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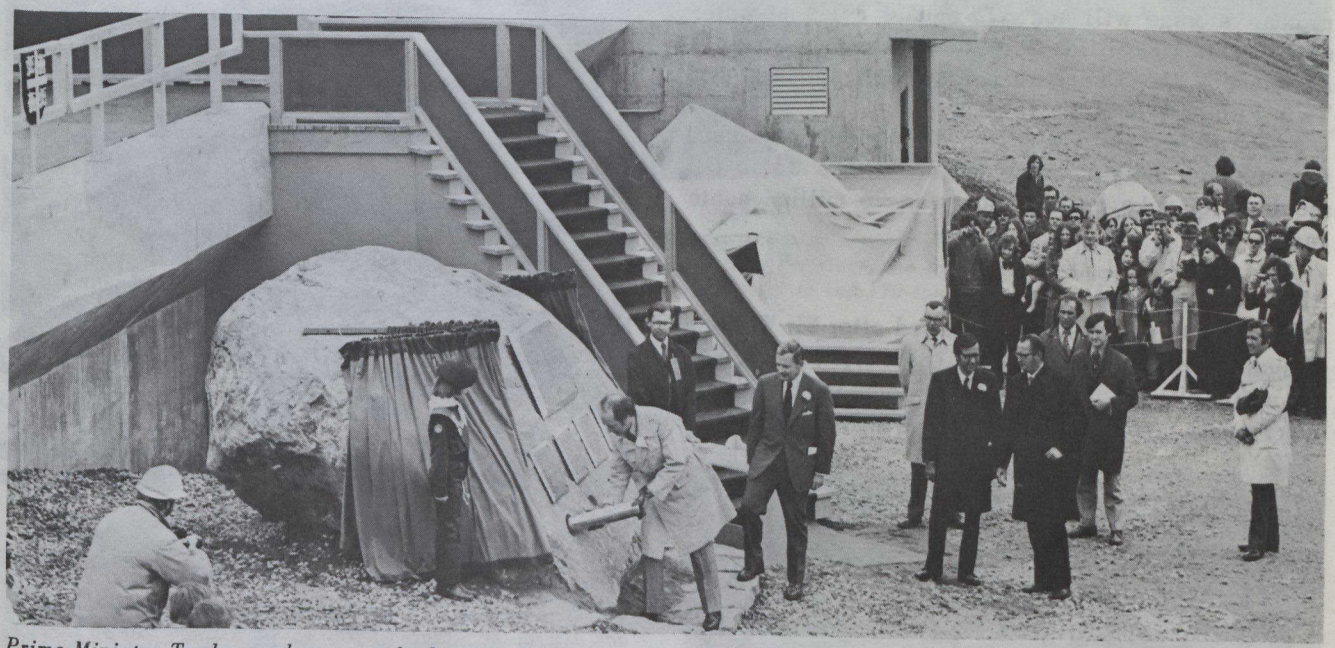
CHURCHILL FALLS POWER GIANT INAUGURATED



Prime Minister Trudeau places a cylinder containing historical project documents in the Labrador boulder. From left to right foreground are: W.D. Mulholland, chairman and chief executive officer of Churchill Falls (Labrador) Corporation Limited and president and chief executive officer of Brinco Limited; Mr. Robert Bourassa, Prime Minister of Quebec; Mr. Frank D. Moores, Premier of Newfoundland and Labrador.

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Prime Minister Trudeau, with Premier Moores of Newfoundland and Prime Minister Bourassa of Quebec and over 800 out-of-town guests in attendance, opened the $950-million Churchill Falls power development in Labrador on June 16, hailing it as "the largest construction project ever undertaken in Canada, the largest underground powerhouse in the world, the largest single-site power station in the Western hemisphere".

The complex, operated by the Churchill Falls (Labrador) Corporation Limited and owned by Brinco Limited of Montreal (57 per cent), Hydro-Quebec (34 per cent) and the Newfoundland and Labrador Power Commission (9 per cent), lies about 750 miles

(Over)

northwest of Montreal – "on a site so distant from centres of population, so inaccessible from tidewater, as to have been virtually isolated for centuries", said Mr. Trudeau. When fully operative in 1975, it will have a generating capacity of 5.225 million kilowatts, or enough to light more than 65 million light bulbs for a year. Most of its full annual production of 34.5 billion kilowatt hours of energy has been contracted for well into the next century, with Hydro-Quebec the principal customer.

STORAGE FACILITY

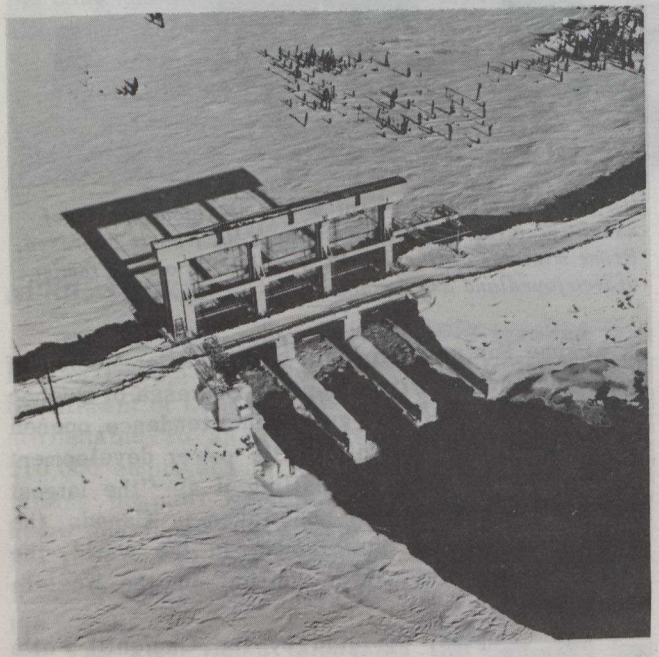
To impound the Churchill Falls storage of 1,000 billion cubic feet of usable water and to form the forebays and other works in the Smallwood Reservoir, more than 40 miles of low dams or dykes and five control and spillway structures have been built. The main or Smallwood Reservoir alone covers 2,200 square miles of water surface. The existing Ossokmanuan storage will add 322 square miles of water surface and 100 billion cubic feet of usable storage. At present the Ossokmanuan storage supplies the Twin Falls power-plant.

The dykes reach a height of 120 feet in places, the average height being 30 feet. The total fill required for dyke construction was 26 million cubic yards.

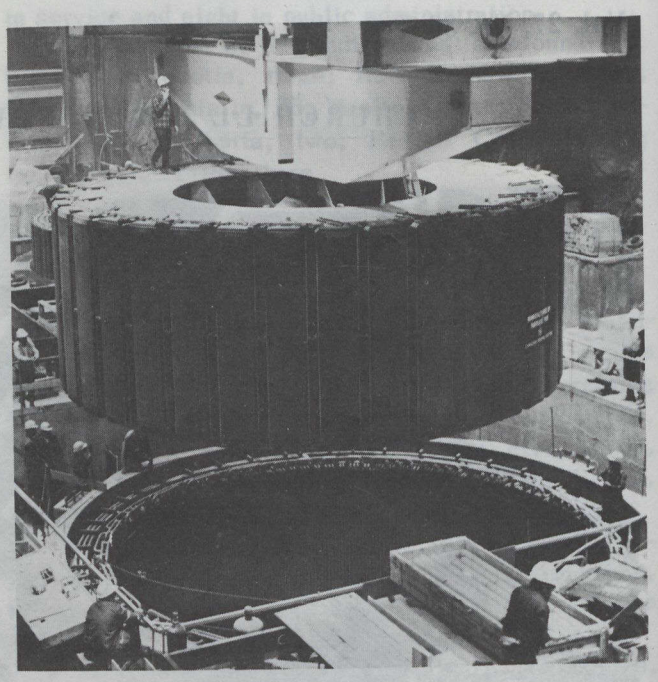
HISTORY OF PROJECT

Labrador's Hamilton River, renamed after Sir Winston Churchill, was first explored in 1839. However, it was not until 1892 that a geological survey described its hydro-power potential. In 1942 the Aluminum Company of Canada commissioned a wartime study of the upper river's energy capabilities. This was the first engineering report to suggest consideration of the "channel scheme". This is the basic idea that was finally adopted for the present power development and involved the diversion of the river above Churchill Falls to a point 16 miles downstream, where the present power head of over 1,000 feet is obtainable.

In 1953 a group of British investors set up the corporation, which is now Brinco Limited, and obtained the hydro-power lease on the Upper Churchill from the Newfoundland government.



With a discharge capacity of 100,000 cubic feet a second, Whitefish Falls control structure (above), *will regulate the flow of water between the eastern and western parts of the forebay.*

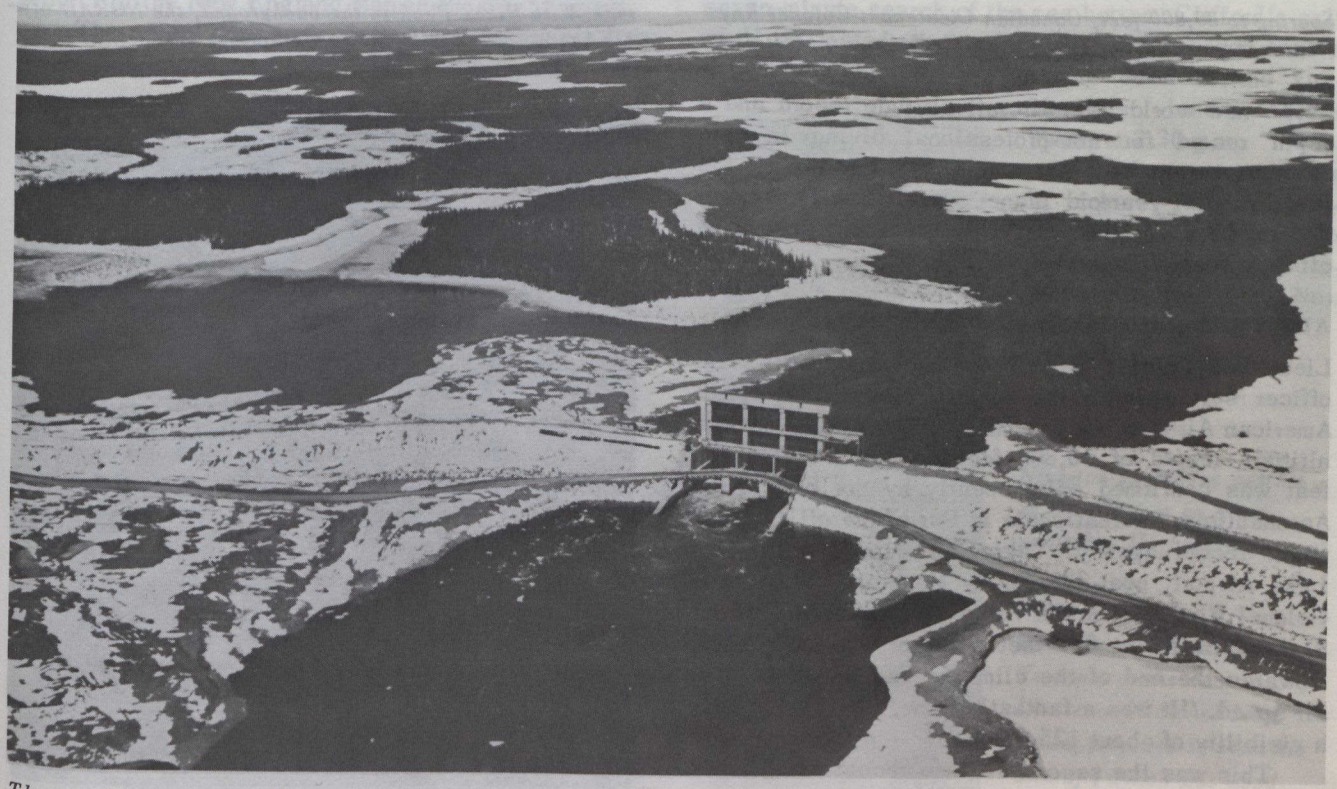


Two powerhouse cranes, with a combined lifting capacity of 800 tons, have been responsible for the placement in the machine hall of such pieces of equipment as the rotor and alternator pictured here. With a diameter of 30 feet and a height of close to 10 feet, the rotor of each of the 11 generating units at Churchill Falls weighs 650 tons.

In 1962 a Brinco-controlled company, Twin Falls Power Corporation Limited, delivered hydro-electric energy to Labrador's fast growing mining industry from the Twin Falls power-plant on a branch of the Churchill River. With increasing power needs and the development of long-distance power transmission by Hydro-Quebec, the development of Churchill Falls was started in 1967.

When the project is complete, over 65,000 persons will have participated in the work force; site employment alone will have taken a total of 52 million man-hours in 200 categories of employment, excluding off-site work which, for example, will require some 600 employees over a six-year period. (See also *Canadian Weekly Bulletin* dated February 10, 1971. P. 3.)

In July 1971, 36 strands of subconductors were pulleyed across the Churchill River to complete one of the more graceful phases of the hydro-electric power development at Churchill Falls. The strands are in groups of nine quad-bundles, each one an electrical conductor. With a span of 6,165 feet across the river, the transmission lines are attached to the 170-ton towers on each bank.



The control structure at Lobstick regulates the flow of water from the Smallwood Reservoir to the forebay. Once full, the Smallwood Reservoir (shown behind the Lobstick structure) *will provide the powerhouse with a potential reserve of 1,000 billion cubic feet of water. The reservoir's surface area will cover 2,200 square miles, making it the largest man-made lake in the Western hemisphere, and the third largest in the world.*

CANADIANS SET ALTITUDE AND DEPTH RECORDS

NORAD photo

Soaring to 30,800 feet, Canadian Lieutenant-Colonel Roy Windover took this 1941 Interstate Cader *to a record altitude. With Pikes Peak in the background, the NORAD officer has a good view of Colorado Springs area.*

A new world light-aircraft altitude record and a depth record for non-professional diving in cold northern waters were set recently by Canadians, the first in a 31-year-old plane over Pikes Peak near Colorado Springs, the other from a research submarine off the coast of Maine.

ALTITUDE RECORD

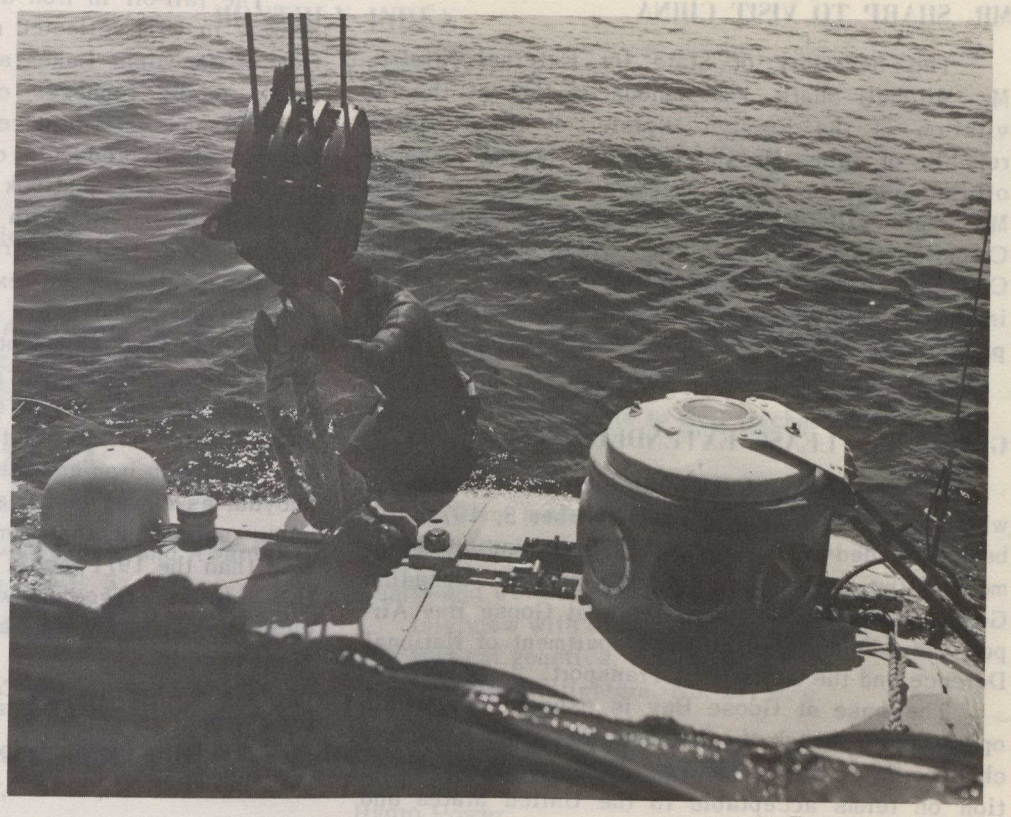
Lieutenant-Colonel Roy W. Windover, a Canadian officer serving with the joint Canadian-U.S. North American Air Defence Command headquarters, set the altitude record of 30,800 feet on April 10 but the feat was confirmed only recently by the Federation Aeronautique Internationale in Paris, the official air-flight record agency. Taking off from the Meadow Lake Airport, near the Rocky Mountain east slope, Colonel Windover flew a 75-hp 1941 *Interstate Cadet* S1-A aircraft just 880 feet short of six miles high. Towards the end of the climb he had only a 37-mph air speed. "It was a fantastic view," he said, "with a visibility of about 125 miles."

This was the second altitude record established by Colonel Windover. He set a Canadian national record on February 29 this year in his own 1946 *Cessna 140*, by reaching a height of 27,050 feet. This light aircraft is powered by an 85-ph engine.

Environment Canada

Aquanauts Roger Clifford, (left) *and David Scarratt, examine specimens taken on practice dive in the Gulf of Maine. CBC newsmen look on.*

Colonel Windover has been the commanding officer of the Canadian Forces Support Unit at Colorado Springs for the past 30 months; the organization provides the Canadian personnel for NORAD headquarters at Ent Air Force Base. He is also the executive officer for the deputy commander of NORAD.



Environment Canada

DEPTH RECORD

Canadian fisheries biologist, Dr. David Scarratt, and his American teammate, biological technician Roger Clifford, who were collecting marine samples 287 feet down in the Gulf of Maine on June 13, set a new depth record for non-professional diving in cold northern waters. The dive, made from the research submarine *Deep Diver*, highlighted the closing day of a three-week training and research project of the New England Man-in-the-Sea program.

The record dive took place about 100 yards from Monhegan Island, a rocky, lobster-fishing community off the coast of Maine.

Scarratt left the submarine at 11.30 a.m. for a seven-minute search of the sea bottom. Clifford's exit at 11.38 lasted three minutes. They emerged from a decompression chamber on the deck of the submarine's tender, *State Wave*, at 2.30 p.m.

Dr. Scarratt is leader of lobster ecology studies, Fisheries Research Board of Canada Laboratory, St. Andrews, New Brunswick.

Above–
Nine-ton submarine settles in the Atlantic as diver unhitches the hoist rope.

Left–
With Lieutenant-Colonel Windover at the controls, Lieutenant-Colonel John Crater prepares to start his aircraft, which was used in the record flights.

MR. SHARP TO VISIT CHINA

The Secretary of State for External Affairs, Mr. Mitchell Sharp, has announced that at the invitation of the Foreign Minister of the People's republic of China, Mr. Chi Peng Fei, he will make an official visit to China in August. While in China Mr. Sharp will officiate at the opening of the first Canadian trade fair in Peking, where more than 200 Canadian firms, representing a good cross-section of industrial sectors from all regions of Canada will participate.

GOOSE BAY LEASE EXTENDED

The United States lease at Goose Bay, Labrador, which was due to expire on December 5, 1972, has been extended until June 30, 1973, by mutual agreement between the United States and the Canadian Governments. Canadian interests at Goose Bay Airport are administered by the Department of National Defence and the Ministry of Transport.

The base at Goose Bay is expected to remain operational, though the U.S. status at the base may change. Extension of the lease will permit renegotiation on terms acceptable to the United States and Canada.

SEAWAY REPORT

For the second consecutive year, ice conditions delayed the opening of the St. Lawrence Seaway beyond the announced date of April 1. Temperatures for the month of March were lower than those experienced in March 1971, which had been considerably below normal; and a comparison of weather and temperature data for the years 1971 and 1972 indicates that 1972 weather conditions were less favourable than those of 1971, in particular in the critical period from March onwards.

As a result, the season opened in the Montreal-Lake Ontario section on April 12, when the *Olau Syd*, a 463-foot Danish tanker bound for Green Bay, Wisconsin, locked through at St. Lambert, Quebec, shortly before noon.

The Welland Canal was opened to navigation on a round-the-clock basis on March 29 when the laker *Tadoussac* transited Lock 8 bound for Sandusky, Ohio. The icebreaker *Griffon* was on hand to escort vessels in Lake Erie.

PROSPECTS FOR 1972

Traffic on the Seaway during 1972 appears to be promising. Recent sales of grain to the U.S.S.R. and the Republic of China have led to a prediction by grain experts that exports of Canadian grain on the Seaway during the last navigation season are likely to continue in 1972.

The fall-off in iron ore in both sections of the Seaway in 1971 reflected mainly lower steel production in the Great Lakes area. A "soft" demand for steel, record tonnages of steel imports in North America and blast-furnace problems experienced by Ontario steel producers contributed to lower steel production. The outlook for 1972 production is generally optimistic, with a new record predicted for the Canadian steel industry.

Prospects for an expansion in the Canadian steel industry and a low coal inventory point to an increase in coal shipments over those of last year, when shipments dropped as a result of a U.S. coal mine strike and lower requirements by industrial users located on Lake Ontario.

Traffic in iron and steel is not expected to be as buoyant as it was last year owing to a new voluntary quota agreement that limits U.S. steel imports to less than the 1971 record volume. Devaluation of the U.S. dollar, together with adjustments in other currencies, should also have a dampening effect on steel imports.

The outlook for the Canadian and U.S. economies as a whole is generally optimistic and an increase is, therefore, forecast for general cargo other than iron and steel.

NEW FISHERY FORESEEN

Five Canadian fishing vessels are investigating what Fisheries Minister Jack Davis describes as a promising new fishery in the Northwest Atlantic this summer. They are testing the feasibility of harvesting capelin, stocks of which are at present under-utilized.

Capelin are small, tasty, smelt-like fish, which hold much promise as a source for human food, a matter of some consequence in view of the world demand for protein.

Dr. Wilfred Templeman, a prominent fisheries scientist formerly with the Fisheries Research Board of Canada and now of Memorial University of Newfoundland, St. John's, is of the opinion that the stocks of capelin can support a substantial fishery. This view is endorsed by Dr. Olav Dragesund, a fisheries ecologist with the Institute of Marine Research at Bergen, Norway.

Dr. Dragesund's studies of migratory patterns, spawning behaviour and population dynamics of the species have played a key role in the development of the valuable Norwegian capelin fishery in the Barents Sea.

Four of the vessels in this summer's exercise are under charter to the Fisheries Service of the Department of the Environment. The fifth is operating on a shared cost basis between the federal Fisheries Service and the New Brunswick Department of Fisheries and Environment.

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