to the American west coast.

Now the Department of Transport is taking over Frobisher for civil aviation operations and is doing all in its power to make it as efficient a refuelling stop as possible. As the Department's programme progresses, the importance of the airport will increase.

It will mean a lot of pioneering and hard work for all concerned; lots of work and not much play, as recreation facilities at present are limited and the ease and pleasant associations in a more temperate climate will for a time be non-existent. But here is a job worth doing, with the world looking on. Canada has in the past had more than its share of real pioneers and the success of this undertaking at Frobisher will show that the pioneering spirit has not vanished in the welter of motor cars and electrical gadgets.

### PRAIRIE MANUFACTURING INDUSTRIES

Factory shipments from all manufacturing industries in the Prairie Provinces in 1955 were valued at a record \$1,524,661,000, some 7 per cent greater than 1954's total of \$1,427,421,000, according to the Dominion Bureau of Statistics annual review of the manufacturing industries in the Prairie Provinces. Number of establishments rose to 4,635 from 4,584 in the preceding year, employees to 87,654 from 85,515, salaries and wages to \$263,094,000 from \$246,875,000, cost at plant of materials used to \$869,801,000 from \$844,679,000, and value added by manufacture to \$624,380,000 from \$556,376,000.

Value of factory shipments climbed 11.5 per cent in Alberta to \$641,148,000 from \$575,278,000, making it the leading manufacturing province of the Prairies for the second consecutive year. Establishments rose to 2,126 from 2,052, employees to 34,846 from 32,765, salaries and wages to \$106,549,000 from \$96,910,000, material costs to \$366,023,000 from \$346,525,000, and value added by manufacture to \$263,309,000 from \$219,328,000. All six of the leading industries reported gains in 1955 compared to 1954 and were as follows: slaughtering and meat packing, \$126,628,000 (\$121,955,000 in 1954); petroleum products, \$115,990,000 (\$101,707,000); butter and cheese, \$36,893,000 (\$35,535,000); flour mills, \$30,954,000 (\$30,402,000); sawmills, \$23,853,000 (\$22,794,000); and sash, door and planing mills, \$22,087,000 (\$20,756,000).

Manitoba was second in value of factory shipments, these rising 3 per cent to \$588,-

351,000 from \$571,409,000. Establishments were up to 1,549 from 1,522, employees to 41,318 from 41,224, salaries and wages to \$121,719,000 from \$116,455,000, material costs to \$329,699,000 from \$328,828,000, and value added by manufacture to \$247,472,000 from \$232,488,000. Of the six leading industries, two reported declines from a year earlier. Shipments of the slaughtering and meat packing industry fell to \$98,777,000 from \$144,009,000 and those of the railway rolling stock industry to \$28,150,000 from \$31,370,000. Factory shipments of the petroleum products industry advanced to \$40,235,000 from \$34,659,000, butter and cheese to \$28,510,000 from \$28,083,000, flour mills to \$24,516,000 from \$22,473,000, and men's factory clothing to \$20,569,000 from \$19,365,000.

Factory shipments in Saskatchewan increased 5.1 per cent to \$295,162,000 from \$280,734,000, increases in two of the four leading industries outweighing losses in the other two. Shipments in the petroleum products industry were up to \$84,368,000 from \$76,494,000 and in butter and cheese to \$28,278,000 from \$27,863,000, but were down in slaughtering and meat packing to \$30,440,000 from \$30,664,000 and in flour mills to \$42,919,000 from \$43,437,000. Establishments declined to 960 from 1,010 and employees to 11,526, but salaries and wages increased to \$34,826,000 from \$33,510,000, material costs to \$174,079,000 from \$169,326,000, and value added by manufacture to \$113,599,000 from \$104,560,000.



**MAIL HANDLING PROJECT:** Canada, the United States and Great Britain have inaugurated a long-term research programme to improve machinery and equipment for handling mail, it was announced in the House of Commons November 7 by Postmaster-General William Hamilton.

Representatives of the postal services of the three countries are meeting now in Washington, and will later study mail-sorting methods now used in Canada and in the United Kingdom.

In his announcement, Mr. Hamilton said that the development of modern methods of handling mail has lagged behind similar developments in other fields.

For some time Canada, the U.S. and Britain had been studying the development of new machinery and equipment, particularly in the electronic field, to improve mail sorting and other postal operations.

There had been discussions among the three countries on mail handling problems but no joint review of development work in each country. There also had been no attempt to develop close co-operation in research and development.

Mr. Hamilton said the conference and studies will result in closer co-operation by the three countries in the development of mail-handling equipment. The interchange of ideas would enable each to concentrate on those areas in which it was farthest advanced and to benefit from development in the other countries.

**NRU REACTOR IN OPERATION:** Atomic Energy of Canada Limited has announced that the NRU reactor has gone into operation at Chalk River Ontario. The start-up culminates six years of intensive effort in design, engineering development and construction. The reactor will be operated at low power for several weeks, during which time a series of test experiments will be carried out. The power will then be increased to the rated capacity of 200,000 kilowatts thermal. This rated capacity is approximately five times as great as the capacity of the NRX reactor which has been in operation for the past ten years.

The NRU reactor is a triple-purpose reactor and this has contributed greatly to the complexity of its design and to its cost. The reactor will provide the research, testing, and experimental facilities required for the development of nuclear power; it will produce plutonium; and it will produce radioactive isotopes.

As a tool for research, engineering development and testing, the NRU reactor will be unsurpassed. Its neutron flux is approximately five times as great as that of the NRX reactor. No other known reactor has such a high density

of neutrons combined with such a large capacity for experiments. This makes possible the testing of any fuel element assembly that is now being considered for nuclear power plants. Because of this, the NRU reactor will be used extensively for carrying out loop experiments similar to those which are now under way in the NRX reactor. Some of the loop experiments in the NRX reactor have been joint projects with the United States Atomic Energy Commission and with the United Kingdom Atomic Authority. These agencies have already asked for testing space in the NRU reactor. Inquiries have also been received from certain other countries.

The NRU reactor will produce substantial quantities of plutonium which will be sold to the United States Atomic Energy Commission. It will also produce a larger supply of the various isotopes - notably Cobalt 60 - which are now being used widely in research, industry and medicine.

The moderator of the reactor and its primary coolant is heavy water; its fuel is natural uranium. This is the reactor technology which Canada has pioneered successfully with the NRX reactor and which offers very good prospects for economic nuclear power. A unique feature of the reactor is the method of changing the fuel elements. Whereas the NRX reactor and other high power research reactors must be shut down to change fuel elements, the NRU reactor can be refuelled without a shutdown. The fuel-element-changing machine weighs 240 tons, about twice the weight of a diesel engine that pulls a Canadian passenger train.

The NRU reactor, which has cost approximately \$57 million, has been designed entirely in Canada and all of its components, with the exception of the heat exchangers, have been supplied by Canadian manufacturers. Over 100 Canadian companies have been employed on the fabrication of components for the reactor.

**WHEAT FOR INDIA:** Prime Minister Diefenbaker announced that Canada and India have agreed that \$7 million worth of Canadian wheat is to be supplied to India as part of the Canadian Colombo Plan programme for India.

This grant of wheat will be financed out of existing Colombo Plan funds and is designed to meet part of India's pressing needs for food grains. The wheat will be shipped shortly from Eastern Canadian ports.

A similar announcement was made in New Delhi following conversations between Mr. T. Krishnamachari, the Indian Minister of Finance, and Mr. William J. Browne, Minister without Portfolio, who visited New Delhi on his way back to Canada from the annual Colombo Plan Conference in Saigon, at which he led the Canadian Delegation.