

Chapter 4

Canada and Pharmacy 1759 to 1814

Early Canada

Prior to the British invasion there were attempts by the French to build agricultural settlements and develop a population that would stimulate trade and provide self-protection. France established a settlement in Cape Breton in 1713 and built a large fort at Louisbourg in 1720. This was a major fishing station and both dried fish and fish livers packed in casks were sent back to France. The best quality fish was sent to Europe, the lower quality was used locally and the poorest quality was sent to the Caribbean as food for slaves. Some slaves were also brought to Louisbourg (there were slaves in Canada until the 1800's when Lord Simcoe as the Governor of Upper Canada passed legislation to end slavery in the colony).

Britain had suffered from several military reverses in Europe, the Mediterranean and Caribbean, and in fact was threatened by invasion from France in 1755. That same year there were a number of sea battles between the French and British off of Newfoundland. Aware of its weakness Britain built a strong navy and increased the army to reestablish its position in the world. With the Dutch, Portuguese and French established in Asia and South America, Britain turned to the New World, along with India, as the main focus for colonial development and was prepared to battle France in both areas.

There was continuing warfare along the North American frontier between France and Britain (the Indian Wars) including their Indian allies. It was 1756 before there was a formal declaration of war (the Seven Years War) between England and France based on a number of issues. Many of the American leaders in the Revolutionary War, such as George Washington, gained their military experience in these wars. George Washington did not have an exemplary record as his ill trained troops and Indians attacked and slaughtered a small party of French and Indians coming to negotiate a peace treaty. This action did not advance that objective of regional peace.

The French, largely through their alliances with the various Indian tribes, had controlled the territory on the inland side of the American colonies which resulted in them surrounding the New England colonies and threatening the borders. This French band stretched from the mouth of the Mississippi up the Mississippi to the Ohio river and then to Lake Michigan, Lake Erie and Lake Ontario and eventually out to the St. Lawrence. There was constant skirmishing between the two countries. A British force had sailed up the St. Lawrence River as early as 1711 to attack Quebec City but had navigational difficulties and were unable to get close. They did, however, seize Acadia (Nova Scotia) in 1710. Another, unsuccessful attempt to capture Quebec had been made in 1746. The British capture of Quebec and the St. Lawrence in 1759 was a major historical event that led to the creation of

Canada in its current form as it established control over the wilderness to the West and South.

Over the period 1775 to 1812 there were many skirmishes and battles involving Indians, American colonists, and British troops but they were fairly small hit-and-miss efforts as the troops were generally not well trained; often deserted in large numbers; supplies were scarce and troops often were hungry and out of ammunition; leaders had poor communication as to what was happening around them; there was rough terrain, fluctuating weather and large distances all of which had an influence so that luck and circumstance were often the key to success.

The British forces with the help of the American colonies fought a number of campaigns against the French and Indians with little success until the capture of Louisbourg in 1745 (it was then returned) and more importantly again in 1758. This was the major French North American stronghold located on Cape Breton Island (now restored in a National Park). Cape Breton then became a British colony until its merger with Nova Scotia in 1820. In addition to Cape Breton the other British colonies were Nova Scotia, New Brunswick, St. John's Island (renamed Prince Edward Island in 1798) and Newfoundland. After the capture of Quebec City the British colony of Quebec was also established.

The decisive battle, the capture of Quebec City by General James Wolfe in 1759, and a subsequent battle at Montreal the following year doomed the French position in North America. The British had sent a large army of 8,699 regular soldiers and 13,500 sailors in 119 vessels for the campaign. The whole of North America was now under the control of Britain except for Louisiana, an area which included not only the mouth of the Mississippi but much of the area drained by the Mississippi, which was ceded to Britain in 1761 and Mexico, which under Spanish rule included most of the area along the Gulf of Mexico and most of the Pacific coast. The New England colonies which had now grown to a million and a half, about a quarter the size of Britain, had been hemmed in by the French and Indians to the West and were now able to expand into the Ohio valley and westward to the Mississippi. Parts of New England had been settled for over a hundred years and had many thriving towns with physicians and apothecaries. In 1721 there were 14 apothecary shops in Boston. In Williamsburg, Virginia there were four apothecary shops in 1731, two owned by doctors and two by "chymists". In 1737 an apothecary advertised that he could supply "Double-refin'd, Single refin'd, and Lump sugars, Cinnamon, Cloves, Mace, Nutmegs, Bateman's Drops, Squires's Elixir, Anderson's Pills, Sweet Oil". It was clear that the Patent medicines and natural products were the products of interest to the public. The compounding, dispensing and selling of medication was performed by physicians, apothecaries, druggists and merchants as these practices were only loosely regulated.

In the area captured and known as Canada the colony of Quebec was expanded to include Labrador and the area west including the drainage basin of Great Lakes and as far South as Ohio under the Quebec Act of 1774 which also set out the rights of the people of Quebec

with respect to religion and language. These rights were more extensive than those held by the population of Britain. We now see this policy as enlightened but at the time it were seen as a threat by the British colonies along the Atlantic seaboard. The Quebec colony was much larger in area than the American colonies and allowing the acceptance of the Catholic faith was anathema to the rigid Protestant faiths in New England.

Following the American Revolution and the influx of empire loyalists to Canada the Quebec colony was divided into Upper and Lower Canada (1791). To the West of the Canada colony was an immense area occupied only by Indians and the Hudson's Bay Company. It was intended that there be no further large land grants for settlements and that the area be left to the Indians and the fur trade. At this point there was little knowledge of the size of North America and the explorers going beyond the Great Lakes were constantly aware of the importance of discovering the Pacific Ocean. It was not until 1778 when Peter Pond reached the Athabasca country and the rivers to the Arctic and the concurrent exploration of the Coppermine River and MacKenzie River that the speculation about the Northwest Passage was finally ended. It was clear that the land mass extended into the Arctic. There was no Northwest Passage.

With British control of the colonies a flow of immigrants came to North America stimulating trade and creating economic prosperity. The agricultural and manufacturing advances in Britain and Europe enabled more efficient production with fewer workers. Instead of hundreds of craftsmen, the work was divided into small components that a machine would perform accurately and tirelessly while monitored by an unskilled worker. This efficient use of labour and the quality flowing from mechanized systems led to interchangeable parts which was a major advance in producing low cost goods. This gave the country a great advantage in trade. During the industrial revolution, which was now underway in Britain, there was a shift of population from rural areas to the cities. Science and technology grew rapidly and led to the development of factories that efficiently produced products using steam power based on iron and coal. The mass production of iron products enabled a wide variety of industries to become more productive using iron equipment and to expand trade in metal products. Wealth flowed from mining and improved transportation as well as the production of woolens, pottery, textiles, tools and pharmaceuticals. There was also a major blooming of literature and art with many of the wealthy British going to Italy to study the classical period and beginning a new era of architecture. Travel within Britain accelerated as new toll roads came into being as well as better roads, canals and later railways. Some of these technological advances were shared in the colonies but Britain wanted to maintain most of the manufacturing in Britain and have the colonies supply raw materials and purchase the manufactured goods.

The improvements in communications and intellectual pursuits resulted in the nobility and wealthy in Europe exploring various modes of governance, the abolition of serfdom, the place of absolute monarchy and close examination of various events around the world with a particular interest in the republican form of government in America after the Revolution.

This was a period of ferment with the French Revolution, the Russian-Turkish War, the Russian - Swedish war, the partition of Poland among Prussia, Russia and Austria, Prussian expansion and the rise of Barbary Coast piracy.

Trade expansion had another aspect, however. Britain's policy of controlling colonial trade led to friction with New England and resulted in an armed revolution lasting eight years. As most government revenue flowed from customs duties any requirement for revenue resulted in some form of additional tax on imports. In the American colonies these taxes, first on paper and then on tea, were bitterly resented as they were levied by Britain and the colonies had little representation. These concerns over the rights of the colonists and the need for a means to be heard led to insurrection then revolution. The American Revolution was noteworthy for the Declaration of Independence in 1776 which elevated the status of the individual citizen. The enthusiasm of the people in this revolution led them to believe that the Canadian colonies would also want to throw off the British shackles and join in their new nation. This led to two Revolutionary Armies being sent north to take control of Canada. One column, sent to attack Quebec, was based on the assumption that the French Canadians would be eager to join them as they were opposed to British occupation.

Britain used Quebec City and Halifax as its major bases in fighting the American Revolution. Aware of the need for substantial troops, they recruited then sent 6,000 men - seven Irish regiments, one English regiment and 2000 German mercenaries. It took time to get these troops in place and during this time the American Revolutionary Army was launched against Canada.

Few Canadians realize that the new country of United States sent one Revolutionary army to seize and destroyed Fort York (Toronto) then move up the St. Lawrence River to occupy Montreal. This army was to continue on to Quebec to link up with the other American army but was defeated at Trois Rivieres and lost many troops, perhaps 5,000 in the battle and to disease, especially smallpox. Two of the best American generals, Montgomery and Thomas were also lost. A small party consisting of some Americans who had settled in Nova Scotia attacked Fort Cumberland in Nova Scotia without success. Another large army under Benedict Arnold, a Boston apothecary, came through Maine but ran out of supplies. The route turned out to be twice as long and much more difficult than anticipated and the troops suffered from starvation, disease, accidents and violent weather. Foraging for food by pillaging and destroying farms alienated the French Canadians. Less than half of Arnold's army reached Quebec City which they attacked during a snow storm that wet their gunpowder and limited their advance. Many of the American soldiers were treated by the hospitals in Quebec City. Arnold's army continued to besiege Quebec City during the winter of 1775/1776 but could not capture it before spring when the British fleet arrived. The British had sent troops and supplies early but did not realize that the rivers in Canada froze in the winter and so the ships had to wait until the river was clear to reach Quebec City - a mistake that might have had disastrous consequences. Although a brilliant general, Arnold had a very difficult task. Had he succeeded all of Canada would now be part of the

United States. Imagine, the fate of Canada hung in the balance of an apothecary! Arnold later sold secrets to the British and is reviled in the United States as a traitor. Although unsuccessful in the siege of Quebec, Arnold then went to Lake Champlain, the inland water gateway to the U.S. where he built a fleet to prevent the British from going south on Lake Champlain to Albany and then on to New York City. His fleet fought the British and although they were defeated this action slowed the British advance by one year and gave the Americans time to build their army. If he had not taken the initiative to build a fleet and engage a larger enemy force the British may have sailed on to New York and defeated the poorly equipped and disorganized Revolutionary Army making all of North America a British colony. Imagine that, an apothecary deciding the fate of nations!

The conclusion of the war was the defeat of the British at Yorktown. The British army of about 7,000 men was surrounded by 8,800 Americans and 6,000 French troops as well as a French naval squadron. The French funded the American war effort and supplied most of the uniforms and weapons as a maneuver to fight Britain. While French support had some immediate success in wearing down the British army and navy, in the long run it had a more substantial impact on France. It drained the French treasury and led to the French Revolution. With this last battle Britain realized that the war was over. The war had lasted for 8 years and both countries were eager to end it. The treaty expanded New England West to the Mississippi. Once the fighting was over it took time for the peace settlement and while the countries were still technically at war many New Englander privateers continued to raid the coast of Acadia. Thus, the regular appearance of armed freebooters continued to afflict themselves on the settlers. Although the United States had won, the nature of the new country was still unsettled with issues of states rights, slavery, debt repayment and federal responsibilities threatening the future of the country. It is generally acknowledged that it was the wise leadership of George Washington that enabled the country to survive.

One aspect of the American Revolution was that 70,000 colonists in New England remained loyal to Britain. These were not solely British, it included Afro-Americans (slaves escaping to the British were freed from slavery and many were enrolled as soldiers fighting for Britain. After the war many settled in Nova Scotia but were badly treated and some returned to Africa), Germans, Indians and others. They had their property seized and were forced to leave the country and were considered to be enemies of the country for over 10 years. Ships were crammed with people leaving for Britain, the Caribbean and British North America. This is significant to Canadian history as Britain arranged for many of them to be settled in Nova Scotia to replace the Acadians that had been deported. A number were placed along the St. Lawrence between Lake Ontario and Montreal, along the north shore of Lake Ontario and in the Niagara Peninsula. Few Loyalists went to Lower Canada due to language, religion and lack of a cultural link. Some of the Iroquois who had been allies of the British were also driven from New York and the British relocated the Mohawks to the Grand River area of Ontario (Brockville) under their chief Joseph Brock. The Iroquois in the area of Fort York (Toronto) were encouraged to settle further West and given a small amount of cash to move. The large number of settlers in this region led to the

formation of Upper Canada (Ontario) in 1791. It was seen as essential that there be two provinces as most of the people in Lower Canada were French speaking while the settlers in Upper Canada were English speaking. Both groups were concerned about language and religious issues making two separate provinces a logical outcome.

The early settlers in Upper Canada were given land that was heavily wooded resulting in a difficult task to clear the land for crops and establishing farms and towns. Some orchards were also established and in 1811 John McIntosh developed the apple trees with McIntosh apples. In the United States the settlers had moved West earlier and when later settlers came and found that much of the good available land was taken many of them moved North to the Niagara region. This resulted in a large number of Americans in the Niagara region and caused some problems when they supported the American army invading the Niagara peninsula in 1812-13. Over the next several decades Upper Canada grew quickly and progressed to the point of having a thriving industrial base in using water power for spinning wool, processing leather, and making alcoholic beverages. Charles Fenerty (1836) developed a way to make paper from wood pulp which spawned a new industry. In this period the population rose from 14,000 in 1791 to half a million in 1848. This was still far behind the population growth in the US as the New England colonies had a longer existence and a stronger industrial base that attracted many people from Quebec and recent immigrants from Britain.

Canada was built on fish and furs. However, one result of the American Revolution was that New Brunswick replaced New England as the main source of lumber products for Britain. British and European forests were depleted to make iron and build ships. British military ships of the line, with a lot of cannons, were an enormous investment. For example, a 74 gun ship of the line required 100,000 cubic feet of timber for the hull, 168,000 pounds of hemp for the rigging, 33,750 pounds of copper to sheath the bottom, and 4,800 pounds of nails. About 3,400 trees would be required, ninety percent oak. The demand for oak had depleted the forest reserve of Britain, France and Spain. In 1793, Britain had 135 ships of the line and 133 frigates while France had 80 and 66. By 1802 the British had 202 ships of the line and 277 frigates. Just prior to the American Revolution a third of the British merchant fleet had been built in New England. Consequently, the lumber industry grew rapidly from this point on. The population of New Brunswick grew quickly and it became a fairly prosperous colony separated from Nova Scotia in 1784.

In Newfoundland the fishing industry had been a vital resource for many European nations as it provided inexpensive food for their population, especially Portugal, Spain and Italy. It was also an important source of food for the slaves in the Caribbean. Although many countries had fishing stations there the population was scattered at many small coves and was linked to the fishing industry. Despite its economic importance there was little permanent settlement in Newfoundland until after the British made it a colony. In the late 1600's the clergy ministered to the body as well as the soul and were known to compound and prepare medication. During the 1700's and early 1800's physicians compounded and

dispensed all their medication. In the hospitals the practice of having attendants and male nurses to compound under the direction of the medical staff developed. Pharmacy as a profession did not occur until 1823 when Thomas McMurdo arrived from Scotland. He began a pharmacy in St. John's and this soon expanded to include a wholesale. He was trained as an Apothecary which enabled him to prescribe for minor ailments. Over the years they trained most of the pharmacists, who were apprentices following the British tradition of indenture. The McMurdo family became the first virtual pharmacy school in that early time and became known as the "fathers of Pharmacy".

In Nova Scotia, the arrival of Edward Cornwallis with a group of military and their families in 1749 established Halifax as a military base that continued for many generations and became the major British base in North America. In Nova Scotia the Acadian settlers (French) had developed a productive agricultural base with exports to Europe. Although this declined sharply after the Acadians were uprooted and sent abroad. It took a long time for replacement settlers, mostly from the American colonies, to again create a dynamic agricultural industry.

Nova Scotia was a key transportation hub due to its location between Europe and New England and further on the Caribbean. Most goods were transported by ship and as a result ship building and transportation became important industries and Nova Scotian ships were seen as being very fast and well built. The Bluenose was emblematic of this period. This tradition of ship building and trade continued for almost a century culminating in major steamship lines such as Cunard. Trade goods flowed through Nova Scotia to Europe, New England and the Caribbean. Canada received molasses, sugar and rum while the Caribbean plantations received fish, grain, textiles and manufactured goods. The links between the Caribbean, New England and Atlantic Canada are long standing and have many cultural aspects that remain. For example, rum is more popular in the Atlantic region than in other parts of Canada. A Nova Scotia population census in 1767 reported a population of 11,072 of which 5799 were Americans (and this was before the Loyalists arrived in 1782), 1862 were Germans, 1831 were Irish, 682 were English and 650 were Acadians. This was just before the Highland Clearance in Scotland that resulted in a large wave of Scottish immigration to Nova Scotia after the disruption of the American Revolution.

In the West many Scots, Quebec French and Americans entered the fur trade and began to compete with the Hudson's Bay Company at first as small groups based in Montreal and later as the Northwest Company (1779). This was a lucrative trade and attracted a lot of adventurers. The trade route was from Montreal, up the Ottawa River, to Lake Nipissing, and across Georgian Bay to Lake Superior. At the end of Lake Superior a major fort was built at Grand Portage near what is now Thunder Bay. It was called Grand Portage (Great Carrying Place) as the trade goods and canoes had to be carried nine miles upstream to the height of land before they could enter the river system going West. The trade goods carried in canoes took several months to get to a fort where they would be exchanged for the furs from the interior and then transported by canoe back to Montreal. From Grand Portage

canoes carried the trade goods west through the Lake of the Woods to the Winnipeg River then to Lake Winnipeg and along the Saskatchewan River to the various posts across the West. A major centre was created in Fort Chipewyan on Lake Athabasca, the first town in Alberta, that regulated the trade in the West and North and served as the major trading route to the Columbia River. The other major centre was at Fort Edmonton and controlled the trade to the South, to the prairies and to the Oregon region, a large area that stretched from the northern boundary of California (42nd parallel) up to Alaska. This area was shared between the United States and Britain until the international boundary was established along the 49th parallel. Traversing this long trade route took several months. It was important to start as early as possible and complete the travel before the rivers froze in the fall. There was also a trade route from Grand Portage, South to the Missouri river and its tributaries where James McGill (founder of McGill University) traded until the American settlers and trappers moved West after the American Revolution.

It was in this period, 1775-1795, that British traders arrived by sea to the Pacific Coast of Canada and established a trading post at Nootka on Vancouver Island which resulted in hostilities with Spain who claimed all the coast up to Alaska. This issue was resolved by arbitration and Britain was given the area from California to Alaska.

At the same time, explorers approached the coast from inland. Alexander Mackenzie of the Hudson's Bay Company reached the West coast from Fort Chipewyan in July 1793. In 1789 he had journeyed to the mouth of the Mackenzie River on the Arctic Ocean. Further south the Americans dispatched the Lewis and Clark expedition in 1804 to find a passage through the mountains to the coast so that they could lay claim to this area. They reached the coast in November 1805 and stayed at the trading post previously established by the Northwest Company (Astoria, named after Jacob Astor, later named Fort George). The fur trade had resulted in trading posts and mapping (David Thompson) of most of Western Canada by the end of the century. These discoveries led the Hudson's Bay Company to expand their trading empire beyond Hudson's Bay by including the Mackenzie watershed, Vancouver Island, Oregon Territory, and establishing posts along the coast from Alaska to San Francisco in California and even in Hawaii. They established a fleet to trade with Hawaii and the Far East. From this it is clear that they company had an important role in the development of Canada as a country.

One of the negative results of Europeans going into the plains, however, was a major smallpox epidemic in 1781-82 and continuing into the next century. Earlier epidemics had decimated the tribes in Eastern Canada and over the next several decades the European diseases; diphtheria, pertussis, typhoid, and especially smallpox drastically reduced the total aboriginal population to much less than half the pre-European level. These epidemics had a strong and continuing impact on the fur trade. Trading posts and missionaries provided some help in dealing with them. Later, vaccination for smallpox and diphtheria vaccine was used to prevent and control some of the epidemics.

In the colony of Quebec, or Lower Canada, the population continued in their traditional life. Quebec City was mainly a British garrison with British businessmen and governing officials reflected the British nature of the colony. In 1786 John Molson established a brewery and was active in other commercial endeavors such as a steam boat that ran from Montreal to Quebec City. There was an influx of immigrants from the British Isles after the Conquest. Many of these were destitute and the religious institutions that provided care grew to accommodate the additional duties. Two new groups locally organized were the Grey Nuns of Mother d'Youville and the Providence Sister of Mother Gamelin. The military doctors and their dispensaries, some of which had full time pharmacists as well as physician trainees, were also busy providing services, not only to the military, but to the population.

The top treatments in 1795 were: opium, senna, aloes, tartar, cinchona, licorice, mercurials and jalap along with blistering agents. You will note that most of these were laxatives.

The eighteenth century was a dynamic period in the development of pharmaceutical formulae. Some remedies were based on ancient knowledge while others reflected the discoveries made in science. It also marked the transition from exotic remedies such as viper's blood and extract of the castor (beaver) gland (that led to the extinction of the beaver in Europe). The beaver gland product called castoreum (castor is the Latin name for beaver) was harvested in the West along with the beaver pelts and exported to Europe. Pharmacists also made use of the better known botanic and mineral substances. There were a large number of Pharmacopoeia and Dispensatoria in this century with a wide range of formulae. The first American pharmacopeia was published in 1778 by William Brown in the USA. One feature of the time was the selling of amazing cures to royalty, who often, in turn allowed the products to be sold with financial rewards to the formula holder. This process is remarkably similar to the modern discovery of medicines with higher prices based on their exclusive patents. In fact the patent, or exclusive use of a formula, by the King was a common process for several centuries. For example, LaWall describes Louis XVI purchasing a cure for tapeworm for 18,000 livres from Madame Nouffer who had inherited the formula from her husband, a physician in Switzerland. This was later found to be the well known taenifuge, male fern, which had been known since the days of Galen.

The earliest apothecary in Nova Scotia was established in 1778 by a Dr. Philips who came from England and then returned a few years later. Several other dispensaries were then opened by physicians in the Halifax area. Dr. John Naylor engaged exclusively in the drug trade and created remedies that he sold such as Naylor's Pectoral Balsam which was very popular. In early Canada it was the normal situation to have physicians operate dispensaries to sell drugs. Only after there was a larger population and trained pharmacists did pharmacists become the main owners of pharmacies. When Canada was founded in 1867 almost a quarter of the pharmacies were owned by physicians.

An interesting early doctor/apothecary was Jean Baptiste McLoughlin (later known as John), who studied with Dr. James Fisher, the father of medical legislation in Lower Canada. His maternal uncles were Alexander, explorer, and Dr. Simon Fraser, who served in the Black Watch during the Napoleonic wars. He became qualified to practice in 1803 and worked for the fur company at Fort William and later in life was stationed for many years at Fort Vancouver (just outside Portland, OR) on the Columbia river. Because of his activities in that period he is popularly referred to as the "Father of Oregon".

With the conquest of Quebec there was a transition to a military government and a rebuilding of the fur trade and exploration of the West. Quebec City was rebuilt and became an important British base for defence and transportation. The British Army bases always had physicians and apothecaries along with medical supplies and medication to keep the army healthy. The British fleet regularly visited Quebec City and Lord Nelson in his younger days spent some time there and reportedly fell in love with Mary Simpson the daughter of the provost marshal. Had he married her history may have been different.

From Lake Ontario west there were only trading posts and a few missionaries. The difficulty in transporting goods to the plains and beyond limited the settlement and there was a belief that crops would not do well although wheat had been successfully grown in Carrot River in what is now Saskatchewan in 1754. The Hudson Bay Company later made a practice of the trading posts having garden plots to help provide food for the growing number of people in the posts.

In 1811 Lord Selkirk, with strong ties to the Hudson Bay Company, established the Selkirk Colony based on an enormous land grant of 116,000 square miles centred on the Red and Assiniboine rivers. The initial 350 settlers faced many difficulties and received little support from the Hudson's Bay Company in Canada as it was seen as a threat to the fur industry. It was only later that the colony survived when former Hudson Bay Company employees settled in the colony along with from people associated with the fur trade coming from Montreal when the Hudson's Bay Company and the Northwest Company combined in 1821 the result of which led to many losing their jobs in the fur trade and an estimated 15% of them settled in the Red River Colony. Several ethnic groups in the colony consolidated in different areas and gave a unique culture to the area separated by religion and social status (metis, native, European). Gradually the Hudson's Bay Company influence over the colony waned and the colony became more oriented to the West and its settlement. Later when the US railroads were built to the prairies a branch line came up to Winnipeg and encouraged settlement. The early existence of the colony, however, was a key factor in establishing British rule by preventing the Americans from settling the area, and led to the creation of Manitoba as a province in 1870.

In France, the American Revolution and the presence of some key figures from the American Revolution such as Benjamin Franklin (who for a short period sold drugs in his shop) and later Thomas Jefferson, as well as Lafayette who led the French forces during

the Revolution, stimulated an uprising in France from 1789 onwards resulting in the execution of the King and his family. The formation of a Republic followed. The French revolution lasted several years with a lot of bloodshed during the Reign of Terror 1793-94. Many executions, estimated at 40,000, used the guillotine, a device invented in 1792 for more humane executions. France also saw the formation of a huge national army, the first based on national conscription, that carried the spirit of rebellion to the other countries in Europe. It also led to the rise of Napoleon and a long lasting period of warfare from 1792 to 1815. In the Caribbean there were revolts by the slaves that had to be put down. In Haiti, the British landed troops to put down a slave revolt but Yellow Fever killed over 12,000 troops over the next few years (Yellow Fever vaccine was developed one hundred years later) and they left the island to the French who also lost many men. Haiti became the second republic in the Americas in 1804 when the slave revolt deposed the French. The French fleet was active in the Caribbean at this time as this was a very rich area from the sugar and tobacco plantations. It was also the age of pirates in the Caribbean.

Relations between Britain and the new country of the United States were tense following the American Revolution as the US had lost a major trading partner and was forced to compete with Britain. England was at war with France and US trade with France led to incidents that quickly escalated leading to Britain and the US fighting the War of 1812-1814. The US had almost gone to war with Britain several times but diplomacy prevailed. Finally war was declared and the people in the US were convinced that with Britain engaged in a war with Napoleon they would be able to expand their trade and capture Canada. Because Canada was a part of Britain and physically close to the US, it was easy for the American armies to invade Canada. The United States armies made several attacks into Canada, mainly in the Niagara region, but were chased out by some British regiments assisted by Loyalists in the militia units (Upper Canada population was about 75,000 with 2,000 militia but the war mobilized the sedentary militia consisting of all males 16 to 60 who were called up raising 10,000 troops) to help the British army. Sir Isaac Brock was a charismatic leader in these battles until killed and Laura Secord became a heroine by taking some overheard conversations of American officers to the British through difficult terrain. These names are closely associated with the war. American plans to attack and capture Fort Frontenac, Montreal and Quebec City were never acted upon.

The Indians to the west of the American colonies had united under Tecumseh and assisted the British. They made a significant contribution to success in some of these Western campaigns. He was a strong leader who had the character and boldness to unite many tribes to prevent the continued incursion of American settlers and in this he had some initial success but in the long run was unsuccessful. He was more successful in fighting with the British and keeping the Americans out of the Western sector of the Great Lakes.

In the war at sea, 1812-14, the British fleet, the largest and strongest in the world, blockaded the American coast and attacked Washington DC where they burned the White House, Capitol building and many other government buildings. The long coastline and

variable weather made the blockage less effective and many American privateers were successful in the early part of the war until a convoy system was initiated. One of the more interesting aspects of the war was the need for naval supremacy on the Great Lakes to control supplies and move troops. The building and fighting of warships on the Great Lakes was an important component of the war (The wreck of the Caledonia, a Canadian built ship that contributed to the victory on the Great Lakes was found in Lake Erie near Dunkirk N.Y. in 2009). At the end of the Napoleonic wars Britain had a huge fleet and a strong army leading to a dominant trade and political position in the world for the next 100 years. The United States had only a small navy for some time.

Both the US and Canada (Britain) claim to have won this war and the war of words continues today. The US achieved no territorial benefits from the war. Nor did they receive any trade or maritime benefits. They had to be satisfied by the purchase of Louisiana from the French (Napoleon needed the money) in 1803 which gave the US access to the Mississippi watershed and enabled them to expand to the Rockies. They also purchased Florida from Spain.

In the field of medical science there were developments in the study of anatomy, physiology and pathology. Early in the nineteenth century the advent of physical diagnosis was based on advances anatomy and clinical medicine. Diseases were now linked to anatomical changes and clinical terminology became more scientific. Studies were begun early in the nineteenth century on the symptoms and mortality of various diseases to better understand the disease process and the success of treatment. A forerunner to evidence based medicine. Digitalis was introduced to medical practice at this time and its properties and use was studied and improved for the next two centuries. Jenner published the results of his work on smallpox vaccination in 1798 but vaccination was uneven with most of the affluent English speaking vaccinated. Smallpox outbreaks continued to occur with an outbreak in Montreal that killed over three thousand people. Apparently, there were some groups that opposed vaccination with the result that there was an increased loss of life.

In the period 1812-14 the main diseases encountered in Canada were: typhus/typhoid; ague (shaking caused by fever, often malaria); dysentery; malaria; measles; mumps; tuberculosis; and wound infections. Infectious disease was the major health problem in society until anti-infectives were introduced in the late 1930's. Despite the relative paucity of effective remedies the availability of medication was seen as important. One example of this was demonstrated during the 1812-14 war. When the British evacuated Fort George in Niagara they buried some medicine nearby. Later, when the Americans were occupying the fort, the British required more medicine so they initiated an assault on Fort George to divert the American troops while a work party dug up the buried medicine and took it away.

Chemistry underwent a major transformation as alchemy was discredited and the elements identified. One pharmacist made a major contribution in this field, Carl Wilhelm Scheele a Swedish Apothecary. He is credited in the period 1771-1775 with the discovery of cream

of tartar and tartaric acid, the isolation of phosphoric acid from bones and also many other substances among them hydrofluoric acid, potassium permanganate, manganese dioxide, barium oxide, chlorine, arsenic acid, hydrogen sulphide, and most importantly, oxygen. His discovery of oxygen was independent from that of Priestly and Lavoisier (executed in 1794 by guillotine). Unfortunately Scheele died early. During this period there were many pharmacists who made great strides in applying science to healing, mainly in the area of chemistry.

Since antiquity there has been an interest in drugs and their action. As science advanced and new products were found they became important medicines. Tea, coffee, tobacco and soda water on their introduction were hailed as wonderful medicines or, in some cases, prohibited. Many of the original drugs are now thought of as poisons: antimony, mercury, strychnine, arsenic but their pharmacologic activity led to their use in a variety of diseases. In the early part of the century drugs were classified by their action. If they induced urination they were a diuretic, irrespective of their therapeutic use. Digitalis was introduced in 1789 as a diuretic for the treatment of cardiac disease. There was a movement to use the more pure form of drug, especially in France, as it was seen as being more modern and scientific. Hence, morphine was used instead of opium. This trend has continued until today with efforts to identify the active ingredients of many medicinal plants.

In Canada in this period there were few people with an education and fewer who had knowledge of medication. Highly educated people in communities often served in various capacities. Priests were the educated people in the rural areas and small towns and they were often the ones who dispensed medication. It was at this time that widespread literacy was developing and more people began reading the newspapers that were appearing. The people with money who used medications imported them from Britain in addition to the home remedies that were made in the home. Even so, there were relatively few products and the physician could easily carry them in a bag when he went to visit a patient. People lived a demanding life of hard work for long hours with injury and disease always prevalent. Discomfort and pain were part of life and not seen as something that required treatment or bed rest. The few medications used had little efficacy in today's context but were seen as being very valuable to those who became sick or injured and needed some form of therapy, particularly for children or during incapacitating illness.

There were few apothecary shops or drug stores and those that did exist carried a wide variety of products, mainly non drug. The medication carried consisted of chemicals, crude drugs, spices and patent medicines. Some of the medications in use at this time were opium, purgatives (jalap, rhubarb root, senna, castor oil) as well as salts such as Glauber's Salts and Epsom salts, emetics (ipecac and tartar emetic), blistering plasters (cantharides, known as Spanish Fly that were used for topical diseases and deeper pain), camphor for the treatment of venereal disease along with arsenic, potassium nitrate for fevers and delirium, and mercury for the external treatment of wounds. A popular patent remedy at this time was Turlington's Balsam of Life. This was compound tincture of benzoin, a product that was

used on wounds and officially known in pharmacopeia as Traumatic Balsam. It was effective and had a long life. It was sold in a small angular bottle that only held a tablespoonful of ingredient. A patent for this product was received in 1744. It arrived in America in 1746 and was widely distributed. Hudson Bay traders carried it into the interior of the country and it remained popular for many years. There were even reports of it being used in the American Civil War a century later. Generally, these English patent medicines were popular in Canada and New England and they were sold in various outlets including post offices in New England. Some apothecaries refilled the containers. Many products were named after their inventors, so we had: Plummer's Pills, Matthew's Pills, Starkey's Pills, etc. Over time many of these received a patent and their formulae were disclosed. Some became official in the compendia.

Pharmaceutical Dosage Forms

Many of the medical ingredients for prescriptions were brought to Canada in crude form. Bottles of herbal and chemical ingredients were carefully packed and brought in wooden cases. For solid dosage forms the two main types were powders and pills. The powders were usually combinations of two or more ingredients that were combined and triturated in a mortar until they consisted of a fine uniformly mixed powder. The powder was then poured onto a dispensing slab and carefully divided into equal portions. Each portion was then folded into a square sheet of paper in a specific manner so that it would fit into a powder box. Usually there were about 12 to 15 powder papers in a box. To use the powder, it was poured into a glass of water, mixed and drunk.

Pills were prepared by mixing the active ingredients with a liquid binding agent or with a solid binder and a suitable liquid additive. This mixture was kneaded into a dough like mass which was rolled out onto a tile and cut into single dosed using a pill cutter or a spatula. Each dose was then rounded into a ball using a pill roller, a round piece of wood that had a recessed centre. Or, it could be rolled in the palms of the hand. The pills were then allowed to dry. To protect them and make them more stable they could be coated. In Europe the rage was to coat them with precious ingredients but this is unlikely to have occurred in Canada. The pills were dispensed in a pill box, usually a small round paper box. Similar types of plastic or metal containers are again being used to carry capsules or tablets. This name and form were later applied to military hats that were round, flat on top, without a brim. The process of making pills gave rise to pharmacists being called pill rollers.

Liquids were also prepared and were popular, more in urban areas than in smaller centres. Preparation usually required concentrated fluid extracts that were imported from Britain. In some areas the local medicinal plants, based on Indian tradition, were used to prepare medication. A tea made of spruce was used early on to treat scurvy. Juniper was used for stomach aches and colds. Seneca or arrowroot steeped in tea, was an Indian medicine used as a tonic. Tobacco was often used topically or orally as a medicine.

Counter irritants to mask or diminish pain were prepared as a liquid and then placed on a piece of cloth, a plaster consisting of a semi-solid mixture spread on paper or in some cases bread, or as an ointment. These products were either purchased in bulk from Britain or prepared locally. Topical products as solutions, suspensions or lotions were used for skin conditions, a common problem in early Canada. They were applied without friction and usually covered with a bandage made of cloth.

For the most part the population and health professionals used what was available and this varied from place to place and from time to time. Often people just used household remedies that had been passed down in the family. To this was added local native remedies.

An important therapy in practice was bloodletting and cupping. It was thought to be useful to draw blood from patients and often up to 30 ounces would be removed, a large quantity even for a healthy donor. Cupping was the process of drawing blood to the surface of the skin by burning alcohol in a jar to remove the oxygen and make it warm then placing this on the skin. The vacuum created as it cooled would pull the tissue into the cup. This was then either left as a protruding mass (the poison had been drawn out) or cut to release the blood (wet cupping). This procedure continued in folk medicine well into the 1900's.

Pharmacists experienced difficulty in obtaining medication due to irregular shipments from Europe. Boats would often be held up for months or be lost at sea. Some manufacturers and wholesalers in Britain would send out trunks full of assorted medication to pharmacies in Canada on speculation. These were welcome and pharmacies would immediately accept them and use the contents. Usually there was an excess to current needs and the medication could then be shared with other pharmacies. This could lead to an arrangement in which the local pharmacy would place larger orders in Britain and then distribute the goods on arrival, in effect becoming a wholesaler. They could also become a wholesaler by manufacturing larger quantities of some items and selling them to other pharmacies.

The drug wholesalers Estey and Curtis were established at the end of the Century in St. John and Fredericton N.B In 1800 Lymans Ltd. (Wadsworth and Lyman) began in Montreal and had their head office at Place d'Youville near the place of the first dispensary in Montreal. Lymans was later acquired by the National Drug and Chemical Company.

Apothecary Weights and Measures

The Apothecary System of Weights was used in early Canada. It was based on the ancient system of weights and measures used in Europe for centuries. The basic unit was the grain.

$$1 \text{ grain} = 65 \text{ mg}$$

20 grains = 1 scruple = 1.3 Grams

3 scruples = 1 drachm = 3.9 Grams

8 drachms = 1 ounce = 31.1 grams

The Apothecary ounce contains 480 grains. The Avoirdupois ounce used in commerce today has 437.5 grains. Also, the number of Apothecary ounces to a pound is 12 while the Avoirdupois system has 16 ounces to a pound.

In measuring precious metals the grain and ounce and pound are the same as the Apothecary system. What weighs more a pound of gold or a pound of feathers?

An ounce of gold is 480 grains and there are 12 in a pound.

An ounce of feathers has 437.5 grains in an ounce and 16 ounces in a pound.

So the pound of feathers is heavier than a pound of gold.

Liquid measures were the Imperial system based on the minim as the smallest unit. The minim is roughly one drop and prescription instructions written as minims were given to the patient as "drops". For example, put 3 drops in a glass of water and take before meals.

1 minim (one drop) = 0.06 millilitres

60 minims = 1 fluid drachm = 3.55 millilitres

8 fluid drachms = 1 fluid ounce = 28.4 millilitres

20 fluid ounces = 1 pint = 0.57 litres

2 pints = 1 quart = 1.14 litres

4 quarts = 1 gallon = 4.55 litres

One Imperial liquid ounce of water has a mass of 437.5 grains.

The Apothecary system was used in compounding prescriptions until the Second World War. Afterwards, the metric system replaced it. The new medication that was being discovered and marketed always measured the drug dosage in the metric system and the containers were increasingly metric. This shift to modern medication also reflected the demise of compounding as a generally applied skill of pharmacists. Physicians trained in the use of the new medication no longer knew the apothecary system and the old

compounding favourites. Early physicians had to spend time compounding as part of their education.

References:

CWDA Commemorative Book, 25th Anniversary, Toronto, 1989.

Daughan, G.C. If By Sea. New York: Basic Books, 2008.

Duffin, Jacalyn. History of Medicine. Toronto: University of Toronto Press, 1999.

Ford, T.K. The Apothecary in Eighteenth-Century Williamsburg: Being an account of his medical and chirurgical services, as well as of his trade practices as a chymist. Williamsburg Craft Series, 1966.

Nicholson, A. Seize the Fire. New York: Harper Collins, 2005.

Norrie, K., Doug Owram, and J.C Herbert Emery. A History of the Canadian Economy. Toronto: Thompson Nelson, 2002.

Ridley, F. "An Early Patent Medicine of the Canadian North." Canadian Geographic Journal, July 1966.

Sonnedecker, G. Kremers and Urdang's History of Pharmacy. Philadelphia: J.B. Lippincott, 1963.