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Mixed train No. 352 steams majestically out of Trenton towards Picton in this March 12, 1952 view. Originating at the divisional yards in Belleville, the mixed was scheduled to spend three hours and fifty minutes covering the 44 miles between Belleville and Picton.

Source: Paterson-George Collection.

As part of its activities, the CRHA operates the Canadian Railway Museum at Delson / St. Constant, Que. which is about 14 miles (23 Km.) from downtown Montreal. It is open from late May to early October (daily until Labour Day). Members, and their immediate families, are admitted free of charge.

Mining and Tunnelling Locomotives in British Columbia Today

By Mervyn T. Green

INTRODUCTION

By the very nature of their purpose and usage, railway locomotives owned by mining and tunnelling operators spend most of their working lives hidden away from the cameras and notepads of railfans and recorders. This attempt at chronicling all such units as are in existence today in British Columbia is therefore fairly accurate in recording any locos that are out of use or are preserved, but is not completely accurate in defining all the units still at work in mines and tunnels today.

Over the last 110 years, several thousand mining and tunnelling locomotive units have been used in the surface and underground workings of the hundreds of B.C. mines, quarries, tunnels, cuttings and pits. They have used a variety of different power sources, including steam (both saturated and "dry"), compressed air, electricity (from an overhead power line, or from batteries carried on the unit) and diesel or gasoline engines (usually with mechanical transmissions using gear trains or chain drives).

The units that exist today fall into four distinct categories. First, there are those few still in use at four mine/tunnel operations. Second, there are units stored at mines, usually awaiting a buyer since the mine closed down, or they are mine units for sale at the sites of second-hand dealers. Third, there are five units still in use at two non-mine sites. Fourth, there is a sizeable number of units that have been preserved and are on public display at museums and similar locations.

MINE AND TUNNEL UNITS STILL AT WORK

The Kemano Completion Project, some 75 km. southeast of Kitimat, started in 1989. Its purpose is to add a second tunnel to bring down stored water from Tahtsa Lake to sea level to feed hydro-electric turbines in the Kemano powerhouse. From there, electricity is sent by an overland transmission line to Kitimat. Most of this new power is destined to be used in the expansion of the smelters of the giant Alcan Canada Products Ltd. aluminum processing plant, located on the western side of Kitimat, on Douglas Channel. Tonto Drilling Co. of Kamloops won the contract to drill the new tunnel: in September 1989 it bought two JMD24 diesel-mechanical 4-wheel units, built by Plymouth Locomotive Co. of Plymouth OH, from Nelson Machinery Co. of Savona (just west of Kamloops). These two 36" gauge 25-ton units are now Tonto No. 1 (serial number 7371, built March 1982) and No. 2 (7137, built 1976). Nelmaco had acquired them late in 1988 (its numbers 106 and 111) after the sale of equipment used in building the new Canadian Pacific Railway tunnel under Mount MacDonald. They both came from one of the two main contractors there, Manning Kumagi Joint Venture Inc. (MKJV), which used them as its K20 106 and K20 111. MKJV bought them both as 42"

gauge units and had them converted for use on 36" gauge track. The number 106 came from Atkinson Commonwealth Construction Co. of Chetwynd in 1984, where it had been stored since late 1982. Purchased new in March 1982, it was one of a group of eight new Plymouth 42" gauge units acquired to build the northwestern extension of B.C. Rail to Dease Lake. However, the B.C. government (owner of the railway) stopped work on the construction the following year, leaving the eight locos to wait for buyers. MKJV bought the number 111 in 1984 from the Kenny/Paschen/S&M Group of Argo IL, where it had been in use since its purchase as a new unit in 1976.

The second group of mine units is located in Kimberley, at the Sullivan Mine, on the northern side of town (some 30 km. north of Cranbrook). The giant mining corporation Cominco Ltd. (once owned by Canadian Pacific, and now by Teck Corp.) also owns the smelting complex at Trail. It announced in January 1990 that the mine is to be closed, but it was in at least partial use during 1990, although its future is dim. One of three 36" gauge 40-ton General Electric Co. 8-wheel units (built in Schenectady NY) pulls out trains of 40 Kimberley-built steel ore cars, each carrying 15 tons, from the upper levels of the mine to the rotary dumper. The first two units, numbers 101 and 102, were built in September 1948 (serial numbers 29447 and 29448), while the third (103) followed four years later. 101 was to have been rebuilt and upgraded next, but this is now unlikely given the dubious future of the mine. The mine's lower levels are worked by an unknown number of 18" gauge "mine mules" (built by Westinghouse?), weighing 4 to 8 tons apiece and producing 20 to 40 horsepower from an overhead trolley wire. The numbers and builders of these are not known to the author, nor how many are currently at work; 6 such units were noted outside the portal to the lower Sullivan Mine entrance in September 1989. The upper level mine yard also houses three unique specimens: a 4-wheel GE overhead electric line car (probably home-built), a 4-wheel railrack tamper using compressed air, a 4-wheel home-built snow blower driven by a Euclid C11-01 engine. Both the concentrator and the fertilizer plant are connected with Canadian Pacific Railway's Kimberley Subdivision (built 1899-1900), which runs 26.5 km. south to North Star, near Cranbrook. Ore concentrates travel this route to reach the Cominco smelter at Trail, in short trains of hopper cars powered by one or two CP SD40-2 locomotives from Cranbrook.

Using an open-pit technique since 1988, Westmin Resources Ltd. of Vancouver has cut into the side of a mountain high above the Salmon River, some 20 km. north of Stewart. This company is a joint venture between Westmin (60%) and Pioneer Metals Corp. (40%). Gold production began in May 1989, but the mine's future is unsure, being somewhere from less than one year to more than five years, depending on the amount of ore now available and the



Two Plymouth JMD24 36" gauge 25 ton diesel-mechanical units sit in the yard of Nelmaco, in Savona in September 1989, waiting for road transportation to their new owners in Kemano and Minneapolis.

continuing investigation of new sources. Cutbacks were announced in December 1990, with the workforce cut from 165 to 100 persons. The area was worked before, by Big Missouri Gold Mine Co., using vertical drilling techniques (1923-1932), then by Premier Gold Mines Ltd. and then by Silback Premier Exploration, using horizontal adits. Within one of the latter is an 18" gauge line, which is still in occasional use by geologists to check on ore bodies. It contains two 4-wheel 1.5 ton battery-electric "Little Trammer" mine mules built by Mancha Locomotive Works of Chicago IL, one numbered 17, the other without a number. Their origin and age are not known, but they date from the days of the Premier Mine (1927-1932), when all the ore was sent out by gravel road through Hyder Alaska or by an overhead bucket line to an ore transshipment at Stewart (at the head of the Portland Canal). Today, the partially-refined gold is carried to Stewart by company truck, then forwarded to the bank on the six-times-per-week (not Sundays) run of the Stewart-Terrace public bus service!

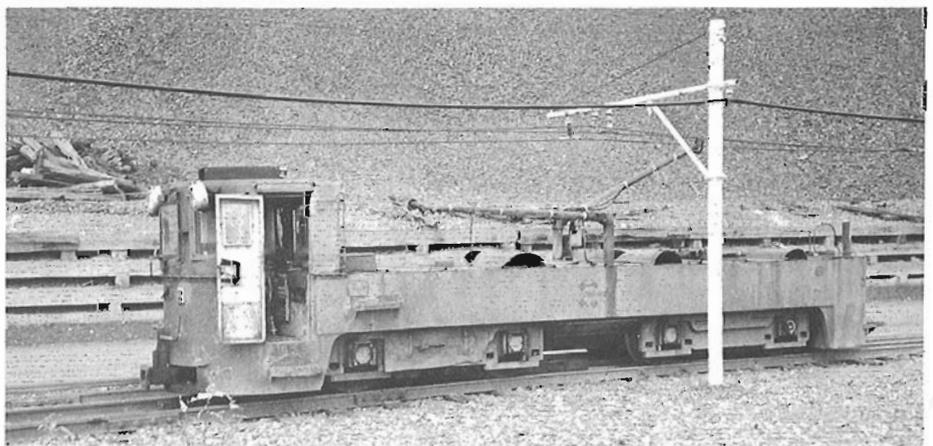
The last group of mine units in use is a small one of a single unit of Dickenson Mines Ltd., a division of Silvana Mines of Vancouver. Since 1970, Dickenson has been operating 2 km. of underground track in the tiny mining settlement of South Sandon, some 110 km. north of Nelson, via Kaslo. In this silver/lead/zinc mine is at least one 24" gauge mine mule, probably a 4-wheel 1.5 ton Mancha battery-electric "Little Trammer" unit, which hauls 4-car trains of 4-wheel ore cars, each carrying 16 tons of ore. Sandon is a ghost town, since a 1955 flood removed most of the few buildings that were then still standing. It was the centre of "Silvery Slocan" for over 50 years,

after ore was discovered in the area in 1891. Sandon became a sizeable mining town, served by both the Great Northern's narrow-gauge Kaslo & Slocan Railway (to 1910, when it was rebuilt to standard gauge by the CPR), and by the CPR's Nakusp & Slocan Railway (to 1957).

MINE & TUNNEL UNITS STORED FOR SALE

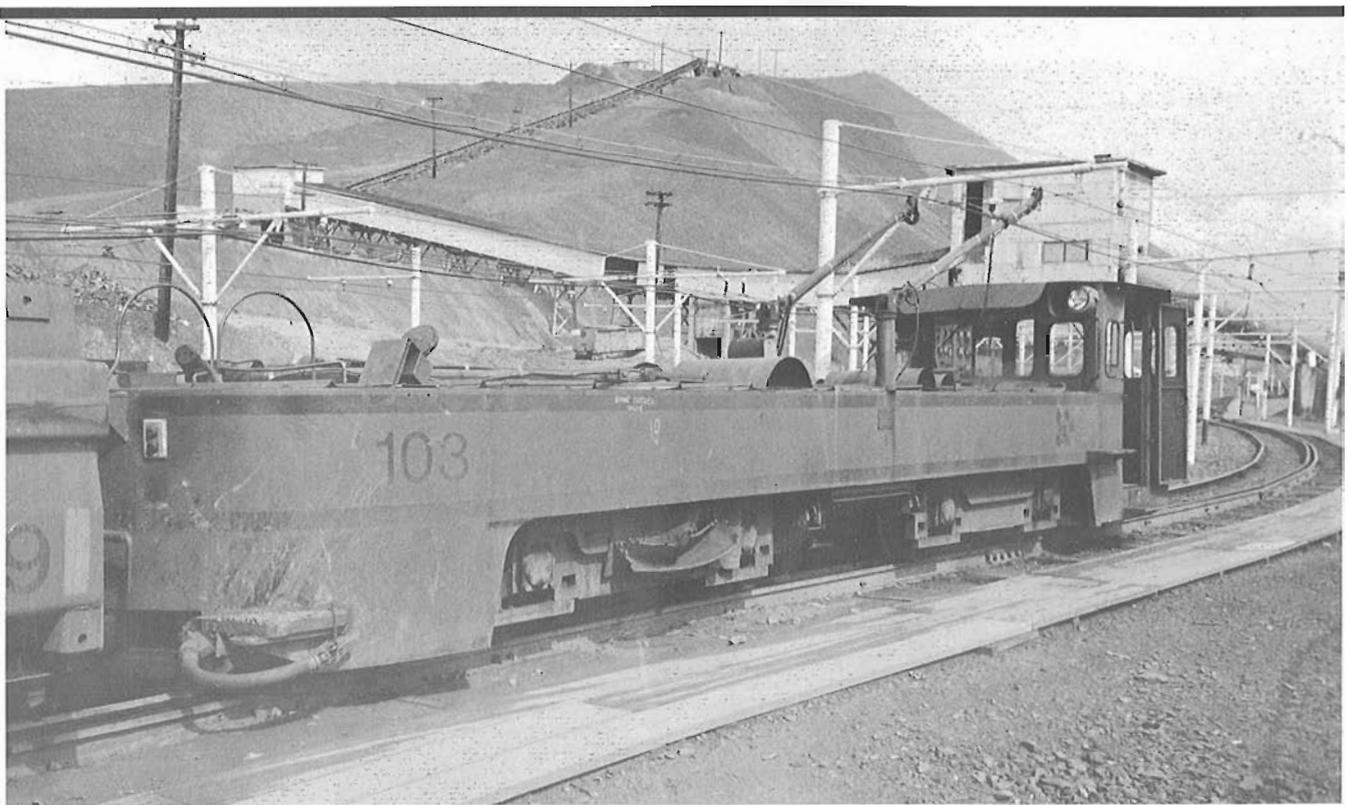
Of the eight Plymouth units bought by ACCCo. for BCR's Dease Lake extension, at least five were purchased in 1984 by MKJV for the Mount MacDonal contract of CP Rail. It is not known what became of the other three; whether they were sold to dealers or contractors, or whether they are still stored in Chetwynd.

Further north, and accessible only via Alaska over a rough gravel road, the Granduc Operating Co. of Vancouver built a copper mine (1964-1969) beneath Tide Lake, some 60 km. north of Stewart. From 1985 this site (called Canada Wide Copper Mines) was serviced by a 52 km. gravel road, kept open all year, across the Salmon Glacier and along the edge of the Salmon River to Hyder Alaska. The ore from the concentrator was brought down in cylindrical road tankers, each carrying 25 ton dry loads, to a new ore terminal built on the north side of the Portland Canal between Hyder and Stewart. The first shipload of Granduc concentrate left Stewart for Japan in January 1971. The three 42" gauge Plymouth 4-wheel DMD24 units, built in 1962 and 1963, formerly



Cominco 8-wheel General Electric 36" gauge overhead-electric unit 102 in the dumper yard above the Sullivan Mine, Kimberley in September 1989. It wears the original yellow paint scheme of 1948.

used to help dig out the mine, were sold in 1969. Mine haulage of ore out and personnel in/out was handled by five 42" gauge Mitsubishi Heavy Industries 8-wheel overhead electric locomotives: these were 750 horsepower double-ended units built in Tokyo Japan - the only Japanese-built mining locomotives ever used in B.C. (so far). Active from 1969 in the 16 km. tunnel constructed from Tide Lake portal to the Leduc ore faces, they handled all the trains of 15 to 20 ore cars (holding 50 tons apiece) and also the 4-car passenger trains (each car holding 55 miners per work shift).



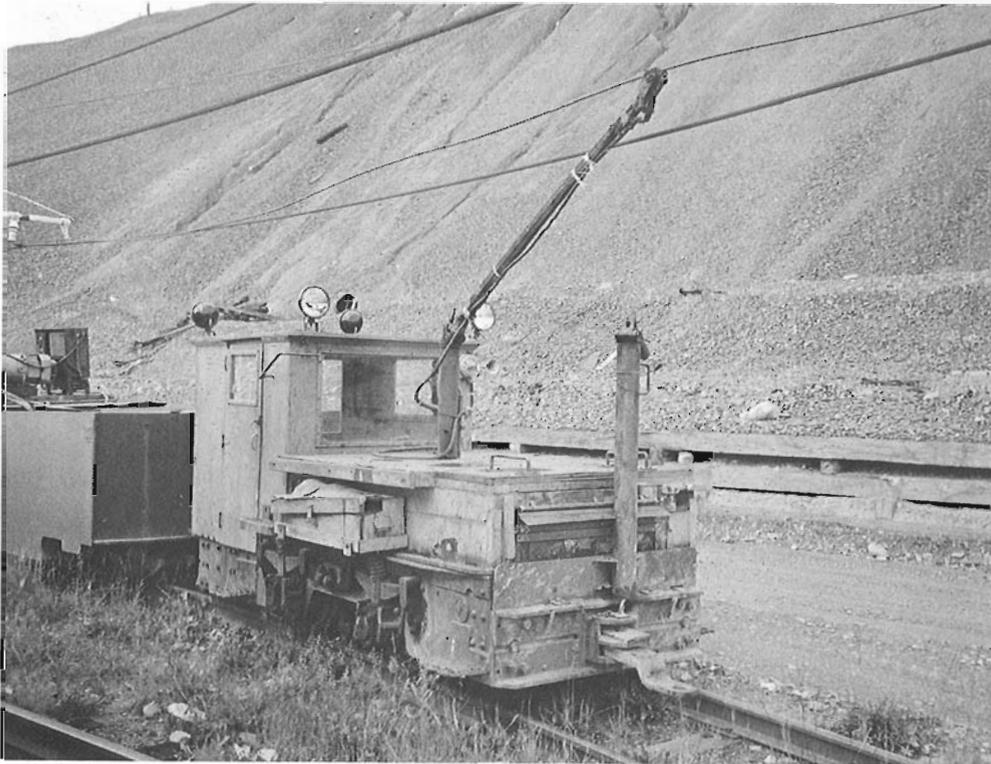
Cominco 8-wheel General Electric overhead-electric unit 103 pulling a train of ore cars over the ore dumper, in September 1989. Note that both trolley poles are in use to pull the heavy train out of the Sullivan mine.

The mine was closed down in 1984 and all the rolling stock was sealed within the mine. Four of the mine units are stored there still, waiting for a reopening or a buyer; one was wrecked and scrapped after an avalanche accident in 1971 (its maker's plate is on display in the Stewart Museum on Columbia Street).

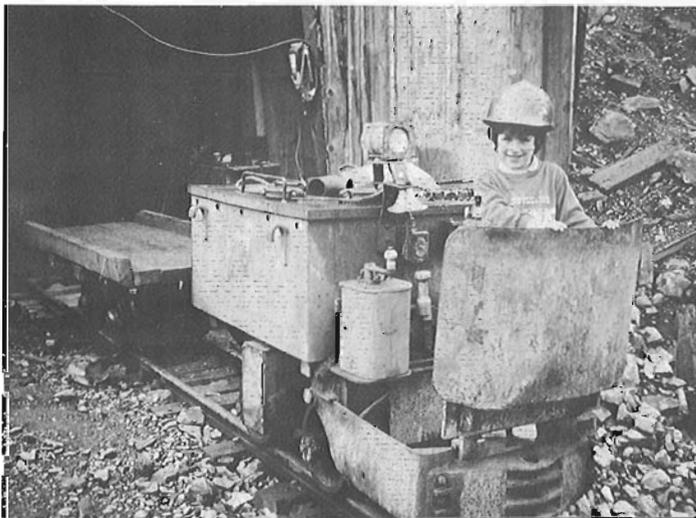
About 150 km. east of Vancouver is the small town of Hope. At the corner of Tom Berry and Starret Roads (southeast of the airport) and south of the Canadian National Railway's bridge at mile 43.5 of the Yale subdivision of the Mountain Region, there is a dealer in second-hand vehicles (mostly from logging operations nearby). There is no direct rail access from the CNR main line to the yard of second-hand equipment. In the centre of the lot, lined up in a row (but off rails) are four units bought from the Giant Mascot Mines Ltd. operation after it closed down in 1974. Previously known (before 1965) as the B.C. Nickel Plate Mine, it was located several thousand metres up in the mountains northwest of Hope. The four 30" gauge mine units are two British-built units from Ruston & Hornsby Ltd. of Lincoln England, built with closed cabs in the 1950's (serial numbers 349059 and 392572) of type DLU 48. There is also a third unit built by Plymouth and equipped by BCNPM/GMM with a protective body made of heavy sheet steel plate designed to protect both the loco and its operator from the intense heat while working near the smelter. The fourth loco, number 15, is another British-built unit from the North British Locomotive Co. of Glasgow Scotland, serial number 27492, of 1955, weighing 15 tons and producing an output of 100 horsepower from a Crossley diesel-mechanical engine and drive. It is a sister to number 36 in the B.C. Mining Museum (see below). Nearby is

a fifth unit, a compressed air front loader/mucker built by ATCO of Sweden (serial number 191581). This has been recently refurbished and repainted for sale (June 1990), but the other four are deteriorating badly in the open. All five are 4-wheel units; the first four have diesel-mechanical power.

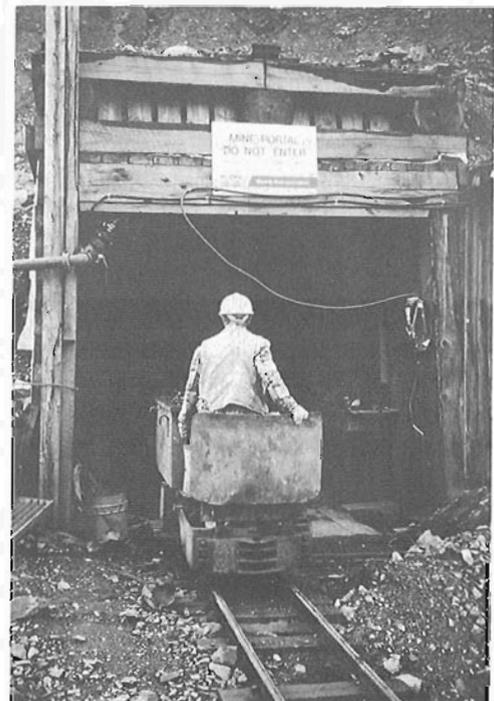
The largest collection of mine locomotives lies in a vast area 40 km. west of Kamloops, lying between highway 1 and the Canadian Pacific main line at Savona. This is the yard of Nelson Machinery Co. (Nelmaco), who have been dealers in small industrial units for many years and who have donated several of the units now displayed at the B.C. Mining Museum (see below). Most of the units are in 24" and 36" gauges and are in poor condition. They include about thirty "Rocket Loaders", or compressed air front end loaders/muckers, built by EIMCO Corp. of Salt Lake City UT. There are also many mine mules, including 11 battery-electric units in 18" gauge and five in 24" gauge. Among the builders represented here are units made by Goodman Mining Equipment Co. of Chicago IL, Jeffrey Manufacturing Co. of Columbus OH, Plymouth Locomotive Co. of Plymouth OH, EIMCO Corp. of Salt Lake City UT, Atlas Compressed Air Locomotive Co. of Sweden and Canadian General Electric Co. of Toronto ON. There are also many piles of steel-bodied ore cars, 4-wheel chassis and frames. This collection is constantly changing as units are bought or sold, or cut up for scrap with oxy-acetylene torches. Scrap metal goes out in open gondola cars over a short spur line south of CP Rail's main line (at mile 25.2 west of Kamloops, in the Thompson Subdivision of the Pacific Region). Recent sales have seen locomotives sent to Kemano B.C., to Minneapolis MN and to Italy.



LEFT: The unnumbered General Electric 4-wheel overhead-electric unit, used as a line car for the power lines, parked near the end of the track outside the Sullivan Mine at Kimberley. September 1989.



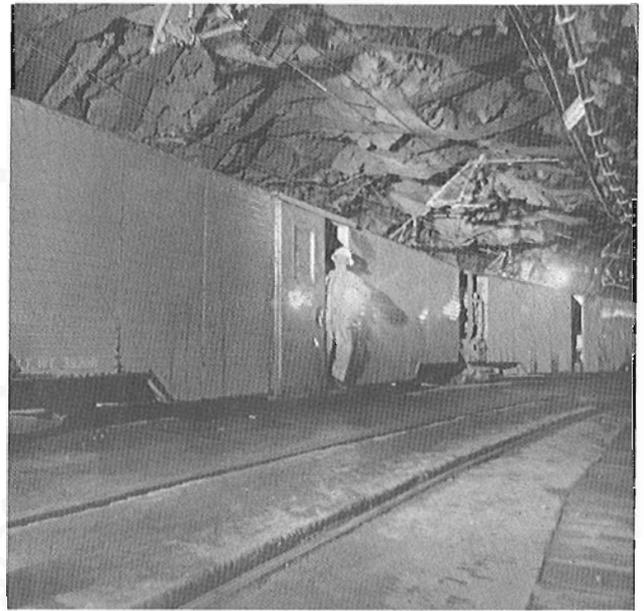
ABOVE: Westmin Resources Mancha 18" gauge 4-wheel "Little Trammer" 17 (with a driver to match its size!) outside the adit left over from the previous Silback-Premier operations. Salmon Valley, north of Stewart, June 1990.



RIGHT: Unit 17 being driven back into storage inside the mine portal by the chief engineer. This line is now used only by geologists to check the ore body. June 1990.



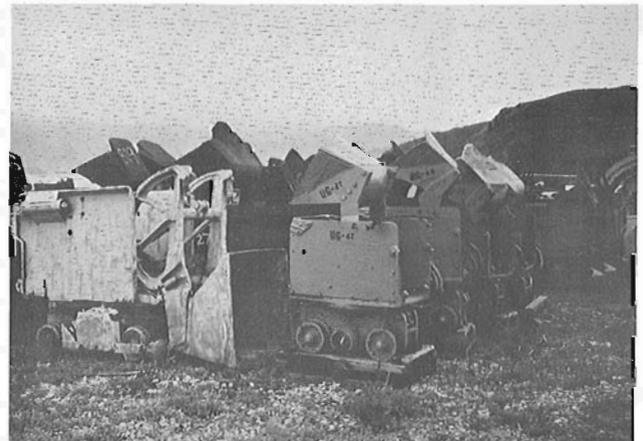
*Inside the engineer's cab of one of the 42" gauge Mitsubishi 750 horsepower double-ended electric locomotives used on the run between Tide Lake and the Granduc Mine, about 1971
Photo from Granduc Operating Co.*



*The life-line of the Granduc mine was the 16 km. tunnel connecting the mine with the Tide Lake concentrator. This is the underground terminal at the mine, large enough to accommodate an entire work train as well as repair shops, generators, offices and other facilities. Shown is one of the enclosed 55-passenger cars (number 62) and two of the ore cars, about 1971.
Photo from Granduc Operating Co.*



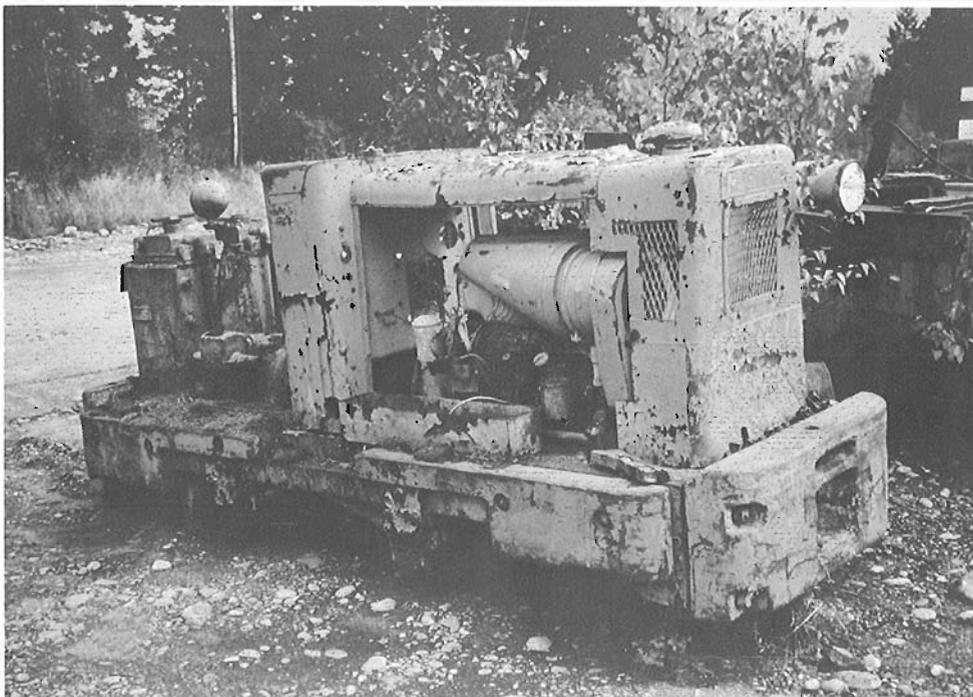
Nelmaco's yard in Savona, showing the variety of rail stock stored there. In front (from left to right) are: 4-wheel battery-electric unit, 4-wheel diesel-mechanical unit, another 4-wheel battery unit, then two steel ore cars.



Line-ups of "Rocket Loaders" at Savona in September 1989. On the right is a line of 24" gauge versions; behind these is a variety of 36" gauge units. All are in a wide range of states of repair.



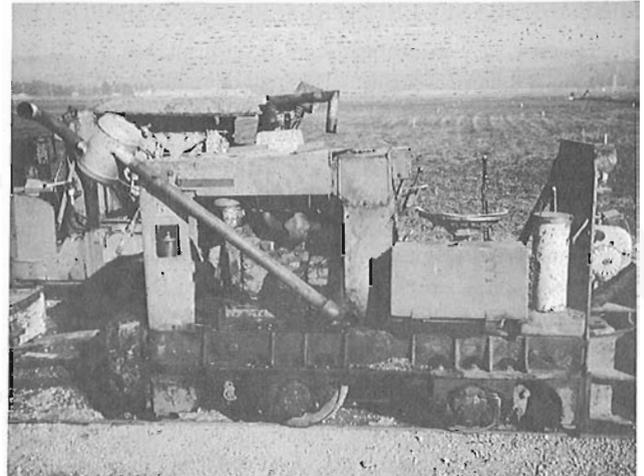
Parked in the dealer's yard in Hope, in August 1989, are three 4-wheeled locomotives (from right to left): North British built 30" gauge 15 ton unit number 15, Plymouth-built unnumbered unit with locally-made protective steel cover, also one of the Ruston & Hornsby units. All came from the Giant Mascot Mines Ltd. operation to the northwest of here.



The other British-built Ruston & Hornsby unit, resting off rails in the Hope dealer's yard. This also came from the Giant Mascot Mines Ltd.



In September 1989, Bavarian City Mining Railway 36" gauge 4-wheel diesel-mechanical unit number 1986 heads a two-car passenger train out of the depot onto the 2.5 km. of continuous track. Note the white flags for an extra! The stock is ex-Hudson Bay Mine.



Ruston & Hornsby number 3, one of three 24" gauge 4-wheel locomotives of the cranberry farm in Richmond, stands in front of the Plymouth/GMC unnumbered unit. September 1988.

MINE AND TUNNEL UNITS IN USE AT NON-MINE SITES

The Bavarian City Mining Railway (also known as the Kimberley City Mining Railway) is located in the Happy Hans Campground, on Gerry Sorenson Way in northwest Kimberley. In 1978 the Kimberley Railway and Steam Navigation Co. was incorporated by the Kimberley Chamber of Commerce. Rails and equipment were located and transported from the Hudson Bay Mine of Cominco at Salmo, 30 km. east of Trail. This mine had been in operation from 1973 to 1978, extracting lead/zinc ore which was trucked to Trail for smelting. Two 4-wheel diesel-electric units were restored and numbered 1985 and 1986, to mark their dates of first use on the BCMR. Both weigh 8 tons, are powered by 4-cylinder Deutz engines, and were built by IGA of Sweden in 1972 for the HB Mine, where they carried numbers 2 and 4 respectively. They now operate over a 2.5 km. loop of 36" gauge track, hauling passengers in 4 passenger cars, home-built on the chassis of 4-wheel steel ore cars (also ex-HB Mine), during the summer months. There are plans to expand this tourist operation.

One of the least likely places to house mining equipment is Richmond, located on the low islands which comprise part of the Fraser River delta. On one of these, Lulu Island, is the Cranberry Farm Railway of Art and Jack Savage. Located at 16300 Cambie Road, about 15 km. south of Vancouver, the line has been progressively extended since 1983 along the banks of the cranberry bogs, which are enclosed by earthen embankments around rectangular basins where peat was extracted in the past. The extensions have brought the line to its present length of about 5 km. over the last eight years. This line is a private family operation and is in service only during the cranberry harvest each year (around October 8 to November 1), hauling about 1500 tons of fruit each season. The three 24" gauge locomotives each haul seven 4-wheel flatcars containing boxes of fruit along the embankments around the field edges to a transshipment area on the road. There the boxes are transferred to trucks for the short haul to the Ocean Spray Cranberries Ltd. plant on No. 6 Road. Two units came from Craigmont Mines



Two of the Cranberry Farm Ry. units are lined up ready for the harvest rush. Ruston & Hornsby 3 is on the left, while the unnumbered Plymouth/GMC is on the right.

Ltd. (north of Merritt) in 1983: a Ruston & Hornsby Ltd. LDU 3-cylinder diesel-mechanical of 30 horsepower (serial number 427806). It was built in Lincoln England in 1958 for 24" gauge, then converted to 42" gauge and eventually reconverted to 24" gauge. A second, Plymouth-built 4-wheel FMD unit (serial number 6196, built in July 1959) also ex-Craigmont, was re-engined with a General Motors Corp. 3-cylinder diesel engine before delivery to Richmond. A third smaller 4-wheel diesel-mechanical 23 horsepower unit built by Hunslet Engine Co. of Leeds England (serial number 5286, built in 1959) was bought in September 1988; its previous history is not known. There is also a 150 psi. live steam 4-4-0 on the property. Built by Crown Metal Products Co. of Wyano PA in the early 1980's and bought from a dealer in Minneapolis MN, it is used once a year to haul a special train of three bogie coaches containing the many Savage children and grandchildren at the annual family party held in September.

In future, it may be possible to add two more units to this category, when the compressed air locos at Chilliwack and Savona are coaxed back into action again (see below).

MINE AND TUNNEL UNITS PRESERVED AND DISPLAYED

The largest collection of mine locos is on display at the British Columbia Mining Museum at Britannia Beach (Mount Sheer), located 50 km. north of Vancouver on the eastern side of beautiful Howe Sound. This site was selected by the Britannia Beach Copper Mining & Smelting Co. after copper was found there in 1888. There has never been any direct rail access here, and all ore concentrate left on an overhead conveyor belt system from the mill to a seaside storage dock for carriage by coastal steamers, most of it destined for the copper smelter at Tacoma WA. The Pacific Great Eastern Railway (BC Rail since 1972) built along the water's edge in June 1956, only yards from the foot of the huge mill concentrator (at mile 31.0 of the Squamish Subdivision, which runs south from Squamish to North Vancouver port and the Canadian National Railways' interchange). Today, long freight trains pass by, hauled by BCR's diesels, with daily passenger service provided by three to seven RDC's, as well as the summer "Royal Hudson" excursion train hauled by ex-CPR 4-6-4 2860, or 2-8-0 3716. The first mechanical transport system built at Britannia Beach was a 5 km. aerial tramway built in 1905. A 36" gauge surface railway was built in 1913-1914 and was fully operational to carry ore from late 1915. As work progressed deeper underground, lines were laid in at various levels from 1923 on, with over 16 km. in operation in 1924. Ownership of the mine was acquired by U.S.-based Anaconda Copper Co. in 1963 and remained so until 1974. The mine was closed down in November 1974, and the Mining Museum acquired the property soon after. There are now ten units on display, most of them having been donated by Nelson Machinery Co. (Nelmaco - then located in North Vancouver), as follows, all being 4-wheel except for one unit that is so noted:

One 18" gauge loco:

- This unnumbered unit, on display at the road entrance to the Museum, is a compressed air front loader/mucker built by EIMCO of Salt Lake City UT. It was acquired from Nelmaco, but details of it are not known.

Seven 24" gauge locos:

- Number 21, built by H.K. Porter Co. of Pittsburgh PA in 1912 - this is a "Pebrec" type 10-ton compressed air loco, originally used as the Canmore Mines Ltd. 21 in Canmore AB. It came via Nelmaco in 1980.
- An unnumbered unit built as serial number 592455 by Atlas Copco of Sweden, is a compressed air front end loader/mucker, acquired by the Museum from a Vancouver Island mine via Nelmaco in July 1979.
- Another unnumbered unit built as serial number 415137 by Atlas Copco, and similar to that above, has operated at the display face inside the mine since 1974. Acquired in 1974, its previous history is not known.
- An unnumbered compressed air front end loader/mucker, built by EIMCO as serial number 401-217, was acquired through the Fimming Tractor & Equipment Co. of Spokane WA in 1986. It had been used in a mine in eastern Washington or Utah.
- A sister unit to that above was acquired from Anaconda Copper as their number 401. It is now operated in the tunnel at the mine display face, having been acquired in 1974.
- An unnumbered diesel-mechanical unit, built by Ruston & Hornsby Ltd. of Lincoln England in 1950 as a 7.5 ton loco, serial

number 349078. It was purchased new by the Crows Nest Pass Co. of Fernie for use in its mines there. Sold in 1964 to Vancouver Iron & Engineering Works, it came to the Museum in 1976 via Nelmaco.

- An unnumbered bright yellow unit built by Mancha Locomotive Works of Chicago IL is a 1.5 ton "Little Trammer" battery-electric unit which hauls visitors into the mine in three home-built 12-passenger cars. It was acquired in 1974 and its previous history is not known.

One 30" gauge loco"

- Number 36 was built in 1957 by the North British Locomotive Co. of Glasgow Scotland, for the Lethbridge Coal Co. in Alberta. This unit, serial number 27720, weighs 15 tons and could produce 100 horsepower from a Crossley diesel-mechanical engine. It is well-travelled, having come to the Museum via Dominion Coal Co. (Alberta), Giant Mascot Mines, Churchill Mines and Nelmaco. It is displayed in front of a false portal above the Museum entrance with a 42" gauge "Granby Car", a steel side-dumping 4-wheel ore car from Stewart. Both vehicles were acquired in 1974 from Nelmaco.

One 36" gauge loco:

- An unnumbered 8-wheel diesel-mechanical front loader/mucker was acquired in 1979 from Nelmaco. It was built by the Goodman Mining Equipment Co. of Chicago IL as serial number 359 of type 75-1500A. This large unit is displayed on the Industrial Road with all the others not specifically located above.

There is also a wide variety of mining rolling stock on display in the concentrator and around the grounds of the Mining Museum.

The Atchelitz Threshermen's Association on Lickman Avenue in Chilliwack (80 km. east of Vancouver) has a single 36" gauge compressed air 4-wheel unit, number 4 built in 1903 by H.K. Porter Co. of Pittsburgh PA. It was acquired in March 1983 by Mr. Al Cook as number 5 from the Ginter display on Westminster Highway (Richmond). It is now part of the Chilliwack Antique Power Land display of (largely) agricultural equipment, which is open to the public for only two days each August. Attempts have been made since 1985 to install a gasoline fuel engine and a chain drive to permit operation on a small loop of track. This unit was built originally for the Elk River Colliery of Fernie as its number 4, then went to a Vancouver Island quarry operation. From there, it went to Richmond in 1981. The ATA also owns the engine from the Canadian Northern Railway's SS Canora that was last used on the CNR Delta (Tilbury Island) to Victoria train ferry route. It also owns an ex-CN caboose that was formerly on display at the Surrey Fairgrounds.

There is supposed to be a 36" gauge GE overhead electric (250 volt) mine mule on display in the Kimberley Museum, but it has not been seen in recent years. Not far away, just east of Cranbrook, at the junction of highways 3 and 93, there is a small display of a 36" gauge compressed air locomotive with two 4-wheel steel-bodied ore cars. Their histories are not known.

At the Creston Tourist Infocentre on highway 3 there is a 36" gauge 0-4-OST built in June 1913 by Porter for an unknown owner. It became Dutton & Grant Contractors Ltd. number 30 and is believed to have worked in rail tunnel construction. It was then withdrawn from service and displayed in Ryan Pioneer Park in



The Porter-built 4-wheel compressed air locomotive on display at Elko is very similar to this Lions Club "piggy bank" seen in Coleman Alberta in September 1989.

Yahk B.C. in the early 1960's, then transferred to its present site in October 1983. However, somewhere along the way, it lost its coupling rods on both sides.

A 1901 Porter-built 36" gauge compressed air 4-wheeler is on display at Elko B.C., at the junction of highways 3 and 93 (30 km. south of Fernie). Accompanied by several 4-wheel ore cars, its history also is not known.

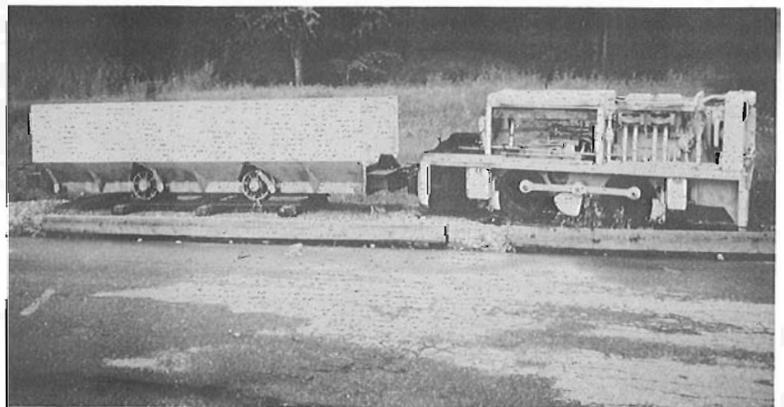
The City of Fernie in the southeast of the province, at the entrance to Crowsnest Pass, owns five mine locomotives, which must be some sort of a record for a city of this small size! This is not surprising, however, as Fernie was the headquarters of the Great Northern's Crows Nest Pass Coal Co. (1901-1957) which operated 37 km. of 36", 42" and standard gauge trackage in 1924, the 36" gauge Elk River Colliery Ltd. (1903-1965) and GNR's standard gauge Morrissey Fernie & Michel Railway (1904-1957). Two units are currently on display at the East Fernie Travel Infocentre on highway 3, with a variety of ore cars. They are both unnumbered and were built in Britain for 36" gauge track: a 4-wheel diesel-mechanical unit built by Hunslet Engine Co. of Leeds Yorkshire (serial number 4131 of 1949), while the second is a rare 100 horsepower 6-wheel unit built by Hudswell Clarke & Co. Railway Foundry of Leeds (serial number DM641 of 1948). The former is displayed with a 42" gauge steel hopper car, while the latter is connected to a "train" of four wooden 4-wheel coal cars. The former unit came from the City Hall display in 1989, where it was sent from the Elk River Colliery in 1965. The 6-wheeler has a "Huwood Hudswell" plate across its radiator nose and came from the International Coal & Coke plant in Coleman AB. Huwood was a Canadian importer/dealer in industrial locomotives. All of the other three locos were in the Rotary Park display at 7th street and highway 3 until 1989, when they were placed in storage in the city works yard. They are all unnumbered 4-wheel locos: a Porter-built 36" gauge 0-4-0ST (serial number 2438 of December 1901) acquired in 1970 from the Crows Nest Pass Coal Co. as its number 1; a Hunslet-built

36" gauge diesel-mechanical unit (serial number 3428 of 1947), acquired in the 1970's from the Elk River Colliery; and, finally, a Porter-built 24" gauge 0-4-0ST, built in 1904, from the same source. The first of the trio was replaced on display in Rotary Park with a high-sided steel ore car in the spring of 1990.

The Fort Steele Provincial Park (12 km. north of Cranbrook) has another 36" gauge Porter-built 4-wheel compressed air unit, acquired in the 1970's from the Elk River Colliery, where it was bought new and carried number 1. It has been moved several times, but now sits close to the passenger depot of the East Kootenay Railway Co. This railway operates in summer over a loop of standard gauge track, using 0-4-4T "Dunrobin" (from Scotland), Shay 115 "Robert E. Swanson", or B.C. government 2-6-2 1077 (both of which originally served in Vancouver Island logging camps).

The Happy Hans Campground in Kimberley contains two areas of preserved mining stock, as well as the operating Bavarian City Mining Railway (described above). In one is unit number 69 from the Sullivan Mine, carrying serial number 46253, but her builder and date are not known. Acquired in 1984 from Cominco, this unit is a 36" gauge battery-electric unit producing 3 horsepower at 10 volts A.C. or 15 volts D.C. Nearby are 4-wheel mine passenger and ore cars, all from the Sullivan Mine, which is visible across the intervening valley.

The Nelson Machinery Co. of Savona has been mentioned before. Outside its offices on display is a 24" gauge Gardner-Denver Mining Equipment Co. (of Denver CO) front loader/mucker (serial number 142119) driven by compressed air. It sits with a 4-wheel steel-body ore car. Both were previously on display in front of Nelmaco's office in North Vancouver from 1970 to 1988; their prior history is not known.



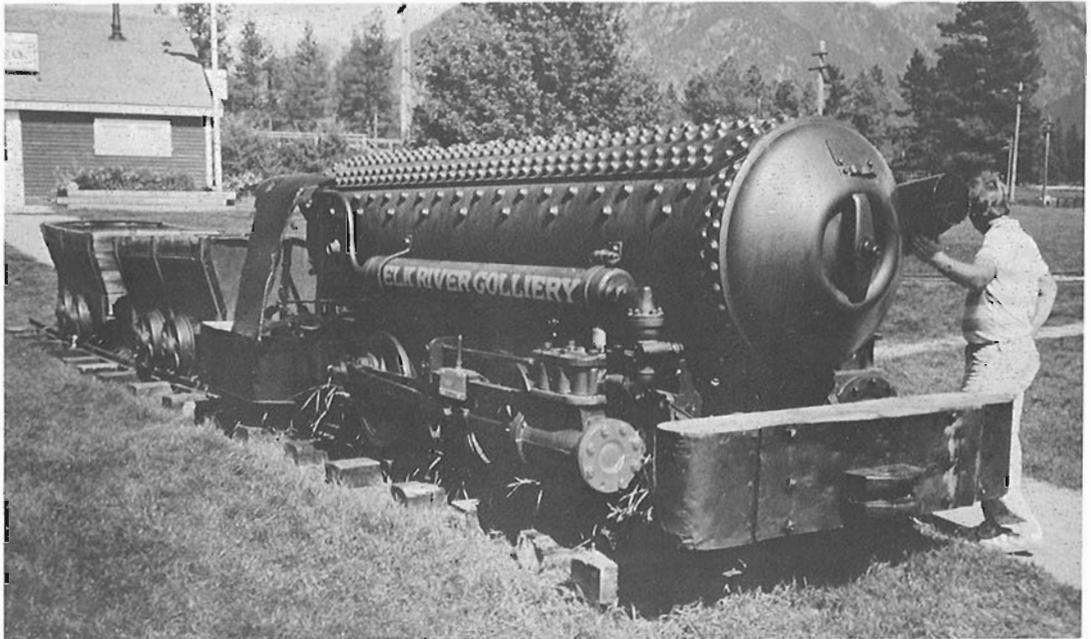
A 36" gauge Hunslet 4-wheel diesel-mechanical unit from the Elk River Colliery is paired with a 42" gauge steel hopper car at the East Fernie Travel Infocentre. Photographed in September, 1989.

The Nanaimo Museum (behind The Bastion) has on display in Phil J. Piper Park a 36" gauge 0-6-0ST, built by the Baldwin Locomotive Works of Philadelphia PA in March 1889 (serial number 9869). It was bought new as Wellington Collieries number 5, then it was transferred to Union Collieries as number 9. It was rebuilt for a while (1916-1935) as a standard gauge 0-6-2T, then reconverted to 36" gauge and acquired by Canadian Collieries Ltd. who numbered

it 19, "Victoria". Retired in 1952, it went to Nanaimo for display, painted as Wellington Collieries "Wellington". All the companies named were part of James Dunsmuir's "empire" of coal mines and transportation companies (including the Esquimalt & Nanaimo Railway at one time) in southeastern Vancouver Island.

The Rossland Gold Mine and Museum complex is 10 km. southwest of Trail, at the junction of highways 3A and 3B, located in the Le Roi Mine property. In and around the Black Bear entrance are several mine units on display, with other pieces of narrow and standard gauge restored rolling stock, including an

ex Canadian Pacific caboose. Two 18" gauge 4-wheel overhead electric trolley pole units are permanently coupled. These are numbers 34 and 35, mine mules built by Jeffrey Manufacturing Co. of Columbus OH in July 1900. The mine opened in 1890, producing copper, then from 1904 to 1942 the main product was gold. The mine was serviced by both the Great Northern's Red Mountain Railway (1895-1922) from the U.S. border and Spokane WA, and by the Canadian Pacific's standard gauge Rossland Branch (1899-1966) from the smelter at Trail. Two other 4-wheel 18" gauge



Elk River Colliery number 4, a 1903 Porter 36" gauge compressed air 4-wheel locomotive, is on display with a couple of wood-side coal cars just south of the East Kootenay Railway depot in Fort Steele Provincial Park. Photo taken in September, 1989.

compressed air front loader/muckers are also on display (both having been donated by Cominco): one is Gardner-built (serial number 124526), the other is EIMCO-built (serial number 10021).

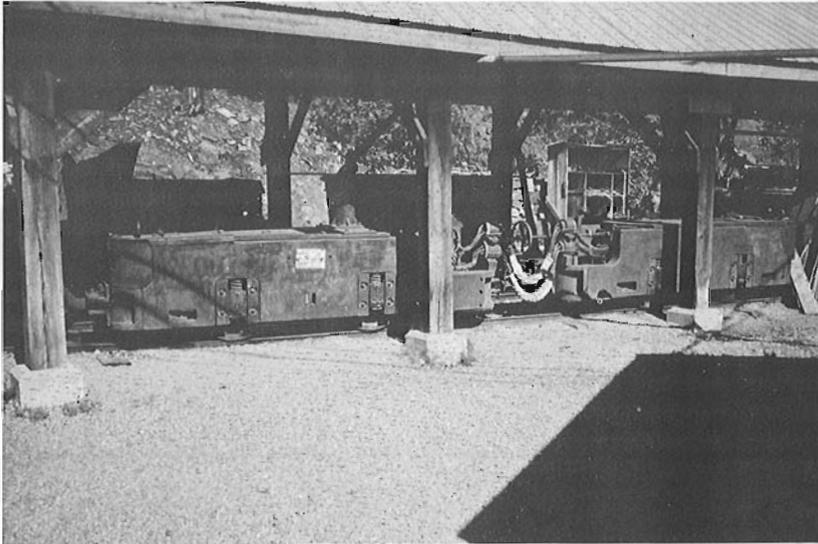
Just east of Savona there is a single 24" gauge 10 ton compressed air unit owned by Mr. Shane Sherman. He acquired it from Canmore Mines of Coleman AB, where it was purchased new from Porter in May 1912 as serial number 1451. Mr. Sherman is converting the unit into steam operation.

The Stewart Museum in northwestern B.C. has on display on Columbia Street, Stewart a 24" gauge 4-wheel compressed air front loader/mucker. It carries no number, but it was built by EIMCO of Salt Lake City UT as a "Rocket Shovel", serial number 10162, for the Premier Gold Mine. It was acquired by the Museum in the early 1980's, together with a variety of 4-wheel steel-bodied ore cars.

By the Three Valley Gap Motor Inn (20 km. west of Revelstoke) there is a small 24" gauge 4-wheel steam-loco outline unit powered by a gas-mechanical engine, lettered number 102 of "3VGRR". Its origin is unknown, but for some years (1970-1980) it ran over a circuit of track through a Western "Ghost Town", hauling three small passenger cars built on 4-wheel ore car chassis. Nearby (along highway 1) are three standard gauge coaches on display, one each ex Canadian National Railways, Canadian Pacific Railway and Grand Trunk Pacific Railway.



Cominco 36" gauge battery-electric locomotive number 69 sits in the Happy Hans Campground in Kimberley, in September 1989, with a variety of mining stock from the nearby Sullivan Mine.



Displayed under cover at the Black Bear entrance to the Le Roi Gold Mine (part of the Rossland Gold Mine and Museum Complex) are two 18" gauge Jeffrey-built 4-wheel overhead-electric mine mules, numbers 34 and 35, both dating from 1900. Cominco presented them to the Museum in the 1970's.

At Hill 60 on highway 1 (near Duncan on Vancouver Island) there is a 36" gauge 0-4-0ST on display inside the Whippletree Junction Mall. This Porter-built loco (serial number 3022 of April 1904) is painted as number 1 of the "BRRCo." (Burnell Rail Road Co.). It was acquired in 1969 by Mr. Roger Burnell of Vancouver, who had it brought down by barge and road from the Yukon Territory for restoration. It ran for the Detroit & Yukon Mining Co. of Dawson City YT, a subsidiary of Yukon Consolidated Gold Corp., which also owned the Northern Light Power & Transportation Co. It was retired from service in 1911 and remained unused until recovered by Mr. Burnell. It is a sister to the loco restored in 1985-1986 by Mr. Ken Hynek of Surrey and exhibited outside the Yukon Pavilion at Expo-86 in Vancouver. This latter locomotive (serial number 3025) is now back on display again in Minto Park, Dawson YT.

Finally, an 18" gauge front loader/mucker is on display at the Woodbury Mining Museum on highway 31 about 15 km. south of Kaslo. Built by EIMCO, its history and that of the accompanying two steel-bodied ore cars are not known, like so many other items of displayed mining and tunnelling locomotives.

CONCLUSION

The dispositions of many mining and tunnelling locomotives used in British Columbia are not known. The ten 42" gauge 35 ton locomotives of Selkirk Tunnel Constructors, used on the west end of the CP Rail Mount MacDonald project from 1984 to 1988 were believed sold to an unknown dealer in late 1988, but there has been no word of them since. The eight units used by Atkinson Commonwealth Construction Co. from 1982 to 1984 on BCR's Dease Lake construction project are not accounted for either. Five went to Manning Kumagai Joint Venture for the Mount MacDonald east end job, but three are not accounted for; they may still be in storage in Chetwynd.

There is also an unconfirmed report that there is a 24" gauge 4-wheel battery-electric mine mule in private storage on Sumas Mountain, about 75 km. east of Vancouver. This unit is believed to be the fifth loco owned by Clayburn Industries of Abbotsford (known as Clayburn Brickworks and Coal Mines from 1905 to 1928). Built in 1920, it was used until CI closed down in 1976, and has been in storage ever since. The local community talks of moving it to a display site in Abbotsford.

This is typical of the uncertainties that cloud the history of any kind of equipment used by the B.C. mining and tunnelling industry. Frequent changes of owners (who often contracted for just one job), plus the few records which remain of the past operations of mining companies, force the researcher into the locomotives of mining and tunnelling companies to use locally-published histories, photographs, mine plans and large-scale maps as his most useful sources of information. That, of course, is part of the fascination (and the frustration) of industrial archaeology!

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Vancouver Public Library, Vancouver B.C.: Historical Photographs Section - Railroads, Mines & Mining Files.

N.B. All photographs are by the author, unless stated otherwise.

The St. Clair Tunnel Centennial

1891-1991

Today the Channel Tunnel, connecting England and France is much in the news. Already the first bore has been holed through, and within a few years it will be possible to ride a through train from London to Paris. One hundred years ago a tunnel was built on this continent that was just as much of a revolutionary feat of engineering for its time as the Channel Tunnel is for today. There are three major similarities between the St. Clair Tunnel of 1890 and the Channel Tunnel of 1990. Both are international, both pass under heavily-travelled bodies of water, and both were the latest "state of the art" when built. One hundred years later, the St. Clair Tunnel is still in regular service, and it is fitting that the centennial celebrations be called "The Year of the Tunnel". We are fortunate to be able to print this collection of papers, presented by Gerry Elder on May 4, 1991, together with some contemporary drawings, as a salute to the first hundred years of this great achievement of nineteenth century engineering, still in use today.

THE ST. CLAIR TUNNEL

By C.G.Elder

Sarnia Historical Society, July 1989.

The year 1991 is the 100th anniversary of the completion of the St. Clair tunnel, one of the greatest engineering feats of the age.

By the 1880's, there was a keen competition between the railways to handle the dressed meat traffic from the Swift Abattoirs in Chicago to the Atlantic seaboard. The Grand Trunk Railway, by its willingness to provide refrigerator cars and the necessary icing facilities, was able to capture much of this traffic in competition with the Vanderbilt lines. This was handled at the western end by their subsidiary, the Chicago and Grand Trunk Railway, to Port Huron and by car ferries from Port Huron to Point Edward. The ferry operation could handle 14 cars in 15 minutes, but even with the use of an ice-breaker in winter, delays were often experienced that could not be tolerated in the transportation of such a perishable commodity as fresh meat.

A tunnel under the St. Clair River had been investigated as early as the 1850's. In 1883, the old reports were reviewed and further studies and test borings made. These indicated a suitable location for a tunnel in the blue clay above solid rock about three miles downstream from the ferry operation. The St. Clair Tunnel Company was formed in 1886, and work began in January 1889. The actual tunnelling was done by shields within which the men worked. These were advanced by hydraulic pressure as the work proceeded. Similar, but less sophisticated shields had been used on a

GRAND TRUNK RAILWAY GREAT INTERNATIONAL ROUTE

GREAT INTERNATIONAL ROUTE

You May See the

ST. CLAIR TUNNEL

By purchasing tickets to Port Huron and beyond via the people's favorite and reliable line, the

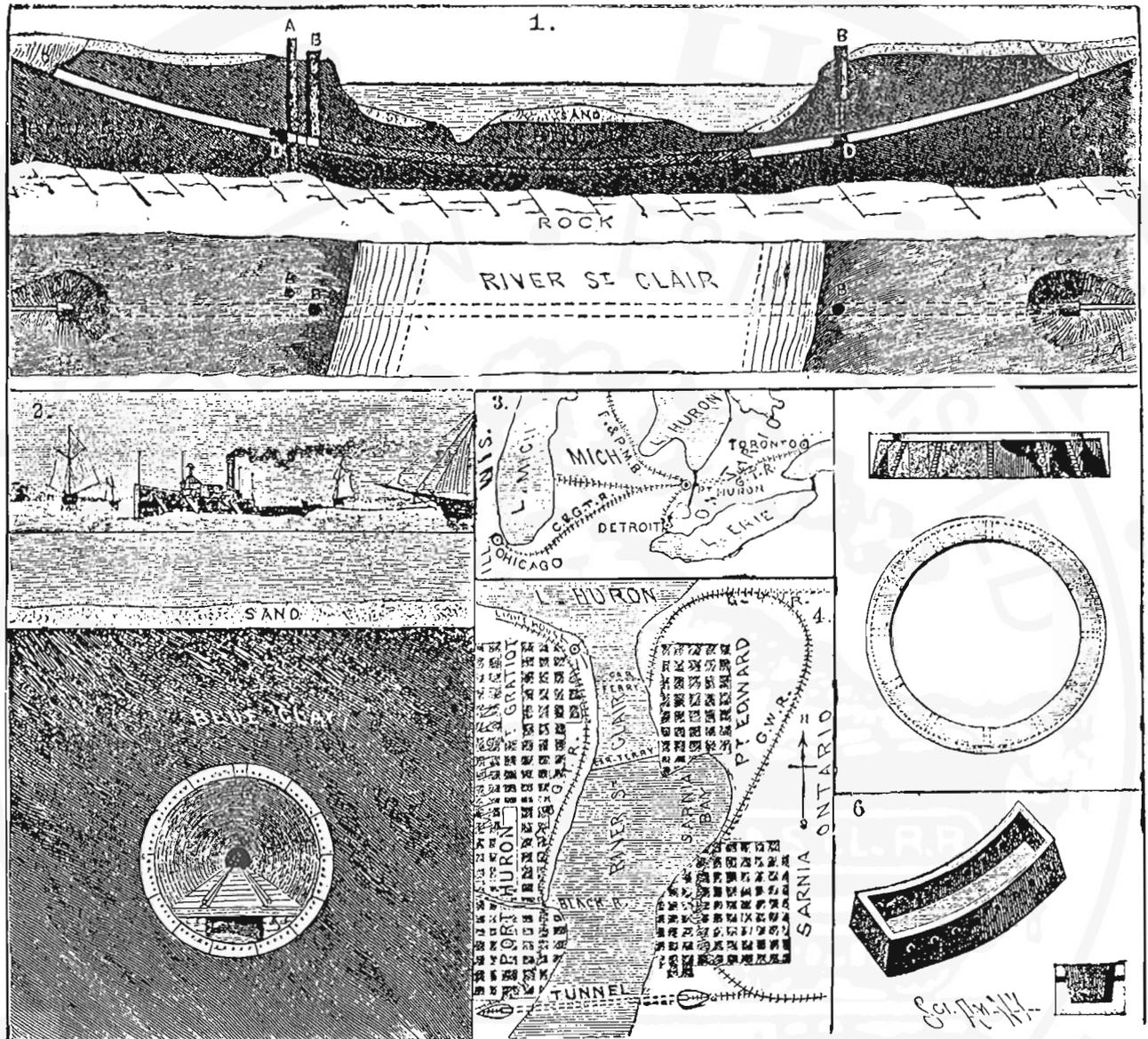
Grand Trunk Railway

under one management between the

Atlantic Coast and Chicago and Milwaukee

SEE THE GREAT ST CLAIR TUNNEL
BETWEEN SARNIA, ONT.,
AND PORT HURON, MICH.

A Grand Trunk advertisement dated July, 1894.



1. Sectional elevation and plan of tunnel: A. pump shaft; B. brick air shafts; C. cuttings; DD. bulkheads. 2. Cross section of tunnel and river
 3. Map showing location. 4. Plan of Port Huron and Sarnia, showing position of tunnel. 5. Section and plan of iron shoe of shaft.
 6. Segment of cast iron of which the tunnel is composed.

CONSTRUCTION OF THE ST. CLAIR TUNNEL.

Drawings illustrating the construction of the St. Clair Tunnel. Originally published in Scientific American, reprinted in the Dominion Illustrated, October 10, 1891.

much smaller scale in England and the United States. The shields for the St. Clair tunnel were designed by Joseph Hobson, the chief engineer of the Grand Trunk, based on earlier designs. They were both fabricated by the Hamilton Bridge and Tool Works and assembled in place, one on either side of the river, and lowered into the excavations that had been prepared for them. They were each 21.5 feet in diameter and propelled by 24 hydraulic jacks. As the workers within the shelter of the shield tore down the face of the clay, the spoil was passed back to other crews who cleared it away for removal to the surface. As the shields advanced, follow-up crews lined the tunnel with cast iron plate sections whose joints were caulked and waterproofed. Shifts worked continuously, and ten feet per day was the average advance. When the bores from

each side dipped under the river, thick brick bulkheads were built near each end of the tunnel and the air pressure increased substantially inside the bore to prevent the incursion of water, wet clay and gas. On August 30, 1890, the shields from either side of the river met in exact alignment and the dicey part of the operation was complete. It would be another year, however, before the approaches at each end were completed and the tunnel made ready for operation. The first official train passed through on September 19, 1891. The over all cost had been \$2,700,000 of which the Canadian government had paid about 14%. The tunnel meant a saving of 30 minutes running time and about \$50,000 per year in ferry costs. The total length, portal to portal, is 6028 feet (1837.3 metres).

This is but a brief outline based on information from the references quoted below. One of the members of the Sarnia Historical Society is working on a comprehensive book on the St. Clair Tunnel, its construction and operation, which is expected to be available in time for the centennial in September. The St. Clair Tunnel continues to be a most important link between Canada and the United States, handling all but the tallest of rail freight traffic, not to mention the daily Amtrak/VIA passenger train, the "International", between Toronto and Chicago.

Sources: Stevens, G.R. CANADIAN NATIONAL RAILWAYS, Vol. I, Clarke Irwin and Company, 1960.

Pinkpank, Jerry A., TRAINS, Vol. 24, No. 11, September 1964, pages 36 to 44.

INSTRUMENT WORK IN CONSTRUCTION

When one learns that the tunnelling shields met each within 1/4 inch vertically and dead on horizontally, one marvels at the survey instrument work utilized to attain such precision. The only good description the writer has seen of how this was accomplished is in a chapter on the construction of the tunnel in the following work:

Patton, W.M., A TREATISE ON CIVIL ENGINEERING
John Wiley and Sons, New York, 1895, First Edition.

Following is the writer's condensation of the description of this work from the text, beginning on page 830, paragraph 738. "Locating the Centre Line of the Tunnel".

At each of the two outside ends of the excavations for shield placement, a 3 foot square brick pier was embedded at a depth of 12 feet below grade and capped with a cut stone block 2 feet thick. A theodolite, with objective lenses 2 1/2 inches in diameter, was placed on the top of each pier and protected with a weather resistant housing. These piers were 2100 yards apart and in direct line of sight to each other. Each instrument was set to bisect the object glass of the other.

An ordinary 7 inch Stackpole transit was set up at the mouth of the tunnel and adjusted until it was exactly on the sight line of the large theodolite. The small transit was sighted on the object-glass of the theodolite for a back-sight, and reversed to prolong the line into the tunnel. This provided an accurate method of keeping the line straight until the brick bulkhead was reached.

To carry the line through and beyond the bulkhead, a cast iron pipe, 12 inches in diameter and 25 feet long, was built into the eight-foot thick brick bulkhead on the centre line of the tunnel. The pipe was provided with a hinged heavy glass plate, an iron protective plate and a valve at each end, thus becoming an air-lock. Near the end of each pipe, a set of adjustable cross-wires was mounted in a ring. To adjust these wires, a transit was set up outside the bulkhead and adjusted to the exact centre line of the tunnel, the iron plate and glass plate on the outside were then removed and the cross-wires adjusted on the exact centre line, the iron plate only was removed on the inside end of the pipe and those cross-wires aligned. The cross-wires were illuminated by a hand-held electric light. The outside glass was then replaced, the transit carried through a large air-lock and set up inside the bulkhead. The inside glass was opened and the transit aligned on the illuminated cross wires to allow the transit to be collimated. By this method, the transit is always sighted on naked cross-wires and not subject to any

possible distortion from the glass plate. The transit was then reversed and the line prolonged beyond the air-lock.

The position of the centre of the shield and plane of the bulkhead was tested every day and, if the shield was found to be out of line, it was forced into its proper place by varying the pressures on the appropriate hydraulic jacks.

It was important that when the shields met, there should be no errors in alignment or levels from the two ends. To ensure against such errors, the shields were stopped when about 25 feet apart and a six-foot drift, lined with timber, was run between the two. Proper measurements were made through this drift to verify the accuracy of the work. As a result, when the two shields met, the error in levels was only 1/4 inch, and in the line, unmeasurable.

FACTS ABOUT THE TUNNEL

Total length of tunnel, portal to portal, 6028 feet (1837.3 metres).

The tunnel is located at about mid-point of a 40 foot (12 metre) layer of blue clay, interspersed with gravel, that lies between the river bed and a layer of gas-bearing soft shale.

At its lowest point, the top of the tunnel is 40 feet below the average surface of the river and there is about 8 to 10 feet (2.5 to 3 metres) of soft river bed clay above the cast iron lining.

The cast iron lining is made up of 4000 rings of 13 segments each, plus a key piece at top. The total weight is 28,000 tons (25,454 tonnes). The lining is held together by 739,230 bolts, each 7/8 inch (22.2 mm.) in diameter.

The segments of the lining installed from Port Huron were cast in Detroit, and those installed from Sarnia were cast in Hamilton. All were drilled and machined by machine shops on sites.

80-ton Tunnelling shields were prefabricated in Hamilton and assembled at each site. The railway had to pay import duty on the shield used from the Port Huron end!

The total work force was from 600 to 700 workers. The diggers were paid 17 1/2 cents per hour, the erectors received 15 cents per hour while the others were paid 12 1/2 cents. When the men started working under air pressure, a bonus of one dollar per day was added.

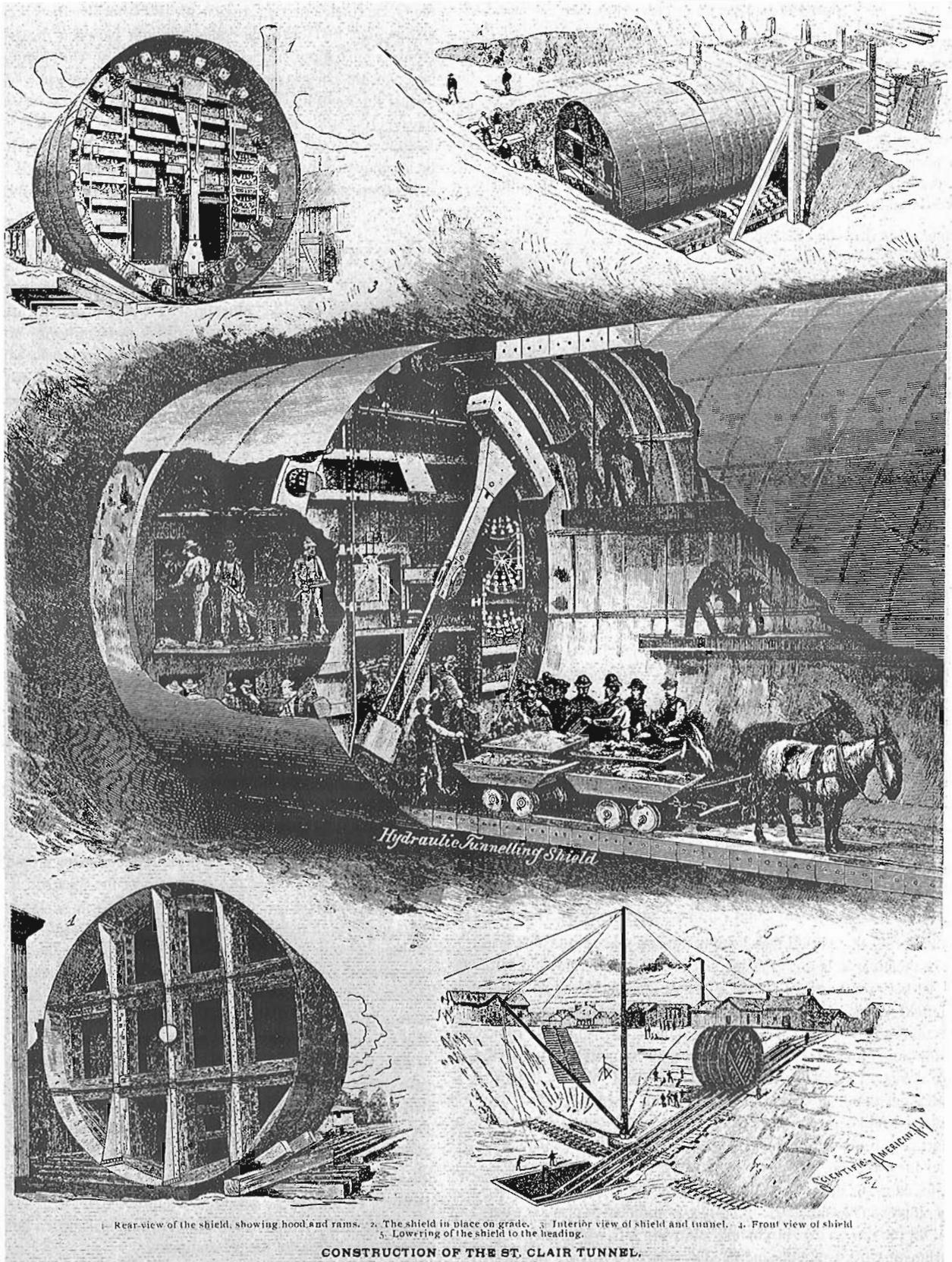
Electric lighting, good ventilation and portable pumps at working faces made for exceedingly good conditions for such an undertaking. When air pressure was used, the work area was quite dry as well.

Men worked under air pressure of up to three atmospheres. Rapid decompression at the air locks caused some cases of the "bends" (then called "tunnel grippe") and three deaths.

Work was continued around the clock with no interruptions. Actual excavation took one year (August 1889 - August 1890).

All excavation work was performed with hand tools. A total of 2,196,400 cubic feet (62,195 cubic metres) of material was excavated in making the bore.

The estimated cost of \$2,500,000 was the basis of the Canadian government grant of \$375,000 (intended to be 15%). The St. Clair Tunnel Company floated a Mortgage Bond issue of \$2,500,000 in the State of Michigan, the largest ever issued there up to that time, to cover the cost of construction. The actual cost of construction was \$2,700,000.



1. Rear-view of the shield, showing hood and rams. 2. The shield in place on grade. 3. Interior view of shield and tunnel. 4. Front view of shield
5. Lowering of the shield to the heading.

CONSTRUCTION OF THE ST. CLAIR TUNNEL.

Originally published in Scientific American. Reprinted in the Dominion Illustrated, October 10, 1891

JOSEPH HOBSON (1834-1917)

Joseph Hobson was born in Guelph Township, Upper Canada, on March 4, 1834. Educated in the local schools and at Toronto, he served his apprenticeship as a Land Surveyor and was qualified as such in both Ontario and the Dominion.

After qualification, he first entered the service of Gzowski and Macpherson, who had the construction contract with the Grand Trunk Railway for the building of the line from Toronto to Guelph and eventually to Point Edward.

Leaving this firm, he practised as a land surveyor for some time in Berlin (now Kitchener) and Guelph. He later returned to railway work and, until June 1869, was engaged as an assistant engineer on various lines in Nova Scotia, Ontario and Michigan. From June 1869 to April 1870, he was engineer on the construction of the Wellington Grey & Bruce Railway, leaving that position to again join Sir Casimir S. Gzowski as Resident Engineer on the International Bridge between Bridgeburg (Fort Erie) and Black Rock just north of Buffalo. This was a railway bridge being built for the Grand Trunk Railway, and for which Gzowski was the Chief Engineer. This project presented a challenge as it was the first bridge across the swirling waters of the Niagara River in which the main supporting piers were in the river. Until the construction of the Peace Bridge in 1927, it was the only bridge across the Niagara River at Fort Erie.

With the opening of the International Bridge to traffic in November 1873, Hobson joined the Great Western Railway, first as Assistant Chief Engineer and two years later as Chief Engineer with headquarters in Hamilton. Upon the absorption of the Great Western by its bitter rival, the Grand Trunk, in August 1882, Hobson became Chief Engineer of all the Grand Trunk lines west of Toronto, with his offices in Hamilton, and he served in this capacity until February 1, 1896, when he became Chief Engineer for the whole system.

It was during this period that Joseph Hobson was responsible for one of the greatest feats of the age, the construction of the St. Clair Tunnel between Sarnia, Ontario and Port Huron, Michigan. This undertaking was entirely engineered and carried out under the direction of Hobson and his staff and financed by the Grand Trunk and the Government of Canada. Many original tunnelling techniques were devised by Hobson to complete what was then the longest submarine tunnel in the world. The shields used to protect the workings and keep back the wet blue clay, and often gassy gravel strata through which the bore was dug, were designed and constructed under his direction. Air pressure of up to three atmospheres was employed in the deepest section to prevent the incursion of water, clay, gravel and gas. Electric lighting was supplied to provide what was, for the time, a dry, bright and relatively safe work space. The instrument work was outstanding, for when the shields met they were only one quarter of an inch out of alignment vertically and dead on horizontally. Hobson himself was frequently at the work

face. The shields met on August 30, 1890, but five days previously an opening had been shovelled through between the two, and Hobson and a number of others walked through. Completion of the bore was the tricky part of the operation, and the Grand Trunk did not let the contract for the excavation of the approaches until 12 days before the shields met, for until then there was not full assurance that the bore could be successfully completed. It was to be another year before all necessary work was completed, and the official opening took place on September 18 and 19, 1891.



MR. JOSEPH HOBSON.

*Joseph Hobson, designer of the St. Clair Tunnel.
Dominion Illustrated, October 10, 1891.*

While Hobson was much involved with the construction of the tunnel, there is no evidence that he lived in Sarnia, as all correspondence relating to the tunnel and other projects in hand at the time originated from his office in Hamilton. Concurrent with the tunnel project, basic work was carried out on the original suspension bridge at Niagara Falls that had been built by the Great Western in 1855. In this project, the original masonry towers were replaced by iron towers without any disruption in traffic.

In 1896, the year in which he was made Chief Engineer for all Grand Trunk operations, he put in place the construction of the Niagara Railway Steel Arch Bridge at Niagara Falls to replace the original suspension bridge. Known technically as a "two hinged spandrel-braced arch", it was built out from the two walls of the gorge directly below the suspension bridge so that the old bridge rested directly on

the new arch. In this way, the two were integrated and the work completed with little interruption of traffic. The new bridge carried a double track railway line on the upper deck and a two-lane roadway on the lower level with the same alignment of approaches as the original span.

Soon after his appointment as Chief Engineer of the Grand Trunk, Hobson was responsible for upgrading of the Victoria Bridge at Montreal. This bridge, of tubular design resting on 24 masonry piers in the St. Lawrence River, had been completed in 1859. The bridge, carrying a single track within the tube, was inadequate for the weight and volume of traffic that had developed. Under Hobson's direction, open work spans resting on the original piers were constructed around the tube which was afterwards dismantled. The improved structure was four times the width of the original bridge and provided not only a double-track railway but also carriageways and foot paths. During alterations traffic was never halted for more than two hours. The new bridge was opened December 13, 1898. It was renamed the Victoria Jubilee Bridge and is still in use today on the original piers built in the 1850's.

Though the head office of the Grand Trunk was in Montreal, Hobson continued to reside in Hamilton. He remained Chief Engineer of the Grand Trunk until August 1907 when he became Consulting Engineer for the company.

Joseph Hobson was one of the first members of the Canadian Society of Civil Engineers, of which he was councillor in 1888,

1891 and 1892. He was also a member of the American Society of Civil Engineers and of the Institution of Civil Engineers in England. At the time of his death in Hamilton, on December 19, 1917, one son, Robert, was President of the Steel Company of Canada in Hamilton. Another, J.I. Hobson, was Treasurer of Canada Steamship Lines Ltd. in Montreal.

Hobson's career and works are best summarized by an article in the Hamilton Spectator at the time of his death, viz:

"His life was full of the noblest and grandest conquests over the conditions and forces of nature. At a ripe old age, well earned repose came to him in comparative retirement; yet still the benefit of his accumulated and sound judgement was sought and cheerfully yielded. Most God-like among men are the rare spirits to whom is given in large degree the power approaching that of creation."

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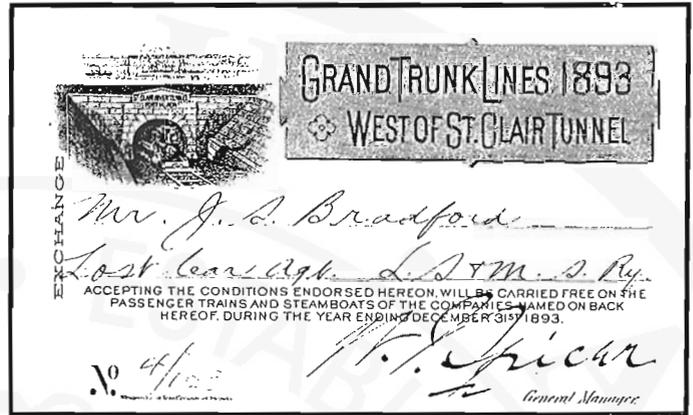
Discussions with Clare Gilbert, author of a forthcoming book on the St. Clair Tunnel, entitled RAILS BENEATH THE RIVER to be published By Boston Mills Press in 1991.

INAUGURATION OF THE MONUMENT AND PLAQUE

On August 30, 1990, the St. Clair Tunnel, and the engineer who designed it, were paid special tribute in Sarnia by the unveiling of a plaque and monument in their honour.

The bronze plaque, presented to Canadian National Railways by the Canadian Society for Civil Engineering, recognized the efforts and perseverance of Joseph Hobson, Chief Engineer, the man credited with designing the methods of construction and ingenuity of completing the seemingly impossible task of building the world's first subaqueous railway tunnel.

The official unveiling party were Mayor Mike Bradley of Sarnia; Mayor Mary Brooks of Port Huron; Martin Jones, Vice-President of the CSCE; Jan Feberwee P. Eng.,



A Grand Trunk pass for "Lines West of St. Clair Tunnel" for 1893, showing a fine engraving of the tunnel portal. However the inscription shown over the portal is incorrect.

Historical Representative of the CSCE; Pat Ross, Manager of CN's Southern Ontario District. They were joined by throngs of well-wishers who gathered outside the VIA station to witness the first public viewing of a new local landmark.

What strikes one first about this rather unusual monument is the seven-and-a-half foot high arch anchored in concrete footings almost 20 feet apart - and we're not talking about a golden arch with lights - this one is made up of six 1100-pound tunnel segments that were "left over" from the construction 100 years ago.

Basking in the shadow of the half circle is the pedestal which houses the historical plaque. The dedication reads in part: "The St. Clair Tunnel Shield Driven In Compressed Air And Lined With Cast-Iron Segments - Construction 1888-1891".

The official ceremony was coordinated by a Port Huron/Sarnia group of railway enthusiasts and historians who have banded together to form the St. Clair River Tunnel Centennial Committee. They have deemed August 30th, the day in 1890 when the tunnel shields met under the river, as a kick-off for the "Year of the Tunnel".

A group spokesperson says that the special events will continue for more than a year and will culminate with the grand finale on September 19, 1991, which will mark the 100th anniversary of the official opening. Organizers are planning a re-creation of the events of the day, including a special passenger train through the tunnel.

**THE YEAR OF THE TUNNEL
DON'T FORGET THESE DATES**

July 10, 1991

6 o'clock P.M. - Downtown Port Huron.
International Day Parade
Theme: Tunnel Through Time.

September 19, 1991

12 o'clock noon. - Sarnia/Port Huron Stations
Centennial Celebration.
Recreating the events of 100 years ago today,
and the first official train through the St. Clair
River Railway Tunnel.

**For Further Information write:
"Year of the Tunnel"**

817 Danbury Cresc.		2624 Conner Street
Sarnia, Ontario	OR	Port Huron, MI
N7S 4L7		48060
Canada		U.S.A.

The Restoration of CPR 7077

By Ken Carroll



*A view of 7077, just out of the shop, on exhibition at the Canadian International Trade Fair in Toronto in 1948.
Canadian Pacific photo.*

In 1984, CP Rail donated its retired 1000 horse-power diesel-electric switcher No. 7077 to the Canadian Railway Museum.

When outshopped by Montreal Locomotive Works (MLW) on May 30, 1948, this S-2 switcher, carrying MLW builder's number 75752, was the first of the twenty members of its CPR sub-class (DS-10h) to be completed, thus it earned the distinction of having been the first production diesel locomotive to be built in Canada. Actually, it had been partly equipped by the Alco Schenectady works before completion by MLW. Upon delivery, it was immediately shipped to the Canadian International Trade Fair, held at Toronto, and was shown there from May 31 to June 12, 1948.

The unit carried CP Rail's 1968-era "action red" livery when it arrived at Delson. When the decision was made, in June 1988, to carry out a cosmetic restoration it was decided that the livery to be applied should be Canadian Pacific's 1960s-era grey and maroon scheme, with the familiar "script signature", as it was not practicable to restore it to "as-built" condition since minor changes had been made to its physical appearance.

Due to the absence of paint drawings, the crew, headed by Odilon Perrault, had to rely upon photographs, positioning the various graphic elements in relation to the physical features on the locomotive. Then the work began under Odilon's direction, beginning with the removal of all loose paint and the sanding of the remainder to prepare the surface for the new scheme. Because of other

volunteer work needed on weekends, No. 7077 was mainly a week day project. Odilon and the writer were augmented by a few young Museum volunteers who worked occasionally on Saturdays. In addition to us, we had a little help from an unusual source: "community service" workers who had volunteered to donate time in lieu of fines for minor offenses, such as unpaid traffic tickets. It was a colourful group, but I doubt that the "community" workers gained many work skills!

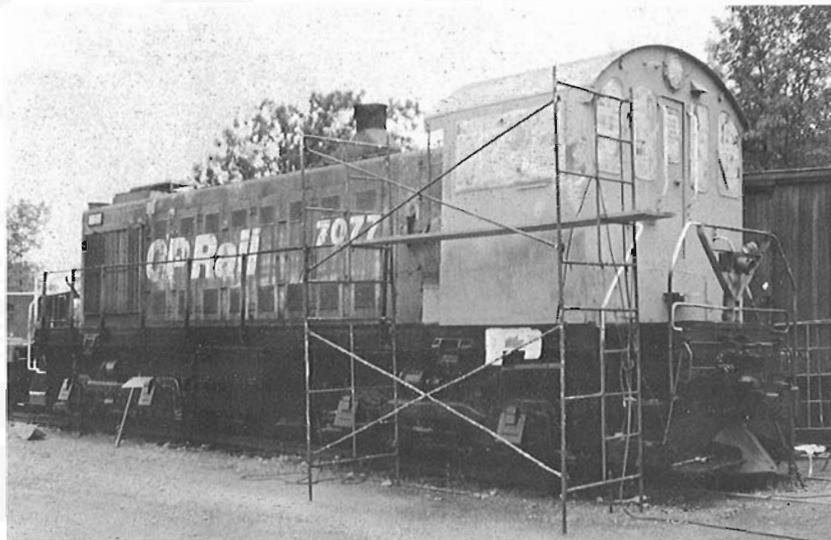
The accompanying photographs show the step-by-step progress of the restoration. Appropriately, Odilon Perrault -- a most dedicated volunteer -- appears in many of them. After working throughout the summer and fall of 1988, it was only during the ensuing winter that Odilon had time to cut the stencils for the road numerals and "Canadian Pacific" script lettering. The over all paint scheme was tuscan red, with a grey band on each side of the hood, carrying the corporate lettering in tuscan red. So great was Odilon's concentration that, in applying the word "Pacific" to one side, in May 1989, we realized that the paint which he had stencilled in was yellow instead of tuscan red! Fortunately, it was a simple matter to correct as we had not yet removed the stencils.

The restoration, which has been much admired, was the result of about four hundred hours of work, in addition to the cost of the materials. Hopefully, it will inspire additional volunteers from among the membership to enable further much-needed cosmetic work on the many other deserving exhibits.



*7077 at it appeared when it arrived at the Museum, photo was taken in April 1985.
All photos of restoration were taken by the author.*

*RIGHT: The frame and trucks
are complete, and the cab is
primed; end of July, 1988.*



Painting the cab; August 16, 1988.



The left side of the locomotive; August 16, 1988.



Starting to stencil the lettering, end of May, 1989.



The stencils in place for the numbers on the cab side, August 18, 1988.



Script lettering taking shape. June 12, 1989.



Odillon Perrault painting the script lettering. June 13, 1989.

Rail Canada Decisions

By Douglas N.W. Smith



In those long ago years before the First World War, the arrival of a photographer was a matter of note. In this view of the Grand Falls, New Brunswick station, photographer Joseph W. Heckman found the staff from the freight shed and who are possibly the children of the agent ready to pose. Heckman travelled the line on the hand car in front of the station. the special seat affixed to the front of the handcar was his rather precarious perch while two worthies provided the muscle power to move the car between photo sites.

Source: CP Rail, photo No. 4532. Collection: Douglas N. W. Smith

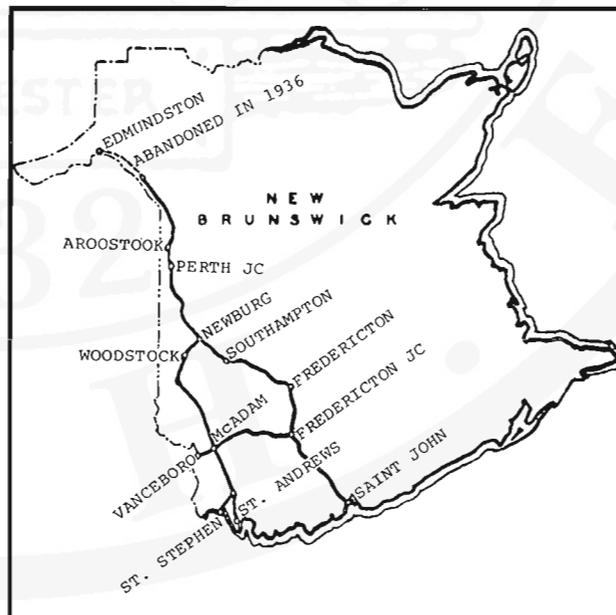
Due to illness and a heavy workload at the office, it has not been possible for me to keep up to date with the decisions of the National Transportation Agency. To clear up the backlog, many of the Agency's orders are reported in an abbreviated format.

NEW BRUNSWICK

CP TO EDMUNDSTON NO MORE

On January 9, 1991, the Agency gave CP permission to abandon substantial portions of the line running from McAdam to Edmundston. In 1987, floods washed out bridges at Woodstock and Aroostook effectively splitting this route into three segments.

Permission was granted to abandon the 51.5 miles from McAdam to Woodstock as well as one mile of track at Aroostook, both of these sections were part of the Shogomoc Subdivision. Continuing northwards, CP was also granted authority to abandon 20.4 miles of Edmundston Subdivision from Aroostook to a point



near Grand Falls and a half mile of trackage in the City of Edmundston. In 1989, traffic handled over these three sections of trackage amounted to 92 carloads and the financial losses totalled more than \$750,000.

Since 1936, the CP trackage in Edmundston has been isolated from the rest of the CP system. In that year CP abandoned its trackage between St Cyr and Edmundston and commenced to exercise trackage rights over the parallel CN line between these points.

Hearings have recently been held by the Agency to consider CP's application to abandon the section of the Shogomoc Subdivision from Mileage 54.2, a point north of Woodstock, to Mileage 88.5 near Aroostook. This line is currently served by the CP branch line running from Fredericton.

QUEBEC

CN TO EXIT FROM GASPE

Making a living on for those hardy residents along the Gaspé coast has always been a difficult business. Similarly, making ends meet has been a frustrating business for those operating the rail line through this region.

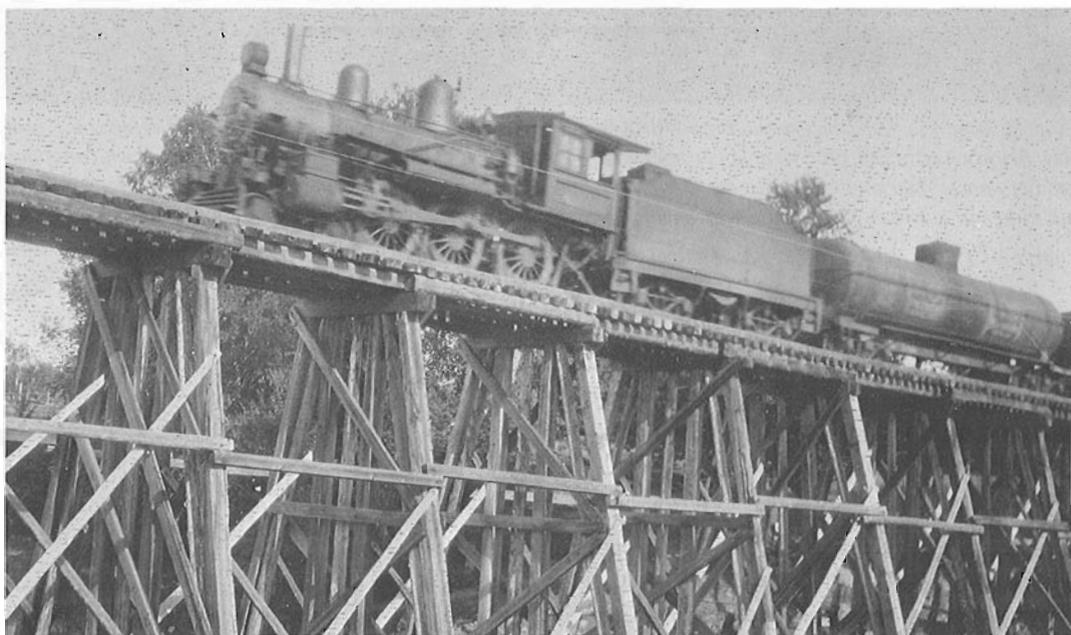
The Baie des Chaleurs Railway received a chart from the Quebec legislature in 1882 to build a line from Matapédia to New Carlisle or Paspébiac with the right to extend the line to Gaspé. After a scandal which toppled a Quebec government, the line was acquired by the Atlantic and Lake Superior Company (A&LS) in 1894. At this time the Baie des Chaleurs had managed to lay its trackage from Matapédia as far as Caplan, a total of 80 miles.

The A&LS proved to be an equally ill-fated venture. The company held a charter which granted it permission to build a line from Gaspé to Sault Ste Marie, Ontario. A rag-tag group of disconnected short lines was assembled by the company's main promoter, one C. N. Armstrong. He lacked the financial means necessary to accomplish much good. One of the few bits of construction undertaken by the A&LS was the extension of the former Baie des Chaleurs Railway 20 miles eastward from Caplan to Paspébiac. After spending the better part of a decade in receivership, the A&SL was sold to the Quebec Oriental Railway (QO) in 1910.

In 1901, the Quebec legislature granted a charter to the Atlantic, Quebec and Western Railway (AQ&W) to build a rail line from a point near Causapscaal to Gaspé. From its connection with the QO at Paspébiac, the AQ&W slowly pushed its line eastward. The line was officially completed to Gaspé in 1912. Overall, it took 40 years to complete the 202 mile line of railway from Matapédia to Gaspé.

While retaining their separate names, the AQ&W and QO were shared common ownership and management. The financial history of these lines shows they yielded little profit to their owners. In 1929, CN acquired the two lines. At this time, the equipment for the two railways comprised 9 locomotives, 1 passenger car and 4 work cars. Matters had reached such an impasse that CN had to provide the passenger equipment used by the two lines for the daily except Sunday passenger train between Matapédia and Gaspé.

The development of paper mills at Chandler and New Richmond and copper mines in the interior created traffic for the rail line. However, in the latter part of the 1980's, the mine traffic was diverted to highway transport. This resulted in CN seeking to abandon the 56 miles of the Chandler Subdivision from Ste Adelaide to Gaspé. The Agency found no economic rationale to order continued operation of the line. The line handled only 245 carloads and posted a loss of \$284,504 in 1988. Consequently, the Agency ruled that CN may abandon its operations one year from the February 5, 1991 date. The year's moratorium is to allow VIA to decide whether to purchase this line which is currently used by its Montreal-Gaspé train, the "Chaleur".



While this is a less than crisp view, it is the only picture of a Quebec Oriental locomotive which your co-editor has been able to locate. This picture shows locomotive 16 on the trestle at Black Capes, a point slightly east of New Richmond. The 4-6-0 was built by the Montreal Locomotive Works and was one of the engines acquired by CN when it took over the railway. Assigned CN number 1200 for corporate purposes, the number was never applied to the engine as it was retired shortly after CN took over the line in 1929.

Source: Collection of Douglas N. W. Smith.



Pulling away from the Breckenridge, Quebec station, CP locomotive 489 throws a wisp of smoke over the consist of mixed train 543 comprising three box cars, a mail-express car, a combination, and coach. The 80.2 mile Ottawa-Waltham journey will require more than three hours. Less than two years after this October 2, 1957 scene, the mixed would have made its last run.

Source: Paterson-George Collection

“PUSH PULL AND JERK” NO MORE

The Ottawa Valley has lost another railway line. On February 27, 1991, the Agency authorized CP to discontinue operations over the Waltham Subdivision from Mile 1 in Hull to Mile 34, near Quyon, and the 4.7 mile long Hilton Mines Spur.

Built by the Pontiac Pacific Junction Railway (PPJ), the line was chartered to build from a connection with the Quebec, Montreal, Ottawa and Occidental Railway near Hull, Quebec to Pembroke, Ontario along the north bank of the Ottawa River. On January 13, 1886, the PPJ inaugurated service from its with Canadian Pacific in Aylmer to Shawville, a distance of 37 miles. Two years later, when finances ran out, the line adopted Waltham, Quebec as its terminus. After CP sold its Hull-Aylmer line to the Hull Electric Railway, the PPJ undertook the construction its own line between these two points. CP acquired the line in 1902.

The Hilton Mines Spur has an unusual history. In 1888, the owners of the Bristol Iron Mine had the spur constructed. While the mine ceased operations in 1891, the trackage remained intact until 1916. The rails were sent to Europe as part of the war effort. With the reopening of the mine in the early 1950's, the line was relaid on its old alignment. While the mine has been closed for a number of years, CP has continued to run trains over the spur as it has been using the tailings for high quality ballast.

ONTARIO

NATIONAL TRANSCONTINENTAL DIMINISHED

During the 1890's, rapid settlement in the prairies which lead to a tremendous expansion in western agricultural output. As the production greatly exceeded domestic requirements, the excess was sold to foreign markets, most notably in Great Britain and continental Europe. Glowing predictions as to the bountiful harvests which were to be expected as additional western land was placed under the plough lead to demands for additional rail lines. At this time, CP controlled the only Canadian rail link from the prairies to the summer ports at the head of the Great Lakes and to ocean ports on the Atlantic. Westerners expected the new railway would provide needed additional rail line capacity to reach eastern ports as well as exert competitive pressures on CP which would lead to a reduction in its rates.

Two corporations vied for government support to provide additional outlets for the west. The Canadian Northern Railway (CNo) was the west's own railway. While it was rapidly stretching its tentacles over the prairies, the CNo had only built its first line in 1897. Its competitor was the princely Grand Trunk Railway (GTR) whose trackage was confined to southern Ontario and Quebec. The corporation was one of the oldest railways in the country whose foundation in 1852 predated the formation of the Dominion. Neither company was willing to surrender its ambitions or to join with the other. Consequently, they both sought government approval to build their transcontinental lines in 1902.

Oddly enough both were successful. The Prime Minister, Sir Wilfrid Laurier, favoured the GTR. In exchange for his support, he required the eastern portion of the line to be built from Winnipeg through to Quebec City. This gained the support of Quebec politicians who wanted to see the northern regions of the province opened to agricultural settlement in order to stem the tide of French Canadians moving out of the province to find farm lands. Subsequently, the eastern terminus was pushed further east to Moncton in order to placate Maritime interests. The government agreed to build the eastern portion from Winnipeg to Moncton and, upon its completion, to lease it to the Grand Trunk. This portion of the project was called the National Transcontinental Railway (NTR).

The CNo was supported by a number of powerful western Cabinet Ministers. In a move which seems to typify Canadian decision making, both projects received government blessing and financial considerations.

The stated purpose of the NTR was to carry western grain traffic to ocean shipping. Copious quantities of money were poured into building a grade free line along the most direct alignment between Winnipeg and Moncton via Quebec City.

When the bills were finally in, the NTR had cost several times more than had been estimated. The GTR refused to carry out the terms of its lease. Through service over the NTR between Winnipeg and Quebec City was inaugurated in 1915 under the auspices of the Canadian Government Railways. While theoreticians and politicians had postulated that the rail line would be able to move grain cheaper than the existing rail-ship route through the Great Lakes, their calculations were proven to be faulty. Grain shippers continued to use the cheaper water route through the Great Lakes. The NTR was left with a well-engineered line through the northern woods with few shippers.

The CNo found itself in financial difficulties due to the outbreak of the World War I which brought on an unprecedented wave of inflation and the closure of the European money markets to its securities. The GTR, which built the Grand Trunk Pacific between Winnipeg and Prince Rupert, found the subsidiary to be unprofitable. Faced with the imminent financial collapse of its major railways, the government accepted the conclusions of Drayton-Ackworth Commission to amalgamate all these properties into one system under the title Canadian National Railways.

Following the formation of the CNR, the investment in the NTR was partially redeemed when CN completed the cut-off between Longlac and Nakina in 1923. While the CNo had completed a rail line from Toronto to Winnipeg, its route was very circuitous. The cut-off linked the Toronto-Longlac portion of the CNo line to the Winnipeg-Nakina portion of the NTR thereby providing CN with the shortest line between Toronto and Winnipeg.

Following the completion of the Nakina cut-off, the portion of the NTR lying between Nakina and Quebec City ceased to be used as by transcontinental traffic. As a secondary main line, its primary traffic source was the natural resources along the line.

In the early 1980's, CN began to route westbound freight traffic over the Algoma Central from Hearst to Oba where it joined the CN transcontinental line. As no local freight traffic was being generated on the 121.17 mile Nakina-Calstock section, CN applied

to abandon this trackage. In 1986, authority was given for this step which made the first break in the NTR Winnipeg-Quebec City line.

On September 17, 1990, the Agency completed its review of the 1987 decision by the Canadian Transport Commission requiring the retention of the trackage between La Sarre, Quebec and Cochrane, Ontario. As no freight has been handled over the line since 1981, the Agency found it to be uneconomic and authorized abandonment twelve months from the date of the order.

The reason for the one year hiatus is to give VIA Rail the opportunity to acquire this trackage. VIA's tri-weekly service between Montreal and Cochrane currently uses this trackage.

The result of this most recent decision would be to leave CN with the section of track between Cochrane and Calstock, Ontario isolated from the rest of the CN system. On February 21, 1991, the Agency announced its approval of the conveyance agreement between CN and the Ontario Northland Transportation Commission whereby the ONTC will acquire this trackage.

While CN is selling the line, it is interested in retaining the paper traffic moving off the line from the paper mills at Smooth Rock and Kapuskasing. Under the terms of the conveyance agreement, "CN agrees to assist ONTC in the continuation and promotion of rail use by an incentive pricing arrangement which will encourage the continued use of CN as the principal connecting railway for traffic."

VIA TO CONTINUE TRAIN SERVICE

Months of speculation came to an end when the Agency decided on February 5, 1991 that CN could abandon its operations over the portion of the Smiths Falls Subdivision from a point near Richmond to a point near Smiths Falls, Ontario, a distance of 21.1 miles. While freight traffic over the line is negligible, it forms a key link in the route of VIA's Ottawa-Toronto passenger service.

This trackage was built by the Canadian Northern Ontario Railway in 1913. It formed part of the Canadian Northern's main line between Toronto and Montreal. With the exception of the Montreal-Deux Montagnes commuter line, this is the last major portion of the former Canadian Northern Montreal-Toronto line which remains in active use.

The line has been uneconomic since 1987. In 1988, only 7 carloads were handled and the operating loss was \$39,038. In 1984, VIA upgraded this trackage as part of a program to reduce journey times between Ottawa and Toronto. Approximately \$38 million was spent on CN's Smiths Falls Subdivision and the CP's Brockville Subdivision to raise train speeds from 35 to 95 M.P.H.

VIA has announced that it has concluded an agreement with CN to have this line transferred to it. This will be the first piece of inter-city trackage owned by the rail passenger corporation.

CN ORDERED TO STAY IN BRUCE PENINSULA

On February 4, 1991, the Agency released its decision concerning the remaining CN lines in the Bruce Peninsula of Ontario. Under consideration were the Stratford-Owen Sound and Listowel-Wingham lines. The total trackage involved amounts to 137.2 miles.

In 1880, the Grand Trunk (GT) leased the Port Dover and Lake Huron and, in 1881, the Stratford and Huron Railway. These lines, which were jointly operated, had just completed a line from Port Dover on Lake Huron to Listowel (in 1877). Financial difficulties hampered the continuation of construction to Wiarton on Georgian Bay. Under the auspices of the GT, these two small lines were amalgamated with yet another small railway to form the Grand Trunk, Georgian Bay and Lake Erie Railway.

Employing the charter of the Stratford and Huron, the GT financed the extension to Wiarton which was reached in 1882. At the prompting of the citizens of Owen Sound, in 1894 the GT built to that community from Parkhead, 12 miles south of Wiarton. This line was built under the charter of the Grand Trunk, Georgian Bay and Lake Erie Railway.

In 1989, CN trains handled 230 carloads over this trackage generating a loss of \$567,368. The Agency, however, rejected CN's abandonment application as a number of firms stated that they would be requiring rail service by 1992. The forecasted level of shipments would be sufficient to make this trackage economic.

CEMENT BINDS RAILS

On October 17, 1990, the Agency ordered CN to continue to operate its Marmora Subdivision from a point near Trenton to Picton, Ontario. This twenty five mile section of track was originally built by the Prince Edward Country Railway. It opened to traffic on October 27, 1879.

The Agency determined that the line had posted operating profits in three out of four years between 1986 and 1989. The main shipper is the Lake Ontario plant Cement near Picton. The firm indicated a continuing need for rail service.

LAST RAILS TO LINDSAY TO GO?

Central Ontario may lose yet another section of rail trackage. On October 18, 1990, the Agency ruled that CN could



CN Pacific 5057 stands at the Lindsay station with a three car train. While the fireman uses the opportunity to replenish the water supply in the tender, mail, baggage, express and passengers have been discharged and loaded. After a scheduled ten minute station stop, the train will start on the final leg of its Toronto to Peterborough trip. Source: Paterson-George Collection.

abandon the 38.9 miles of the Uxbridge Subdivision from a point slightly north of Stouffville to Lindsay. Also included in the decision is over 7 miles of trackage in the Lindsay area remaining from the network of CN rail lines which at one time fanned out to the four points of the compass from this community.

The portion of the line from Stouffville to Uxbridge was built by one of the few narrow gauge railways constructed in Ontario. In 1871, service started over this portion of the line when the Toronto and Nipissing Railway (T&N) started service between Toronto to Coboconk. In 1881, the T&N was sold to the Midland Railway. The Midland purchased the line in order to give it an outlet to Toronto. After broadening the T&N to standard gauge, the Midland began service between Toronto and Lindsay via Lorneville in December 1881.

This routing was quite circuitous. The Midland moved rapidly to open a more direct route. In 1882, under the charter of the Toronto and Ottawa Railway, the Midland built a nine mile line from Blackwater Junction, on the former T&N, to Manilla Junction, where a connection was made with the Midland's recently acquired Whitby, Port Perry and Lindsay Railway (WPP&L). The WPP&L had completed the trackage from Manilla Junction and Lindsay in 1877. In this manner, the present day CN line was completed.

On January 25, 1991, upon an application by the Lindsay Rail Retention Committee, the Agency varied the date of its abandonment order to April 1, 1991.



CN 4-6-0 brings a short way freight into Collingwood. Built by the Montreal Locomotive Works in 1913 for the Canadian Northern Railway, the 1397 and its sister locomotives ran up millions of miles handling the branch lines of the Canadian National - then North America's largest railway.

Source. Paterson-George Collection

EARLY ONTARIO RAIL LINE SPARED

Trains will continue to operate over the first steam railway built in Ontario. In its September 20, 1990 decision, the Agency refused to permit CN to abandon the Meaford Subdivision between Barrie and Collingwood, a distance of 30.3 miles.

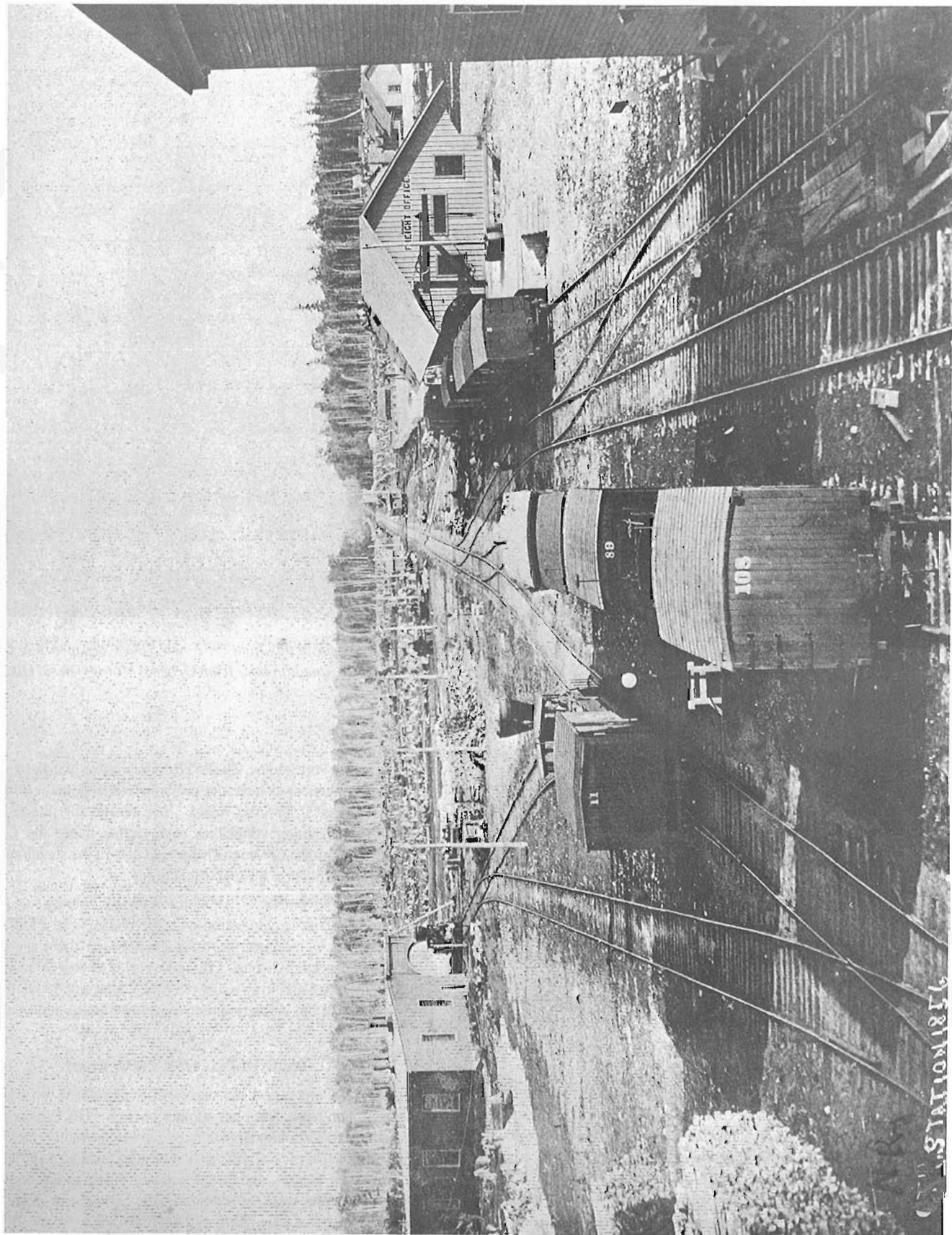
This was the northern most portion of the Ontario, Simcoe and Huron Union Railroad Company. The first portion of this line

was completed between Toronto and Aurora in 1853. The portion under review was completed in late 1854.

While the line has generally lost money during the past four years, the Agency noted that Collingwood's two major industries depend upon rail service to remain competitive. As well, several companies indicated they would be increasing their level of rail shipments.

OPPOSITE PAGE: One of the earliest known photos of a Canadian railway subject is this view of the bustling terminal yard at the frontier community of Collingwood. It was taken in 1856. If the tracks appear to be wider than usual, believe your eyes. The Ontario, Simcoe and Huron Union Railroad Company was built to the provincial broad gauge. The arrival of the railway spurred the development of the community on the shores of Georgian Bay. Beyond the roundhouse and freight office can be seen the stumps of the trees cut down to clear the land for development.

Source: National Archives of Canada, photo PA-138976.





Heading a manifest freight, Canadian built GP-7's 5732 and 5733 head east out of Windsor in this June 1952 view. The Chesapeake & Ohio, one of the predecessors of today's owner CSX, purchased the diesel fleet assigned to its Canadian lines from General Motors Diesel Division plant in London, Ontario in order to avoid paying duties on U.S. built power.

Source: Paterson-George Collection

RAIL LINE RESTORATION IN ST THOMAS

In 1982, CN received permission to abandon its trackage from a point south of St Thomas to Port Stanley, Ontario. In earlier times, this line had formed a portion of the London & Port Stanley Railway (L&PS), an interurban line linking the communities in its corporate title. CN sold this trackage to the Port Stanley Terminal Rail (PSTR) which reactivated the line as a tourist railway.

St Thomas is bisected by three rail lines which form a letter "H". The former London & Port Stanley splits the community on a north-south axis. Two lines cut across the community on an east-west axis: the Casco Subdivision of the former Canada Southern Railway, now owned jointly by CN and CP, and the Payne/Cayuga Subdivision. Both of these lines form parts of two parallel routes from Windsor to the Niagara Frontier.

In 1989, CN lifted the 0.7 miles of former L&PS track through St Thomas between the Casco and Payne/Cayuga Subdivisions including the diamond crossings. In September 1989, CN notified the Agency that it would abandon the 1.36 miles of the former L&PS trackage from a connection with the Casco Subdivision to the PSTR. The PSTR opposed the move as it would effectively isolate the PSTR from any rail connection and end plans to develop

freight traffic at Port Stanley. The PSTR countered CN's abandonment plans with a request to have the previously abandoned ex-L&PS trackage across St Thomas relaid. The reason for this request stems from on-going studies to route trains using the Casco Subdivision onto the CN line. This would permit the abandonment of the Casco Subdivision through St Thomas.

In its November 27, 1990 decision, the Agency ruled that CN is to maintain its connection with the PSTR. The PSTR will pay the costs of relaying the trackage between the Casco and Payne/Cayuga Subdivisions. CN, however, is to bear the costs of reinstalling the diamond crossing over the Casco Subdivision as it had not obeyed an Agency directive prohibiting its removal.

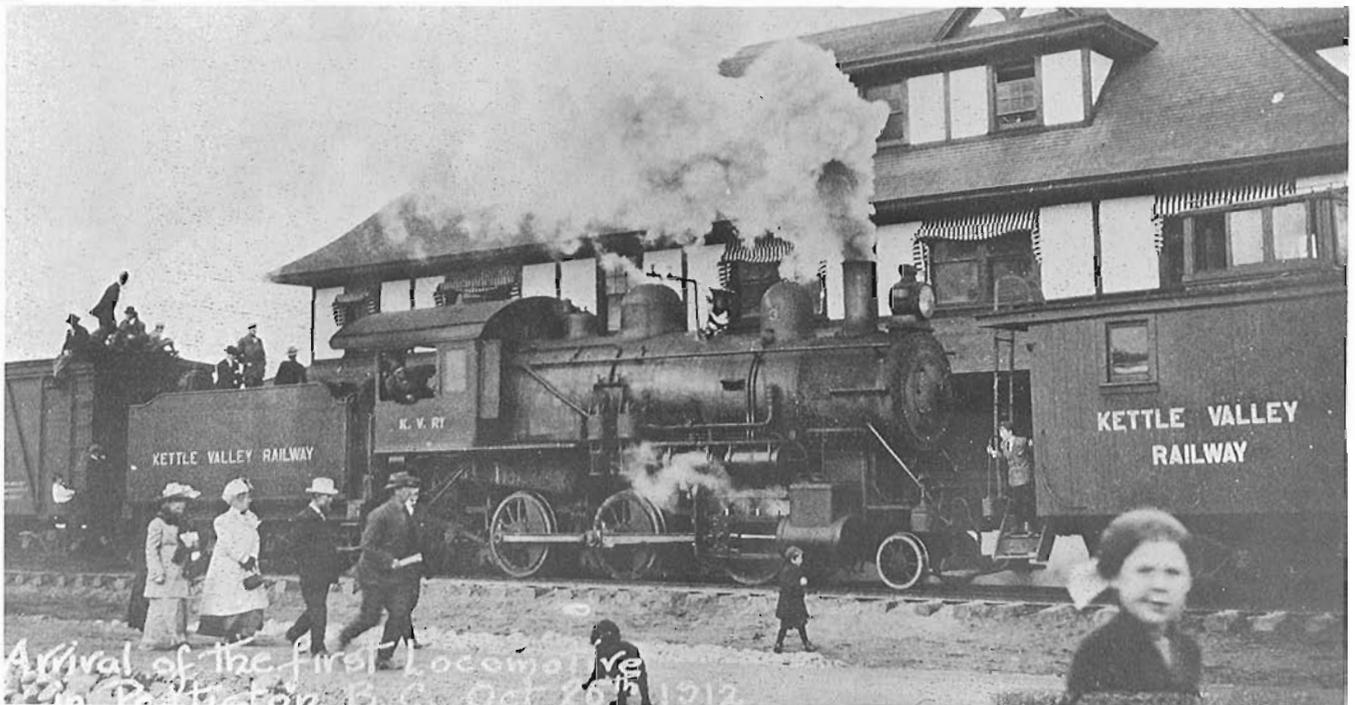
DWINDLING CSX TRACKAGE

CSX Corporation has successfully petitioned the Agency for permission to abandon yet another portion of its former main line between Windsor and St Thomas. On December 21, 1990, the Agency ruled that the 6.6 mile section of the Canadian Subdivision No 1 between Harrow and Arner was uneconomic and could be abandoned. The trackage handled 106 carloads in 1989 and generated a loss of \$18,223.

Following the sale of the Canada Southern to CN and CP, CN accorded trackage rights to CSX between Windsor and St Thomas. CSX has already abandoned the West Lorne-St Thomas portion of the line. The effect of this decision will be split the remaining trackage between Windsor and West Lorne into disconnected segments.

In another decision dated December 19, 1990, the Agency approved an agreement of purchase and sale whereby Mileage 2 to Mileage 8 of the Canadian Subdivision No 1 from Temcuseh Road in Windsor to Oldcastle and trackage from Mileage 37.35 to 38.16 in Leamington are to be sold to Canadian National. Under the terms of the agreement, CSX retains trackage rights over the trackage in order to serve the remaining portions of the Canadian Subdivision No 1.

Dinosaur Junction. Since its creation, the line has faced legal challenges as to whether it came under provincial or federal jurisdiction. In a precedent setting decision, the Supreme Court of Canada ruled on December 20, 1990 that the CWR could not be characterized under the Constitution as a "federal work or undertaking". Should the court have placed it under federal jurisdiction, the provincially-chartered CWR would have had to observe the succession duties for all unionized employees formerly employed by CN on this line. As freedom from the rigidities of the collective agreements is one of the factors in allowing short lines such as the CWR to make a profit, a decision which would have placed the line under federal jurisdiction could have jeopardized the future of the CWR and the establishment of new short lines. With this issue resolved, it is most likely that additional CN and CP trackage will be sold to new short line ventures.



This historic photo shows the arrival of the first locomotive at Pentiction on October 26, 1912. The KVR purchased the 2-6-0 from the Chicago Iron Works, a second hand locomotive dealer, in July 1912. The locomotive and related railway equipment were brought to Pentiction by barge over Lake Okanagan. This permitted the KVR to open a third front for construction purposes.

Source. National Archives of Canada/PA-177904

ALBERTA

SHORT LINE TO EXPAND

In a decision which will more than double its trackage, the Central Western Railway (CWR) received the permission of the Agency to acquire two CP lines. CP and the CWR had signed a conditional agreement of sale on June 19, 1990 covering the portion of the Lacombe Subdivision from Coronation to Stettler and the Coronation Subdivision from Coronation to Compeer, a total distance of 132.9 miles.

The CWR began operations in 1986 over the former CN Stettler Subdivision from a point near Camrose to a point near

BRITISH COLUMBIA

FAMED KETTLE VALLEY RAILWAY DISAPPEARS

The Kettle Valley Railway (KVR) formed part of CP's second main line across southern British Columbia and provided a direct rail link from the Okanagan Valley and mineral rich Kootenay regions to the west coast. It has attracted a large following based upon the beautiful countryside it traversed and the blood stirring battle between Jim Hill and Sir William Van Home to build through this area.



On December 12, 1941, CP opened a new combined station-divisional office building at Penticton. After the war, an extension was built on the eastern end bringing the structure up to the size shown in this photograph taken on August 30, 1952.

Source: Paterson-George Collection

During the 1890's, CP and the Great Northern Railway, an American based corporation headed by former Canadian James Hill, had battled to a draw over building rail lines into the silver mines of the Kootenays. [The story of competing rail lines is told in the May-June 1989 issue of "Canadian Rail".] Spurred on by Hill, CP created a 578 mile long railway from Medicine Hat, Alberta to Midway, BC between 1896 and 1900 through the purchase of existing lines and the construction of new lines.

To complete this new line to Vancouver would have required overcoming the formidable mountain ranges west of Midway. As Hill had ceased his incursions into southern BC, CP was content to leave Midway the terminus of its southern line. Matters were upset in 1906 when Hill announced his intention to complete a line from Spokane, Washington to Vancouver across southern BC. For the Canadian portions of the line, Hill used the charter of the Vancouver, Victoria & Eastern Railway (VV&E).

While Hill had track crews out laying rails, CP delayed undertaking the highly expensive task of completing their line to the coast. The necessary stimulus was provided by BC Premier Richard McBride who felt the development of BC depended upon the construction of railways to access the natural resources of the

provinces and to foster trade between the interior and the coast. He feared that the VV&E would divert the commerce of the interior to Spokane.

In the provincial election campaign of 1909, McBride sought voter support for his plans to grant provincial subsidies to assist in the construction of the following projects: the Edmonton-Vancouver and Vancouver Island lines of the Canadian Northern, the North Vancouver-Prince George line of the Pacific Great Eastern, and the Midway-Hope main line and Merritt branch line of the KVR. Returned by a large margin, these plans were rapidly transformed into new railway construction.

The KVR, while nominally a private company, was in reality backed by the CPR. Its incubus was the Kettle Valley River Railway which operated a branch line railway between Grand Forks, BC and Republic, Washington. In 1911, it was officially reconstituted as the KVR with powers to build from Midway to Hope and construct a branch line into Merritt. CP had built a railway line into from Spences Bridge, on the transcontinental line, through Merritt to the Nicola coal mines in 1907 under the charter of the Nicola, Kamloops & Similkameen Coal & Railway Company.

In 1910, the KVR began construction from Merritt and Midway to head off the VV&E which was building towards the only feasible pass through the Coquihalla Mountains to Hope. Fortune smiled upon the KVR when James Hill retired from his position as Chairman of the Great Northern's Board of Directors in 1912. His successor did not view the VV&E to be as important a project as Hill had. Construction on the VV&E slowed to a crawl. In 1914, the VV&E and KVR signed trackage sharing agreements whereby the KVR would use VV&E trackage between Princeton and Brookmere and the VV&E would be granted trackage rights over the KVR line through the Coquihalla Pass line from Brookmere to Hope.

The dates for the opening of major segments of the Midway-Hope and Brookmere-Merritt lines of the KVR are as follows:

SECTION OF LINE	DISTANCE IN MILES	OWNER	DATE COMPLETED
Midway to Penticton	135.0 Mi.	KVR	October, 1914
Penticton to Princeton	68.8	KVR	April, 1915
Princeton to Coalmont	11.5	VV&E	November, 1911
Coalmont to Brookmere	26.5	VV&E	October, 1914
Brookmere to Merritt	29.4	KVR	September, 1914
Brookmere to Hope	54.5	KVR	July, 1916

Upon the completion of the Midway-Merritt trackage, the KVR inaugurated scheduled passenger service on May 31, 1915. When the line through Coquihalla Pass to Hope was completed, the Brookmere- Merritt section was downgraded to a branch line.

The VV&E threat proved to be chimerical. Reflecting the change of heart at the Great Northern headquarters towards the viability of the through Spokane-Vancouver line, it only ran one train over the KVR line through the Coquihalla Pass. The Vancouver-Hope and Spokane-Brookmere sections were operated as branch lines. The first section was abandoned in 1924. By the start of World War II, most of the VV&E trackage had been dismantled.

BELOW: One of the major sources of traffic in the Penticton region around the lower end of Lake Okanagan was from the vast fruit groves on the hillsides. This highly perishable traffic was handled in special express cars as well as in express refrigerator cars on passenger trains. Car 4149 is typical of the special cars assigned to this service. The ventilators on the roof were designed to force air through the car. The loss of fruit traffic in the early 1970's was one of the factors leading to the abandonment of the Kettle Valley Railway.

Source. National Archives of Canada. photo PA-177903.



The extension the KVR built from Penticton to Okanagan Falls was not a typical branch line. The line, which opened in March 1923, featured a car barge operation across Skaha Lake. After CP absorbed the KVR on January 1, 1930, one of its first projects was to replace the barge operation on Skaha Lake with a new rail line which was completed in August 1931. In 1945, CP purchased the VV&E line between Princeton and Brookmere from the Great Northern.

In November 1959, the Coquihalla line was hit by a devastating number of slides and washouts. As the line over the pass had been very difficult to keep open and in view of declining traffic, CP rerouted all traffic over the alternate route via Spences Bridge. In July 1961, permission was granted to officially abandon the Coquihalla line.

In 1973, CP ceased to handle revenue freight traffic between Penticton and Beavertown, a point 42 miles from Midway. Five years later, the Canadian Transport Commission approved the abandonment of most of the Princeton-Midway line.

On June 21, 1990, the Agency authorized CP to abandon the 177.8 mile long Princeton Subdivision between Penticton and Spences Bridge as well as the 12.3 mile Okanagan Falls Spur from Penticton to Okanagan Falls. While the line posted a small operating profit of \$109,484 in 1987, the total losses in 1986 and 1988 amounted to \$1.8 million. The remaining freight traffic, which consisted primarily of lumber products, is now handled by highway to a reload centre on the transcontinental line.

SHORT TURNS

-On February 7, 1991, the Agency rejected CN's request to abandon the St Raymond Subdivision between Hedley and Jackson's, Quebec, a distance of 33.9 miles. Even though the line generated a loss of \$350,000 in 1988, profits of \$1.5 million in 1987 and 1989 kept the line in the black. As the Agency determined that the line was necessary to service the needs of the Canadian military and its continued operation would impose no hardship upon CN, it ordered the line retained. It had reached similar conclusions when it considered a similar application from CN in 1988. This history of this line was covered in the March-April 1989 issue of "Canadian Rail".

- CP received authority to abandon the portion of the Saint Gabriel Subdivision between Joliette and Saint Felix de Valois, a distance of 10.1 miles, on January 25, 1991. This line was built by the Quebec, Montreal, Ottawa and Occidental Railway in 1882. Up to 1983, this line extended an additional 14 miles to Saint Gabriel. The Agency has determined that in 1989, the line handled 120 carloads and generated a loss of \$120,624. The abandonment date was fixed eleven months after the date of the order in order to allow a shipper of natural gas time to arrange for alternate transport facilities.

- The Quebec Central lost more trackage when the Agency approved on November 30, 1989 an application to abandon the line from Beebe Junction, on the Quebec-Vermont border, to Lennoxville as well as the 2.4 spur from Beebe Junction to Rock Island. The trackage was built by the Massawippi Valley Railway. The main line, which extended from Newport, Vermont to Lennoxville, was opened to traffic in 1870.

- CP received permission to abandon the 3.2 mile Base Borden Spur on November 7, 1990. This line was built to serve the military base lying north of Toronto during World War I.

- The Agency has ordered CN to continue operate the Burford Spur between Brantford and North Burford, Ontario. The Agency determined that the line had generated a profit in 1989 and indications were it would continue to be economic. The history of this line was reviewed in the January-February 1988 issue of "Canadian Rail".

- Based upon an application by CN and the BASF Corporation, the Agency has extended the date for the abandonment of the CN's Renfrew Subdivision between Arnprior and Nepean until December 31, 1991. A history of this line is contained in the March-April issue of "Canadian Rail".

- The Agency has given CN permission to abandon the portion of the Preeceville Subdivision from Preeceville to Kelvington, Saskatchewan, a distance of 40.1 miles. In 1988, it handled 96 carloads generating a loss of \$176,451. The line was built under the charter of the Canadian Northern Railway in 1921.

- CP has received permission to abandon its line between Robson West and Midway. The Agency had denied a similar application on June 20, 1988 on the basis of interventions by area shippers who stated they would be expanding their use of this line. The Burlington Northern, however has captured most of the traffic in this area through low freight rates. The decision requires CP to retain the 2 mile Carson Spur and approximately one mile of trackage in Grand Forks to serve a major shipper. Rail connections to this isolated section will be maintained over the Burlington Northern. A history of this line appeared in the November-December 1988 issue of "Canadian Rail".

- Due to the discontinuance of the VIA Rail passenger service between Halifax and Yarmouth effective January 15, 1990, the National Transportation Agency (the Agency) amended the date for the abandonment of the Dominion Atlantic Railway line between Coldbrook and Yarmouth from July 13, 1990 to January 16, 1990.

The Business Car

BOMBARDIER SECURES MAJOR CONTRACTS

Bombardier Inc. of Montreal watched the good times return on April 23, as orders and options for up to \$900 million for railway passenger equipment rolled in from the United States and Europe. The company said that it has obtained a \$400 million order for 140 Superliner II cars from Amtrak. The order also includes an option for an additional 39 cars, which would bring the total contract price to \$485 million. The Superliner II cars are based on models built by Pullman, from which Bombardier purchased all the working drawings. Amtrak already has 282 Superliners built by Pullman between 1979 and 1981. The new cars will be delivered between July 1993 and January 1996. The parts will be built at La Pocatiere, Que. and assembled at the Bombardier plant at Barre Vt.

The company also announced that the French National Railroads (SNCF) has awarded a contract for 45 two-level TGV high-speed train sets, consisting of eight cars each, to a consortium formed by the French-British group GEC Alsthom, De Dietrich of France and ANF-Industrie, Bombardier's French subsidiary. The latter company's share of the order is estimated at \$190 million and could reach \$420 million with the exercise of an option for an additional 55 train sets. The first is scheduled for delivery in the spring of 1995.

Source: Globe and Mail, April 23, 1991.

AIR CANADA AND CP TO STUDY HIGH-SPEED TRAIN

Air Canada is reported to be thinking about getting into the railway passenger business with CP Rail. The two transportation companies reported on May 7 that they will spend \$500,000 over the next year to determine whether there is a market for a high-speed passenger train in the Quebec City to Windsor corridor. Air Canada is not, of course, in the rail transportation business, but it has a sophisticated reservation system, knowledge of the characteristics of the market place and connections for other directions. One thought is that Toronto and Montreal could be used as intermodal hubs into which passengers would pour on planes and trains to be transported to their destination by whatever mode of transportation is appropriate. There are approximately eight million people in the corridor area, but this is a small number compared to the populations that support high-speed rail projects in other countries.

The proposed Air Canada - CP study does not represent a third competitor to the Bombardier and Asea Brown Boveri groups that are studying high-speed rail in the corridor; on the contrary, Air Canada has been cooperating with both ABB and Bombardier. The proposed study should determine what kind of high-speed train system is required for the region, if one is required at all.

Source: Globe and Mail, May 8, 1991.

NEW MONTREAL FORUM NEXT TO WINDSOR STATION

Months of speculation ended recently with the announcement that the new Montreal Forum, home to the Canadiens hockey team, will be built on CP / Marathon land just west of Montreal's Windsor station. Also a part of the development is an office tower that would be built between the new forum and the station. A pedestrian walkway would connect with a new terminal for west-island commuter trains as well as Metro and bus stations. The original grey stone station building, built between 1888 and 1913, would remain intact, however the plans call for the demolition of the accounting building (built in 1953-54) and the former express building (known as the "Mud Hut", built in 1906 and enlarged in

the 1920's). The latter building is the cause of some debate since it has been declared to be part of the station (unlike the accounting building) and hence comes under the newly-proclaimed Heritage Railway Stations act. The matter is still being discussed and final plans have not yet been released.

HERITAGE STATION VANDALIZED

The former CP Rail station at Beaconsfield Que., recently refurbished as a Montreal-area commuter station, was set on fire by vandals on March 28 and seriously damaged. Fortunately, firefighters extinguished the blaze before the station could be destroyed, but the estimates of damage range upward from \$50,000. The structure, built about 1898, is one of the few original wooden stations remaining on the west-island commuter line.

ANOTHER HERITAGE STATION GONE

Canadian National's station at Petitcodiac New Brunswick has recently been demolished. This station had not been used for passenger service since the local train between Halifax and Saint John was discontinued in January 1990. Petitcodiac station was a very interesting looking building, appearing like a station from one side, but resembling a house when viewed from the other side. It was quite a large building, with second-floor living space for the agent, and it dated back well over a century to the days of the European and North American Railway.

LAST LONG DISTANCE TRAIN TO GRAND CENTRAL HAS CANADIAN CONNECTION

A new Amtrak schedule came into effect on April 6, and with it all Amtrak trains coming into New York City use Pennsylvania station. The long-planned line down the west side of Manhattan Island, allows access to Pennsylvania station from the lines north of New York City that were formerly served by Grand Central. Commuter and local trains will continue to use Grand Central as before. Interestingly, the last scheduled Amtrak train to use Grand Central was train 64, the "Maple Leaf", from Toronto. This recalls the fact that the last long distance train to use Montreal's Windsor station was Amtrak's "Adirondack" bound for New York City.

PARIS METRO TO ABOLISH FIRST CLASS

What may well be the only rapid-transit system in the world still offering two classes is scheduled to stop doing so by the end of this year. Since it opened in 1900, each train in the Paris Metro system has carried at least one car for first-class passengers who pay a premium fare. Last year 120,000,000 passengers rode the system, of which only 21,000 went first class; hence the discontinuance of the service.

"ROYAL CANADIAN" STILL IN THE WORKS (LITERALLY)

While the schedule of Blyth and Company, to introduce a luxurious cross-canada train running on CP's transcontinental line, is delayed, the plans for the train are still proceeding. The rolling stock is being completely rebuilt by Rader Railcar Inc. of Denver Colorado, and it is expected that the train will go into service in either the spring or autumn of 1992. The major market for such a train is from prosperous tourists from other countries, and the train will be billed as a land cruise, offering services akin to those provided on cruise ships.

BACK COVER: On July 14, 1951, CPR train number 8, hauled by locomotives 5468 and 2863, were photographed at Revelstoke, British Columbia. Number 5468 is now preserved at the Canadian Railway Museum, and may some day return to Revelstoke in the custody of the CRHA's Selkirk Division.

CRHA Archives, Toohey Collection, photo 51-513.

Canadian Rail

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