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"We Look into the Earth" – An Early Canadian Transnational

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Abstract

Central to the development of Canada's post-World War II resource-based economy was the identification of potential commercial mineral deposits. One of the central components of this process is exploration drilling using drill bits encrusted with diamonds – commonly called *diamond drilling*. Through the 1930s to the end of the 1960s Boyles Brothers Drilling Ltd was one of the major players in the Canadian industry. Headquartered in Vancouver, it had office across Canada. It had a major drill and diamond drill bit manufacturing operation in Vancouver. It was able to enter the international market given its expertise. It exported services and drilling equipment around the world and opened subsidiaries in the United Kingdom, East Africa, Southern Africa, South America and Asia – making an early successful multinational company. Drilling technology can also be used in mining operations, foundations of high-rise buildings and infrastructure projects such as dams, bridges, ports and roads. Boyles Brothers was involved in many of the major infrastructure projects in Canada. This was all run out of Vancouver when communications were rudimentary and logistics for both equipment and individuals was slow and difficult. This article explores the challenges of running a transnational operation largely beyond the fringe of civilization in Canada and across the globe.

Keywords: communications, diamond drilling, logistics, manufacturing, transnational

> At Zeballos on the west coast of Vancouver Island Billy Wilson is handling a tough one. First it rained so continuously that it was almost impossible for the pack horses to negotiate the steep mountain trail. Then when the trail dried up, the packer nearly cut off his foot with an ax, the cook quit, a cougar frightened two helpers off the job and finally the woods got so dry the fire-warden shut her down.

This account appeared in the July 1951 issue of *Core Box*, an in-house publication of Boyles Brothers Drilling Ltd. From the 1930s to the late 1960s Boyles Brothers, headquartered in Vancouver, was one of Canada's most prominent diamond drilling companies and was able to use its expertise to export its products and services. It established subsidiaries in a number of countries to become a Canadian-based multinational.

Diamond drilling is a tough job. Much of the work is undertaken in *the bush*, far from the amenities enjoyed by most Canadians and subject to harsh weather, hordes of black flies and mosquitoes, unforgiving terrain, isolation, dangerous working conditions and the drudgery of hard manual labour. It was common for crews to work for months at a time living in tent camps. Drills moved often, so crews could have a few miles to walk to the work site. In winter, normally a shack was constructed around the drill, but it had to be small as the heat radiating from the drill's engine was the only heat source. Much of the work still had to be done outside, including climbing a 30-foot mast to pull the rods out of the hole to change bits, and making sure water lines – sometimes kilometres long – did not freeze. In the winter, drilling often took place on frozen lakes. On one frozen lake at Steep Rock Iron Mines around 10 pm:

> an odd rumbling sound shattered the stillness of the evening. The set-up [platform under the drill] heaved violently and when the boys peered out, they saw that what had been a solid mass of ice was now a series of bobbing and weaving chunks. As the drill was some 300 feet from shore, they lost no time dashing for terra firma. One can readily imagine the confusion as the set-up disappeared through the ice and the wild scramble as the lads jumped and slipped from one ice-cake to the next.

In the early days everything had to be moved to camp by pack horses – the disassembled drill, the fuel, the food, the core boxes and the drill rods. Drill rods are 10 feet long and of various circumferences. Holes depths can easily exceed 1000 feet. Securing drill rods onto the back of a horse that will be traversing mountainous terrain requires considerable skill. Eventually, helicopters and planes replaced pack horses, making things much easier, but challenges remained. For one job on Vancouver Island the crew, even without baggage, could not climb to the drill site. A helicopter made 83 flights without mishap lifting 25,000 pounds of camp and drill equipment:

> The landing field was a 12x14 tarp stretched on top of a mound of snow near the edge of a cliff. Digging out the snow for the set up was a real job, as there was 15 to 18 feet of it. Five feet of fresh snow fell in one day to bring further complications. Bears were an added nuisance …

The pay was good and there was nowhere to spend it, but long absences were not conducive to stable family life or relationships. Drillers had a reputation for hitting town with wads of money, partying hard until the money was gone and then reconnecting with the company and heading out to a new job. The work was hard and the time in town was hard, and men aged quickly. Boyles Brothers was one of the first to provide a company pension plan that covered not only the employees located in the various branches but also for those who worked on-and-off in *the bush*.

Diamond drilling uses bits embedded with industrial diamonds that can cut through hard bedrock, where drill holes can be more than a mile deep. The bits are circular with a hollow centre. This allows the *core* to be collected and examined for the presence of minerals to detect ore bodies with commercial potential. Once mines become operational diamond drills are used underground to drill into ore faces. Dynamite can be placed in the resulting holes to free ore for extraction. Diamond drills can also be used to determine the suitability of the ground for the foundations of large structures such as dams, bridges and skyscrapers. They can also be used for a variety of smaller jobs such as water wells, soil sampling and infrastructure repairs.

Boyles Brothers was engaged in all of these activities from coast to coast to coast in Canada and eventually became a Canadian-based multinational with branches in the United Kingdom, Africa, South America and Asia. It is hard to find a major Canadian project that they were not involved in: the clearing of Ripple Rock in the inside passage on the West Coast, the Saint Laurence Seaway, hydro electric dams in BC, the Kitimat-Kemano aluminum smelter, the Trans-Canada highway, the mining developments at Uranium City, the Lions Gate bridge in Vancouver, the harbour and grain terminals at Thunder Bay, dam repairs at Powell River, the oil sands near Fort McMurray, the Empire Games pool at the University of British Columbia, the bridge over Okanagan lake at Kelowna, the Deas Island tunnel under the Fraser River, dock sites in Vancouver harbour, the Seymour Dam, the Peace River power project, the salvage of a sunken freighter in Montreal, the asbestos mine in Ungava, the Port Mann bridge over the Fraser River and the highway at Hell's Gate in BC.

The more routine underground mining operations produced some impressive statistics, including 2 million feet (approximately 600 kilometers) drilled for the Giant Mine near Yellowknife and similar distances at United Keno Hill in the Yukon. A 1958 map of BC shows over 75 drill sites, mostly in remote locations, where Boyles Brothers had been drilling since 1926. While the head office was located in Vancouver, the

company had facilities in Kirkland Lake, Noranda, Edmonton, Thunder Bay, Yellowknife, Moncton and Toronto.

The company was established in 1895 in Spokane, Washington, by Elmore and Page Boyles but quickly began drilling in support of mining operations in the West Kootenays of BC. They gradually extended operations across the province and into Alaska. The contacting office was moved to Vancouver in 1917. In 1926 Canadian interests bought out the US operation but kept the Boyles Brothers name. In 1936 five younger executives of the company took over the business and ushered in an era of rapid expansion and growth. In 1956, Boyles Brothers became a public company.

The Boyles Brothers facility in Vancouver produced drills, equipment and most importantly diamond bits. The equipment was initially used by company drilling crews but soon drills and diamond bits were supplied to other Canadian drilling firms and around the world through a number of agents in Newcastle, Johannesburg, Kitwe, Manila, Milan, Lima, Athens, Rio, Oslo, Buenos Aires, La Pas, Tokyo, Bombay and Lisbon. Although the company activities were widely geographically dispersed, the company culture encouraged employees to think that they were part of the *Boyles family*. One important pillar for encouraging and maintaining the image of Boyles Brothers as a family was its in-house magazine. The *Core Box*, published four times a year from 1947 to 1968, included reports from all of the company's offices from Yellowknife to Noranda to Newcastle to Kitwe. Given its popularity it was eventually circulated widely in the mining world. Today it provides a treasure trove of information on drill sites and company activities such as Christmas parties, golf tournaments, marriages and births and the results of long-distance bowling competitions among the branches spread across Canada.

While nowhere as hard or wearing as life in the bush, managing such a diverse and geographically dispersed company presented its own set of challenges. With branches scattered from Yellowknife to Thunder Bay to Kirkland Lake to Moncton, and reliance on the mail for communications, the company executives spend a considerable amount of time travelling and visiting the various branches. There are consistent reports of the board chairman, president, vice president and secretary–treasurer visiting all of the branches by rail several times a year. Visits to each branch inevitably took a number of days and often involved going to remote drill sites to provide assistance or expertise in solving problems or to observe new techniques or technologies in action. Getting to remote drill sites involved slow overland journeys or flights in small float planes landing on small lakes in the summer and ski landings on frozen lakes in the winter.

The visits involved social events and helped solidify the feeling of belonging to the Boyles Brothers family. Often the executives' wives accompanied them on their travels.

The management style incorporating visits to company offices extended to the multilateral facets of Boyles Brothers operations with long, complicated journeys to Kitwe in what was Northern Rhodesia (now Zambia), South Africa, Peru, England and various other drill sites in Central America, India, North Africa and other locations. There were also scouting trips to identify new opportunities and to deal with problems with drills sold to other companies. The heads of the various branches often travelled to the Vancouver headquarters for meetings and briefings on technological advances. The management style was hands on and based on building personal relationships. It also contributed to the rapid uptake of new technologies throughout the firm and the quick resolution of problem situations.

Boyles Brothers was also at the forefront of technological innovation for the industry. The fact that the company was vertically integrated, from designing and manufacturing the equipment to using that equipment in their own drilling operations, certainly helped. The timely visits by decision-makers to drill sites helped information flow back to the designers in Vancouver. In other cases, the nature of a project itself required innovation. For example, one of the firm's major projects involved the removal of Ripple Rock, a navigation hazard in Seymour Narrows on the BC coast. Ripple Rock was responsible for the sinking of over 100 ships and the loss of 114 lives. The rock was a steeply sided mountain situated in the middle of the 2,500 feet wide channel of Seymour Narrows and submerged only 9 feet at low tide. An exploratory hole was drilled from the shore to the rock. This involved drilling in a large U-shaped hole 2500 feet long. From the drilling machine on shore the hole was first angled down 22 degrees to get under the 200-foot depth of the sea. The hole proceeded relatively in the level until the rock was reached, then angled up nine degrees into Ripple Rock to take core samples. A system of uniquely designed wedges was used to accomplish this feat. The U shape caused a spate of problems that had to be overcome, and the hole took five months to drill.

Working conditions for the shore-based drill crew were also far from ideal:

> Well if our equipment performed excellently, the weather did not, and many storms, some with gusts of over 60 miles per hour, caused hardship and damage. We lost two or three shifts while storms were raging and spent other shifts repairing the tent camp and tarps at the drill. Snow, too, plagued the crew for six weeks.

On the basis of the test hole, the project was approved, and Boyles Brothers was contracted to sink shafts, tunnel under the sea and then drill up into Ripple Rock for the placing of the dynamite. The blast took place on April 5th 1958 and was successful, leaving a clearance of 47 feet of water at low tide.

The shop in Vancouver turned out new drill rig designs and improved water pumps to lubricate the bits and remove rock waste on a consistent basis, but not all the innovations arose from improvements to machinery. New drill bits were designed:

> The bit of 25 years ago was hand set with six, eight or twelve large black diamonds. Since these bits cost up to $3,000, they were handled as carefully as a king's crown. Today the less expensive Bortz diamond has practically replaced the black diamond in drill bits. Modern mechanical settings, using a greater number of smaller stones, has further reduced costs. The Bortz diamond is harder and has better cutting qualities than the black, and is capable of drilling at vastly higher speed.

Innovations were also made to the materials the diamonds were set into extending the life of a bit. Boyles Brothers was also a rapid adopter of technologies such as the *wire line system* which allowed core to be recovered without pulling the drill rods from the hole. The company also adopted technologies from other sectors, using helicopters, small aircraft and tractors to deal with the logistics of establishing camps and moving drilling equipment. A report from January 1949 mentions that Boyles Brothers was contracted to drill holes for heat pumps, *the new heating idea*.

In 1966 Boyles Brothers was purchased by Inspiration Limited and integrated into the operations of the new owner's family of companies. In January 1968 it was announced that the manufacturing plant in Vancouver that employed 175 people would be shut down and production consolidated in Inspiration's plant in Orillia, Ontario. The 77th and last issue of the *Core Box* was published in February 1968.

Endnotes

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