
Appendix

A Bit of History

The Founding of Deloro, a Mining Town, 1866

*Marmora Historical Foundation
(pages 54-60)*

Further information on the history of Deloro can be found at the Archives of Trent University. This collection was in the custody of Professor Roy Bowles and Professor Morgan Tamplin before it was donated to Trent University Archives in 1998.

After the discovery of gold at Eldorado in 1866, a great amount of activity was shown in the Deloro area with at least 25 shafts being sunk on the site. The Severn Mine (Pearce Mine) which is located on the east side of the Moira River was supposedly opened in 1868. The present site had a number of owners and/or companies involved. The Hawkeye Property, the W.J. Gatling Company (brother of the inventor of the Gatling gun), the Tuttle property, the Severn property, and quite possibly the Cook property. The Deloro Mine, which included the Gatling and Tuttle shafts, was first opened by the Gatling Gold and Silver Mining Company in 1873. This company spent many thousands of dollars developing the property that sold out to Canada Consolidated Gold Mining Company.

Canada Consolidated obtained the property in 1880 and spent extravagant sums of money in buildings and plants, but made a complete failure in treating the refractory mispickel ores (arsenopyrite) by their chlorination process. In 1883

expenditures reached \$200,000, work was suspended and the personal property of the company was sold under execution. Work continued two years longer under lease and then given up as a complete failure. Arsenic production is reported as 440 tons in 1885, 120 tons in 1886, and 30 tons in 1887 etc. There is no mention of gold having been recovered. Canadian Gold Fields secured the property in 1886 and erected a large mill at Marmora station. The ore was treated using the bromo-cyanide process (Sulman-Teed process) for nearly a year when the mill and plant were destroyed by fire. At that time the management of the plant was put in the hands of Mr. P. Kirkegaard. A new stamp mill was erected at the mine site and a double process (amalgamation followed by the bromo-cyanide treatment) was begun, which proved to be a great success.

In 1896 the Laboratory and Dry Crushing Mill was the third mill to be built in Deloro.

In 1901 the number three level was 426 feet three inches long and the number four level was 393 feet six inches long. There was extensive cross cuts as well as working in the Tuttle and Red Shafts. The ore was worked exclusively for the gold and the arsenic was purely a by-product. It should be noted that the tailings from the previous operations was successfully reworked using the new process. The "Report of the Ontario Bureau of Mines-1901," page 115-116, states, "At the present time the arsenic plant is undergoing complete reconstruction for the purpose of securing a large yield at reduced cost per ton. The difficulties formerly experienced at Deloro from the loss of arsenic and the consequent imperiling of livestock in the vicinity, have been entirely overcome by modifications etc. No cases of arsenic poisoning have occurred, great care being observed to preclude accidents of this sort." In 1901, this was the only arsenic producing plant on the American continent manufacturing (99.4-

100% pure AS₂O₃) on a commercial scale. Production was fifty to sixty tons per month. Seven hundred tons (valued at \$42,000) were sold in 1901 for use in pesticides, fertilizer and even cosmetics.

In 1902 the mine was flooded and eventually pumped out because the company needed all the arsenical ore from the area to make a profitable recovery. Canadian Goldfields continued until 1903 and had recovered over \$300,000 worth of gold and arsenic. From 1899 to 1904, the Atlas Gold and Arsenic Mining Co. (Gatling 5 Acres Shaft) also took out substantial quantities of these materials. In the fall of 1903, silver deposits were discovered at Cobalt, Ontario, and by 1904 efforts had been made to resume production at Deloro using the Cobalt area ores. By 1905 the O'Brien Mine (owned by M.J. O'Brien) was in production and by 1906 several mines were producing with 5,335 tons of ore being shipped. The ore contained 160 tons of nickel, 321 tons of cobalt, 1440 tons arsenic and over five million ounces of silver. The mine owners received no payment for the cobalt, nickel or arsenic.

The Deloro Mining and Reduction Company was incorporated in 1907; the same year in which Canadian Goldfields Limited was dissolved. Just as the Canadian Goldfields mining operation was facing ruin because of its flooded mine, a complex ore of silver, cobalt, nickel and arsenic was discovered in the fall of 1903 at Cobalt in northern Ontario. Mining began in 1904. Rail connections between Cobalt and the southern Ontario network were completed in 1905. This ore, like that at Deloro, was an arsenopyrite. The silver was by far the most valuable component of the ore but arsenic was the largest constituent by tonnage. As mined in 1904, the ore, by weight, consisted of six percent silver, thirteen percent nickel, fifteen percent cobalt and sixty-six percent arsenic.

After gold mining shutdown at Deloro, the General Manager (Peter Kirkegaard) had kept the mill open doing custom work for other area mines. At the same time Dr. S.F. Kirkpatrick, head of the Mining School at Queen's University and a metallurgical consultant for Canadian Goldfields, continued his research in refining arsenical ores. The two men believed they had both the technical expertise and the physical plant to refine the Cobalt ores. They contacted Michael John O'Brien, a very successful colourful Renfrew businessman with a passion for money and hockey, later railway contractor and mine speculator who had acquired some of the most valuable Cobalt mining areas. O'Brien was convinced to invest \$75,000 in a small plant at Deloro that was completed in 1906. The refinery began operating in 1907 and the Deloro Mining and Reduction Company was incorporated to operate the property. In 1910 when cobalt began to show possibilities in the world market, O'Brien expanded the plant to produce both cobalt and nickel oxides. Kirkpatrick convinced the Ontario government that they should fund his research on cobalt at his lab at Queen's. The new cobalt plant required additional electrical power. The original, steam-driven generator, installed by Canadian Goldfields in 1900 was shut down in 1909. Electricity was instead purchased from the Seymour Power Company's hydroelectric plant located thirty-five kms away at Campbellford. It is assumed that the concrete transformer building that still stands was built in 1909 when this changeover occurred.

Inexplicably, the Deloro smelter did not receive a rail connection until 1913. All ore was brought by rail from Cobalt to Marmora Station and trans-shipped into wagons for the two kilometre trip to Deloro. Possibly, the quantity of ore received was initially not sufficient to justify the cost of the spur line. Possibly, O'Brien was being cautious and not investing more

than absolutely necessary until both the metallurgical process and markets for cobalt were well established. Cobalt prices were quite volatile in this period. Prior to the Canadian refining of cobalt ores, cobalt oxide was selling at \$2.50 per pound. Production from the Cobalt district soon glutted the market and by 1912 the retail price quoted in New York was about 90 cents per pound and in England about 68 cents. The Coniagas Reduction Company and the Canadian Copper Company were the two main competitors for Deloro. The Coniagas Company, wholly owned by the Coniagas Mines Limited of Cobalt, Ontario, opened a smelter at Thorold, Ontario, in 1908. The company operated successfully for a number of years. Conversely, the Canadian Copper Company closed its cobalt plant in 1912 as a result of the collapse in cobalt prices.

Deloro had one advantage over its competitors in that it also sold a cobalt product called stellite, as well as cobalt oxide. In the early 20th century, an entrepreneur in Kokomo, Indiana, Elwood Haynes, began experiments to develop a stainless metal. In 1907 he patented an alloy of cobalt, tungsten and chromium that he called stellite. Since Haynes required cobalt, the only place he could get it in large quantity was from Deloro. Thus in 1912, as the price of cobalt oxide deteriorated, Deloro Mining and Reduction began producing high-value stellite under contract to Haynes. The demand for stellite varied considerably in the early years. During the First World War it was in high demand for military uses but after the war the demand shrank considerably. In 1919, the son of M.J. O'Brien, Ambrose, went to England to explore markets for cobalt and stellite. One result of his visit was the opening of a stellite plant in Birmingham. Deloro became the world's leading cobalt producer in 1924. Stellite is still manufactured today by Deloro Stellite, a multinational company that had its origins with the Deloro Mining and Reduction

Company. In 1909, hydroelectric power lines were installed from the Trent River. A railway spur line connected Deloro to the Central Ontario Railroad in 1913. The results of experimentation by M.E. Haynes and Prof. H.T. Kalmus of Queen's University was applied in production and in 1914 Deloro manufactured the first cobalt metal (226,079 lbs.) to be produced commercially in the world. This led to the production of stellite a much sought after war material.

On January 1, 1919 the village of Deloro was incorporated. On Jan. 9, the Herald reported the results of the first election: Reeve, S.B. Wright; Councillors, R.A. Elliott, F.A. Bapty, J. Judge and S. Simmons. In 1916 the company's name was changed to the Deloro Smelting and Refining Co. By 1917 the company employed 400 men in a series of plants destined to irretrievably pollute the stretch of the Moira River they sat along, while manufacturing refined silver, refined arsenic, cobalt oxide, metallic cobalt, nickel oxide and stellite. On 25 March, 1920, ninety-six railroad cars of silver weighing over 8,500 pounds left Marmora Station heading for China. Dwindling world markets for cobalt in the 1920s lead to large scale layoff, however when several silver mines closed in Cobalt after 1929, the silver cobalt ore was shipped to Deloro and stockpiled. This kept the company operating until World War II when the demand for cobalt boomed. Also from 1932 to 1937, the hand cobbled ore shipped by the Eldorado Mine at Great Bear Lake, North West Territories to its Port Hope refinery, along with the residue from the refinery, was sent to the Deloro smelter for reprocessing.

During World War II Deloro was the only cobalt plant in North America and operated mainly on cobalt-copper-iron alloy residues from northern Rhodesia plus a supplementary supply from the Belgian Congo. No Canadian concentrates were treated. Following World War II the Deloro smelter went back

to treated ores and concentrates from Cobalt, Ontario, but at a reduced rate. From 1944 to 1952 the Deloro smelter treated the 19.7% speiss residue from the Port Hope refinery and a smaller quantity of hand cobbled cobalt from the Eldorado Mine. Eight lean years followed. The Korean War and United States government contracts for the treatment of Moroccan ore kept the plant operating full strength until 1958. The company employed as many as 500 workers.

Belgian competition, falling world prices and the decline of silver mining in the Cobalt area dealt the company a crushing blow. There were no substantial customers to use the company's smelting and refining facilities. So in March 1961 the plant closed down and the chemical and research laboratory was moved to the Belleville plant of Deloro Stellite, a subsidiary of Deloro Refining & Smelting Co.

The poignant and powerful documentary, "The Price of Gold," produced by Heather Hawthorne, which is available at area libraries and at Trent University, was completed in 2012. It was first screened at a public information session in Deloro. Councillor Linda Bracken presented Hawthorne with a framed certificate of appreciation from the municipality, recognizing her achievement and thanking her for her "determination, compassion and enthusiasm to make sure the history of the Deloro Mine Site is preserved."

In 1917 the Deloro Mining and Reduction Company was reorganized as the Deloro Smelting and Refining Company Limited. This event marked a large capital expansion in the operation. A "metals building" for stellite production, a new office, and a warehouse and bag house for arsenic production were completed in that year. The previous year a plant to manufacture aluminium dust, used in refining silver, was completed. A water sprinkler system was also installed in 1917. The tall water tower became a

prominent landmark. However, the system did not stop a fire in the spring of 1919 when the engineer's office, carpenter shop, and weigh scales were destroyed. Presumably these buildings were not provided with a sprinkler system. In the fall of the year, the Twenty-Stamp Mill, powerhouse, and concentrator, which were being used as storage, also burned. Only the laboratory building survived. This group of buildings were far removed from the main mill. In about 1918, O'Brien acquired a cobalt refinery at Fredericktown, Missouri; the only cobalt refinery in the United States at the end of the First World War. The company was bought on the recommendation of S.F. Kirkpatrick, the Managing Director of Deloro Smelting and the metallurgist who had perfected the refining of arsenical gold ores for Canada Goldfields. Unlike the Cobalt, Ontario, ores, those from Missouri were sulphide and required a different smelting process. During the early 1920s, the silver and arsenic departments worked continuously. The cobalt and nickel plants were more variable. In 1921 the oxide plant was closed and the following year operated for only six months. The Fredericktown plant was also unsuccessful and closed in 1925, probably due to a slump in the cobalt market and possibly because of refining problems. The success of arsenic production at Deloro into the 1920s was driven by the demand for insecticides, particularly to control the boll weevil crisis. By 1922, eighty-seven percent of the cotton producing areas of the United States had been affected by the weevil. Calcium arsenate was determined to be the cheapest and most effective method for controlling the insect.

Deloro began producing lead and calcium arsenate. By 1919 the demand was such that the company constructed a separate insecticide plant and the following year the Deloro Chemical Company was incorporated. The company also produced various cobalt compounds including cobalt sulphate, acetate, nitrate, chloride, hydrate, and carbonates. The global price of cobalt metal fell

dramatically with the opening in 1925 of large copper-cobalt deposits in the southern province of Katanga, in the Belgian Congo (today the Democratic Republic of Congo). Katanga cobalt could be produced cheaply since it was a by-product of copper refining. Deloro Smelting was selling cobalt metal at \$2.35 per pound; the Belgian company in Katanga charged \$1.25 per pound. Fortunately (for Deloro) before competition became ruinous, the Belgian company experienced refining problems. Kirkpatrick was able to negotiate an agreement by which Deloro Smelting would provide technical assistance and the Belgian company agreed to split up the world market; in other words form a cobalt cartel. During the late 1920s, the supply of silver-cobalt ore from Cobalt began to diminish. By 1929 Deloro's smelting operation was curtailed by the lack of ore supplies. Depressed markets caused by the onset of the Depression minimized the effects of the dwindling ore supply. In fact, in 1930 Deloro Smelting started to stockpile cobalt for future use. Stellite production provided a partial cushion for the lack of markets for cobalt metal in general. With the decline of production from Cobalt, Ontario, Deloro Smelting began to import cobalt ores. The cartel that began with the Belgian company in Katanga was expanded in 1932 to include a northern Rhodesian (today Zambia) company, known as the Rhokana Corporation, and later a company working in Morocco. In 1935 an association of German cobalt producers joined the "trade pact" and a Finnish company followed the next year.

A new domestic source of cobalt became available at Deloro when, in 1933, Eldorado Gold Mines Limited (despite its name) completed a refinery to extract radium at Port Hope, Ontario. The process produced a radioactive waste that contained 3.5 percent cobalt. The Port Hope refinery concentrated this waste into a speiss with 12.75 percent cobalt that was then shipped to Deloro for further refining. This source of cobalt

speiss apparently produced the radioactive slag found on the Deloro Mine Site today. With the onset of war, in October 1939 the Belgian company and Rhokana Corporation asked Deloro Smelting to take up their refining obligations. Ore from both companies was processed in Belgium. When the country was invaded by Germany in May 1940, Deloro Smelting had to modify its refining process as the Rhokana ores were forty to forty-four percent cobalt compared to the ten percent ore from Cobalt, Ontario. The new ores also did not contain arsenic which seems to have accounted for the reduction in arsenic production.

Cobalt became a strategic metal during the Second World War. As an indication of its importance, Deloro Smelting completed a new research laboratory in 1940. A new chemical laboratory and sample room were constructed one or two years later. As of 2017 the research laboratory still stands and is used as the arsenic treatment facility; the chemical laboratory has been demolished. In 1942 a United States Government agency, Metal Reserve Company, contracted with Deloro Smelting to supply 7,000 tons of cobalt concentrate. When the contract expired in 1944, the government changed its policy and stockpiled the concentrate at the Deloro smelter property. The stockpile was moved to New Jersey between 1947 and 1948. The following year the United States government decided to add to their stockpile by purchasing sixty tons of cobalt a month from Deloro Smelting. The contract lasted until 1958. By 1959, the Deloro plant had a capacity of only 35 tons per month. Thus the existing facilities had to be rebuilt and expanded. In 1958 the Canadian government also decided to purchase cobalt and stockpile it at Deloro.

During the era of Deloro Mining and Smelting, the former mining area north of the industrial plant was used for a variety of industrial activities and workers' housing. The laboratory that had

been associated with the Canadian Goldfields continued to operate for some years. An insecticide building was completed.

Although the Deloro Smelting and Refining Company plant had been rebuilt in the early 1950s and the company continued to flourish, the rural, isolated location of the industry became a growing liability. Fewer people were willing to work within the company town environment of Deloro. As well, the company itself had become part of a larger international operation. In 1956 some of the operations were moved to a new facility in Belleville in order to be closer to schools, transportation, and an urban environment that would attract skilled employees. In 1961 the Deloro Mining and Smelting Company completely shut down its Deloro plant. Fifty years of refining and smelting arsenical ores at Deloro had contaminated the land. However, a broad public awareness of environmental issues was still in its infancy in the 1950s. At that time the Deloro plant was still an economic boon to the region. Only during the 1960s did the environmental concerns begin to become evident. The corporate lineage of the Deloro Smelting and Refining Company Limited continues to the present. In 1970 the company was purchased by British Oxygen and its name changed to Deloro Stellite Limited (later Inc.). Deloro Stellite Inc. in Belleville was part of a multinational firm known as the Deloro Stellite Group Limited which produced speciality steel alloys using cobalt. Today, the company is known as Kennametal Stellite Inc., having been purchased by an American firm. In 1970, when British Oxygen purchased the holdings of Deloro Stellite, the Deloro property was not included. Instead the property at Deloro went to new owners, Erickson Construction Company Limited also in 1970. Note: It is believed this corporation was a skeleton company with no assets, simply set up to hold the very polluted Deloro site separate from Deloro Stellite, which may otherwise have been subject to lawsuits.

Deloro—Life in a Company Town (pages 61-64)

Marmora Historical Foundation

(pages 61-64)

Description by Brenda Brooks Skofj

with excerpts from the Toronto Telegram 1957

In 1868, gold was discovered in Deloro at the site of the first Gatling Gold Mines. When a method for refining silver ore was discovered, Deloro Smelting and Refining Company built one of the first Canadian silver smelters at a cost of eight million dollars. This company produced arsenic, silver bullion, cobalt oxide, cobalt metal, and nickel oxide and provided work for approximately 400 in and around Deloro. Industry restarted in 1907 and in 1914 Deloro was producing the first commercial cobalt in the world. Cobalt is necessary for high temperature alloys used in jet plane turbines. Between 8,000 and 9,000 tonnes a year are needed and Deloro's output helped keep quite a few of the world's newest aircraft flying. In 1955, the Deloro Stellite Department moved to Belleville, Ontario and in 1961, the remainder of the operation at Deloro ceased. In 1919, the Ontario Legislature passed a special Act making Deloro the smallest incorporated village in Canada, with a population of approximately 250, including the elected reeve. Discussions at council meetings were not usually about money, but about a water main from a town well and sewers, which Deloro, unlike many towns its size, does enjoy. Discussions would also centre on entertainment and recreational activities for the employees and their families.

The Village of Deloro, a company-village, is a 19th century romance and flourished in the mid-20th century. The Corporation of Deloro owned the land, and all the gaily-painted frame houses, together with the factory and office buildings. The workers lived in these houses and paid an average of \$8.00 a month for rent, with all the repairs and maintenance taken care of by the Village. In its earlier times, Deloro hosted its share of newcomers or refugees from Yugoslavia, Hungarian, and Poland, which added to its old pioneers of the last two centuries keeping the "help-your-neighbour" atmosphere happy.

The village had a general store, public library, community hall, two retirement homes, a boarding house, a public school, a Roman Catholic school, and among the recreational facilities were a lawn bowling club, an outdoor skating and hockey rink complete with lights for nighttime activities, two changing rooms complete with wood stoves, a lighted ski and toboggan hill, a baseball diamond, and a football field on which many other activities took place. The town hall hosted movies, Christmas Eve pageants, dances for teenagers, and dances for adults on New Year's Eve, a bean supper in the fall, a Remembrance Day service every November and a very well-used library. At the t-road corner stood a big white house called The Company House, Deloro's only hotel. Down the small street to The Company House were two apartment buildings, and across the street from the apartment buildings was a grand old house that housed the current acting manager of the plant. Also across the street from The Company House was a large building bearing the legend Deloro Trading Company, again located on company property. Everything was sold from these premises, from pins to pomegranates. Postal boxes were located here with the postmaster being employed at the plant. There was also a two-pump gasoline station, a community hall, and across the

street were two rather large houses housing management for the plant. There were two advantages to everything being owned by the Village. There were no taxes for the residents and the company paid for all. Secondly there was no crime, no jail, and no policeman, except for the specially appointed ones on Halloween when young spirits would bubble over with the soaping of windows, upsetting of outhouses, gates, and flagpoles.

There were, of course, two schools in Deloro, one a public school and the other the Catholic school. Older students would take the bus to school either in Marmora or Madoc. There was no church or cemetery in Deloro, most people traveling to Marmora for worship. In the community hall, there was a Sunday school for the children and a recreational association hosted social activities and athletics in the summer months there. Swimming took place at "the Old Watering Hole."

Something to Crow About

Reported Aug. 8, 1946

Pet crows, Amos and Andy, cared for by Alphonse Clemens before they were fledglings, have come into quite an amount of publicity recently owing to an episode that occurred at the residence of Jules Ethier. On Saturday evening, Jules placed a dollar bill and two dimes in a milk bottle at his back door to pay for milk tickets. When Thomas Hannah arrived next morning, there was the empty bottle but no cash so he rapped at the door to report this. The amazed Jules eventually found a dime on the veranda and another on the ground below, but no sign could be seen of the dollar bill. The next morning, when going to his garage to feed some chickens he saw the two crows, but thought nothing of it until a few minutes later they had come closer to

the house. The detective element in Jules' mind then was roused. So he went indoors and placed a piece of paper the size of a dollar bill within the neck of an empty bottle and took the bottle to the spot where it was generally placed. He addressed the crows thus, "Bring back that dollar to me or else." Incredible as it may seem, when he came out of the house a little later, there was the dollar bill. One of the crows presumably Amos, had made restitution.

Never a Dull Moment

Constant activity in the village made Deloro a good place to grow up and develop good morals and values. There was always a festive celebration on July 1 each year including baseball games, three-legged races, spoon races, etc., topped off by free drinks, and ice cream supplied by the village. Fireworks were enjoyed in the evening. At Halloween the children would receive tickets for UNICEF and were required to go to sell these tickets. On October 31, the children were required to collect these tickets and, of course, treats for themselves. There would then be a gathering at the community hall and prizes for the best costumes

In the early months of winter each year the Sunday school was treated to a tobogganing party, with a dinner of scalloped potatoes, baked beans, and hot cocoa provided at the community hall. At Christmas there was a pageant given by the school children with a huge Christmas tree in the centre of the hall, topped off by a visit from Santa Claus with a gift and bag of goodies, again supplied by the village.

Numerous opportunities to play all sports and in winter, a ski hill with lights was provided for us. Add to that, sledding, the outdoor skating rink, and hockey. The outdoor rink was usually maintained by George Brooks and his sons with help from other

members of the community. Rink carnivals with music were held and prizes awarded in all categories. There were two changing sheds complete with wood stoves for warmth. On Remembrance Day each year, a service would be provided at the community hall with the laying of wreaths in memory of the war dead and those who were injured in the fighting. Documentary movies were shown to the children to help them understand. The first placing of wreaths at the memorial tablet in Deloro Hall took place on November 11, 1949, with the "last post" and "reveille" played by George Brooks and at other times Tom Brooks.

A Good Year

1945-1946

The Silver Band, with twenty members practiced in a warehouse using the building remodelled from the home of Hec Boudreau.

- The Deloro Public Library Association was formed.
- The Deloro Red Cross Association was set up.
- The nursing home opened in 1946.
- Tap water came to Deloro on May 9, 1946.
- The Deloro Community Sunday school opening service was on October 7, 1945, with 39 children in attendance.
- The Deloro Moving Picture Shows began to operate. The formation of the Wolf Cub Pack.



About the Author

Jim Dalton was born in Ottawa, Ontario in 1936. The family moved to Deloro when Jim was three, with his brother David, age two. In 1943, along came a sister, Donna.

The stories in this book, a long-awaited labour of love, take place between 1939 and 1952. In 1952, the family moved to St. Catharines, Ontario. After high school in Thorold, Ontario, Jim entered the field of professional accounting (1963 to 1984). In 1984, he went back to school: Brock University, 1984 to 1987, and Queen's Theological School, Queens University, 1987 to 1990. He was ordained in the Hamilton Conference of the United Church of Canada.

Jim served from 1990 to the present, 2017, some twenty-seven years, within congregations in Ontario and Quebec.

Jim is married to the Reverend Brenda S. Bell, lives in Montreal, has two children and one grandchild from a previous marriage, and celebrates with Brenda her two sons and three grandchildren.