

The war had underlined the bleak oil reserve situation in Canada. Turner Valley had passed its peak. Exploration now required sophisticated techniques. In an almost desperation move, Imperial Oil geologists decided to drill near Leduc. It paid off. In the next 23 years, reserves of more than 14 billion barrels of oil, 60,000 billion cubic feet of natural gas and 100 million tons of sulphur were discovered in western Canada.

Geologists attribute the oil reserves in western Canada and the probability of large reserves in the north and off Canada's east coast, to matter laid down on the bottom of shallow seas which covered these regions ages ago.

There have been several recent new explorations, some successful some disappointing. The Athabasca sands and the extraction of oil from the sand, which is far more costly than the normal drilling, has become a considerably more viable project since world prices have rocketed recently. The Alberta Energy Resources Conservation Board has estimated the ultimate recoverable reserves of synthetic crude to be approximately 300 billion barrels. Of this, however, with present methods of recovery only 26.6 billion barrels (of which 0.1 million barrels has already been produced), are viable. The technicalities of extracting oil from sand are quite different from a conventional well.

The oil can probably be recovered to a depth of 300 feet by open-pit mining, which is the method used by Great Canadian Oil Sands. Nearly 100,000 tons of sand have to be processed to retrieve 50,000 barrels of oil a day.

Research on methods to recover the oil without removing the sand, where the oil is deeper than 300 feet is still under way. All the research has the same objective, to extract bitumen from the sand by liquifying it before bringing it to the surface in the conventional manner. To accomplish this many methods have been studied, including underground controlled fires, atomic explosion, steam injection and the use of dissolving agents.

The mined tar sand is moved to the processing plant, where it is treated with hot water and steam to separate the bitumen from sand and other solids. The clean sands are removed to the mining site and used in reclamation of the mined-out pit. The recovered bitumen, which is impure and highly viscous in its raw state, is then hydrogenated to remove undesirable components and improve its quality. The result is a high-grade synthetic crude oil that meets the projected needs for energy and petrochemical feed-stocks.

Canada has, potentially, sufficient oil reserves to put her in an extremely fortunate position of self-sufficiency for many years to come.

The second half of 1973 and the world energy crisis polarised all the political wranglings and arguments. But no matter how large Canadian supplies might be, a huge section of the country depended on imported oil. The national policy adopted

in 1961 splitting the country into one market for imported and another for domestic oil, worked reasonably well while world supplies stayed plentiful and prices remained low. Reversal of the world situation in the early 1970s left south-eastern Ontario, Quebec and the Atlantic provinces exposed and vulnerable.

There was no quick, practical way to move large volumes of western crude oil into eastern Canada. The interprovincial pipeline, which feeds industrial Ontario and pumped huge volumes of Canadian crude into U.S. markets, stops at Toronto. Its main eastern terminus lies even farther west at Sarnia. Extending it to Montreal will take at least two years and cost C.\$200 million or more.

Exports to the U.S. became a political sore point as the danger to eastern Canada became clear. American customers, suddenly thirsty for all the oil available, were buying more than 1.2 million barrels a day by the beginning of February 1973. The outflow, more than half of all Canadian production, alarmed critics who wanted reserves held in store for future generations.

In mid-February, the Government stepped in, ordering the National Energy Board to limit exports to supplies considered "surplus to Canadian needs." The energy crisis outside Canada was closing in. Price increases affected every refinery east of the Ottawa Valley. Domestic crude followed the fast-rising world price trend. On September 4, 1973, the Government made three major announcements.

- the Interprovincial pipeline would be extended to Montreal as quickly as possible;
- petroleum prices would be frozen voluntarily by the companies for five months,
- and a "control mechanism" would be devised to keep domestic oil prices from jumping upward with each new surge in world and U.S. prices.

The mechanism, announced shortly afterwards, was an export tax on crude oil set initially at 40 cents a barrel, effective on October 1, 1973. In effect, the tax froze oil industry windfall profits from selling Canadian oil to U.S. buyers at the going world rate for Canadian oil. The difference between the Canadian and export prices was skimmed off and collected by the Canadian Government instead of the multinational oil corporations.

As world oil prices continued to rise, the government raised the export tax accordingly to match the widening spread between world and Canadian prices. First call on the resulting revenue was for what the government called a "consumer cushion" to bring down the cost of imported oil to the domestic oil price level.

Abolition of the voluntary freeze on Canadian prices fitted in with Government plans to establish a uniform pricing system based on the cost of imported crude oil at Montreal. The freeze was removed at the end of the heating season. ♦

## *Girl survives under ice*

A nine-year-old girl, Jacqueline O'Neil, of St. John's Newfoundland, last winter survived the parent's nightmare of falling through a hole in an ice-covered river. Her father said afterwards, "I really can't believe she's alive!"

Jacqueline was playing with a friend, Mike Ryan, also 9, when she fell through the ice. Mike ran to fetch her father, who returned to find a gaping hole in the ice and assumed the worst. But Jacqueline had been swept downstream about 20 feet and came to rest on her back beneath the ice with her face out of the water.

She said afterwards, "All I could see was the ice above me — I tried to pop my head up once, but I didn't try it a second time." However, she managed to make a small hole in the ice with her thumb.

Police came with an axe and a pickaxe, though they, too, were convinced that the child was lost. Then, after about 15 minutes, someone heard a child's voice calling from under the ice. Jacqueline said she heard the sound of chopping and called out, "I'm over here!"

The ice around her head was broken away with a pickaxe and she was pulled to safety. A hospital examination found her to be "in good condition." ♦

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## *Drink your health in milk!*

A professor in Guelph, Ontario, is trying to promote a milk liqueur he has invented on the grounds that it is better for people than the soft drinks at present consumed in great quantity on the North American continent.

Professor Cyril Duitschaver of the food sciences department of Guelph University has developed his liqueur by processing equal parts of milk and alcohol. The final product is a clear drink which tastes like tequila. Tasters in the food sciences laboratory have been highly impressed with this "fine, soothing" product, according to the professor.

He has also developed a fizzy yoghurt drink which he is promoting rather more seriously as an antidote for soft-drink addicts. ♦