

International

Europe was swept by a wave of liberalism and democracy with upheavals, often violent, in many countries. Emperors, kings, princes, and even the pope fled. This was an unprecedented revolution. It was followed by a wave of counter revolution and repression. All of these events were followed with interest in Canada.

Having recovered from the Napoleonic wars and the subsequent political realignments flowing from it, European nation states emerged with plans for economic growth, trade, and foreign possessions. Economic nationalism was driven by the industrial revolution and its demand for markets and natural resources. The Industrial Revolution transformed Britain with the urban population exceeding 50% by 1850. Cities grew and the industrial workers were oppressed and without hope. While production and productivity soared and profits doubled, wages remained unchanged. Disease was rampant due to the overcrowded, unsanitary conditions that gave rise to cholera, typhus, and tuberculosis. The plight of the workers in Britain was recorded by Marx and Engels which led to the call for workers to “revolt, you have nothing to lose but your chains”. Britain was a very different place from that several decades earlier and it led the world in technological changes as reflected in the World Fair held in London in 1851.

Across Europe the workers did revolt and communist governments were created. Workers in England also rose up to protest their situation but the riots were put down by troops with a good deal of bloodshed. The workers continued to drown their sorrows in alcohol, the cheap gin in Britain that enabled workers to forget their troubles. It was at this time that the phrase “Drink, the curse of the working man” was used. More recently students use a variation of it, “Work, the curse of the drinking man”.

One of the most dishonourable events in this period was the Opium Wars of 1839-42 and 1856-60. Britain wanted to obtain Chinese goods as there was a large market in Europe for these products. The Chinese Emperor did not want to open up trade and there were few products that the Chinese wanted from the West. Britain had to pay for Chinese goods in silver and as the quantities of tea demanded in Britain soared there was difficulty in getting enough silver to pay for the goods. In order to create a market for trade goods that could be traded for desirable Chinese products Britain smuggled opium from India into China through its trading posts. When China objected and tried to stop the trade Britain went to war to force the Chinese to open up the country for trade and established trading posts along the coast. The treaty was very unfair and opened up China to other European countries who established trading posts in various cities. These actions did much to discredit the Western countries in the eyes of the Chinese.

The potato famine in Ireland, 1845-48, caused by a blight resulting in the potatoes rotting in the ground, was a terrible disaster that influenced immigration, economic policy, and demographics. The government in Britain believed that the free market would sort out the problem and did little until it was too late. The 8 million people in Ireland were dependent on the crop and when it failed millions were hungry. In their weakened condition many died of disease as well as

starvation.

Owners of estates with little income from crops were anxious to have their tenants leave rather than have to support them. Some shipped people to Canada in ships that had little or no food, poor sanitation, and overcrowding. It is estimated that a million and a half died of starvation or disease while a million and a half who could afford the fare, emigrated, mainly to the United States and Canada. Many of those who fled to North America on crowded ships died from typhus or other infectious diseases en route. In Canada there were quarantine facilities, especially in Quebec City, where many arriving immigrants died.

In China the Taiping Rebellion took place 1850-64. This was a religious upheaval based on a strange form of Christianity claimed to achieve a Great Peace. The rebellious army seized cities and provinces. The war with government lasted 14 years with over 20 million being killed. Western armies in China as a result of the Opium wars were involved in some of the battles. This rebellion further weakened the central government in China in its dealings with the countries that were establishing trading centres in China.

In 1854 France and England went to war against Russia. Although it was England that declared war it was really the British Empire that was at war as the colonies were required to participate. The main battleground was the Crimean peninsula although there were other battles around the world. The Crimean War is best remembered for the Charge of the Light Brigade and the wonderful work of Florence Nightingale in creating the profession of Nursing. Another important event was the creation of the Victoria Cross for bravery, the medals being cast from Russian cannons that were captured. Some Canadian participants also took part in the battle, one being William Hall of Nova Scotia. He was serving in the British navy aboard the HMS Shannon. While his time in the Crimea was uneventful, he then sailed to India to take part in the Indian Mutiny in 1857 and was awarded the Victoria Cross in 1857 for his part in a siege of a city where he bravely dashed forward and placed an explosive charge at the gate allowing it to be blown open for the troops to seize the city. After the war he returned to farming in Nova Scotia. He was the first Canadian and the first black man to receive the Victoria Cross. This was commemorated in Canada by the issue of a stamp in 2010. This medal for exceptional bravery was also awarded to some pharmacists. In Halifax there is a large monument in a cemetery to those who fought in the Crimean War. An interesting side light is that despite the British -Russian enmity, the Hudson Bay Company and the Russian company trading out of Alaska maintained business as usual.

The significance of the Crimean war in terms of health care was the demand for a reform of the way that soldiers were treated. The treatment of British soldiers was disgraceful as there was inadequate medical care and the hospitals were unsanitary without wholesome food. The British government was under great pressure to improve things and engaged Florence Nightingale to go beyond the establishment of nursing services to conduct a review of health policy in the British Army which included accommodation, treatment services, and ambulance service during war time. These were important changes in the Army that accompanied other changes such as the change from red coats to darker colours of the familiar khaki uniforms and much more emphasis on training for war. Based on the Crimean experience the use of ambulances and care of the wounded on the field were greatly improved.

The Sepoy or Indian Mutiny in which the local troops mutinied for religious reasons, later described as the First War of Independence, was a mass insurrection that lasted several years as Britain had few troops in India and it took time to send more troops to India. The significance of the mutiny was that Britain sent troops to fight to recover the states that mutinied and as a result took over responsibility for governing India from the East India Company. This was occurring about the same time (1868) that Canada purchased the Hudson Bay Company and incorporated the territory into the new Dominion. Other countries such as France, Belgium, and the Netherlands also had huge private companies that occupied large areas and often treated the inhabitants poorly. These countries also took over the responsibilities from the companies and ruled them directly as part of the colonial expansion of the time. Russia was also expanding to the east and south. This was also the time when the United States purchased Alaska and Canada began to deal with the problem of a northern border, a contentious issue with the discovery of gold in the Yukon and an influx of American miners.

The United States Civil War, 1861 to 1864, was a major war with thousands killed and displaced. As a close neighbor Canada was affected by the war. It was a major threat to Canada's territorial integrity as there was now a major army on its border. Britain sent 14 000 troops to North America and reinvigorated the militia to protect the colonies from American invasion and to give some moral support to the Confederacy. Britain supported the Confederacy in order to obtain cotton for their mills as cotton fabric was a major industry. This military preparedness was expensive with the costs of troops and fortifications. This led Britain to give more self-government to Canada (Upper and Lower) and to support the concept of a federal self-governing state linked to Britain but not as a colony. The term British Empire was beginning to be replaced with commonwealth to describe the relationship.

Because of the proximity to the United States and the international border, Canada had a minor, continuing role in the U.S. Civil War. Several regiments were recruited from Canadian volunteers for the Union Army. In addition, there was a lot of skullduggery going on in Montreal with Confederate agents buying contraband material and plotting assassinations. The Northern States were blockading the South and there were many sea battles in addition to the land battles. Some of the first battles of iron clad ships occurred (The Monitor and Merrimack) and there were reports of a submarine being used.

Advances in Science

The dominance of British merchant ships in trade and Royal Navy presence around the world contributed to the expansion of the colonial empire as no country was able to challenge British hegemony. To aid in the colonial expansion and to guide ships in foreign waters there was a systematic expansion of exploration and mapping that served to meet the needs of government and the navy. A number of ships were dispatched on expeditions, often lasting for several years. One of which was Sir John Franklin's expedition to find the Northwest Passage in 1847. His ships were lost in the Arctic and the crew all died. Recently the graves of Franklin and some of

his crew were found. A ship, HMS Investigator, sent to find the lost expedition was also sunk but was located in shallow water in good condition near Bank's Island in 2010. The position of the ship indicates that Franklin had found the Northwest Passage but it was not a navigable route.

A few years earlier a ship, HMS Beagle, was sent out to map the coasts and harbours of a number of countries (1831-36). Aboard was Charles Darwin who collected detailed information on biological specimens in various countries around the world. Based on his discoveries on this trip he published a number of papers and a book, *The Origin of the Species* (1860), that initiated a long and continuing debate over the evolution of species. This was initially seen as a religious heresy as it inferred that humans also evolved but when combined with many other enlightened scientific discussions at the time it became part of the general spirit of inquiry. This was a major base for subsequent research. The concept of evolution was later applied to social systems, known as laissez-faire capitalism which was the opposite of socialism and communism.

Although Priestly first described the production of soda water (1772) by impregnating water with fixed air, the manufacture of carbonated water began in Geneva in 1790. The use of baking soda and tartaric acid to produce soda water became widespread. This formula had some laxative properties. Later, carbon dioxide under pressure was used to make soda water. Seltzer and soda water were considered to be medicinal and became popular leading in turn to their use as a social drink in Europe and later North America. Soda fountains became popular in the United States then in Canada at the end of the century and their popularity continued to grow through the 19th Century.

The tremendous advances in chemistry enabled scientists to identify many of plant constituents and to search for medicinal properties in plants. It was in this context that the study of the cola nut began. The stimulant property of cola nuts was published in 1864 and shortly thereafter caffeine was identified as the active ingredient, about 2% by weight. In comparison, coffee has ½-2% caffeine and tea ½-3½% caffeine. This led to the use of cola extract as a stimulant medication in soda water and later in soda fountain beverages in pharmacies.

Transformation of Canada

Canada was mostly rural with few cities and a population thinly stretched across a continent. The western part of the country, which consisted of everything west and north of Lake Superior, was ruled by the Hudson's Bay Company. The eastern part consisted of the colony of Canada (Upper and Lower) which contained most of the population. By 1842 the population of Upper Canada had grown to almost half a million. Along the Atlantic were the smaller colonies: Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland.

Prior to Confederation, the Atlantic colonies of Nova Scotia, P.E.I., New Brunswick, and Newfoundland were much closer geographically and economically to the American colonies and Great Britain. There was much more communication and trade with Britain and the American colonies than with Upper and Lower Canada as the commerce and transportation to the Great

Lakes was quite small and slow. Sailing was improving steadily with a number of technological changes and the period 1840 to 1870 was the golden age of sailing ships of which Canada had many. This gave a transatlantic economy to the region which made it prosperous and stimulated trading voyages around the world. This prosperity and orientation to the East rather than the West lessened the interest of the Atlantic Provinces in a union with Canada.

Internal trade was slow to develop in the pre-confederation period. The St. Lawrence River was a long route to markets and difficult to travel as it was covered in ice during the winter and in the summer the river was impassable in places requiring the portage of goods. All of this to reach small markets. Nova Scotia with a population of 330 000 in 1861 was by far the largest Atlantic colony and had a balanced economy of fishing, farming, coal, and iron. P.E.I. had only agriculture and had been split off from N.S. as a separate colony in 1769 by the 67 landowners who had each received grants of 20 000 acres. The colony was to be self-financing but the disruption caused by the American Revolution resulted in Britain having to fund the colony and the issue of land ownership dominated politics for a long time. New Brunswick depended mainly on forest products and was adversely affected by the introduction of free trade and periodic depressions. The Newfoundland fishing industry was fairly stable but did not generate a lot of revenue. Until a rail link was built to join the Atlantic Colonies and Canada their interests were to the East and South, not to the West.

Transportation was a problem in Canada due to the distances and rugged terrain. Travel from Toronto to Montreal in the winter of 1840, a distance of 376 miles, took 36 hours by sleigh with 24 changes of horses. Water transportation was a key factor in economic growth with most of the communities and farms along the lakes and rivers. The reliance on agriculture, forestry, and mining created a need to move massive amounts of product and this required ships. Steam powered ships hastened the pace of immigration and economic growth but the need for portages with the trans-shipment around rapids posed a major problem as ships and cargos became larger. Initially the Erie Canal in the United States enabled Canadian products to be moved cheaply to the Atlantic Ocean through New York but the building of the Welland Canal in 1827 allowed an all Canadian route. The volume of grain shipped from Upper Canada increased ten fold from 1838 to 1847 with Britain as the major market. It is estimated that Britain depended on grain imports for 40% of its requirements. Water was the major transportation system until the advent of the railways and this limited the distance from water that the farms and communities could be established.

It was only with the building of the railroad that travel became more rapid and less difficult. The early railroads were built in the Atlantic Provinces and Upper/Lower Canada but the sparse population and meager trade made them expensive to use and there was not enough traffic to make them profitable. In 1850 there were only 60 miles of track. With Confederation and the need to link the provinces the government subsidized railroads resulting in 2 188 miles of track at a cost of almost \$148 million. The presence of rail transportation was a major stimulus to industrial development in Canada. Reports of scientific expeditions to the West indicated that the area was suitable for agriculture and that settlements should be encouraged once the railway was built. The gold rush in British Columbia added further pressure for a railway.

There was further pressure for colonial status of British Columbia when in 1857 gold was found

in the Fraser and Thompson Rivers leading to an influx of miners, mainly from the United States. Two years later, in 1859, the larger Cariboo Gold Rush began requiring a road to the gold fields. Until a wagon road was built supplies were carried by camels, horses, mules, and donkeys.

While there was a clear case for British Columbia to become a province of Canada it was unclear what should be done with the large, empty space between Manitoba and British Columbia that Canada had purchased from the Hudson's Bay Company. To examine the future of this territory Britain sent out the Palliser Expedition in 1857 and the Canadian Exploring Expeditions to assess the prairie area for agriculture and resources. It was in this era that Britain, with colonies around the world, became the leader in sending expeditions to map and explore the world.

In Canada, the Union of Upper and Lower Canada was proclaimed in 1841. The borders of Canada began to be negotiated with the Webster-Ashburton Treaty resolving the New Brunswick and Canada border in 1842 and the Oregon Boundary Treaty setting the western boundary along the 49th parallel in 1846. This left only the western boundary with Alaska to be resolved.

Responsible government was initiated first in Canada in 1847 with a wide franchise, then Nova Scotia in 1848 with P.E.I. soon after. The development of responsible government in Canada based on equality of races, acceptance of all religions, democracy, and a wide franchise was controversial and was opposed as being disloyal to Britain and the Governor. One significant change was that referring to inheritance, primogeniture the passing of assets to the first born son was discontinued and the more equitable system of passing inherited assets to all the children in the family. The demand for government responsible to the people led to riots and the burning of the Parliament Buildings. Canada's avoidance of armed repression by government, as had occurred in 1837-38, and compromise in many areas began a process of inclusion that led to a stable, progressive system that endured. In comparison with Europe where repression reemerged, these changes remained in place and formed the basis of the new country being formed. It was the united colonies of Upper and Lower Canada that drove the process to create a larger country. In 1864 a conference to promote Confederation took place in Charlottetown. It was followed in 1867 by the joining of 4 colonies into a country named Canada (Nova Scotia, New Brunswick, Upper and Lower Canada were the ones entering Confederation on July 1). Tilley the pharmacist from New Brunswick who took part in Confederation as the representative of New Brunswick is reported to have looked at his open bible and read the statement about a dominion "from sea to sea to sea" and urged the Confederation to name the country The Dominion of Canada.

In response to the influx of American settlers into the Columbia Territory, from California to Alaska, the Hudson's Bay Company moved their coastal headquarters from the mouth of the Columbia River (Fort Vancouver, not to be confused with the city of Vancouver, B.C.) to Camosun (now Victoria, B.C.) a trading post on Vancouver Island in 1843. This was a major move as the company had extensive buildings, farms, and stock raising facilities around Fort Vancouver. At this time The Hudson's Bay Company leased all of Vancouver Island from Great Britain and part of coastal Alaska from Russia. Vancouver Island became a Crown colony in 1849 and the mainland a colony in 1858. The mainland area had been known as New Caledonia but was now known as British Columbia (the British side of the Columbia River) with the capital at New Westminster (Westminster is the seat of government in Britain), 1859-68, and its borders were much the same as now with the 49th parallel being negotiated as the southern border in

1846. The two colonies united in 1866 and soon afterwards the capital was declared to be Victoria. The population of Victoria grew rapidly in the early 1860's, especially from miners who had come to the gold rush along the Fraser River. In 1871 British Columbia became part of Canada.

Health Developments

The American Civil War with its blockades and embargos resulted in severe trade disruption. It was especially acute for medication as most of the medicine in the United States was imported. The war casualties and the spread of disease from the concentration of troops created a tremendous need for medication. Local production began and a pharmaceutical industry started in the United States. Dr. Squibb, for example, began the production of ether and other medication and promoted them on the basis of high quality. This was in the days before regulatory controls and before firms placed high quality above high profits from adulterated products. Many of the troops relied on home remedies and patent medicines. Turlington's Balsam of Life, a patent medicine, was still popular in the United States a century after its introduction. Sickness was a major problem during the war. Although it was generally known that sanitation was important, it was disregarded all too often, especially in the hospital areas.

Technology advanced quickly with the introduction of telegraphy in 1837 (particularly important in Canada due to the long distances), photography (1839), and the use of ether in surgery (1847). In the pharmaceutical world, books on therapeutic remedies appeared which contained formulae endorsed by prominent physicians. The purpose of the books was to guide physicians and to steer away from quack remedies. One of the best known physicians, John Paris of London, is often quoted: "Every medicine prepared by a secret process and sold for private advantage of an individual is a nostrum." This battle would continue for another hundred years.

Canada at this time was still largely rural and agricultural with the cities and towns largely built of wood and heated with wood burning stoves and lighting from candles and oil lamps. As a result, during this period there were a number of fires that destroyed large parts of cities. In 1866 fire destroyed 2 500 homes in Quebec City leaving 18 000 homeless. This kind of misfortune tended to be followed by disease outbreaks. In Chicago (1871) a massive fire left 90 000 homeless. Because legend has it that Mrs. O'Leary's cow kicked over the lantern and caused the fire, this fire is widely known while other major fires are less known. New Westminster, at one time the capital of B.C., had a major fire in 1899 which destroyed the city except for two buildings.

A major advance in health care was the introduction of anesthesia. Prior to 1850 there was little elective surgery. Most surgery was military and consisted of amputations. The first use of an anesthetic was nitrous oxide. It was introduced as a party drug (ether parties) to make people woozy. This history impeded its use in medicine. In 1842 it was used for dentistry with poor results (people were asked to breathe the ether). Later it was administered with a mask and was used for tooth extraction. It appears that ether was first used in Scotland but in 1848 Dr. Warren at the Massachusetts General Hospital began to use ether during surgery. (Because it was first used in the Massachusetts General Hospital it was called a "general" anesthetic – old pharmacy joke). It was then widely used in surgery about the same time chloroform was first used. A pharmacy in Nova Scotia produced some chloroform and Sir John A. Macdonald's wife was administered chloroform to assist in the birth of her son. Queen Victoria also used an anesthetic in child birth making it socially acceptable. Up to that time many people opposed the use of anesthetics in child birth for religious and traditional reasons. Chloroform had the advantage of not being explosive but gradually it was discovered that it caused liver damage and cardiac deaths. These agents were used for over 100 years.

The top treatments in the 1850's were: quinine, opium, tartar emetic, calomel (mercury), ipecac, chloroform, iron salts, jalap, venesection (bleeding), cupping, and blistering.

Pharmacy education as a formal process in educational institutions, instead of an apprenticeship augmented by lectures, was initiated early in a few locations thereby setting an example to be followed by other sites. Pharmacy colleges were established by pharmacists in the United States beginning with the Philadelphia College of Pharmacy (1821), Massachusetts College of Pharmacy (1823), and Maryland College of Pharmacy (1841). The move to universities was later. The first pharmacy department established in a university was at the University of Michigan in 1868, the second at Wisconsin in 1883. Wm. Proctor in at the Philadelphia College of Pharmacy published the first pharmacy textbook *Practical Pharmacy* which described the techniques of making various dosage forms and the equipment to be employed. In the UK the Pharmaceutical Society of Great Britain was founded in 1841. The American Pharmaceutical Association began in 1852. In Canada, university programs in pharmacy did not begin until 1905 in Montreal.

Charles Tupper who graduated in Medicine from Edinburgh opened a pharmacy in Amherst in 1843. His brother Nathan then operated the pharmacy when he entered politics and had a distinguished career serving as Premier in 1864 and Prime Minister of Canada in 1896. He had played an influential role in Confederation.

Leonard Tilley, later Sir Leonard Tilley, operated a pharmacy in St. John New Brunswick in 1853

and advertised a range of products that he had just imported from London, England. He served as Governor of New Brunswick, was a father of Confederation, and a Finance Minister of Canada.

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