

“A Grey Wee Town”: An Environmental History of Early Silver Mining at Cobalt, Ontario

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Article abstract

Cobalt was Ontario's first mining-boom town and at its height was the world's fourth-largest producer of silver. The initial discovery of silver in 1903 led to a rush that saw the town grow to several thousand inhabitants within a decade. In this period, land values rose to astronomical heights, thousands of claims were laid, and the town was hemmed in by mining operations. Initially the mines were relatively small-scale and used simple technology, but soon major mining interests impinged on the town geographically and severely affected it politically and economically. The mining-boom story of Cobalt takes the form of a conflict between the town council on the one hand and powerful mining concerns on the other. The former struggled to provide a reasonable standard of living for Cobalt's inhabitants, while the latter attempted to extract as much silver as quickly as possible from the surrounding land, from beneath neighbouring lakes, and even from within the townsite itself. In this struggle both the urban and natural environments suffered: financial constraints and near-unrestricted mining production resulted in a thoroughly inadequate urban infrastructure, especially in the provision of water for the town's inhabitants, while unhindered mining systematically deforested and denuded the land around the town and even drained the town's original main source of water, Cobalt Lake. Today, almost a century after the silver industry began to decline, the Cobalt region still displays the environmental impact of the mining activities of those early, rush years.

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Abstract

Cobalt was Ontario's first mining-boom town and at its height was the world's fourth-largest producer of silver. The initial discovery of silver in 1903 led to a rush that saw the town grow to several thousand inhabitants within a decade. In this period, land values rose to astronomical heights, thousands of claims were laid, and the town was hemmed in by mining operations. Initially the mines were relatively small-scale and used simple technology, but soon major mining interests impinged on the town geographically and severely affected it politically and economically. The mining-boom story of Cobalt takes the form of a conflict between the town council on the one hand and powerful mining concerns on the other. The former struggled to provide a reasonable standard of living for Cobalt's inhabitants, while the latter attempted to extract as much silver as quickly as possible from the surrounding land, from beneath neighbouring lakes, and even from within the townsite itself. In this struggle both the urban and natural environments suffered: financial constraints and near-unrestricted mining production resulted in a thoroughly inadequate urban infrastructure, especially in the provision of water for the town's inhabitants, while unhindered mining systematically deforested and denuded the land around the town and even drained the town's original main source of water, Cobalt Lake. Today, almost a century after the silver industry began to decline, the Cobalt region still displays the environmental impact of the mining activities of those early, rush years.

Résumé

Cobalt a été la première ville-champignon fondée sur l'exploitation minière en Ontario. À son apogée, elle arrivait au quatrième rang des plus importants producteurs d'argent du monde. La première découverte de minerai d'argent, en 1903, a provoqué une ruée qui a provoqué une croissance démographique à Cobalt de plusieurs milliers d'habitants en une seule décennie. Pendant cette période, la valeur des terrains a augmenté de façon astronomique, des milliers de concessions minières ont été octroyées et la ville était encombrée par les opérations minières. Si les mines du début étaient relativement de petite dimension et qu'elles employaient une technologie simple, d'importants intérêts miniers ont tôt fait d'empiéter sur la géographie de la ville, avec des conséquences importantes sur les plans politique et économique. L'histoire de l'expansion minière rapide de Cobalt prend la forme d'un conflit entre le conseil de ville, d'une part, et les grandes préoccupations des prospecteurs, d'autre part. Le premier se

battait pour procurer aux habitants de Cobalt un standard de vie acceptable, tandis que les seconds essayaient d'extraire beaucoup d'argent le plus rapidement possible des terrains environnants, des sous-sols des lacs voisins et même du sol de la ville elle-même. L'environnement à la fois urbain et naturel a souffert de cette bataille : des contraintes financières et une production minière presque illimitée ont causé une infrastructure urbaine inadéquate, en particulier à l'égard des ressources en eau potable pour les citoyens. De plus, l'exploitation minière sans vergogne a systématiquement détruit la forêt environnante et dénudé les terres autour de la ville, allant jusqu'à drainer la plus importante source naturelle d'eau de la ville, le lac Cobalt. Aujourd'hui, presque un siècle après le début du déclin de l'industrie de l'argent, la région de Cobalt porte toujours les stigmates des activités minières de ces premières années de ruée.

The word *Klondike* resonates in post-Confederation Canadian history. It is emblematic of Canada's moment as a frontier nation, and the men and women who undertook the arduous journey through the Chilcoot to the headwaters of the Yukon are rightly seen as heroic and driven individuals worthy of their special place in Canada's history. The Klondike rush resonates in us because of its promise of wealth and emancipation from want at the dawn of a new century: it is still celebrated in popular festivals in western and northern Canadian cities more than a hundred years after the rush itself ended. Given the focus on the Klondike as the central event in Canadian mining history at the turn of the twentieth century, it is perhaps surprising to learn of another, far more significant find that occurred at roughly the same time as the Klondike strike. The 1903 discovery of silver at Cobalt in northeastern Ontario ushered in a period of unprecedented profitability and growth in Canadian prospecting and mining. Minerals mined at Cobalt in its heyday (between 1903 and 1926) were worth almost a third more than all the gold extracted from the Klondike. Cobalt Camp, as it was known, was in a very real sense for several decades the economic engine of the Canadian hard-rock mining industry: prospectors who learned their craft at Cobalt spread out across Canada's Precambrian Shield, identifying and developing deposits of copper, silver, nickel, manganese, platinum, zinc, and other metals.² As late as 1897, the *Canadian Mining Review* was editorializing that British capitalists were unsuited as investors in the Canadian mining sector, though it allowed that "the introduction of British rather than American capital" was desirable.³ Cobalt operations that generated the capital so desperately needed in the Canadian hard-rock mining industry, did so domestically, and in turn created many of Canada's leading mining companies that, through amalgamation and

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expansion, formed the heart of an international industry of immense economic reach.

In 1977, the first detailed study of Cobalt argued that the story of the town's foundation and growth was one that reflected the larger Canadian story at the end of the nineteenth and the beginning of the twentieth century. It was a story of rapid, often dramatic change, accelerating industrialization, expanding immigration, growth of urban centres, and the concentration of capital. The author noted, "In the past decade, historians have increasingly turned their attention to the social and economic effects of these changes upon the nation's cities, factories, and construction camps. In particular they have examined poverty and the growth of urban slums, labour strife and union organization, and the socio-economic and ideological gulf between worker and employer."⁴ However, the article included no mention of the impact of mining on either the urban or the physical environment.

This omission is hardly surprising, because a generation ago, historians—especially those studying Canadian urban history—were primarily interested in urbanization in relation to social or economic processes. Environmental questions as they related to settlement and urbanization, when they arose, tended to be examined within this framework: in the 1970s Geoffrey Bilson, for example, wrote about the cholera epidemics of the nineteenth century in explicitly social terms,⁵ and historical examinations of settlement patterns of "resource towns" were undertaken with an eye to federal projects that anticipated the construction—and therefore the planning—of new resource towns in the period 1980 to 2000.⁶

It is interesting that, in the 1980s, as urban history began to take note of environmental history—and vice versa—the investigative focus increasingly rested on questions of the built environment and its relation to nature, and the impact of environmental factors on urban life. Studies such as William Cronon's *Nature's Metropolis: Chicago and the Great West* (1991), Kenneth Jackson's *Crabgrass Frontier: The Suburbanization of the United States* (1985), or David Schuyler's *New Urban Landscape: The Redefinition of City Form in Nineteenth-Century America* (1986) sought to understand particular aspects of the environment–human relationship, such as the metropolis–hinterland relationship, the growth of suburbia, or the development of green-space consciousness. Common to all of these examinations was an emphasis on the metropolis in the true sense of the word—as a major seat of human activity, as a location commanding the environment both within its boundaries and across a wide hinterland beyond.⁷ In contrast, Canadian environmental history has tended to focus on the environmental impact of resource extraction, especially from forests, and discussions of the environmental history of mining in Canada are relatively rare.⁸ This lack of attention is surprising, given that so much of the Canadian frontier was opened up by mining activities, especially in the north. Northern Ontario, the Northwest Territories, and (of course) the Yukon were developed as mining centres,

and the evidence of mining activities is easily apparent on the land today.

Cobalt was also a place where the built environment collided with the needs of a particular and highly destructive economic activity: mining. It did not develop as a mining town; instead, it was a town *within which mining happened*. Dynamiting operations shook the inhabitants day and night, while exploratory shafts were sunk in the middle of streets with no regard to rights-of-way. Trestle-lines criss-crossed the townsite, carrying hoppers laden with ore to the separation and processing facilities located on the town's outskirts. Exploratory shafts were sunk in the very heart of the town, and businesses and residences were literally crushed beneath tailings piled against their walls by the mining companies that owned the rights to the land. Even the lake alongside which the town grew was not immune to the needs of the mines: it was drained to expose the veins of silver that plunged beneath it. The very lives of the residents were bound up in mining, and not in a simple economic sense: it affected their health, their leisure, their access to drinking water, and their politics. The Cobalt Town Council continually found itself on the defensive, fending off the predatory advances of the mining corporations that undermined the town, both figuratively and literally. Ironically, Cobalt was also a community constantly burdened by financial constraints, despite the enormous wealth that its activities generated. All this resulted from the way in which Cobalt was established, which in turn flowed from the precious metal that was its reason for being. The deposits of silver, and the stakeholding licences that were granted to mine it, led to an extremely rapid influx of inhabitants and the creation of an utterly unplanned community. Most people believed that their lives would intersect with Cobalt for a few months at most, so there was little or no concern for infrastructural planning or long-term vision. In short, then, the history of Cobalt demonstrates how rapid urbanization for resource extraction could generate both wealth and power, and human misery and environmental deterioration.

Discovery and Establishment

The initial 1903 discovery of silver in the area that would become Cobalt resulted from the Ontario government's decision to build a colonization railway from North Bay to New Liskeard. Government surveys of northern Ontario in 1900 reported finding "a veritable storehouse of wealth," including good agricultural land and forests; and although no valuable minerals were located, the surveyors were confident that the rock formations showed promise. As a result, the government decided to improve access to northern Ontario by building colonization roads and railways. The *Temiskaming and Northern Ontario Railway Act* was passed in March 1902 to build and operate a railway from North Bay to New Liskeard. In the process of constructing the Temiskaming and Northern Ontario Railway, two lumberjacks stumbled upon valuable silver nuggets at Cobalt Lake. By the summer of 1904 the night air at Cobalt was illuminated by the shimmering light of campfires

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Figure 1: Cobalt 1905

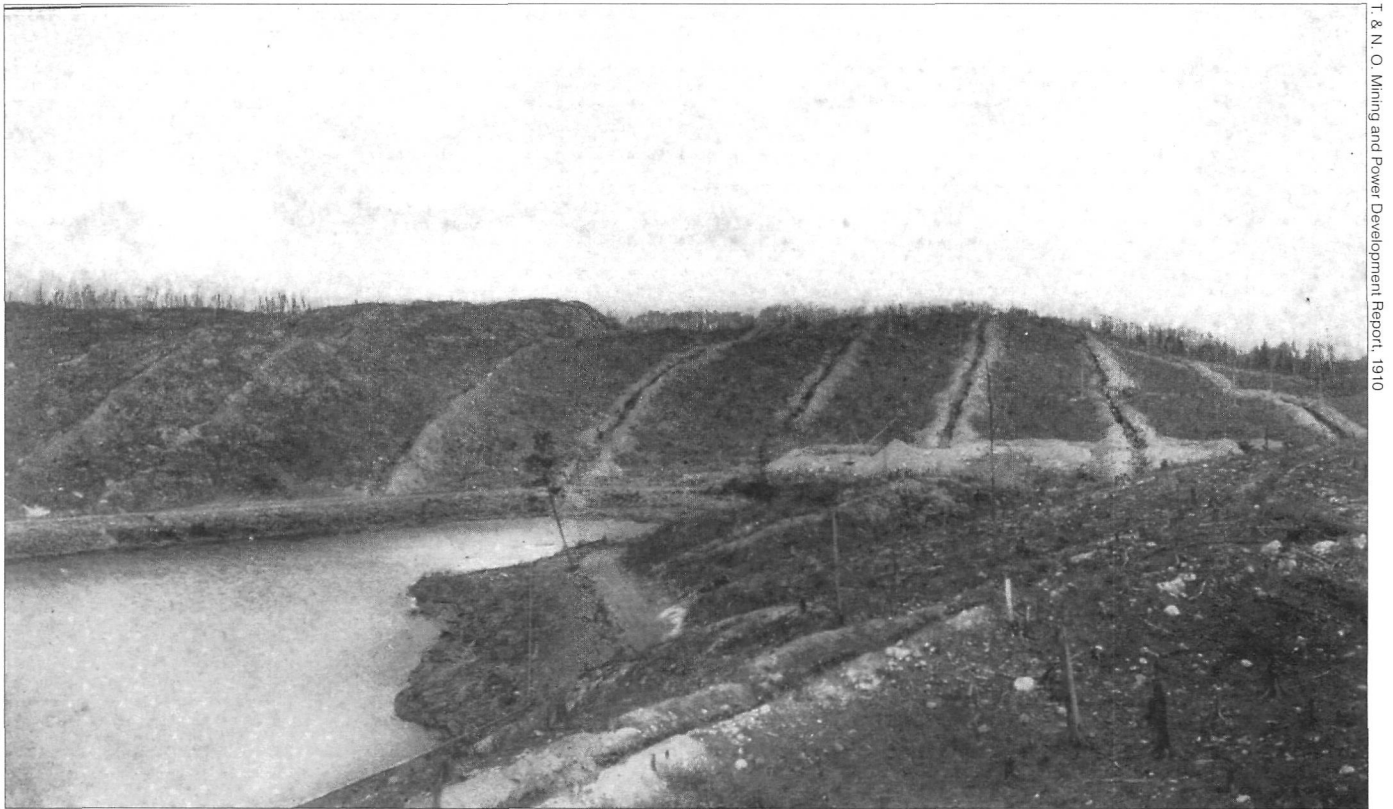
dispersed among the rocks and stumps of the countryside. Pathways meandered through the trees, dodging clotheslines, camp stoves, and wash basins. That fall, the first general store was erected, and just before Christmas, a post office was opened in the front corner of the building. Following the completion of the T. & N. O. Railway early in 1905, men from around the world and from every walk of life began to converge on Cobalt.

Most of the new arrivals remained just long enough to purchase supplies and mining equipment before setting out to join the growing army of prospectors in the woods. By the end of October 1905, about six thousand prospecting licences had been issued by the Haileybury office.⁹ To meet their needs, a mushrooming complex of boarding houses, restaurants, and hotels quickly appeared, and on their heels came merchants, brokers, bankers, doctors, lawyers, and a host of specialized tradesmen. In May 1905, there were less than half a dozen small board or log buildings on the townsite, but by September the population had increased to 600 residents. Less than half a year later, the number of inhabitants had risen to 1500. First impressions of the mining camp were invariably similar. The newcomers remembered the hustle and bustle, the horse-drawn buggies bogged down in the mud, the optimism and excitement, and the profusion of tents scattered every which way among an entanglement of boulders, stumps, and trees. Men hurried to and fro, or gathered in groups to discuss the

latest discovery. On Prospect Avenue a sign over a makeshift toilet read, "BackHouse—5 cents a Sit." Horse-pulled lunch carts, termed "quick lunches," served food and flies to the hungry arrivals, and teams of horses struggled up the hill from the railway station carting lumber, mining supplies, and carcasses of beef and pork.

The depositional nature of the silver that those arrivals sought to mine affected the Cobalt environment in two profound ways. The first was the impact on the land itself. When the Ontario provincial geologist, W. G. Miller, investigated the area in late 1903, in the immediate aftermath of the first silver discoveries, and again in 1904 he correctly surmised that the silver-bearing veins lay extremely close to the surface. He told miners not to waste their time and money sinking deep shafts, as most of the silver would be found at or near the surface. The veins would likely be found as inclusions in surface rock, which could then be worked by a technique known as "drifting," or following the veins laterally as they ran along or just below the surface.¹⁰ This was a labour-intensive operation, using simple technology, that cost little, and for that reason Cobalt became known as a "poor man's camp."¹¹

The first silver mines in the Cobalt area were discovered where the bare rock was exposed to the air. Soon all the surface exposures had been examined, and the prospectors began to dig narrow trenches to get down to covered bedrock. Overlying this



T. & N. O. Mining and Power Development Report, 1910

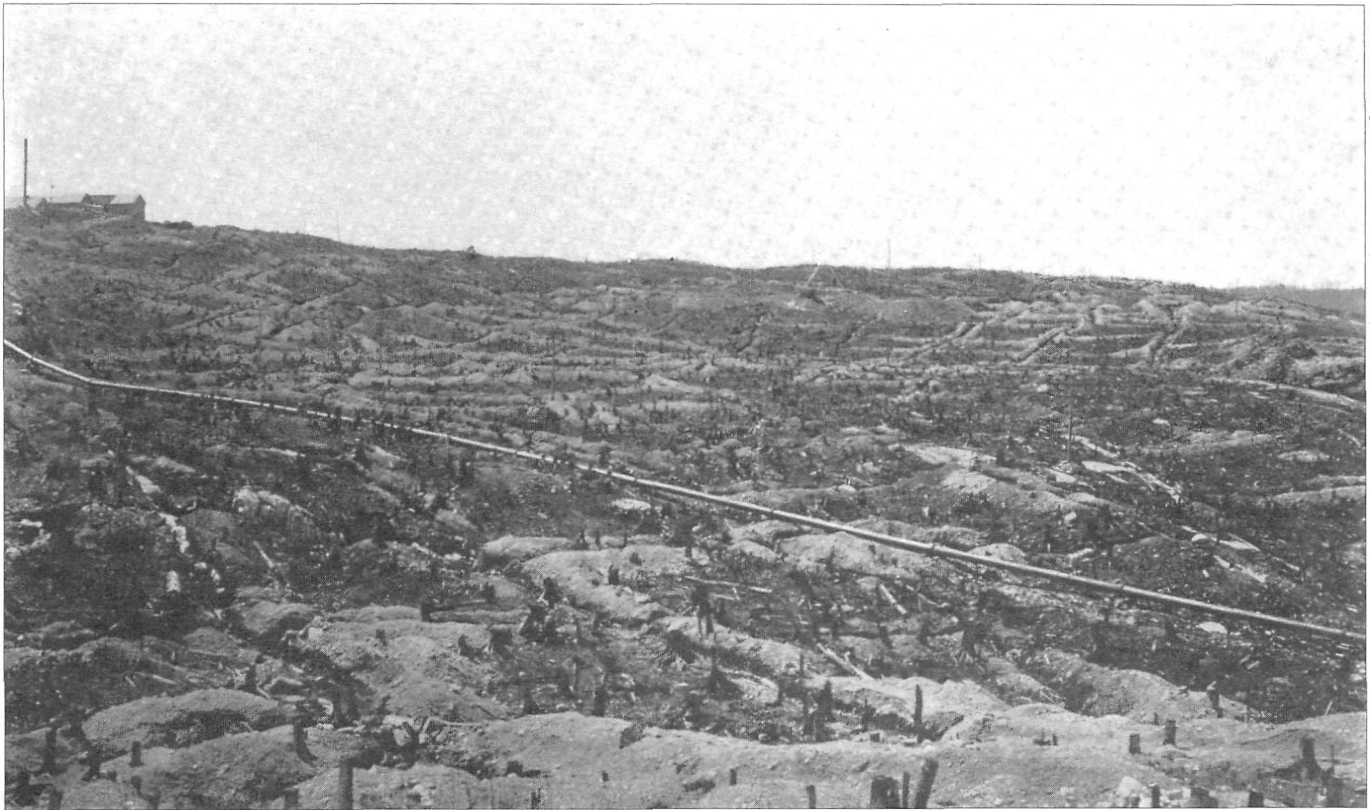
Figure 2: Trenching on the Drummond Property

bedrock was a layer of material known as "overburden"—several feet of soil, glacial debris, loose deposits of rock, moss, and trees. Trenches were dug as narrowly as possible through the overburden, washed clean, and carefully examined for signs of silver-bearing fissures. A good indicator was the pink colouration of the cobalt bloom. The 1906 Bureau of Mines *Report* described the difficulties encountered in this form of mining:

Under such circumstances prospecting for veins partook more of the nature of ditching than anything else, and in numberless instances trenches several feet in depth and many feet in length attested to the zeal with which the prospectors labored. For the most part the surface of the ground afforded no indication of the presence or absence of minerals in the underlying rock, hence the trenches had to be run in a haphazard way as to direction. In addition, the veins themselves are usually narrow, sometimes not more than an inch or even half an inch in width, and frequently in their undisturbed condition give little or no evidence of containing minerals, hence every inch of rock uncovered demanded the most minute inspection lest after tons of earth had been removed, the object of the search might after all escape detection. Men dug and shovelled in the trenches all day and were succeeded by their mates who continued the work all night; ditches twenty feet in depth and of corresponding width were sunk to solid rock where the slate-conglomerate was known to exist.¹²

During the next four years the terrain around Cobalt Lake was systematically criss-crossed by miles of trenches—which were generally dug at intervals of one hundred feet, with intermediate ditches added as circumstances warranted.¹³ There was a legal reason to mine this way, in addition to the geological one: thanks to the claims process determined by Ontario provincial legislation of 1903, miners had to demonstrate that their claims, which were based on acreage rather than on watercourses or other geographic markers, contained a valuable mineral in a reasonable quantity. The legislation was intended to prevent massive staking by big-money interests, which could then prospect the stakes at their leisure as time permitted. In short, it was intended to democratize the business of mining in Ontario. In Cobalt the system worked: many small claims were established in the rush of staking that occurred in 1904 and 1905, and small prospectors gained the opportunity to strike it rich.¹⁴

The land suffered the costs of the rush. Miners were impelled to trench as much and as rapidly as they could, since an empty claim was useless both financially and legally. Even a potentially productive claim might be rendered useless if sufficient proof of its potential was not forthcoming. Miners who suspected that their claims might be harbouring significant silver deposits had to demonstrate the existence of the metal or lose the



T. & N. O. Mining and Power Development Report, 1910

Figure 3: Trenching on the Nipissing Mine Property

claim entirely. Trenches were therefore cut willy-nilly across the landscape, and massive amounts of overburden were stripped away and discarded in waste piles that grew along the shores of Cobalt Lake and on nearby watercourses. What had been a rich, boreal ecosystem was in months reduced to bare, igneous Canadian shield.

Mining Boom Town

The geology of the area also had a profound effect on Cobalt as a built environment. Because the high-grade ore veins at Cobalt were neither long nor deep, many mining men predicted that the camp would have a very short life. The forecasts varied from three to seven years. As a result, the buildings were purely functional and were little more than wooden boxes sheathed with clapboard. The most substantial were roofed with tin, while the crudest made do with tarpaper. The majority of these buildings were clustered on the hill just west of the T. & N. O. station. Built on one of the few areas of level ground on the west bank of the lake, the railway station became the focal point of the town. From here, Prospect Avenue, Argentite Street, and Haileybury Road (renamed Lang Street in 1911) radiated out to the west, northwest, and north respectively. This was the business and financial centre of the town and was called Cobalt Square. By the summer of 1905, it had already attracted two banks (one

still in a tent), several twenty-four-hour restaurants, twelve general stores, a barbershop, two drugstores, and numerous other business establishments.

Cobalt thus emerged as a completely unplanned community. The town had no sanitation facilities, no drinking water, and no firefighting equipment. The roads were, at best, makeshift affairs. Houses were built as close together as possible and faced in every direction. "A visitor walking about the place between the houses and the stumps," reported the provincial health inspector in 1905, "had no way of telling whether he was on a street or private lot."¹⁵ In the following decade, Cobalt's development was dictated by the whims of the T. & N. O. Railway Commission, which had been created by the provincial government to oversee and direct the railroad's activities; the Cobalt Town Council, which came into being in 1907; the numerous mining companies that surrounded the town; and Coleman Township, which contained most of the more prosperous mines. Unfortunately, these four authorities were rarely in agreement, and the physical development of Cobalt was left more to chance than to any coherent plan.

The first problem that confronted the new town council was the state of the roads, which were a precipitous adventure. The stoop of the Prospect Hotel, for instance, was eight feet above

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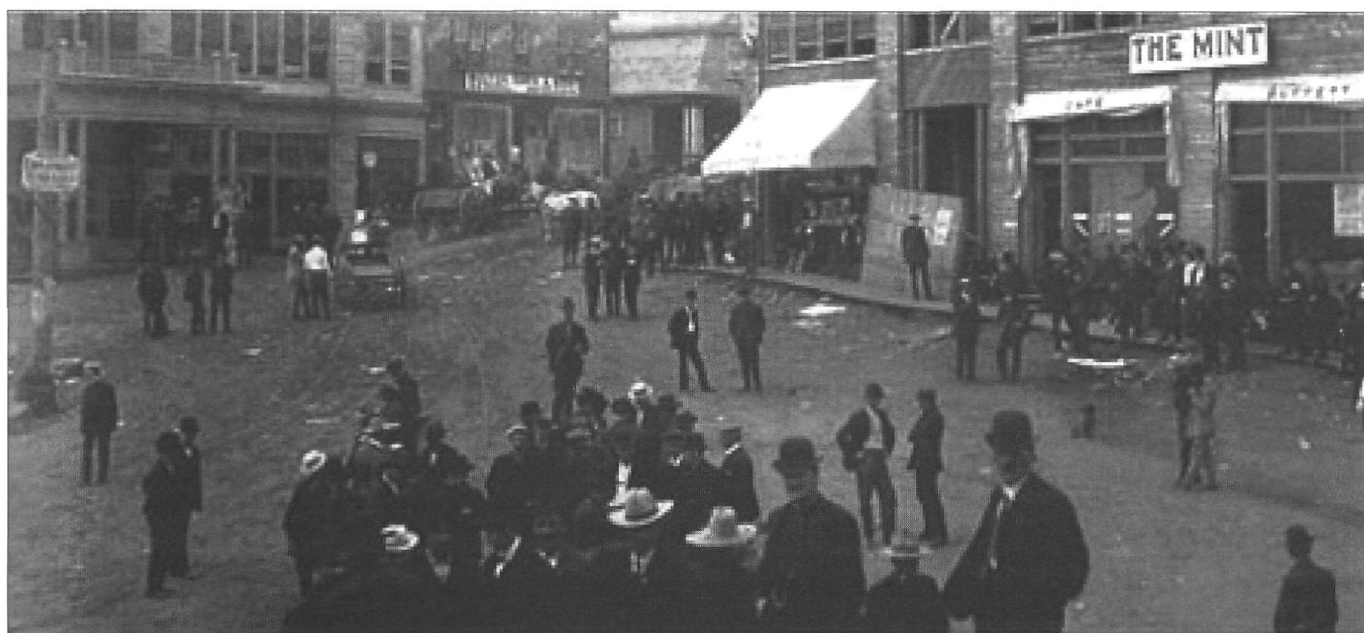


Figure 4: Cobalt Square, 1908

road level at one point and even with it at another. Since several of the streets were so poorly defined, the police staked them to prevent individuals from taking gravel from these “roadways.” Except for the quick-lunch wagon, there were very few four-wheeled vehicles in the early years—the muddy, pot-holed roads were better negotiated by horse.

By the fall of 1906 the land bordering both sides of Haileybury Road was settled as far north as the La Rose Mine, and the last stumps and boulders were cleared and sidewalks laid. As business increased, shanties gave way to stores, warehouses, and offices. Between the spring of 1907 and the following winter, the transformation was completed and Haileybury Road had become the business centre of the community. Unfortunately, the mining rights to the land in this area belonged to the Nipissing Mining Company, and it granted only short leases in the event of discovering silver. As a result, the area to the north of Cobalt was a shambles.¹⁶

Because Cobalt relied so heavily on the railway for supplies and transportation, and as the railway was a visible symbol of the power of the provincial government, the Temiskaming and Northern Ontario Railway Commission was subject to considerable public criticism. In 1904–1905 the provincial government transferred authority over the Cobalt townsite to the T. & N. O. Railway Commission, which surveyed the area and set the town's boundaries. The latter decision created years of acrimony, constrained Cobalt's growth, and contributed to subsequent fires and epidemics. Early in 1906 the managers of the working mines in Cobalt met to oppose incorporation,¹⁷ and at the town council's first meeting in January 1907, the councillors

were forced to deal with opposition to the town's very existence from several mining companies, and by squatters who lived north along Haileybury Road.¹⁸ The majority of the early complaints emanated from the fact that the railway commission owned most of the land in Cobalt. Even the forty acres owned by the T. & N. O. Railway around the station ground was exempt from taxation. The townspeople were especially irked that none of the proceeds received by the railway commission from the sale of town land was utilized for local improvements. At a time when the town council had insufficient funds for such necessities as pure drinking water, sewage, and fire protection, the T. & N. O. Railway received almost \$2 million in mining royalties. The citizens also resented the fact that the Ontario government received millions of dollars in royalties, profit taxes, and prospectors' fees, yet Cobalt was bereft of the basic necessities. The 20 August 1909 headline in the *Nugget* demanded, somewhat extravagantly, “Return to Cobalt Some of the Trillions Taken Away.”¹⁹ The government was constantly petitioned, but to no avail. Many citizens complained that the commission should set aside a percentage of the townsite lands for schools, parks, and public buildings, instead of retaining valuable town lots until their value increased, or selling the land in collusion with the mining companies.

There seemed to be some truth in these charges. The owner of the O'Brien Mine, M. J. O'Brien, had been a member of the first commission; the railway's chief engineer, W. B. Russell, became heavily involved in the Nipissing Mine; and at least one member of the reorganized commission of 1905 was associated with a Cobalt mining company. It was also a fact that the Coniagas

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Mining Company received permission to select the best land before the townsite lots were placed on public auction.²⁰

Within a month of its incorporation, the town council began to petition the provincial government for money to provide adequate water and sewage. The municipality was perpetually in debt. The unused land held by the mining companies was classified as farmland, which meant that it could be taxed at only ten dollars an acre. Because this included the land owned by the mines in Cobalt and rented to their employees, the town's taxable income was restricted to a very small section of the townsite. After considerable persuasion, in 1907 the town convinced the mining companies to pay their land assessment in Cobalt, rather than where their head offices were located. The council was also able to convince the provincial legislature to grant the town half rather than the usual third of the mining profits tax.²¹ Despite these gains, Cobalt was in constant financial trouble. Its revenues were restricted to the sale of commercial licences (which never amounted to much more than \$5,000 annually); liquor fines (which became self-sustaining only in 1909); property taxes (which rose from \$22,000 in 1907 to \$84,000 four years later); mining land assessment; and half of the provincial government's 3 per cent profit tax on the mines. Revenue in 1906 amounted to \$5,000, compared to \$17,000 in expenditures. Although the town's income rose to \$50,000 three years later, payments exceeded \$66,000. By 1911, the debt had increased to \$30,000, and there was little hope of improvement in sight.²²

The only solution appeared to be to widen Cobalt's tax base by enlarging its boundaries. The most valuable land in terms of taxation was in Coleman Township, where most of the mines were located. The financial gap between the two municipalities was immense. In 1913, for instance, the taxable income of the 1,500 residents in Coleman was \$6,300,000, compared to Cobalt's taxable income of \$3,600,000 for 5,200 citizens.²³ The town's tax base was not even large enough to market its own debentures without the township's help. Not surprisingly, the mine owners and many of the squatters located just outside Cobalt's boundaries deeply opposed any expansion of the town, and a January 1907 petition to the provincial legislature to extend the town's limits came to nothing.²⁴ Nevertheless, for the next three years, the extension of the town's boundary remained high on the council's list of priorities.

The challenges confronted by the town of Cobalt reflected many of the problems faced by other northern mining towns. Transportation services were in the hands of a monopoly; the town was pressured on all sides by aggressive, land-hungry mining companies; and Cobalt's tax base was so small that it had to apply to the Ontario government for assistance. Although both the mining companies and Queen's Park benefited greatly from the discovery of silver, little money was put back into the area.

Mining Infringements on the Built Environment

Mining operations were a constant annoyance to the citizens. Leslie McFarlane's first glimpse of Cobalt from the train tracks in

1910 indicates the physical domination that the mines had over the town. "The monotony," he wrote, "was broken by a stop at Cobalt, that strange community with its angular shaft-houses and its ore buckets shuttling back and forth on cables above an unsavoury looking lake, its shabby buildings that seemed to be clinging desperately to the rocky cliffs and its big new railway station where the platform swarmed with men. This offered novelty, a sudden explosion of life, until the train pulled away again into the rocks and the rain."²⁵

Above the streets of Cobalt, aerial tramways transported ore from shaft to mill. At the east of the town, the City of Cobalt Mining Corporation erected trestles 25 feet in height across Miller Avenue and Galena Street. At the north end, Coniagas Mining Company built a trestle over Silver Street. In 1911, the Nipissing Mining Company constructed the most elaborate system when it conveyed ore from its shaft in the northeast section of town above Cobalt Lake, to its mill on the east side of the lake via several trestles. Only later did it add a wire screen under the tramway to catch errant rocks.²⁶ When the Townsite Mine miscalculated the height of its elevated tramway, the road had to be deepened to allow the ore to pass safely overhead. This patch of road soon became a veritable mud pit in wet weather, and traffic had to be stopped and the street diverted. The sound of these conveyor belts above the city streets could be heard nonstop, day and night, year round.

The citizens also had to become accustomed to daily blasting from the mines situated both within the town and on its fringes. In May 1908, the *Cobalt Nugget* reported that the town's citizens were awakened at four in the morning by a tremendous explosion that shook many buildings in the north end of town to "an exceptional degree." The Nipissing Mining Company had been blasting as usual in its shaft on the east side of the lake, but this time all the holes exploded at once.²⁷ Two years later, the *Nugget* celebrated that fact that with deeper underground mining, now only an occasional blast was heard and buildings were no longer shaken regularly. Gone were the days when "day and night the exploding charges of dynamite sounded like a sham battle in full progress."²⁸ At times, the town clerk was asked to request mines in the town to "protect their blasts."²⁹

Whereas the unpleasantness of the explosions dissipated over time, the development of ore milling techniques after 1907 continued the noise pollution. On the outskirts of Cobalt, several concentrating mills crushed the rock before the silver was separated from the rest of the ore. Stamps weighing over 600 kilograms each were raised 20 centimetres and then dropped onto a heavy cast-iron die. The crushed rock was then pulverized and sent to classifiers, where it was sorted and separated into slime and sand. Contemporary insensitivity to the impact of the process is evident in the following colourful description from the *Cobalt Nugget*:

First of all comes the preliminary crushing. A man in overalls shovels the rock, ranging from 20 to 30-lb. chunks, downward into a hole in the floor, and a gyratory crusher, with the action of

Early Silver Mining at Cobalt, Ontario

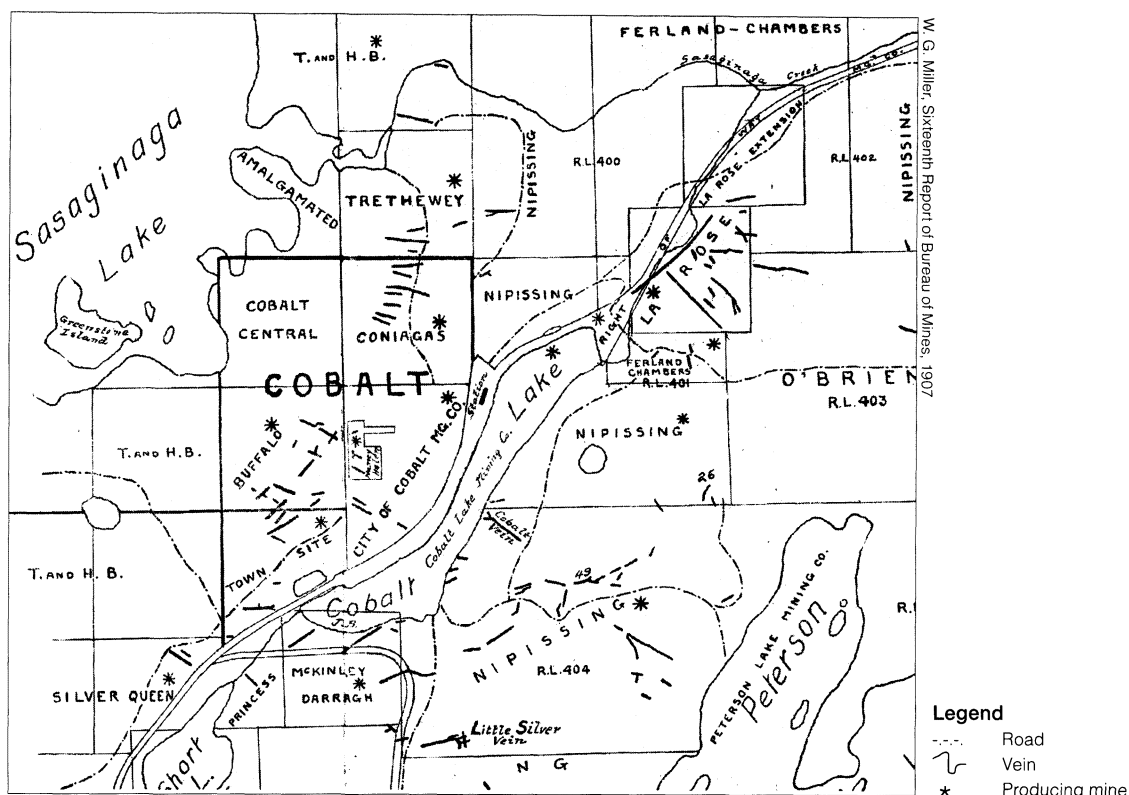


Figure 5: Index Map of Mining Properties, Cobalt

a coffee mill, gleefully reduces it to inch and two-inch pieces. . . . In appearance, the stamps, in sets of five, can be compared to the pipes of a great church organ, but there the resemblance ends, for the music of the stamps lacks melody and variety. First of all comes the preliminary crushing. . . . All night and day, these iron bars, fitted with a steel shoe, rise and fall on the ore beneath, singing the hoarse chant that never leaves Cobalt without the noise of industry, except on the Sabbath. Revolving as they work, the stamps strike 100 blows per minute. Roughly the number of stamps in a mill is the measure of its capacity.³⁰

Property Restrictions and Legal Battles

Cobalt was hemmed in by mining companies. The Nipissing and the La Rose Mining companies were to the north, the Coniagas and the Buffalo were on the west, the Temiskaming and Hudson Bay and the McKinley-Darragh lay to the south. These mines were all within a few minutes' walk of the train station. The town was bounded on the east by Cobalt Lake, and by the Nipissing Mining Company's extensive holdings to the west of the lake. The Nancy Helen, Townsite, Coniagas, City of Cobalt, and the Station Grounds mining companies all conducted mining operations within the town. The main north-south thoroughfare, Haileybury Road, passed through the properties of the Nipissing, the La Rose, and the Chambers-Ferland mining companies on its way to Haileybury.

The town council minutes for Cobalt's first two years of existence reveal the extent of the struggle between town and mine. In May 1907, the clerk wrote Coniagas to remove its fence that was encroaching on the newly constructed Prospect Avenue. Eight days later, the council asked the provincial government to prevent Coniagas from blocking Prospect Avenue. This letter also requested that the Buffalo Mining Company stop trenching on the town's streets and refrain from sinking a shaft on the road to Clear Lake. On 25 May, the managers of both these mines met with the council to protest. In October, the Nancy Helen and the City of Cobalt mining companies appealed to the minister of mines to allow them to mine the roads encompassed by the lands they had leased from the government, and the town offered no objection as long as public travel was not impeded. The same month, Cobalt ordered Nipissing, Chamber-Ferland, and La Rose mining companies to fill in their mining trenches where they bordered on the town streets, or they would be held responsible for any accidents.³¹ These problems continued into 1909.³²

The town was pressured from above and below. The Station Grounds Mining Company evicted the Imperial Bank from its location in 1908 and operated a diamond drill in the town square for a few months in the summer. Although the police complained to Coniagas about holding up traffic on Silver

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Street, the company argued that it was within its rights to sink a shaft at the corner of Silver and Prospect, as long as it sounded a warning whistle before blasting. During such operations, windows rattled several hundred metres away and whole buildings shook. "As you enter the town proper," the *Silver City News* observed in 1907, "great smoke stacks belching forth voluminous black clouds meet the eye, the sound of throbbing engines, the heart beats of Cobalt industry, come to the ear."³³ Cobalt engaged a lawyer almost solely for the purpose of preventing the mining companies from infringing on the town's rights.

An excellent example of such encroachment was Coniagas's reluctance to stop the watery residue from its concentrating mill from overflowing onto the town's streets. In February 1908, the town wrote the mine's owner, R. L. Leonard, calling his attention to the problem and stating that it "must be discontinued at once as several of our citizens were being flooded out."³⁴ When a private meeting between Mayor Lang and Coniagas's mine manager, R. P. Rogers, failed to resolve this issue, the council obtained an injunction to prevent Coniagas from further flooding the north end of Argentite Street.³⁵ The injunction was raised in late July when Coniagas agreed to remove the excess water and pay all legal costs, and the town promised to consider diverting the road to the north.³⁶

The underlying issue in this struggle was the matter of surface rights. In 1905, the T. & N. O. Railway Commission had surveyed and leased the mining rights on thirty-seven acres southwest of the town site to the Cobalt Townsite Mining Company, the Right-of-Way Mining Company, the Wright Silver Mining Company, Railway Reserve Mines, and the Nancy Helen mining companies. A large part of the northwest section of the townsite was sold to the Coniagas Mining Company, for which the commission reserved the "liberty of ingress, egress and regress, with or without horses and other cattle, carts, wagons and other vehicles, of working and carrying away any possible mines and minerals, of sinking shafts and pits, and making air and water courses, of setting up fire engines and other engines, of setting down railroads and other roads, of dumping ore and waste rubbish." Coniagas could sink shafts, dig adits, divert water, and erect machinery on, under, and over its land. It could also appropriate land for depositing minerals, waste rubbish, and other substances associated with mining.³⁷

In the summer of 1908, the town council and the Coniagas Mining Company argued over ownership of the north end of Argentite Street. The town wished to extend the street to the north, and the mining company wanted to mine on the proposed route and transport its mill tailings through the area.³⁸ Neither side was willing to compromise, and on 9 September, Coniagas began trenching activities on Silver and Prospect streets. That night, several citizens filled in the trenches and moved boulders onto the road. When the mining company commenced trenching the next morning, the council had the workers arrested. Later that day, Coniagas started trenching

procedures on the corner of Prospect Avenue and Silver Street, and secured an injunction to prevent the town from interfering with its mining activities. Late in October, Coniagas posted notices for those living in the northwest end of town, stating that the mine "requires to extend its prospecting operations and claims, and intends to exercise the right to prospect completely the whole of the said location including the lands claimed to be owned or occupied by you as aforesaid." After noting that it would not pay for damages or for any improvements that had been made, Coniagas continued, "And you are also required to take notice that the Company's operations demand and require free and uninterrupted use of the whole of the surface of said location, not only for prospecting upon the surface and underground, but for stacking and storing the Company's products and waste."³⁹ The local newspaper later complained, "The Coniagas Mines Ltd. gives the supposed owners of that whole section of the town lying North and West of the Imperial Bank a startlingly concise notice of just where they get off. . . . Men who have bought property at a cost of thousands of dollars and have erected such structures as the Hunter Block, the Prospect Hotel, the Music Hall, Carr's Furniture Store and Livery Stable, the Cobalt Hardware and the score of Argentite Street Hotels, may be required to vacate and move off at a moment's notice, and without one dollar of compensation."⁴⁰

Thus began two years of legal battles. Coniagas claimed the right to commence mining operations (including sinking shafts on the streets and erecting buildings) in any part of the town under which its rights extended. This area included Argentite Street, most of Prospect Avenue, and Silver Street north of Prospect Avenue. Cobalt's lawyer asserted the town's right to the topsoil and urged Coniagas to drift below the streets. The final verdict in April 1910 gave the surface rights to the mining company, but the town retained control over all streets or highways laid out by the municipality. *The Town of Cobalt Audit Report, 1911*⁴¹ contained the following legal expenses incurred by the town's lawyer:

1 November 1907: Charges re appeal . . . re Coniagas and Buffalo mines

29 August 1908: Fees and expense re Coniagas injunction, preventing them from running water onto Argentite Street

4 September: Fee regarding Argentite Street expropriation

23 November 1908: Fee re injunction—Coniagas vs Cobalt & Jacobson

4 December 1908: Fees and expenses re injunction—Coniagas vs Cobalt and Jacobson

8 April 1909: Judgement and costs re Coniagas Sluice

2 September 1909: Costs of suit re surface rights of Coniagas Mine

1 December 1909: Fare and expenses to Toronto re Coniagas appeal

26 January 1910: Travelling expenses and agent's fee re Coniagas appeal

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T. & N. O. Mining and Power Development Report, 1910

Figure 6: Argentite Street, 1908 (Latchford House of Memories)

1 February 1910: Costs re 70 Division Court actions against Coniagas and Buffalo mine employees for taxes

7 April 1910: Half expenses to Toronto re amendment to Assessment Act

21 April 1910: Costs of suit re surface right of Coniagas Mine

17 September 1910: Costs re appeal of Coniagas Mine re surface rights.

Despite these problems, the citizens realized that their livelihood depended upon the success of the silver mines. In general, the council approved of any proposal that might benefit the mining companies. The town council, for instance, charged the mining companies only one dollar to erect trestles over the town's streets. The City of Cobalt Mining Company received permission to erect a headframe that encroached partly on Miller Avenue; and the town had no objections to the Nancy Helen mining on city roads as long as the company did not interfere with or endanger public travel. Significantly, when the government decided to put mining in the same taxation category as manufacturing, the council immediately wrote the Ontario government on behalf of the mining industry to explain

that because the assets of a mine were non-renewable, the two industries could not be equated.⁴²

Cobalt's relationship with the Coniagas Mining Company was a different matter. The Coniagas Mining Company had been formed in the spring of 1904 by W. G. Trethewey of Toronto and R. W. Leonard of St. Catharines. As a result of a dispute over ownership, mining on the company's forty acres was delayed. Prior to beginning mining operations, the owners persuaded the T. & N O. Railway Commission to grant them surface rights to a parcel of potentially valuable land prior to the public auction in 1905. To do this, the commission had to amend the town plan and close all the intervening streets. After the auction, Coniagas purchased all unsold lots and attempted to persuade the commission to include the mining rights to those streets that still remained open within their parcel of land. The request, however, was turned down.⁴³

An indication of the company's reputation in town may be seen in the December 1909 mayoralty campaign. Incumbent mayor H. H. Lang declared, "The Coniagas Company has tried to crush out the existence of the town since its inception; legal

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suits in the courts between the town and the said Company, and the latter at the present time appeals against paying its just rate of taxes, and in every way possible it has encroached on the streets of the town and has caused continual annoyance to owners of surface rights that happen to be over their mining property."⁴⁴ Following Lang's victory, his opponent, Milton Carr, told the *Cobalt Nugget* that the mayor's allegation that he was supported by the Coniagas Mining Company lost him the election.⁴⁵ In a confidential note to the secretary-treasurer of Coniagas, mine manager R. P. Rogers suggested in September 1912 that he withhold 50 per cent of the \$21,752 in taxes due Cobalt "as long as possible," and then pay only a portion of it. Evidently the company agreed, for that is what Rogers did.⁴⁶

Sanitation and Water Supply Problems

The most serious urban environmental consequence of the unplanned growth that erupted after the discovery of silver at Cobalt was the absence of suitable sewage and drinking water facilities, together with a lack of proper firefighting equipment. Almost every visitor who came to Cobalt observed the flimsy shacks scattered about the town and predicted that fire and epidemic were not far away. A magazine reporter visited Cobalt in the fall of 1905 and wrote that "the filth and refuse, or rather the essence thereof, from Cobalt practically all drains into the lake. The town is innocent of even an attempt at sanitary arrangements, which, at this early stage of the game, and until serious epidemic has wrought havoc, is, perhaps, only to be expected."⁴⁷ Likewise, Dr. Bell, the provincial medical inspector, was shocked by the absence of even the most rudimentary sanitary precaution: garbage was dumped about the town site; Cobalt Lake was infected with enteric bacteria; the local water supply was drawn from a spring well that had become a catchment for surface runoff; and there was only one pit closet for approximately every twenty-five residents. Before departing, Dr. Bell issued orders to clean up the townsite and posted warnings around Cobalt Lake.⁴⁸ However, when he returned in February, the situation was, if anything, worse. Some pit closets were overflowing onto the streets, and the only good spring well had been fenced in, and the owner was charging a dollar per month for access. As a result, many residents were drawing water from several "very questionable springs." He reported:

Garbage, wash water, urine and faeces were all mixed together in frozen heaps out in the open, on top of rock practically bare in its greater area. The cold has been steady so far and all is frozen, but when the thaws come the accumulations will all be washed into the valleys and the lake, polluting all water sources. If nothing is done, then in all human probability there will be a severe outbreak of disease in and about the settlement.⁴⁹

Although the town council spent \$24,000 on road improvements and \$7,000 on sidewalk construction, compared to less than \$10,000 on fire protection and proper sanitation in its first three years, the town was not entirely to blame. Petty jealousies and conflicts between the town council, the Coleman Township

Council (which was home to most of the mining companies' headquarters), and the mining companies prevented the adoption of any positive measures until it was too late. The major sanitation problems hinged on the fact that few people expected to remain in the area more than a year or two; and besides, it was almost impossible to sink wells and run sewers on the side of the rocky hill that was Cobalt. When the town was incorporated in 1907, the boarding houses were warned that if they did not remove their garbage from the streets they would be fined, and twenty men were set to work clearing the ditches. In all, the council expended over \$2,600 on sanitation. This total, however, was less than the money spent on road repairs, and the town was unable to reach an agreement with the nearby mining companies for a suitable place for a garbage dump.⁵⁰ Despite the efforts of the Cobalt Board of Health, the town was an unholy mess by the summer of 1909. A committee appointed by the Cobalt Board of Trade to examine the sanitary conditions was unable, it appeared, to find even one clean street in the whole town, and it reported that Lot 306 was "probably one of the most filthy spots existing in Canada to-day . . . many of the closets had streams of water running through them washing the contents not only onto the road, but under people's houses." Meat was left to decompose in the sun, garbage from second and third storeys was emptied out the windows into boxes in the alley, kitchen and laundry drains discharged into the streets, closets emptied under the sidewalks, and at some places the ground was "green with filth."⁵¹

Rather than travel three miles outside of town, or pay for private scavenging services, many homeowners used the open trenches left by the mining companies as convenient, if unsanitary, receptacles for their garbage. The board of trade recommended that homeowners install garbage barrels in the rear of their houses and that the town provide regular scavenging services. These suggestions were supported by the local board of health, which issued a strongly worded memo to the town council that "the sanitary condition of the Town is in a deplorable state and the present system is totally inadequate to cope with the situation."⁵² Most citizens, however, expected that the silver veins would soon become depleted and saw little reason to expend money on public works. At the north end of town, where the mining companies owned the surface rights to the land, renters could be (and were) evicted at a moment's notice and thus had no reason to improve their property.

Cobalt's sewage system, which covered only a small section of the townsite, was also in a sad state. The main sewer, which was useful only for carrying off surface drainage, flowed directly into Cobalt Lake. Because it also received the slop from hotels, laundries, and outdoor privies, it frequently became clogged and overflowed. Mine tailings and town sewage soon turned Cobalt Lake into a cesspool, with the result that much of the town's drinking water was either imported by train or brought in from Sasaginaga Lake by private water carters and sold by the bucket. By 1909, several water-carting firms had amalgamated

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and built a small pipeline to Sasaginaga Lake, allowing them to sell drinking water at exorbitant rates.⁵³

In July 1909, the predicted disaster struck. A typhoid epidemic swept through the town, causing sixty-seven deaths out of 1,100 reported cases. Cobalt was caught entirely unprepared. The only hospital was operated by the Temiskaming Mine Managers' Association, and the town had to erect several military hospital tents at the north end of Cobalt to house the stricken. Concerned about its reputation, the town initially denied the seriousness of the situation and refused the mayor of New Liskeard's offer of drinking water. When provincial health officers arrived in September, they were met with a wall of hostility, and the inspectors were forced to prosecute many defiant citizens who persisted in ignoring their warnings. Approximately fifty people, including two aldermen and the chair of the Cobalt Board of Health, were taken before the magistrate and fined for violations of health regulations.⁵⁴ By the time Dr. Bell returned to Toronto in October, over a thousand loads of refuse had been removed, and the mining companies had consented to allow the lighter garbage to be burned in their mining trenches at the outskirts of town. The municipal authorities were severely criticized by the chairman of the Ontario Board of Health, who stated that the epidemic could have been prevented "with the exercise of ordinary precautions on the part of the citizens and a proper oversight of the local Boards of Health concerned."⁵⁵

Cobalt, however, had been trying for several years to provide its citizens with proper sanitation and a source of pure drinking water. Because the town's financial resources were limited, in 1907 the town council had approached the provincial legislature for monetary help. As we have seen, in the same year Cobalt petitioned for an enlargement of its boundaries into Coleman Township to encompass the properties of some of the larger mines and thus expand its tax base. The petition was largely a ploy to force Coleman Township into helping Cobalt market its bonds. The plan seemed successful when the township promised to ask the government for a special act empowering them to guarantee Cobalt's bonds up to \$75,000 if the town would discontinue its agitation for an enlarged boundary. When the township proved reluctant to carry out its side of the bargain, the new town council (which had been re-elected by acclamation in 1909, primarily with a mandate to secure an adequate water supply) threatened to renew its petition. While these negotiations were being conducted, the town council engaged a Toronto engineering firm to prepare plans for a permanent waterworks system. But when the firm submitted its report in the spring, the town was shocked to learn that a waterworks system to Sasaginaga Lake would cost over \$50,000. As a result, the council engaged a private firm to install a temporary pipeline to Sasaginaga Lake until a permanent line could be laid. Spurred by a disastrous fire in 1909, the mayor wrote letters to Premier Whitney and to each member of the provincial board of health to enlist their support in soliciting financial aid for a permanent

waterworks system. The citizens, the mayor stated, were up in arms, and it was almost impossible to pacify them.

All that winter, the *Nugget* pounded home the need for pure water. The council was anxious to install a permanent water system, but work was slow, and the men went on strike when the town ran out of funds to pay their wages. Finally, in the spring of 1910, the silver mines themselves organized the Cobalt Water Commission to finance the waterworks.⁵⁶ When a permanent system was completed in January, the *Cobalt Nugget* reported that it was no longer necessary for the sanitary authorities to keep their "eternal vigil" on the town's "abominable wells" lest they be reopened.⁵⁷ Later in the year, the government authorized a \$50,000 debenture to enable the town to complete its sewage system. The town council now passed a series of by-laws that prohibited bathing in Cobalt Lake, notified mining companies when there were too many tenants on their land for good health, and required boarding houses to provide suitable toilet facilities.

Polluting the Waters

The *Ontario Mining Act* of 1903 that required prospectors to prove the existence of valuable minerals before they could stake a claim resulted in intensive prospecting at Cobalt. "Indeed," noted a 1921 provincial mining department publication, "it is probable that no mining area in this continent has ever been more closely or more laboriously examined for mineral than was the one at Cobalt, where a crack in the rock an inch wide, but filled with solid silver, might spell fortune for the prospector."⁵⁸ After the initial burst of mining, undertaken by individual prospectors, a round of consolidation occurred, as small interests were bought out by larger partnerships. These larger concerns brought more technological muscle to the mining process, and the environmental impact became more marked.

Although the provincial government reserved control over the pine trees on mining claims, mining companies could use any trees that were necessary for construction or for any purpose essential to the working of the mine. As the mines required power to operate the mills, run machine drills, and hoist the ore, the requirements of the first steam plants quickly ensured that the area around Cobalt that was not stripped of overburden by trenching was deforested for mining fuel in the years before the mines turned to coal.

The government regulation that required evidence of valuable minerals before approving a claim caused problems where lakes were concerned. Obviously, silver veins plunged under the lakes, but how could this be proven? Physical inspection was preferable to drifting, and several companies drained the water bodies on their property. As early as May 1905, the McKinley-Darragh Mining Company, with the consent of the other mines bordering the lake, asked permission of the T. & N. O. Railway Commission to lower Cobalt Lake by four or five feet. Several months later, some mines wished to divert the stream running into the lake. Although the commission rejected

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Figure 7: Clearing Nipissing Hill with high-pressure hoses

T. & N. O. Mining and Power Development Report, 1913

these proposals, it extended the railway station into Cobalt Lake in 1910.⁵⁹

On the hill on the west side of the lake, the Nipissing Mining Company employed a single-stage centrifugal pump with a 650 horsepower motor to rinse the surface soil off the bedrock. Working 120 hours per week, men removed the soil from the bedrock with a highly pressurized stream of water at the rate of 26 hectares per month in 1906. At the bottom of Nipissing Hill a horizontal section of ground was first washed bare and thoroughly examined, the next area farther up the hill was similarly cleared, and the covering material washed down the hill. In this fashion the entire surface of Nipissing Hill on the east side of Cobalt was bared.⁶⁰ Although few important veins were discovered, Nipissing was satisfied that nothing had been missed. Meanwhile, Nipissing Hill had been scoured to bare rock, and would remain so for eighty years.

The mills bordering Cobalt Lake dumped their tailings and cyanide solutions directly into the lake, so that the water was soon undrinkable. In addition, despite the town's sanitary laws, several small sewers emptied into the lake.⁶¹ Thus, by 1913, according to Dr. A. E. Munro, "There is fresh clear water flowing into the lake and there is a different class of water flowing out

of it. . . . The writer was speaking with one who acted formerly in the capacity of conductor of a ferry boat on the lake and he affirmed that in even his time (a few years ago) disagreeable odours existed all over the lake, but more manifest at some parts and seasons than at others." Munro continued that he had

met gentlemen here in Cobalt, who are prepared to make a declaration or an affidavit that they have perceived disagreeable odours emanating from the waters of the Lake. . . . four or five years ago many parties were then boating or canoeing for pleasure, or exercise on Cobalt Lake. Now no one thinks of doing so, and I am not aware of having seen anyone out in this sense on the Lake for the past year or two. . . . Formerly the water used to be tolerably clear; now it is a tainted or a yellow green, and is opaque, due largely or wholly to the powerful water hydrant of the Nipissing Mine clearing away the earth and clay from the surface of the Nipissing Hill. . . . Moreover, there is a portion of the south end of the Lake now being rapidly filled up by the slimes or tailings from the mills, which at the present rate of filling it would in any case transform the appearance of the Lake in 10 or 12 years.⁶²

Munro's pamphlet was written to endorse the draining of Cobalt Lake for mining purposes. In August 1905, the Ontario government had prohibited any future prospecting on Cobalt and Kerr lake beds. In December 1906, the government reversed

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Figure 8: Pumping of Cobalt Lake, looking south

T. & N. O. Mining and Power Development Report, 1916

itself, and the Cobalt Lake bed was sold to Sir Henry Pellatt's Cobalt Lake Mining Company for \$1,085,000.⁶³ The highest bid for Kerr Lake, however, was only \$52,000, and the government called for additional tenders. The Crown Reserve Mining Company's offer of \$178,500, plus a royalty of 10 per cent on the ore mined, was successful. In 1913, the Cobalt Lake Mining Company wanted to drain Cobalt Lake to prospect for silver veins, but it needed the town's permission. The town council agreed to allow the mine to drain the lake on the condition that it consent to be annexed by the town, which it did.⁶⁴

The final verdict by Mining Commissioner T. E. Godson allowed the company to "keep the said Lake dewatered during the life of any mine" and for as long as required. The Cobalt Lake Mining Company was also given permission to use or divert any of the rivers and streams emptying into or out of Cobalt Lake, including Pickerel, Brief, and Short lakes. On the south end of the lake, the McKinley-Darragh Company was to "continue to have the right to discharge the water used by it for the purposes of its mills or any part thereof together with its tailings into Cobalt Lake."⁶⁵ The next year, the water from Cobalt Lake was pumped 1,100 metres through a 50-centimetre pipe into Farr Creek, and the town was supplied with an alternative water supply through Brief, Short, Pickerel, and Bass lakes, which formed a chain with

Cobalt Lake. Six years later, the mining company removed over 320,000 tons of tailings from the lake bed and sent them to be de-slimed and cyanided.⁶⁶

Kerr and Peterson lakes received similar treatment. At the southeast end of the Nipissing property the mining company dug a ditch around Peterson Lake and partially drained the lake in search of silver veins. The Crown Reserve and the Kerr Lake mining companies lowered Kerr Lake in 1907 and emptied the remaining 10 metres in 1913. The Kerr Lake mine manager's report illustrates the lack of environmental sensibilities: "At one period when most of the clear water had been pumped away, some embarrassment was caused by the large number of fish which had been smothered by the mud and came to the surface. Great numbers ranging in size from small perch to eels and pike 30 inches long lay everywhere, and even clogged the suctions and entered the valves. Fortunately, the situation was well met by the gathering of great numbers of scavenging gulls who soon disposed of the fish, to the mutual advantage of themselves and the operations."⁶⁷ Similar to the Nipissing mine, Peterson Lake Silver Cobalt Mining Company employed hydraulic machinery to wash the soil off the bedrock surrounding Peterson Lake and flush it into the water. It then dug a 300-

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metre ditch at the north end of the lake and drained the water from Peterson and Cart lakes into Farr Creek.

The major by-product of the concentration and chemical extraction of silver was physical waste that was dumped as tailings. Much of the waste was dumped in the area's bodies of water; in addition, ore-processing activities on the Nipissing Mine property damaged Cobalt Lake itself and necessitated an alternative source of water for the town. Cobalt Lake also suffered from the physical impact of new extraction techniques. The development of new milling processes at Cobalt extended the life of the town. By 1912, the combined shipments of concentrates and bullion surpassed the production of high-grade ore. Thereafter, milled products became the chief source of revenue. The residue from these mills left the landscape scarred. Munro's 1913 account included the observation that "there is a portion of the south end of [Cobalt] Lake now being rapidly filled up by the slimes or tailing from the mills, which at the present rate of filling it would in any case transform the appearance of the Lake in 10 or 12 years."⁶⁸

Tailings were also dumped in most of the region's other watercourses and particularly in two nearby lakes, Crosswise Lake and Peterson Lake. Between 1905 and 1993 the lakes received millions of tons of mining waste that included arsenic, mercury, and cyanide. The lakes' beds were flattened by the addition of the waste, and Crosswise Lake was shortened by some 300 metres as a result of waste piles deposited along its shores.⁶⁹ In 1965 a series of remedial efforts were undertaken in Peterson Lake, but they worsened the situation by exposing and stirring up heavy metal deposits and providing a vector for them to enter the food chain. A recent study has concluded that the majority of the heavy metal contaminants now lie beneath a thin layer of sediment and that "the most effective way quickly to bring about remediation is to either leave the tailings alone or to add clean sediments to these lakes and bury the tailings."⁷⁰ Ironically, with most mining activities now ceased at Cobalt, it is the environmental impact of the mining that remains their most obvious consequence; and in terms of pollutants, at least the conclusion of environmental scientists is that the best way to sequester those pollutants is simply to re-bury them.

Conclusion

In an important 1970 paper in *Economic Geography* Homer Aschmann outlined the natural history of mining in South America, and more importantly of any mine in general. He concluded that mining and mines have lives that pass through the stages of discovery, development, extraction, and abandonment. Each of these stages, he argued, was conditioned by local circumstances—the nature of the deposited material in question, the market price of the material in comparison to its extraction costs, and so on.⁷¹ In offering this schema, Aschmann was also creating a deterministic perspective: mining activities that have happened in the past, or are continuing today, are simply variations on an extractive theme. That is of course true, but only insofar as it relates to mining directly.

What happened to the communities that grew up on or around mines was a question left untouched by Aschmann, as was the question of the environmental impact of mining activities. It is clear, though, that communities do not necessarily suffer the same fate as the mining activities that spawned them. Some, it is true, wither as deposits are exhausted and mines close, but others manage to redirect their urban energies to new productive endeavours. This is what the early political leaders in Cobalt believed they were doing. In 1912 Mayor Lang asserted, "The old idea that Cobalt would amount to nothing but a mining town, has given place to the knowledge that Cobalt will be a business and industrial centre long after the mining is done."⁷² However, when the price of silver declined to pre-war levels and below in the 1920s and 1930s, the town was particularly hard hit, and the mining camp that had grown to become a major town and the world's fourth-largest silver producer declined to a few thousand inhabitants.⁷³ Today, Cobalt looks much the same physically as it did in 1914, and until very recently many of its 1,500 citizens had to rely on government assistance.

Was this decline inevitable? In one sense, we may argue, like Aschmann, in the affirmative. Cobalt is a classic case of a boom-and-bust mining cycle, of a town founded on a short-term and finite activity. In its urban geography Cobalt was not a municipality that should have inspired hope for the future, despite Lang's optimism: thanks to its extremely rapid development and settlement patterns, Cobalt was neither coherently planned nor suited for activities other than mining. Thanks to the depositional nature of the silver in the area, together with the provincial stakeholding legalities, Cobalt did not—could not—develop as a one-company community, as was very often the case in the Canadian coal-mining industry, for example. Instead, a sort of semi-legal anarchy reigned at Cobalt, with mining corporations evicting banks from their property, and individuals trumping corporations for prospecting rights to extremely lucrative stakes. Likewise, and entirely counterintuitively, the financial circumstances of Cobalt were thoroughly unpredictable: in the midst of near-incalculable wealth, the town council was habitually in debt and could not raise the funds necessary to provide even the most basic of municipal services to its inhabitants. No party took much interest in the long-range future of Cobalt. No one—not the mine owners (who wanted to maximize profits and little else), not the miners and their families (who only wanted to get rich and leave), and not the political authorities (who were busy fighting competing interests for their rights)—paid much attention to a future beyond the silver. So the roads remained steep and tortuous, mining operations scarred the landscape and disrupted normal municipal activities, and the citizens were left without adequate fire, water, and sanitary facilities.

It was not until 1909, when fire and epidemic swept through the town and further disaster stared them in the face, that the people finally became concerned about the deteriorating situation; even then, several years passed before adequate funds were made available to allow the town council to complete

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the needed public works. The town's haphazard growth had important long-term consequences. When the mines closed, Cobalt was not able to redirect its energies into new productive endeavours, precisely because it was not well-suited for anything but mining.

Ironically, that inability may have borne long-term fruit. Thanks to its lack of secondary development, Cobalt is today a prime attraction for those who wish to see the direct physical and environmental effects of mining from the turn of the twentieth century. Cobalt now contains a federal Heritage District, which encompasses the original "silver camp" and is protected by law. In 2002 it was officially named the "Most Historic Town in Ontario," and its centenary celebrations in 2003 drew tens of thousands of visitors from around the world. The remains of the silver boom form perhaps the best intact physical evidence of hard-rock mining in the early twentieth century, perhaps the most crucial phase of the industry in Canada. This is entirely fitting, given the remarkable—and often overlooked—contribution of Cobalt Camp to the creation of one of Canada's most significant industries.

Notes

1. Edward, Prince of Wales, referred to Cobalt as a "grey wee town" on his visit to the area in 1919. See Charlie Angus and Brit Griffin, *We Lived a Life and Then Some: The Life, Death, and Life of a Mining Town* (Toronto: Between the Lines, 1996), 49.
2. Prospectors and Developers Association of Canada, "The Cobalt Discoverers," *The Canadian Mining Hall of Fame*, <http://www.halloffame.mining.ca/halloffame/english/industry.html>.
3. *Canadian Mining Review*, December 1897, 335–336.
4. Doug Baldwin, "A Study in Social Control: The Life of the Silver Miner in Northern Ontario," *Labour* (1977): 79.
5. Bilson was a prolific investigator of the cholera phenomenon from the perspective of social and intellectual history. For examples of his analysis of cholera's social impact, see his "Cholera!" *Canada: An Historical Magazine* 1, no. 2 (1973): 41–56; his "Two Cholera Ships in Halifax," *Dalhousie Review* 53, no. 3 (1973): 449–459; and his "Canadian Doctors and the Cholera," *CHA Historical Papers* (1977): 104–119.
6. Norman E. P. Pressman and Kathleen Lauder, "Resource Towns as New Towns," *Urban History Review* 1, no. 78 (June 1978): 78–95.
7. For an excellent overview of the relationship between urban history and environmental history as it pertains to the United States, see Joel A. Tarr, "Urban History and Environmental History in the United States: Complementary and Overlapping Fields," in *Environmental Problems in European Cities of the 19th and 20th Century*, ed. Christoph Bernhardt (New York: Waxmann, Muenster, forthcoming). An earlier draft of the article is available from H-Net at <http://www.h-net.org/~environ/historiography/urban.htm>.
8. An important new addition, however, is Kathryn Morse's outstanding *The Nature of Gold: An Environmental History of the Klondike Gold Rush* (Seattle: University of Washington Press, 2003). Even here, in the foreword to what is a narrative discussion of a definitively Canadian event, William Cronon argues that "the movement of U.S. citizens into the Canadian Far North was so enormous that history books usually commit a temporary act of narrative imperialism by annexing the Yukon to the United States just long enough to tell this story." Cronon, "Foreword," *Nature of Gold*, xi.
9. H. P. Davis, *The Davis Handbook of the Cobalt Silver District* (New York, 1910), 13; Ontario, Provincial Bureau of Mines, *Annual Report*, 1906.
10. Roy M. Longo, ed., *Historical Highlights of Canadian Mining* (Toronto: Pitt Publishing, 1973), 71.
11. *Ibid.*, 68.
12. Ontario, Bureau of Mines, *Annual Report*, 1906, Baldwin private collection.
13. Kathryn Morse has described a similar process, which she called "disassembly" of the land, in the Klondike gold rush. Morse, *Nature of Gold*, 93.
14. G. L. Cassidy, *Arrow North: The Story of Temiskaming* (New Liskeard, ON: Temiskaming, 1976), 138–139. Major mining interests nevertheless trenched widely also: in 1908 and 1909 the Nipissing Mine alone dug over one hundred kilometres of trenches on its property.
15. The Sanitary Journal of the Provincial Board of Health of Ontario, *Annual Report*, 1905, Baldwin private collection.
16. *Ibid.*, 4 Dec. 1907 and 12 Jan. 1908.
17. *The Haileyburian and Temiskaming Mining Journal*, 2 Mar. 1906.
18. Cobalt Town Council Minutes, 12 Jan. 1907, Cobalt Township Office.
19. *Cobalt Nugget*, 20 Aug. 1909.
20. Englehart to Whitney, 5 Dec. 1905, J. P. Whitney Papers, Ontario Archives.
21. This provision was passed in April 1908 and was to apply only to Cobalt, Ontario, *Statutes*, 1908, 414–415.
22. *Cobalt Nugget*, 12 Aug. 1909 and 12 Nov. 1912; Municipal Audit Books, 1910–1913 (in the possession of David Duke).
23. Cobalt and Coleman Assessment Rolls, 1913, Baldwin private collection.
24. Cobalt Town Council Minutes, Jan. 1907, Cobalt Township Office.
25. Leslie McFarlane, *A Kid in Haileybury* (Cobalt: Highway Book Store, 1975), 38. McFarlane lived in Haileybury and wrote many of the books in the Hardy Boys series.
26. Michael Barnes, *Looking Back: Cobalt, Ontario* (St. Catharines: Looking Back, 2004), 61. The T. & N.O. Railway Commission approved Nipissing's request to erect this tramway above the railway tracks on 20 Oct. 1911. Minutes of the Temiskaming and Northern Ontario Railway Commission, acc. 11444, RG 14, Ontario Archives.
27. *Cobalt Nugget*, 28 May 1908.
28. *Cobalt Nugget*, 6 Feb. 1909.
29. Cobalt Town Council Minutes, 21 Mar. and 2 Apr. 1907, Cobalt Township Office.
30. *Cobalt Nugget*, 10 Sept. 1910.
31. Cobalt Town Council Minutes, 9 May, 17 May, 25 May, 29 Oct. 1907, Cobalt Township Office.
32. See Cobalt Town Council Minutes, 15 April, 17 June, 5 Aug. 1908; 26 July 1909.
33. *Haileybury Silver City News*, 24 Dec. 1907.
34. *Ibid.*, 10 Feb. 1908.
35. *Ibid.*, 1 April, 17 June, 30 June, 15 July 1908.
36. *Ibid.*, 17, 20, 22 July, 5 Aug. 1908. Even then, Coniagas left its trenches on Argentite Street in "dangerous condition."
37. *Cobalt Citizen*, 12 June 1909. By the end of 1907 the mining companies owned the surface rights to 80 per cent of the town site.
38. Cobalt Town Council Minutes, 17 July, 8 Sept. 1908.
39. Coniagas letter book, 30 Oct. 1908, Cobalt Miners' Museum.
40. *Cobalt Citizen*, 12 June 1909.

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41. Cobalt Town Audit 1911, in possession of David Duke.
42. Cobalt Town Council Minutes, 18 May, 29 Oct. 1908.
43. Leonard and Trethewey to Whitney, 20 Apr. 1906, J. P. Whitney Papers, Ontario Archives; C. B. Smith (chair of the T. & N. O. Railway Commission) to Whitney, 23 Apr. 1906.
44. "A Letter from Mayor Lang to the Citizens of Cobalt," 27 Dec. 1909, Cobalt Miners' Museum Scrapbook.
45. *Cobalt Nugget*, 4 Jan. 1910.
46. Coniagas Scrapbook, 24 Sept., 21 Oct. 1912, Cobalt Miners' Museum.
47. "Adventures and Exploration in Ontario's Far North: No. V.—Cobalt as She Is," *Canada First: The Canadian Preference League Magazine* (Oct. 1905), 433.
48. Ontario, *Provincial Health Report*, 1905, 185, Baldwin private collection.
49. Ontario, *Provincial Health Report*, 1906, 98.
50. In fact, Cobalt was billed for dumping its rubbish on the Silver Queen Mining Company's property without permission. Coleman Township Minute Book, 4 June 1907.
51. Cobalt Board of Trade to the Town Council, June 1909, Cobalt Museum Scrapbook.
52. Cobalt Board of Health Minutes, 21 July 1909, Cobalt Township Office.
53. Ontario, *Board of Health Report*, 1909, 30, Baldwin private collection.
54. *Ibid.*, 32, 41.
55. *Ibid.*, 34.
56. The commission was operated by a committee consisting of the mayor of Cobalt, the reeve of Coleman Township, and the manager of the Nipissing Mining Company—a mine that had no direct interest in Sasaginaga Lake.
57. Ontario, Department of Public Works, *Annual Report*, 1911; Cobalt Water Works Minutes, 6 Jan. 1911, Cobalt Township Office.
58. *Twenty-Five Years of Ontario Mining History*, bulletin no. 83 (Toronto: King's Printer, 1932), 53.
59. Cobalt Lake was only two kilometres long and two hundred to four hundred metres wide, and but thirteen metres at its deepest. The Temiskaming and Northern Ontario Railway Commission Minutes of Meetings, 13 Dec. 1905; 15 May 1906; 1 June 1906; 19 Jan. 1910, acc. 11444, RG 14, Archives of Ontario (hereafter cited as AO).
60. *New York Engineering and Mining Journal*, 24 Nov. 1906, 968; A. A. Cole, *Mining Practice in the Cobalt Area* (Haileybury School of Mining: Haileybury, 1926).
61. A. E. Munro, "An Era of Progression: The Draining of Cobalt Lake and Its Effect on the Town" (pamphlet, Cobalt Miners' Museum, 1913).
62. *Ibid.*
63. Whitney General Office Records, J. P. Whitney Papers, Office of the Premier, reel MS 1649, RG 3-2, AO.
64. Munro, "The Draining of Cobalt Lake," and Cobalt Town Council Minutes, 8 July 1913.
65. T. E. Godson, "Cobalt Lake Mining Company, 1913," 23 Feb. 1914, Mining Lands Correspondence, box 2, RG 1-360-0-15, AO.
66. T. & N.O. Engineer's Report, 1920, 25.
67. Robert Livermore, "Draining Kerr Lake, Cobalt District, Ontario," *Journal of the Canadian Mining Institute*, 1914, 180.
68. Munro, "An Era of Progression."
69. Eduard G. Reinhardt, Andrew P. Dalby, Arun Kumar, and R. Timothy Patterson, "Arcellaceans as Pollution Indicators in Mine Tailing Contaminated Lakes near Cobalt, Ontario, Canada," *Micropalaeontology* 44, no. 2 (1998), 131–132.
70. *Ibid.*, 139.
71. Homer Aschmann, "The Natural History of a Mine," *Economic Geography*, 46, no. 2 (Apr. 1970): 172–189.
72. *Cobalt Nugget*, 23 Jan. 1912.
73. In its peak year, 1911, Cobalt's mines accounted for 34 million ounces of silver. In total the community's output of silver neared a half-billion ounces. At present silver deposits remain in the area, but the commodity's low price prevents their development.