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THE VANCOUVER ISLAND BREWING INDUSTRY: 1858 - 1917

by

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ABSTRACT

From 1858 to 1917, Vancouver Island's brewing industry prospered in a community that, especially before the coming of the Canadian Pacific Railway in 1886, was small and relatively isolated. Nevertheless, the Island industry paralleled in many ways its North-American counterpart, particularly in technological change, business practice and the ethnicity of the individuals who shaped it. In areas such as product preference, unionization and export opportunities, however, the industry was at odds with much of the continent.

These conclusions result from attempts to answer such key questions as: what was the overall pattern of growth and development of the Island industry? What market factors, such as transportation and economic cycles, shaped and perhaps controlled it? What were the characteristics of the individuals who founded the many breweries? Was the Island industry as technologically advanced as elsewhere? What role did unionism and Prohibition play in the development of the industry in the twentieth century?

These questions have been answered in varying degrees. Unfortunately, the industry left few primary documents with which to reconstruct its history. Consequently, much reliance was placed on the records of other agencies, mainly those of government which, while comprehensive in some areas, are often incomplete or contradictory in others. Such information was augmented from a variety of sources, ranging from newspapers to individuals, who themselves or through their families, have a connection to the industry.

The thesis has been placed, where possible, against several sophisticated studies of the brewing industry in Great Britain and the United States. Sadly, with the exception of Martin Ian Bowering's Masters thesis on "The Art and Mystery of Brewing in the Nineteenth Century Toronto," few studies exist for the Canadian industry. From time to time, therefore, interpretation rests on assumed parallels

within the industry as a whole, most often within the North American context.

Regardless of these drawbacks, this study of an overlooked aspect of Vancouver Island's industrial history, brewing, reveals that despite the Island's remoteness and small population the local production of beer was a viable economic activity for brewers and investors alike. While it may be argued that this was because the permanent populace, augmented by the Imperial Armed Forces, represented a captive market, the flexibility and resourcefulness of brewers in overcoming a variety of factors cannot be overlooked. This thesis demonstrates that it was primarily these personal characteristics that allowed brewers to meet the challenge presented by the vagaries of local and national economic cycles, imported beer, a growing dependence on outside sources for sophisticated machinery and raw ingredients and, finally, the push by large, national brewers and foreign investors to dominate the North American industry.

In conclusion, recognition of the importance of change, and the flexibility needed to adopt it where warranted, was arguably the most important trait of Island brewers--a trait that allowed the industry to keep pace with the rapid advances in technology and business practice witnessed in the latter half of the nineteenth century; and to take full advantage of the market presented by increasing consumption and changing consumer tastes away from ale to lager. In short, by the time Prohibition had become a fact of life in 1917, the local industry had moved from a largely unscientific, frontier activity to become fully integrated into the sophisticated, large-scale business world of the early twentieth century: an enterprise that demanded both financial acumen and scientific precision.

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The question "Why printers did not succeed as well as brewers?" was thus answered: "Because printers work for the head, and brewers for the stomach; and where twenty men have stomachs, but one has brains."

British Colonist, March 19, 1859

CHAPTER 1

THE HISTORY OF BREWING: A BRIEF INTRODUCTION

When brewers came to Vancouver Island in 1858 they could draw on a long tradition. Brewing began in the ancient world, gradually evolved into a commercial enterprise during the Middle Ages, and benefitted from the technical developments of the Industrial Revolution. During the latter part of the nineteenth century, the industry introduced many scientific advances. Thus, the Vancouver Island industry, which began at a time of great change, was generally able to take advantage of the latest scientific, technical and business methodologies.

The essential beer-making procedures of malting and fermentation were understood and practised in Mesopotamia at least as early as 4,000 B.C..(1) Beer played an important role in the religious and economic life of the ancient Middle East particularly in Babylon and Egypt.(2) Ancient brewers followed simple procedures. First they produced malt by soaking barley in water and burying it to induce germination; after arresting the germination (sprouting) by raising the temperature, they dried, crushed, and baked the "malted" barley into large flat cakes which were "soaked in warm water and pressed through a sieve or basket in a simple mashing process."(3) The resulting liquid or "wort" was then fermented in large earthen vessels and covered at night to keep the liquid warm. The main fermenting agent was then, as now, yeast. Flavourings of herbs or fruit were added because of their perceived medicinal properties. Finally, the liquid was transferred to smaller storage vessels and conditioned in a constant, cool temperature where secondary fermentation took place. The product was usually cloudy, sweetishly strong, and often contained unfiltered grain husks. Common beer was consumed within several days; mature beer, the choice of the upper classes, was more rigorously filtered and usually stored for several weeks.(4)

While brewing originated in the Middle East its fullest development occurred in Europe where the Romans, who preferred wine, likely introduced it to the Celtic and Germanic tribes. Beer quickly became ingrained in the lives of the pre-medieval peoples north of the Mediterranean, an area for the most part devoid of significant

viticulture. Widely employed as a household beverage, it became an integral part of festivals and hospitality and found an honoured place in legend and story-telling. Indeed, it was so important that by the time Europe had fully embraced Christianity, there were no fewer than three patron saints of brewing. Beer also offered a practical attribute: it was safer than water or milk which were often contaminated. Both could be sterilized by boiling, but beer was more palatable and had already been boiled during the brewing process.(5)

During the Middle Ages, brewing was carried out chiefly for family consumption by women, often referred to as "ale wives" or "brewsters," in individual homes and farmhouses.(6) The sale of any surplus beer initiated the evolution of the public ale house complete with its on-site brewing vessels. An exception to the ale wives was evident in the monasteries where, as Michael Brander observes,

> no woman supposedly penetrated, [and brewing] was regarded as a suitable male occupation. With the superior facilities available to them, however, the ale produced in the monasteries was a good deal superior to most of that produced in the generally less well built and less well managed surroundings of the average alehouse. It was, indeed, famed throughout Europe.(7)

In Great Britain, as on the Continent, monasteries gave a firm impetus to brewing. Chaucer and other medieval chroniclers record how the revenue from farming and the often sizeable breweries, enabled the entrepreneurial monks to provide for the needy, while enjoying an enviable standard of living.(8)

Then, between the twelfth and fifteenth centuries, increased urbanization initiated a shift towards brewhouses attached to public houses of one kind or another. This was the initial step towards making brewing one of the first industries to be transferred from the home to the factory and an important economic factor in Europe.

Governments were quick to appreciate the opportunity for revenue generation and so began the brewing industry's long relationship with taxation and legislation. Imposing taxes on the finished product or through the taxation of ingredients was a dependable method of raising money. Government officials also sought to ensure quality control and

imposed stiff fines for variance particularly when brewers tried to disguise weak or inferior beer by adding too much sugar or flavourings. In Great Britain, "ale connors" enforced legislation concerning quality and strength and were responsible for ensuring that proper measures of beer were served in public houses.(9) Despite taxes, regulations, occasional recessions and competition from other beverages such as gin, tea and coffee, brewers survived and prospered.(10) By the eighteenth century, when many of the great European breweries were founded, brewing was entrenched as a major industry throughout the continent.

The reasons for the prosperity of the industry are varied but five developments were principally responsible: the growth of mercantilism; the introduction of hopped beer; the discovery of bottom-fermentation; the popularity of porter; and, finally, the industrial revolution.

Mercantilism gave rise to a merchant class throughout Europe. Brewers were an integral part. Eager to sell their products further afield and increase profits, the new merchants re-opened abandoned trade routes, adopted financially sound business practices and embraced more efficient production techniques, all of which led to a greater selection of commodities. Brewers, like other manufacturers, formed guilds to share new techniques, encourage trade, develop apprenticeships and provide protection against heavy taxation by local governments.(11)

During this period, brewers increased their use of hops and first experimented with the technique of bottom-fermentation. Hops were known to the ancients and by the eighth and ninth centuries, they were likely used in Bavaria and Bohemia as a bittering agent.(12) During the next 500 years, hop cultivation became widespread throughout Europe. Where hopped beer was introduced, it was met with suspicion and resistance, particularly by those who had a vested interest in the cultivation of other plants used to flavour beer. This resistance was most keenly felt in Great Britain where ale brewers lobbied for a complete ban on the use of hops.(13) Eventually, the distinct bitter taste of hopped beer and the discovery that hops acted as an effective preservative, which allowed mild beer to keep for longer periods, ensured its widespread popularity.(14)

Bottom-fermentation, was an equally important innovation. Until

the fifteenth century, the yeasts used regularly rose to the surface of the beer during fermentation. Brewers did not understand this behaviour nor did they realize the actual number of yeast strains involved in the fermentation process. Some German brewers observed, however, that if a certain strain of yeast was used and beer was kept at low temperatures, it did not go sour and the yeast would eventually settle to the bottom of the vessel during fermentation. This beer was much clearer and had a different appearance and lighter texture, than the varieties produced through top-fermentation (ales) which had to be skimmed and cleansed before sale. Bottom-fermentation became popular where there was plentiful natural ice or an abundance of caves. In time, chill-stored beer became known as lager from the German "lagern," meaning to store. With the development and refinement of artificial refrigeration in the mid to late nineteenth century, bottom-fermentation became a universal technique, improved upon by research and experimentation emanating largely from Pilsen, Vienna and Munich. Lager became so popular that by the dawn of the twentieth century it was the world's favourite type of beer.(15)

In Great Britain, the earlier introduction of porter was important. Porter, a dark, almost black ale noted for its strength and highly hopped characteristics, had to be aged from one to two years to reach maturity. Its popularity in the late eighteenth and early nineteenth centuries, accelerated the pace of technical innovation and increased production; in short, it became the instrument that brought full-fledged industrialization and a modern structure of production and distribution to brewing.(16)

Finally, the Industrial Revolution, which began in the latter half of the eighteenth century in Great Britain, stimulated innumerable improvements in the art of brewing. Before then, all that separated the small country brewers from their larger, city-based counterparts, or "common brewers," was scale of operation.(17) By the time the Revolution was in full swing, a considerable gulf had developed between the two parties. Generally speaking, before the 1870s brewing was largely an inexact and slowly changing science, depending mainly on lore handed down from one generation to the next and on empirical knowledge

contained in a handful of reliable brewing manuals. In this context, city brewers were more likely to apply scientific and technical innovations than country brewers because of their respective volumes of production. Most city brewers became fully industrialized at some point in the nineteenth century and by then could chose from many innovations.

Progressive brewers quickly recognized the potential of steam power. Beginning in Great Britain in the 1780s, steam gradually replaced horses and men in many key areas of operation.(18) Its effect was felt everywhere from the introduction of mechanical rakes in mashing machines to powerful pumps and screw conveyors. By the mid-nineteenth century this new technology demanded a consistently new way of thinking and "a new skill came into being--that of the brewing engineer."(19) While steam brought improved efficiency and uniformity to the brewery and remained the main source of motive power until the widespread introduction of electricity early in the twentieth century, it also became an important element in a major innovation of the nineteenth century--artificial ice and refrigeration. Traditionally, because hot weather promoted bacterial infection, brewers stockpiled beer in the spring for summer consumption.

Brewers of lager faced an even more difficult problem. Due to the use of bottom-fermenting yeast, lager required cooler conditions during fermentation and aging. While most ales, with the exception of some, like porter, were aged briefly, the vast majority of lagers were aged in conditioning tanks at low temperatures, often for several months. When natural caves were unavailable, brewers had to accept the substantial cost of constructing and maintaining them. The "Cave Brewery" established by Christian Stahlmann in St. Paul, Minnesota, for example, embodied caves three storeys deep, covering an area of one square mile. In addition to the financial impact of construction, labour costs added to the burden: ice had to be cut, transported, and then packed into the aging cellars. Meanwhile, organic impurities, released from the ice when it thawed, often contaminated brewing materials and the beer itself. In any case, natural ice was not always available even in northern latitudes. For cities in warmer climes, securing large quantities of ice was often out of the question, and special measures

had to be taken. In California, the situation was dealt with through the invention of "steam beer," a cross between an ale and a lager, which circumvented the problem very efficiently.

The problems of cooling were effectively alleviated, starting in the 1850s and 1860s, when a variety of ice-making devices were patented, principally in Great Britain, France and the United States. Several techniques were developed but the principle of "using evaporation of volatile liquids such as ether and ammonia" to cool water proved most efficient.(20) By the 1890s, machines could simultaneously produce vast amounts of block ice and operate a system of cooling pipes containing brine that made it possible to control the environment in virtually every part of a brewery. This process of "artificial refrigeration" was an important step in the pursuit of maintaining exact temperatures in the fermentation and conditioning processes.

Equally important for quality control were two other inventions: the thermometer and the hydrometer, both introduced in the late eighteenth century.(21) The thermometer provided the first precise measurement of temperature, vital to the successful carrying out of several phases of the brewing process. The hydrometer or saccharometer, measured the specific gravity of liquids and was invaluable as it allowed the brewer to determine the exact level of fermentation by the change in the specific gravity of the wort.(22)

Not to be overlooked was the proliferation of publications on brewing. In Great Britain the anonymous book, The London and Country Brewer, led the way in 1734, to be followed shortly after by John Richardson's, Theoretic Hints on an Improved Practice of Brewing. Unlike other, much less objective publications, these comprehensive books exerted a powerful influence on the brewing fraternity and inspired a continuing and rigorous examination of brewing based on scientific principles.(23)

Despite the influence of such publications in advancing its technical and mechanical aspects, the industry did not fully embrace a comprehensive scientific approach to production until the latter half of the nineteenth century. When the industry did so, it led to the unparalleled growth of the large national and international breweries.

Many nineteenth century brewers were no longer just craftsmen but became scientists and engineers as the advantage quickly went to those firms who employed "brewers with theoretical as well as practical experience."(24)

The remaining major scientific investigations centered largely on bio-chemical processes. The biggest gap in knowledge was the behaviour of yeast during fermentation. French chemist Louis Pasteur began researching this aspect in 1857. He demonstrated that yeast was a living organism and that natural changes in it during fermentation produced alcohol. He also showed that bacteria-infested yeast caused diseases in fermented liquids. A yeast free of bacteria produced a disease-free fermentation and thus predictable end results. The challenge was to produce a disease-free yeast.(25) Subsequently, the Danish biochemist Emil Hansen theorized that harmful strains could be eliminated by the propagation of a "pure" yeast culture. He isolated two favourable strains: Saccharomyces cerevisial, ideal for top-fermentation and Saccharomyces carlsbergensis, suitable for bottom-fermentation. In 1883, he introduced the first two absolutely pure yeast cultures--both propagated from a single cell. He followed this success with the development of a practical culture apparatus. Thus, he and Pasteur made great strides in reducing failures in the brewing process.

A second offshoot of Pasteur's work--significant because of the increasing use of bottles to transport beer to the consumer--was pasteurization. This enormously valuable technique involved heating bottled beer to high temperatures to kill any bacteria. Pasteurization or sterilization led to a stable product that could be shipped thousands of miles and still retain a shelf life of several months. Many brewers recognized the potential and quickly formulated the equation: beer, of consistent quality and biologically stable, bottled in mass produced bottles and shipped quickly via efficient railway networks, equalled regional and national markets and, hence, large profits and economic power.(26)

In the New World, many indigenous peoples in Central and South America produced fermented beverages. Their drinks often used corn as

the basic ingredient and followed a simple brewing process not unlike that of the ancient Middle East.(27) The first known example of a European-style brewing operation appears in 1544 when the Spanish conquistador, Alonso de Herrera, established a brewery in Mexico.(28)

However, this had little effect on early British and Dutch settlers to the north who introduced their own brewing techniques to pioneer settlements. Initially, their brewing was confined to home consumption but gradually expanded to include the needs of fellow settlers. Although commercial breweries were established as early as 1637 in Charlestown, Massachusetts, a century later most commercial breweries in the American Colonies were still generally modest affairs, often attached to farms, plantations and taverns, and serving a limited clientele.(29) Brewing was an ideal pioneer industry and a money-making winter occupation for farmers and country tavern-keepers who could learn its basics quickly from a variety of locally produced and imported publications.(30) Many popular recipes--including one for pumpkin beer and another which substituted molasses for malt--often reflected the scarcity of traditional brewing ingredients in the more remote areas of the American hinterland.(31) This partially explains the scarcity of more conventional beers in the early North American brewing experience.

This modest production was in part related to the fact that many cities were located on the seacoast and thus had ready access to beer imported from Great Britain. This offered little incentive to local commercial breweries and ensured that such operations remained relatively small.

The American Revolution inevitably affected brewing. Growth in most forms of manufacturing, including alcohol, was held back in the chaotic years between the end of the Revolutionary War and the ratification of the Constitution. Brewers, however, had at least one thing in their favour--the populace was generally kindly disposed toward beer as it represented the temperate drink, an important matter in a nation influenced by a puritan philosophy. Indeed, many states did not tax brewery property in order to encourage home industry.(32) Even with such encouragement, the fifty years following the American Revolution were marked by little more than stagnation in the industry. This slowly

changed through the steady influx of Germans into the United States beginning in the 1820s. Initially, these new immigrants, who included many experienced brewers, produced and consumed the ales prevalent at the time. Brewing in the United States, however, was on the verge of a radical change.

In 1840, John Wagner, a German brewer in Philadelphia, probably produced the first lager beer in North America.(33) Its light, crisp flavour and clear appearance found immediate acceptance within the rapidly growing German community. Other German brewers quickly learned the technique of bottom-fermentation and took their newly found skills to virtually every part of the continental United States.(34) Within three decades, the popularity of lager virtually changed the tastes of the population and helped make it the nation's favourite alcoholic beverage.(35) Some loyalty to ales and porter remained but production declined steadily throughout the late nineteenth century until their were only small regional markets and a few breweries catering to ale fanciers.(36)

Shortly after the American Civil War there was a world-wide boom in the industry. In the United States, influenced by a newly found industrial strength and a rapidly growing frontier, there was a slow but steady expansion in commercial brewing. The American industry grew dramatically from 431 commercial breweries in 1850 to 4,131 by 1873 and Americans joined brewers in Denmark, Germany and Austria, in challenging Great Britain's lead in technological sophistication and innovation.(37)

The majority of American brewers were as aggressive in their business dealings as their European counterparts and embraced modern large-scale business practices, including consolidation, marketing on a national scale and mass produced packaging (bottling and crating). Led by such men as Milwaukee's Joseph Schlitz (Joseph Schlitz Brewing Co.) and Frederick Pabst (Pabst Brewing Co.) and the St. Louis partnership of Eberhard Anheuser and Adolphus Busch (Anheuser-Busch Inc.), the brewing industry by 1900 had grown into a major industrial force in the United States.(38)

The brewing tradition in Canada, which in some ways mirrors that of its southern neighbour, began in New France with the establishment of

a brewery in Sillery as early as 1646 and another in Montreal four years later. The credit for the first commercial brewery, however, usually goes to Jean Talon, the Intendant, who initiated construction of the King's Brewery at Côteau Sainte-Geneviève in 1668. His goal was to encourage self-sufficiency, to reduce imports (at the time, the colony was spending 100,000 livres a year on imported wines and spirits) and to persuade people to switch from wine and spirits to beer, a more temperate beverage. These objectives were strongly endorsed by Colbert, Louis XIV's principal minister. In addition, Talon restricted imports to 1,200 hogsheads (normally 54 gallons each) of wine and spirits. When the brewery began production in 1670-71, Talon hoped to provide 2,000 hogsheads of ale for home consumption and another 2,000 for export to the West Indies. Talon's dreams were not realized. Despite the number of decrees, imported or smuggled wine and hard liquor continued to appear in the colony, more so during his absence in France. As a consequence, the brewery ceased production in 1675.(39)

While the Canadian brewing industry began in Quebec, brewers in present-day Ontario would eventually push that province to the forefront. This came about, despite the powerful, pioneering spirit of John Molson, who established North America's oldest continuous operating brewery in Montreal in 1786, and, through his strong entrepreneurial skills and philosophy of diversification, foreshadowed the course of action that many brewers in Canada would later take.(40) Interestingly, early Ontario breweries, like their counterparts in Quebec, were for the most part small, seasonal operations and, like those of the United States, were frequently attached to farms, grist mills and public houses. These early "brew houses," were usually marked by poor quality brews, primitive procedures, small size, and an inability to meet local demands.(41)

Such features were likely shared from time to time by many early American brewers but, because the Canadian climate often restricted crop growth, the problem north of the border was more serious. Brewers in Upper Canada were often "obliged to use barley adulterated '...with buckwheat, oats, peas, rye and chaff'."(42) What made this situation particularly frustrating was that the demand for beer was a great.

Whiskey, rum and wine were popular drinks but the popularity of beer as a moderate alternative seldom waned. Shortfalls in quantity and quality were made up for by imports from Great Britain, a situation that did not alter significantly until the middle of the nineteenth century when technological change and improved agricultural products finally ensured a large and predictable supply of locally produced beer.(43)

By the dawn of the twentieth century, Ontario and Quebec were clearly the undisputed leaders of the industry. Of the 133 breweries in Canada in 1903, 79 were located in these, the country's most populated provinces. These same breweries accounted for 23,490,295 gallons of the total of 27,623,767 produced in the year ending June 30, 1902.(44) Toronto emerged as the most significant brewing centre in the East but even the large scale operations like the Toronto Brewing and Malting Company and the Cosgrove Brewery Company Limited could not entirely dominate the Ontario beer traffic or their own hinterland. Stiff competition came from other Ontario cities, among them London, home of the breweries of John Labatt and John Carling.(45)

The industry in the Maritimes was smaller and seemingly took longer to mature. Centered mainly in Nova Scotia, the East Coast industry had only 10 breweries at the turn-of-the-century. While small in terms of over all production, the Maritime industry continued to produce significant amounts of ale in addition to lager.(46) This fact is important for it hints at a feature of the Canadian industry somewhat at odds with the trend to the south. Brewed as early as 1859 in Victoria,(47) and in Ontario in 1861, the popularity of lager grew more slowly in Canada than south of the border, despite high production and aggressive promotion in the 1870s by major eastern brewers such as Eugene O'Keefe.(48) Whether this was due the presence of few German speaking immigrants or a British preference for ales, often ascribed to the large numbers of Imperial Forces stationed in the country, is open to conjecture. What is known is that ales retained a reasonable share of the market well into the sixth decade of the twentieth century, especially in Ontario, Quebec and the Maritimes.(49)

On the Prairies, the cultivation of a taste for beer was somewhat slower than the rest of the country. Whiskey was the principal

alcoholic beverage, a fact not lost on Saskatchewan's pioneer brewer Konrad Wittemann, who established a brewery in Prince Albert in 1895. As he observed upon arrival, "there was hardly any demand for beer in the country, everybody drinking whiskey; but since we started the brewery the sale of beer has increased right along, and the taste here will be cultivated." Early Prairie brewers had to wean drinkers away from whiskey and deal with the limited market offered by a sparse population. While breweries in Manitoba failed in the 1860s due to such limiting factors, the following two decades saw the initiation of several successful operations. Alberta became the second Prairie province to establish a brewing tradition when A. E. Cross established the Calgary Brewing and Malting Company in 1892.(50)

The brewing industry on Vancouver Island was founded during the gold rush days when miners trying to get to the Fraser River and the Cariboo, turned Victoria into a tent city. In their number were several experienced brewers, such as William Steinberger who opened the Victoria Brewery in 1858 and became the first commercial brewer in what is now British Columbia. By the early 1860s, five breweries in the burgeoning settlement produced porter, a light ale and lager beer, the product range saying something about the cosmopolitan tastes of the populace.(51) The pioneer brewers of Vancouver Island, brought their technology from the western United States rather than from Eastern Canada or Europe.

By 1850, the second year of the California Gold Rush, several breweries operated in San Francisco; a city that became not only the West's first major brewing centre and the fifth largest in the United States by 1905.(52) This fact made it the natural home of the early brewing industry along the Pacific Coast both in terms of products and technical expertise. Breweries also sprang up in such communities as Stockton, San Jose and Weaverville, all of which had facilities operating before 1855. Some prospectors were so glad to see a brewer in their midst that, in at least one case, they helped construct a brewery so operations could get underway more quickly.(53) From the outset, California brewers produced a variety of ales, lager and steam beer, the latter thought to have been invented in San Francisco. This product

range (later adopted by Vancouver Island brewers) was adjusted over the years by consumer tastes. Like elsewhere in the United States, ale continually lost ground. Lager, however, did not entirely dominate the market in either California or along the Pacific Coast where steam beer held significant ground until the early twentieth century.(54)

To the north, Henry Saxer of Portland is credited with establishing Oregon's first commercial brewery in 1852.(55) By the late 1860s, breweries had been established in several smaller inland communities but the real proliferation in the 1870s and 1880s paralleled a rapidly increasing population and agricultural industry. While the industry never equalled that of California in size, it mirrored it in product range, earning a good reputation and producing several brewers of commendable stature such as Henry Weinhard, founder of today's Blitz-Weinhard Brewery of Portland.(56)

In Washington, the industry can be traced back as far as 1855, when Emil Meir built a steam beer brewery in Walla Walla. Breweries followed in Steilacoom in 1858, Colville in 1861 and, in Seattle in 1864, the Washington Brewery became the city's first facility.(57) As in Oregon, the industry did not grow significantly until the 1870s when Washington's more remote areas were opened up and the population began to grow. Over twenty breweries were established in Washington after 1870; eleven were situated on Puget Sound. While steam beer is mentioned, the major emphasis was on the production of lager.(58)

In summary, brewing is a craft (or perhaps, in spite of all the scientific research and experimentation, still an art) with origins reaching back to the birth of agriculture. Beer, the much revered beverage, was produced with basic procedures much the same as those used today: "The mechanics of brewing are remarkably simple, yet the natural process which is unleashed is mightily complex."(59) In examining the Vancouver Island industry, it must be recalled that, while old in its own right and in terms of our history, it represents only a tiny fraction on the scale of the history of brewing.

NOTES

1 The subject of the early use of grains and their biocultural significance has been the source of considerable discussion. Some scientists believe that both the understanding of fermentation and beer making may date to the dawn of the Agricultural Revolution itself. This theory is discussed in detail in Solomon H. Katz and Mary M. Voigt "Bread and Beer: The Early Use of Cereals in the Human Diet," Explorer Magazine: Journal of Archaeology and Ethnology, Vol. 28, No. 2, 1985, p.29.

2 Maurice Lovett, Brewing and Breweries (Aylesbury: Shire Publications Ltd., 1981), p.8; H.S. Corran, A History of Brewing (Newton Abbot: David and Charles, 1975), p.22.

3 Lovett, Brewing and Breweries, p.8.

4 Michael Jackson, ed. The World Guide to Beer (New York: Ballantine Books, 1977), p.18. Jackson comments that the Babylonians became so knowledgeable about brewing that they produced texts that actually discussed the suitability of different barleys for different beers and the appropriate maturation period for the varieties that resulted from such recipes.

5 Corran, History of Brewing, pp.19-35. Describes the ancient method of fermentation, which was carried out through the use of wild yeasts attracted to the barley which had undergone processes to liberate its sugars. Brewers did not fully understand the nature of yeast until well into the nineteenth century--they simply let it do its work and retrieved it after fermentation as best they could.

6 Lovett, Brewing and Breweries, p.9.

7 Michael Brander, The Life and Sport of the Inn (New York: St. Martin's Press, 1973), p.58.

8 F.A. King, Beer Has A History (London: Hutchinson's Scientific and Technical Publications, 1947), p.16.

9 Ibid, pp.20-21.

10 Lovett, Brewing and Breweries, p.12.

11 James D. Robertson, The Connoisseur's Guide to Beer (Ottawa, Illinois: Green Hill Publishers, Inc., 1983), p.19.

12 Jackson, World Guide, p.16.

13 Brewing terminology is important in understanding subsequent developments. Originally, ale was a top-fermented malt beverage without hops, and beer, the same but with the addition of hops. Later, when the addition of hops had been universally accepted, beer came to mean all fermented malt beverages; ale then became distinguished as being top-fermented, while lager, the other major type, was bottom-fermented. In short, lager is a generic term to describe bottom-fermented beers; similarly, ale is generic for top-fermented beers. These distinctions, however, cannot always be definitive as the use of terminology varies to some degree the world over.

14 Corran, History of Brewing, pp.44-45.

15 Jackson, World Guide, p.10.

16 Peter Mathias, The Brewing Industry In England: 1700-1830 (Cambridge: The University Press, 1959), p.21.

17 Corran, History of Brewing, p.120.

18 Ibid, p.161.

19 Lovett, Brewing and Breweries, p.14.

20 Stanley Baron, Brewed in America: The History of Beer and Ale in the United States (Boston: Little, Brown and Company, 1962), pp.206-207; 229-234: Steam beer might be best described as a crossbreed as it was fermented using bottom-fermenting yeast but at top-fermentation temperatures. Once the wort had been cooled to 58 to 60 degrees F., it was run into the fermenting tub where bottom-fermenting yeast was added. Between twelve to eighteen hours after pitching (the process of adding the yeast), the wort came into kraeusen (primary fermentation) and then was run into a clarifier where fermentation continued. The clarifier was normally a long, shallow pan-like wooden vessel of no more than twelve inches in depth. It prevented significant rises in temperatures by exposing the large surface of beer to ambient air, accelerating clarification. When the temperature of the liquid was kept within the 60 to 70 degrees F. range, fermentation was usually completed in two days. The beer was then sent directly from the clarifier to the filling room where it was racked into barrels. Each barrel was kraeusened to stimulate a natural infusion of carbon dioxide. Four to six days later the beer had built up the exceedingly high pressure of fifty to sixty pounds per square inch. Because of this pressure, the barrels, when tapped emitted a hissing sound reminiscent of steam, hence the name, "steam beer."

21 Corran, History of Brewing, pp.131-139.

22 The hydrometer works on the simple principle that the alcohol in the wort weighs less than the sugar it replaces--therefore the degree of fermentation can be measured by this noticeable change in the liquid. This is particularly important in determining the progress of primary and secondary fermentation, the reading of the latter being pivotal in the bottling of beer.

23 Corran, History of Brewing, pp.98-99; 139-140.

24 John Vaizey, The Brewing Industry 1886 - 1951: An Economic Study (London: Sir Isaac Pitman & Sons Ltd, 1960), p.5.

25 Thomas C. Cochran, The Pabst Brewing Company: The History of an American Business (New York: New York University Press, 1948), pp.110-111.

26 Baron, Brewed in America, pp.239-242.

27 Jackson, World Guide, p.218.

28 Robertson, Connoisseur's Guide, p.210.

29 Corran, History of Brewing, p.273.

30 Martin Ian Bowering, "The Art and Mystery of Brewing in Nineteenth Century Toronto" (M.A. Thesis: University of Toronto, 1978), p.4.

31 Baron, Brewed in America, pp.95-100.

32 Ibid, p.120.

33 Ibid, p.176.

34 Bill Yenne, Beers of North America (Greenwich: Bison Books Corp., 1986), pp.27-28.

35 Victor S. Clark, History of Manufactures in the United States, in Stanley Baron, Brewed in America, p.113.

36 Jackson, World Guide, p.204.

37 Corran, History of Brewing, pp.273-274.

38 Yenne, Beers of North America, pp.78-84.

39 Emile Vaillancourt, The History of the Brewing Industry in the Province of Quebec (Montreal: G. Ducharme, 1940), pp.15-22.

40 Jackson, World Guide, pp.198-199.

41 Bowering, "Brewing in Toronto," p.7.

42 Ibid, p.10; footnote 37.

43 Ibid, p.30.

44 H.S. Rich, One Hundred Years of Brewing (Chicago: H.S. Rich and Co., Publishers, 1903), p.619.

45 Bowering, "Brewing in Toronto," p.59.

46 Rich, One Hundred Years, pp.632-633.

47 Victoria British Colonist, 8 July 1859

48 Bowering, "Brewing in Toronto," p.32.

49 Brewers Association of Canada, Brewing in Canada (Ottawa: Brewers Association of Canada, 1965), pp.38-39.

50 Rich, 100 Years, pp.633-635.

51 Matthew Macfie, Vancouver Island and British Columbia: Their History, Resources, and Prospects (London: Longman, Green, Longman, Roberts, & Green, 1865), p.85.

52 Yenne, Beers of North America, p.81. See map of American urban centres and corresponding number of operating breweries.

53 Rich, One Hundred Years, pp.360-362.

54 Ibid, pp.533-534.

55 Baron, Brewed in America, p.200.

56 Yenne, Beers of North America, p.48.

57 Baron, Brewed in America, p.201.

58 Rich, One Hundred Years, pp.534-536.

59 Jackson, World Guide, p.8.

CHAPTER 2

ISLAND BREWING: THE PIONEER YEARS, 1858 - 1890

Between the 1858 Fraser River Gold Rush and the advent of Prohibition in 1917, breweries operated continuously on Vancouver Island.(1) This chapter examines their development before 1890, when they progressed from privately owned and mostly smallish providers of a necessary frontier "staple" to the end of a decade when many stood posed to enter a new financial order--the world of the incorporated, joint stock company. This progression is explored primarily through an examination of the entrepreneurs who initiated the many brewing facilities and the market forces that shaped their development.

The breweries of 1858 to 1890, were centered in Victoria, the major brewing centre, and Nanaimo. At this time the brewing industry generally was beginning to experience real innovation. Simultaneously, the young colony of Vancouver Island was experiencing dramatic changes.

Fort Victoria was established in 1843. Although "conceived within a context of retrenchment and retreat," it gradually consolidated its position as the centre of the Hudson's Bay Company's northwest operations. The importance of the settlement and surrounding area was recognized in 1849 when the British Government gave formal control of the island and its economy to the Company. Over the following nine years, Victoria gradually became a general trading entrepot and a community of "surprising complexity".(2) Its economic well-being slowly came to rely less on fur trading and more on other Island commodities such as shingles, fish, lumber, coal and potatoes, the bulk of which found their way to California, via the Hudson's Bay Company. To its credit, the Company realized the need to diversify into farming, mining and lumbering and its tentative steps in this direction meant that Victoria was in an upward economic swing when the thousands of California gold seekers descended upon the town in 1858.(3) When word reached San Francisco that spring that gold had been discovered in the Fraser River, "the mass hysteria that makes gold rushes surged within the city, and thousands prepared to leave for a new El Dorado."(4)

The resulting invasion of fortune seekers changed Victoria's

economic and social face overnight. This diverse and speculative group included general merchants, importers, hotel keepers and agents of San Francisco and British wholesale companies; in short, what historian Margaret Ormsby calls "men of substance who had brought capital for investment."(5) Equally noteworthy was the cosmopolitan make-up of these immigrant entrepreneurs, many of whom had migrated to San Francisco from Europe.(6)

Among the thousands who disembarked in Victoria in the initial rush of fortune seekers, were the pioneers of the Island's brewing industry. While some were experienced in the art of brewing, others had neither practical experience nor theoretical knowledge but this was no handicap because they could hire other individuals who, while lacking the financial resources to establish themselves as brewers, were experienced in the operation of breweries. Besides, these were boom times and many could risk embarking on a new venture without previous experience. They learned by mistakes which were not necessarily fatal. Arriving as they did in a period of positive action and great economic activity, the spirits of these pioneers were also undoubtedly buoyed by many Germans, Americans, Austrians, Scandinavians and Frenchmen, whose presence augmented the well entrenched community from Great Britain. These Northern Europeans and Americans with their affinity for beer gave pioneer brewers good reason to be optimistic.(7)

Equally significant was Victoria's pivotal relationship with San Francisco, the only metropolis on the Pacific coast and centre of an economic region "that included British Columbia in its hinterland."(8) That city's brewing industry was already large and sophisticated. In tandem with dozens of breweries operating throughout the interior of California, it influenced the economic life of the State as a whole, fostering the development of large tracts of land devoted to growing quality barley and hops. In addition, secondary manufacturers provided services to the industry, ranging from the fabrication of brewing vessels to the production of pottery beer jugs and keg bungs.(9)

The close transportation and trade ties between Victoria and San Francisco linked local brewers to a ready source of materials, equipment, and brewing expertise. The economic benefits of such

relationships did not go unnoticed by San Francisco merchants one of whom advertised in the Weekly Victoria Gazette in September 1858:

> To brewers....malt, very superior malt! The subscriber has always on hand at his Pioneer Malt Establishment, situated in the city of San Francisco, Cal., very superior malt made from very choice old barley which he offers for sale in lots to suit purchasers at the very lowest cash price, payable in San Francisco. All orders (accompanied with the cash) for pale or brown malt for ale or beer, or roasted for porter, either ground or unground...or for any and every material used by brewers, if sent directed to the office of the Pioneer Malt House, No. 81 and 83, Washington St. San Francisco, will be promptly and faithfully attended to, as per advice. Lewis S. Ford(10)

Throughout western North America, a brewery was usually one of the first business ventures initiated in a new or regenerated frontier settlement.(11) Such a facility could penetrate the market all the more easily, if reliable brewing materials were close at hand; a situation preferable to a reliance on raw materials from eastern North America or Europe, the quality of which could suffer from weeks and even months of sea travel. Plentiful quality barley, to augment local crops grown on Vancouver Island or along Puget Sound, was only six to seven days away by ship from California. A steady supply of quality brewing materials and equipment, relatively close at hand, meant little or no production downtime for local brewers, and undoubtedly provided them with a sense of security not experienced by brewers initiating operations in more remote frontier areas of North America. Unfortunately, it also represented potential competition.

Against this backdrop of multi-faceted economic and technological ties to California and a burgeoning local economy, British Columbia's first commercial brewer, William Steinberger, appeared. Steinberger, a German with brewing experience, established the Victoria Brewery at Swan Lake in 1858. While this was in marked contrast to his original plans to travel to the gold fields, it nevertheless illustrates the frontier entrepreneurial spirit of early brewers--their readiness to abandon original plans to take advantage of new commercial opportunities.(12)

Steinberger was able to use surplus grain, stockpiled by the Puget Sound Agricultural Company at its nearby Craigflower Farm after the Russian Alaska grain market collapsed after the Crimean War. Kenneth MacKenzie, the agent and bailiff for the company and an entrepreneur at heart,(13) had earlier sought permission to establish a brewery to use up surplus grain but his superior in the parent Hudson's Bay Company demurred, lest such a development upset their market for rum and whiskey.

Curiously, they made no objection when William Steinberger made the same proposal. The reasons for this are open to speculation. The Hudson's Bay Company, which was after all a commercial enterprise, may simply have wanted to profit from the disposal of the grain. It is also possible the Colonial Government pressed the Company to assist in stimulating the Island's economic development. While Steinberger's planned brewery was a small enterprise, it provided a staple item in a growing community--a perspective not to be overlooked in a discussion of economic stimulation.

Whatever the reason for the Hudson's Bay Company's decision, Steinberger set up his brewery on the east side of Swan Lake. While its exact location and physical character are not known, local lore maintains that it was located alongside the original Saanich Road in a flat area upon which the Swan Lake Hotel was later built.(14) The initial cost of this venture would have been relatively modest. The price of grain, given the years of stockpiling, was probably low. The property, remote by 1858 standards, was likely inexpensive to purchase or lease. He could have also kept costs low by building a very basic facility, or he may have leased an existing building and retro-fitted it. The latter is more likely considering that the twenty-one year old Steinberger was unlikely to have acquired much capital.(15)

Within a year, Steinberger moved closer to his market by building a new brewery at the corner of Discovery and Government Streets in downtown Victoria and took Christian Ochsner into partnership probably to assist in financing the new facility.(16) The downtown location also offered easier access to relatively pure water, transported by wagons from the natural springs at Spring Ridge, a mile to the northeast of the

business-core. The water at Swan Lake was already known for its impurities.(17)

In 1860, perhaps due to less than spectacular profits, disagreements with his partner or new goals, he moved to Yale on the mainland where, in 1864, he sought permission to provide the water supply for the community.(18) A year later he was in Big Bend, where he was once again a brewer. Eventually in 1874 he returned to Victoria where he became first a distiller and later a farmer.(19) This brief description of William Steinberger is of more than passing interest because it raises several related issues: the costs and sources of the capitalization of early breweries; the multiplicity of occupations in which brewers engaged during their lifetimes; and the state of flux in many business relationships.

Of the many problems facing early brewers, the primary one was capitalization. While only a few scattered references (i.e. assessment rolls and newspapers) indicate the degree or sources of suitable investment capital, they provide a basic picture. Generally, early brewers experienced high costs. Building materials and skilled labour, were both expensive and scarce during the heady days of the gold rush boom. In addition, land in Victoria's business core was dear.(20) One merchant, who paid $2,000 for a 20 foot by 70 foot lot in the summer of 1858, reported that he did not believe that such high land costs were sustainable yet found no depreciation in the value of his acquisition by the end of the year.(21) The exorbitant land values combined with the availability of spring water, encouraged brewers like Alfred Thomas Elliott and Thomas Lavery, founders of the Lion Brewery, to build their facility one mile from town at Spring Ridge. The same factors no doubt persuaded James Bland to build his combination saloon and brewery, the Half-way House, in Esquimalt in 1861.

High land costs in the booming business-core, coupled with a shortage of personal capital led many brewers to lease land and buildings. From a landlord's point of view, the brewery provided a steady source of income on property that may have been difficult to sell during times of inflated values.(22) For the brewer with limited capital, leasing reduced initial investment and allowed him to use his

limited capital for a building and equipment. Brewers of less substance, such as William Steinberger in his initial venture, were able to amass the financial resources necessary to acquire a site and construct a purpose built brewery at a later date. This may have been the case with Henry Walther who, having run the Bavaria Brewery for nine years on a site owned by H.P.P.Crease and Joseph York, finally secured sufficient savings to purchase the property in 1883.(23)

Elsewhere in North America brewers often adapted existing buildings, including barns, warehouses and framed houses, for their own purposes. This practice allowed a brewer to take advantage of a new market without waiting for either new construction or the financing necessary to build "from scratch."(24) On Vancouver Island, however, there is hard evidence that only one brewery in the 1860s, the Price brothers' Millstream Brewery in Nanaimo, definitely began operations in a non-specialized structure.(25) However, several other Island brewers in the 1860s, leased facilities that were almost certainly non-specialized structures which had to be adapted for brewing.

While it is difficult to ascertain the exact number of brewers who operated in such premises during the first two decades of the industry, it is known that two brewing firms of the 1880s also operated in non-specialized structures. This suggests that some of the high costs experienced in the boom economy of some twenty years earlier were again being felt. Thus, the proprietors of the Vancouver Brewery in Victoria occupied a building believed to have been a warehouse and then moved to an abandoned flour mill.(26) It may also explain why the owners of the Red Lion Brewery in Nanaimo began their operation in a two-storey wooden building, the original purpose of which remains unknown.(27)

Other brewers, however, were able to afford purpose-built structures. Initially, some were modest, but the proprietors, by reinvesting profits, were gradually able to expand. There is little evidence of construction costs for purpose-built breweries prior to 1870. Newspaper references reflect breweries like the large Colonial Brewery and the technically advanced James Bay Brewery and were undoubtedly used to illustrate the growing sophistication of Victoria, where breweries and foundries were the Island's most mechanically

sophisticated factories until the 1880s. However, they offer little regarding construction costs and what there is, often does not conform to real estate assessment records which ignore fixtures, an unfortunate situation as a very large percentage of a brewery's real value was in its machinery and utensils.

Nevertheless, a sense of the cost involved in establishing and operating an 1860s brewery can be ascertained by examining partial company records from the Lion Brewery for 1865. These indicate that the net tangible assets--the brick malt house, brewery building and permanent fixtures (casks, drays, horses but not brewing materials)--were worth $13,050.00, a figure significantly higher than the property improvement of $1,800.00 listed in the 1864-1865 assessment rolls.(28)

The company's valuation represents real investment and replacement value and is supported by Arthur Bunster's experience with the Colonial Brewery after it destruction by fire on May 2, 1868. The loss, including finished products and brewing materials onhand, was estimated at $25,000.00. Rebuilt and in operation by late August, the new brewery, again built of brick, absorbed about $9,000.00 in construction costs alone. The similarly sized Phoenix Brewery, which commenced operation at the same time, probably cost about the same.(29)

The Lion Brewery, the Colonial Brewery and the Phoenix Brewery represented the larger operations.(30) Given the economic realities of the first half of the 1860s, smaller facilities such as the Bavaria and the Victoria could well have cost several thousand dollars to build. Even unimposing structures of wood required a minimum of specialized equipment that probably represented an initial capital cost of several hundred dollars. How these costs compare to those experienced by brewers elsewhere in North America is virtually impossible to determine. It is safe to say, however, that building and equipping breweries was expensive because of the number of vessels and the machinery required. By 1885, the $16,000.00 cost of initiating the Empire Brewery was almost the same as that for the net replacement value of the Lion Brewery, some twenty years earlier--a clear indication of the financial burden facing pioneer brewers.(31)

The source of initial capital remains relatively unclear. One

pioneer brewer, Charles Gowen, might best be classified as a "San Francisco entrepreneur;" he accrued significant capital in the California Gold Rush to acquire a brewery shortly after arriving on Vancouver Island. Others, may have borrowed from family members or financial institutions, the latter becoming a viable option after the arrival of the Bank of British North America in Victoria in 1859.(32) They may have used an American banking technique whereby loans for construction or renovations were structured to be paid off from summer profits, thus establishing financial commitments with a short-term impact.(33) Some brewers used funds earned from other business ventures, this multiplicity of enterprises being a common feature of a frontier economy. John Mahrer, who, except for a brief partnership with William Keddy, operated the Nanaimo Brewery as an individual owner used profits earned in a bakery and restaurant in the Cariboo to purchase a bakery, soap factory and soda water works in Nanaimo. He invested the profits in 1879, to purchase, expand and modernize his brewery. In a sense, Mahrer was his own banker.(34)

Some thirteen years earlier, partners, Alfred Elliot, George Stuart and Hugh Moore of the Lion Brewery likely used profits from their other enterprises, including the sale of livestock, produce, grain and hardware, to obtain and retire, a mortgage from the Bank of British Columbia in 1866. This six-month, collateral mortgage of $2,000.00 or less was secured by the value of the plant and stock and retired as per the agreement. Its probable use for expansion or modernization would have been a good investment as the mortgagors could draw on the profits, particularly from beer sales, to retire it; such profits no doubt being returned many times over in subsequent years due to increased production.(35)

Another style of financial resource generation was largely facilitated by individuals who saw themselves as short-term investors and attached themselves as partners to a knowledgeable and stable brewer; this theoretically resulted in a reasonable return on their speculation and an opportunity to move on to other business opportunities. These individuals, who can be described as incidental investors, operated on speculative impulses and instinct,

characteristics that were prominent in a frontier economy. For them, profits equalled the mobility necessary to move to other opportunities when a positive economic outcome seemed to be securely in their favour.(36)

This explains to a large degree the fluidity witnessed in the private ownership of local breweries over the first 32 years as illustrated in Appendix A. While some breweries like the Victoria, the Phoenix and the Colonial demonstrate relative stability, others like the Bavaria, the Lion and the Vancouver in Victoria, and the Millstream Brewery in Nanaimo, are prime examples of fluid business relationships. Such fluidity, however, does not necessarily imply business failure. Certainly, some movement can be explained by disillusionment with profits, the lack of business acumen of one's partner, competitive pressures or, more seriously, illegal actions on his part. While the former were normal expectations in any business venture, the last could have particularly far-reaching consequences, as liability was not limited to the building and equipment. In effect, one person could be held liable to an unlimited extent for the actions and debts of his business associates, a potentially debilitating situation.(37) Thankfully, such occurrences seem to have been rare on Vancouver Island and the frequent evolution of new partnerships was linked to a prevalent opportunistic business philosophy.(38)

The real challenge is to interpret such business and interpersonal approaches as they relate to day-to-day operations. Evidence suggests that brewers fell, although not always neatly, into two categories: proprietor-brewers and proprietor-investors and that the category determined how individual facilities were actually operated.

Proprietor-brewers normally took a professional role in overseeing and participating in daily operations. Proprietor-investors, on the other hand, because of their diverse business activities, relied largely on hired professionals to operate the brewery. Brewing was after all, a continuous process which demanded long hours from brewer and worker alike, especially in small breweries where the brewer might be the brewmaster, maltster, engineer and chief cellarman, all rolled into one. Thus, carefully choosing a professional brewmaster or manager to oversee

production on behalf of the brewer-investor was critical to the long-term success of the brewery. The right selection, once made, was reinforced by astute owners who fostered a positive relationship in which competent brewers were fully integrated into the affairs of the business.(39)

Often, neither type of owner had previous brewing experience, a situation not uncommon in the opportunistic and quickly changing world of the frontier. As Stanley Baron points out, some of the best known brewers in the early American West, such as Nicholas Kessler and Leopold Schmidt, had careers as diverse as carpenters, seamen and miners, before realizing the profits to be made in brewing.(40) It is beyond the scope of this study to portray all the local brewers but some carefully selected portraits illustrate the diverse skills, backgrounds and philosophies of the men who made the Island industry successful in its initial decades.

In Victoria, Charles Gowen typifies the successful proprietor-brewer with no previous experience in brewing. Born in London, England, he journeyed to California in 1849 where, after trying his hand at prospecting, he operated a boarding house, hotel, freight business, chair factory and bowling alley at various locations. In 1858, he passed through Victoria on his way to the gold fields of the Mainland. Returning in 1860 with a profit, he entered the saloon business with Frank Laumeister and, together, they purchased a share of the Victoria Brewery. Here Gowen learned the craft of brewing and oversaw the daily operation, while pursuing other business interests, including participation in the ill-fated venture to introduce camels as pack animals into the goldfields in 1862. By then the sole owner of the Victoria Brewery, Gowen sold it in 1866 to return briefly to mining before moving back to Victoria to reassume his partnership with Frank Laumeister and to join Joseph Loewen, in purchasing a flour mill and distillery. In 1868, Gowen established the Phoenix Brewery to which he devoted most of his time as he built it into a highly successful operation.(41)

Arthur Bunster is more representative of the proprietor-investor. From 1859 to 1882, he operated the Colonial Brewery and employed

professional brewers to manage it. James Gibson, who managed the brewery from 1868 to 1883 (he carried on this role for John Leahy until the facility closed in 1897) allowed Bunster to engage in other business ventures, including farming, liquor importation, real estate speculation and milling and to become an advocate for Island brewers on occasion--a precursor to a successful political career.(42)

Alfred Welch, builder of the James Bay Brewery, appears to fall between the two groups, devoting considerable energy to the operation of the brewery when other business interests did not demand his full attention. Claiming to have been an practical brewer in his native England, he was also an auctioneer, general commission merchant and real estate speculator. He seems to have hired an on-site brewer, who no doubt ensured continuity, and brought in other managers during periods of great activity in his other business ventures.(43)

Not all examples displayed such complexity and movement. The partnership of Joseph Loewen and Ludwig Erb, for example, illustrates stability and a more focused approach. Joseph Loewen arrived in Victoria in 1858 with Jacob and Frank Sehl, via the California gold fields. German by birth, his family had a history as hotel owners, tax collectors, grain merchants and vineyard owners. After working in the shingle and distilling trades, he joined Ludwig Erb in partnership in the Victoria Brewery in 1870.(44) Erb was a practical brewer before he arrived in Victoria. After attending Liebig's Brewing College in Munich, he worked in breweries in Bavaria, Austria, Hungary, Poland, Turkey, Romania and the United States.(45) In partnership with another brewer, N. Cunio, he operated a brewery in Barkerville until 1870 when he moved to Victoria and joined Joseph Loewen in acquiring the Victoria Brewery.(46) Together they formed the longest and arguably the Island's most successful brewing partnership. Erb's vast experience as brewmaster in combination with Loewen's business acumen resulted in steady growth. They too, eventually diversified by acquiring land and retail liquor outlets, which sold their products.

On occasion, employees became entrepreneurs. John Leahy, largely a brewer-proprietor, had worked for Arthur Bunster for seven years before leasing the Colonial Brewery in 1882 and buying it outright in

1894. Originally a grocer's apprentice in Ireland, he arrived in North America in 1864 and, after trying mining in Colorado and the Cariboo, became a member of a Canadian Pacific Railway survey party. A respected businessman, he eventually acquired other, unidentified business interests with his brewery profits.(47) A similar situation was experienced by Arthur Keast of the Lion Brewery who began his tenure with the brewery as an accountant's clerk before being admitted, in recognition of outstanding service, as a full partner in the company in 1871.(48) August Hasenfratz exhibited equal tenacity, working his way up from labourer in two Victoria breweries to purchasing Nanaimo's Lansdowne Brewery.(49) Hired, professional brewers, also rose in the industry. Henry Reifel, for example, after being employed as a brewmaster in a Victoria and a Nanaimo brewery, became one of the province's most influential brewers and industry investors.(50)

The loss of a proprietorship could also be a fact of life. John Wagner, a partner with John Smith and Henry Walther in the Bavaria Brewery, apparently became a freelance brewer after the dissolution of the business relationship; similarly, Charles Zoelle, proprietor of the Bavaria Brewery from 1887 to 1889, accepted employment with the Vancouver Brewery and the Colonial Brewery during the 1890s.(51)

The Island's second brewing centre, Nanaimo, also saw brewers of varied backgrounds. The aforementioned John Mahrer, who was from a Jewish distilling family in Prague, was preceded by the brothers, John Rees Price and Thomas Rees Price, founders of the Millstream Brewery in 1864. They were coal miners who switched to brewing and hotel keeping in the hope of realizing the financial security that a miner's wages could not guarantee. Never pretending to be brewers, they employed a professional brewer, placing them firmly in the proprietor-investor group.(52)

Diverse backgrounds was also a characteristic of the Nanaimo brewer of the 1880s. The Cornishman, Henry Rosewall for example, was a prospector, coal miner and a farmer, before establishing the Lansdowne Brewery. Local lore says he taught himself to brew, another example of the inexperienced individual becoming a successful practitioner.(53) Similarly, Thomas Preece and John Marwick, principal operators of the

Red Lion Brewery, acquired enough basic skills to operate their facility on a day-to-day basis despite the fact that Preece was a contractor by trade and Marwick a butcher, hotel keeper and owner of a livery stable and express business.(54)

These sketches illustrate the diversity, mobility and, for those who lost proprietorships, uncertainty, that characterized the Island's brewing industry in its first three decades. Uncertainty, was of course a normal experience in any industry. While diversification occurred in other industries, it was common with brewing in North America. Pioneer brewers traditionally expanded into other ventures, such as milling, farming and hotel keeping, each an obvious adjunct to brewing. In addition to the greater economic benefits that such activities could generate, severe weather conditions in some parts of the continent precluded year round brewing.(55) In such cases, pioneer brewers needed other activities to ensure a living. Such was not the case on Vancouver Island, where the equitable climate allowed brewing to be a continuous activity.(56) Nevertheless, this ingrained practice of diversification continued, fuelled by the opportunities afforded by a frontier economy. While some activities, such as real estate speculation and the sale of hardware, were far removed from brewing, others such as milling, soda water manufacturing and liquor importation had direct ties. Success at a variety of ventures, as illustrated in Appendix H, indicates two things: that a frontier economy provided plentiful opportunities for profitable diversification; and that both brewers and investors considered brewing to be a mainstay of diverse business ventures.

To put this interpretation into context it is necessary to place it against a brief chronological history of local brewers and judge how the industry performed over the first 32 years. An examination of the pattern of industry's growth clearly indicates times of growth, decline and stabilization. As Figure 1 illustrates, the first surge in the establishment of breweries came in 1858 to 1863, the period of the greatest excitement surrounding the gold rush. During this period six breweries were established, all in Victoria. Shortly after the founding of the Victoria Brewery in 1858, two others entered into competition; the Colonial Brewery, opened in July 1859; and, the Half-way House

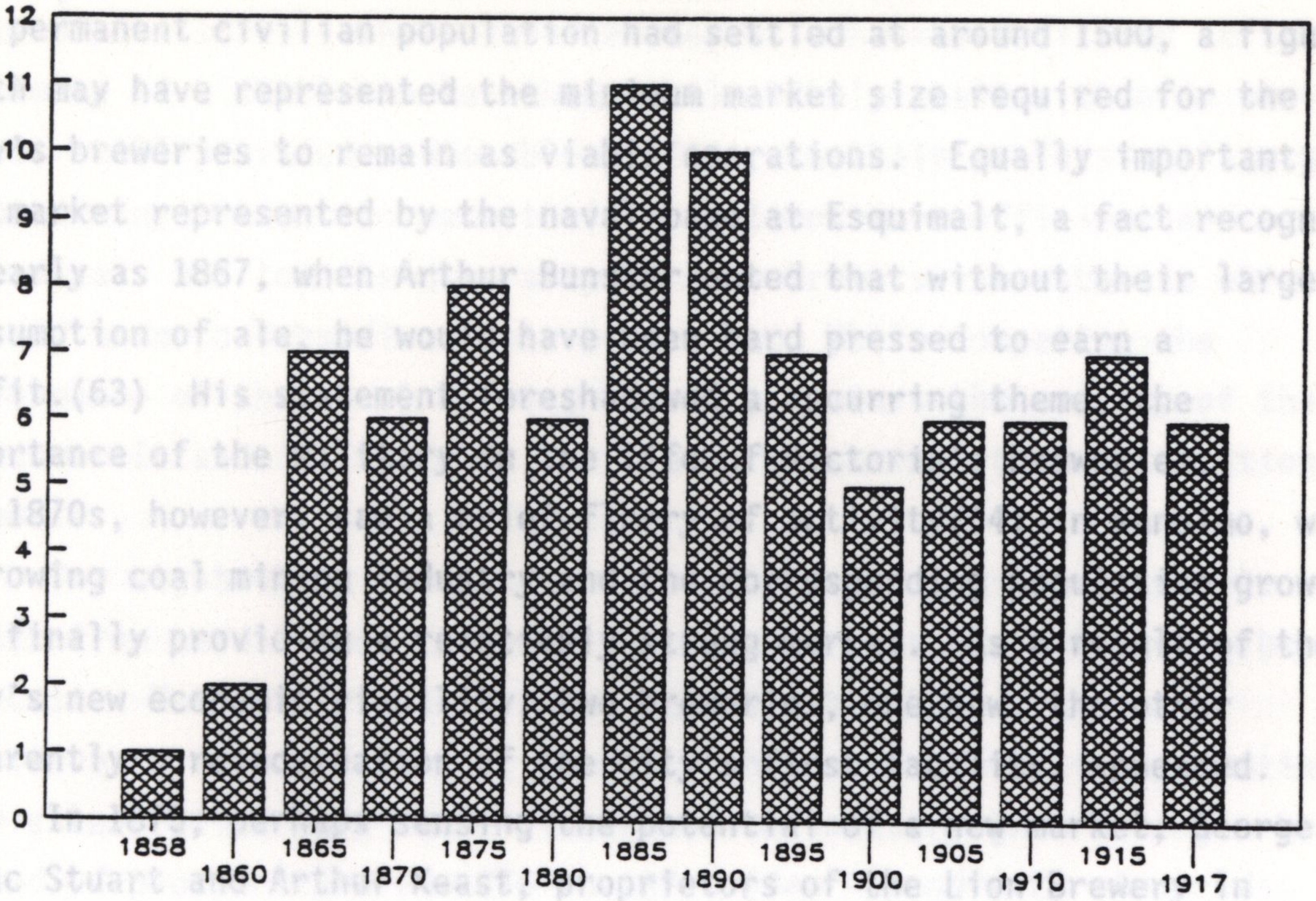
Brewery on Esquimalt Road, established in 1861 under the proprietorship of publican Jimmy Bland. Within two years, there were three more breweries: the Lion Brewery at Spring Ridge, beginning production as early as the summer of 1862; the James Bay Brewery on Michigan Street, which was producing a range of ales by the spring of 1863; and, the Bavaria Brewery on Fort Street, which also opened in 1863, under the proprietorship of Martin Goetz.(57)

To the north, the Price brothers opened Nanaimo's first commercial brewery, the Millstream Brewery, in 1864.(58) Apparently used as a wholesale and retail establishment (to help ensure a living in the small community), it was situated on the banks of the Millstream River and was conveniently located for transportation by land and sea.(59) These factors, however, did not guarantee success. It closed in 1867, its demise, as legend has it, caused by its inability to compete with beer from San Francisco and Victoria.(60) In fact, its departure may have just easily been related to the fact that Nanaimo did not share the frenzied boom felt by Victoria during the Fraser River Gold Rush or the market provided by the Royal Navy, and its population never grew much beyond the 200 permanent residents reported in 1862.(61) This would have represented a modest market by any standard, a factor that, combined with outside competition, spelled the doom of the brewery.

In fact, population was declining on the Island as a whole. After 1863, only 1,500 people claimed to be permanent residents of Victoria, just three years after a population estimated at between three to six thousand. This fact did not apparently deter Charles Gowen, who established the Phoenix Brewery in Victoria in 1868, the final brewery established in the decade. Gowen, obviously an optimist, invested in a new and efficient facility when gold mining on the mainland, which had supported considerable commerce in Victoria, was rapidly declining. As could be expected, except for land trading, mining and sawmilling, which encouraged such manufacturing as shipbuilding and metal fabrication, Victoria's economy was stagnant.(62)

The economy of the Island maintained a holding pattern during the 1870s, showing few signs of real life but Victoria's brewing industry remained fairly stable with six breweries in operation. The secret was

FIGURE 1
Breweries - Vancouver Island



Growth Curve - 1858 - 1917
Number of Breweries

Sources: Newspapers; City Directories; Real Estate Assessment Rolls; Retail and Wholesale Licensing Books; Companies Branch Records; Interviews; Private Collections

the permanent civilian population had settled at around 1500, a figure which may have represented the minimum market size required for the city's breweries to remain as viable operations. Equally important, was the market represented by the naval base at Esquimalt, a fact recognized as early as 1867, when Arthur Bunster noted that without their large consumption of ale, he would have been hard pressed to earn a profit.(63) His statement foreshadowed a recurring theme; the importance of the military in the life of Victoria's breweries. The 1870s, however, saw a brief flurry of activity(64) in Nanaimo, where a growing coal mining industry and the corresponding population growth, was finally providing a relatively strong market. As a result of the city's new economic viability, two breweries, one new, the other apparently a reincarnation of the city's first facility, appeared.

In 1875, perhaps sensing the potential of a new market, George Isaac Stuart and Arthur Keast, proprietors of the Lion Brewery in Victoria, constructed a new Millstream Brewery on Mill Street in Nanaimo, a substantial structure with a reported capacity of 600 gallons of beer per day.(65) Busy with other investments in the capital city, they placed their new Nanaimo operation under the management of a former brewmaster from Victoria, William Crockford. It was built only several hundred feet from the site of the Price brothers' original Millstream Brewery, which two brewers, John Galbraith and Henry Pemble Smith, had re-opened and re-named the Nanaimo Brewery in 1874. The new Millstream Brewery went bankrupt after two years while the Nanaimo Brewery appears to have remained in more or less continuous operation until purchased by John Mahrer in 1879.(66) The reasons for Stuart and Keast's failure are unclear. One could surmise, however, that they misjudged the strength of the Nanaimo market and could not secure a sufficient return on their investment. The partnership of Galbraith and Smith, on the other hand, may have kept overhead costs low by renovating an existing facility thus allowing themselves to profit from a deceptively small market.

Despite expansion in Nanaimo there were still only six breweries in operation on the Island. This apparent stagnation actually speaks well of the majority of local brewers as it indicates their ability to weather the economic doldrums that persisted from the mid-1860s to the

close of the 1870s. Their survival may also have been linked to the existence of a stable market that, while likely smaller than in previous years, still provided reasonable profits; to their professionalism which allowed many brewers to make their operations more efficient and economical; and to, the diversity of some brewers' investments which allowed them to subsidize their breweries. While comparing the performance of the local brewing industry against the economy of the Vancouver Island is important, so too is measuring it against national trends.

One might think that in economically depressed times, people would switch from hard liquor to beer. In Canada, this has not always been the case. Nationally, the brewing industry has been "extremely sensitive to economic shifts, [and] ...when economic activity declines, beer sales follow suit".(67) The Canadian industry grew during a brief period of prosperity from 1870 to 1874. [See Appendix E] A world depression, beginning in 1873, affected Canada and the production of beer began to decline in 1876, a trend that continued until 1879. This trend is closely echoed in British Columbia as illustrated by provincial malt production figures, first accurately recorded in 1874. [See Appendix B] Production grew steadily from 1874 to 1876, then declined just as steadily to 1879. These figures represent provincial outputs but in the 1870s the Island's industry was in reality the province's industry, there being little competition from commercial brewers on the Mainland.

Nationally, the overall recovery of brewing from 1879 to 1884, was followed by three years of depressed production. Not until 1888, did the industry witness a slow movement upwards out of the "lethargic" decade, which followed the completion of the Canadian Pacific Railway.(68) In examining the local industry's performance against the national trend, we find similarities. The recovery of 1879 to 1884 was graphically portrayed in provincial figures. The national depression that continued until 1888, was not experienced, however, in British Columbia where the industry grew steadily. [See Appendix B]

This was linked to the fact that the 1880s was a decade of optimism and prosperity in British Columbia, reflected locally by the

establishment of seven new breweries. In Victoria, the surge was initiated in 1883 by the brothers, Thomas Watson Carter and Robert Carter, who established the Vancouver Brewery.(69) Their facility was followed in 1884 by the opening of the Tiger Brewery (re-named the City Brewery in 1886), by Thomas Breece and Co.,(70) and the Pacific Brewery, established by Joseph Deacon.(71) In 1885, professional brewer Peter Henning Peters built the Empire Brewery, while in 1888 another professional brewer, Henry Smith Fairall, opened the E. & N. Brewery, the last new brewery of the decade.(72)

In Nanaimo, developments did not begin until 1885 when Henry Rosewall established the Lansdowne Brewery on the north side of Comox Road. A year later Thomas Preece and John W. James founded the Red Lion Brewery at Cranberry in Cedar District, several miles south of Nanaimo. These facilities brought the number of breweries in Nanaimo to three, joining with John Mahrer's Nanaimo Brewery which, after renovations in the fall of 1879, began full-scale production in January, 1880.(73)

Several factors drove the expansion of the Island's brewing industry. The population of Victoria alone increased by 184%, the second highest urban growth rate in Canada. On the larger scale, economic diversification was the hallmark of the decade, with exports of coal, timber, seal skins and salmon increasing dramatically, while several events stimulated the development of a more sophisticated business climate. Chief among them was the completion of the graving dock at Esquimalt, the building of the Canadian Pacific Railway and the subsequent construction of the Esquimalt and Nanaimo Railway on Vancouver Island.(74)

While Island brewers surely realized that they were operating in a prosperous climate in the 1880s, they may not have initially recognized that this was to be a decade of change in which much of the groundwork for a modern Island brewing industry was to be laid. Provincially, Island brewers were no longer alone. With the coming of the railway, the Mainland's population reached sufficient size to offer a viable market for new brewers. The several breweries that came into existence in Vancouver in the late 1880s, such as the Mainland Brewery, and the Columbia Brewery, augmented the already established City Brewery

and Westminster (Sapperton) Brewery in New Westminster.(75)

While the Mainland brewing industry eventually out-produced that of the Island [See Appendix C] and influenced some individual Island breweries, a far more significant factor was forming beyond British Columbia's boundaries--the "national brewer," a phenomenon that changed and continues to change, the face of the North American brewing industry. The growth of national brewers, examined in detail in Chapter Three, began in earnest in the 1880s when a good portion of the brewing industry, particularly in the United States, moved towards consolidation. There, between 1880 and 1910, the number of breweries declined from 2,741 to 1,568, while improved technology and distribution methods resulted in an increase in production from 396,827,900 U. S. gallons in 1880, to 1,643,000,000 U. S. gallons in 1910. Production increased with population growth and the rise in per capita consumption of malt beverages, from 8.26 gallons in 1880 to 16.20 in 1901.(76)

In Canada, production grew from 11,065,378 U.S.gallons in 1880 to 46,370,092 U.S. gallons in 1910, a 400% increase. Unlike the United States, the number of breweries remained almost constant, with 127 in operation in 1880 and 131 in 1910.(77) These statistics do not mean stagnation; instead they represent the significant expansion and modernization of existing breweries and factors such as geography, population and above all, provincial trade barriers, that all but stifled any move towards a national brewing philosophy. Individual consumption, on the other hand, did not suffer from these factors. Canadian consumers, like their American counterparts, doubled their intake, at least in the years 1880 to 1902, albeit less dramatically, from 2.248 gallons to 4.737 gallons per year.(78) The most important point, certainly not likely lost on Island brewers, was the fact that fewer breweries were producing an ever increasing volume of beer. This was the result of large, highly-mechanized and efficient facilities that particularly began to dominate the American market in the final twenty years of the nineteenth century. Driven largely by the increasing demand for lager they used the expanding continental railroad network, nation-wide company agency systems and modern marketing techniques to distribute their products on a national scale.

While the rise of the large national brewers did not go unnoticed on Vancouver Island, the local market in turn, would not have gone unnoticed by the national brewers. By the 1880s, Vancouver Island represented a worthwhile market by virtue of its growing population, economic vitality and accessibility through the continental railroad network. Local brewers, however, had faced competition from imported products from the very inception of the Island industry. [See Appendix F] Well known British ales, dictated by the tastes of the time, appear to have been predominant in the early years. Large British brewers, such as Allsops, Youngers and Tennants supplied Island drinkers with ale, porter and stout, in bottle or wood, through the many liquor importers established in Victoria during the gold rush.(79) Such British imports, augmented by Bass and Guinness, continued to appear on Vancouver Island. Similarly, lager from small to medium-sized, regional breweries situated primarily along the American Pacific Coast, had appeared regularly on the Island for years. By the late 1880s, however, the products of the aggressive national lager brewers such as Van Blatz, Anheuser-Busch (producers of Budweiser) and Pabst, were regularly appearing on the shelves of local liquor importers and affecting local brewers far more than British ale.(80)

The appearance of imported lager on any scale was the signal that the distinct shift to this type of beer, which completely dominated the American market by the 1870s, was beginning in British Columbia. The Colonist in August 1890, for example, noted that 26,135 gallons of lager had passed through the Customs House in Victoria during the last six months of 1889.(81) While suitable comparative figures are not available for earlier years, the very mention of lager imports in 1890 suggests that they had reached significant proportions in the minds of the local business community.

Interestingly, although British drinkers were still extremely loyal to ale, brewers there were moving gradually towards milder and lighter ales. Less highly hopped and alcoholic than traditional products, such ales were sometimes produced using techniques borrowed from lager breweries. The production of some lager in Great Britain as early as 1888 demonstrated, albeit in a small way, recognition of the

public's growing appetite for lighter products.(82)

The Canadian situation was a mix of the American and British experience. In 1893, 32% of all beer produced in Canada was lager.(83) The production of lager, along with light ales, had been made more attractive in 1868 when changes in the excise duties on malt and malt liquors began to favour lager and light ale brewers over those producing heavy ales, the net result being a reduction in the rate of duty borne by brewers of these types of beer. Even with this benefit, it was not until the early 1890s that lager began to make truly significant inroads in the Canadian market. The problem with a national statistic, however, is that it does not illustrate regional differences. Ontario, the country's largest beer producer, represented a mix of preferences with lager and light ales gaining the most ground in major urban areas with large German populations. This was illustrated in Toronto by the decline from 1864 to 1916 of the old family-run "heavy ale" brewery and the appearance of technically innovative, joint stock lager and light ale breweries.(84)

While heavy ales gave ground to lager and light ales in parts of Ontario, they apparently gave less ground in the Maritimes. In 1903, traditional ales could be found throughout the region while lager was either not produced at all or in limited quantities. This situation was echoed in Quebec where, despite a number of breweries that produced lager, ales of all types, maintained a dominant position.(85)

West of Ontario, however, the situation was much different. In 1903, the production of Manitoba's largest brewery, that of Winnipeg brewer Edward Drewery (an exporter to British Columbia in the 1890s) was 60% lager to 40% ale. While lager production in Manitoba was significant, it did not come close to matching British Columbia. Statistics for the same year indicate that 96% of all beer produced on the Mainland was lager while Vancouver Island produced 88% lager and 12% ale and stout.(86)

These statistics for British Columbia illustrate several things. They contradict folklore that ale dominated the local market well into the twentieth century.(87) Even though ale maintained a 12% share of the Island market, three times that of the Mainland, it was

nevertheless, clearly in second place to lager by the turn-of-the-century in both marketplaces.(88) The growing dominance of lager was a major impetus to the building of new, large facilities on Vancouver Island. Ale continued to hold a share of the market, largely thanks to the presence of the Imperial Armed Forces at Esquimalt. At least three local breweries, the Victoria Brewery, the Vancouver Brewery and the Phoenix Brewery, had contracts to supply the Imperial Forces, the latter two since the 1880s, the former probably from an earlier date.(89) When the British Army and the Royal Navy began their withdrawal in 1906 the Victoria-Phoenix Brewing Company Ltd. informed its shareholders that the loss of this steady market, most certainly for ale, would be felt in subsequent years.(90) Similarly, the loss of the market represented by the Imperial Armed Forces affected many breweries in Eastern Canada, particularly those which primarily manufactured ale. Indeed, it has been argued that had it not been for the Imperial Armed Forces, lager would have dominated much of the Canadian market by the 1870s as it had done in the United States.(91)

British Columbia brewers exported 635,989 gallons of malt beverages to the Imperial Armed Forces between 1876 and 1906 of which all but 1,036 gallons were produced on the Island. From 1907 to 1915 no exports to the army and navy are shown but during the Great War 71,454 gallons were sold to visiting Imperial Forces.

For local brewers the military market had ramifications on a regional and even national scale. While beer had been shipped to the Mainland from the earliest days of the local industry, its export beyond British Columbia had never been significant, despite occasional claims to the contrary. The Federal Department of Customs Tables of the Trade and Navigation reveal a more factual picture. Between 1872 and 1900, only 8,591 gallons of malt beverages, listed as "the produce of Canada," were exported beyond provincial boundaries. More striking is the fact that cider was often included in these figures and that, during eleven non-sequential years, no exports at all were reported. High rail transportation rates, prohibition in the North West Territories, and the complexity of legislation concerning interprovincial trade hindered the development of markets elsewhere in Canada. As a result, local brewers

came to view the British military as a stable market which was critically important in years of economic downturn.(92)

While the British military consumed locally produced "export ale," they were also loyal to British brands, thus helping to ensure the presence of imported ale. The tastes of expatriates of many other countries ensured that both imported ale and lager maintained a market. Imports also had a certain snob appeal, which when coupled with the liklihood that local brewers were occasionally unable to produce sufficient quantities for the populace, resulted in foreign beer holding a percentage of the Island market.

The quality of Island beer may have encouraged imports but evidence about quality is both subjective and somewhat contradictory. Arthur Rattray in 1862, complained of the indifferent quality of the beer produced in Victoria but later evidence indicates that some local products reached lofty heights.(93) In 1886, the Vancouver Brewery received medals

> ... for the display and superior quality of their ale and porter from the Paris Exposition, the Colonial and Indian Exposition and the British Columbia Agricultural Association; the one received from the Paris Exposition being a handsome one of solid gold.(94)

But factors other than quality ensured that locally produced beer could withstand the competition of imports. First and foremost, it was fresh and readily available for consumption, having not endured the thousands of miles of travel experienced by imports from Europe and the East Coast of North America. This was particularly important before the wide-spread use of the pasteurization of bottled beer (roughly the 1880s) and the completion of the major railways across North America. Confined to ship's cargoholds, beer could spoil on the long outward journey despite durability achieved through high alcoholic content and large amounts of hops. Much depended on its care and handling in transit; violent motion or significant temperature swings could cause degradation and hence, spoilage - a critical factor in the sale of a product that may have already been higher in price than the local item by the time it reached the wholesale and retail network.

Ease of transportation was the key to more than just freshness. Before the arrival of the Canadian Pacific Railway in 1886 and, to a degree, the Northern Pacific Railway into Puget Sound in the same decade, Vancouver Island, but for its ties with San Francisco, had been relatively isolated from the economic life of the North American continent. Thus, geography offered some protection to local brewers from the competition of breweries in eastern North America. While they were not overwhelmed by imports before the mid-1880s, local brewers could perceive the threat posed by the national brewers resulting from the rapid expansion of the railway system and the new bio-chemical process of pasteurization which allowed beer to be shipped, in a stable condition, over very long distances.

Marketing also played a role in the new reality of the 1880s. Before this decade, marketing in the modern sense was unknown in the brewing industry, both generally and in North America. In reality, local brewers did not really need it. The majority had been small to medium sized local enterprises, depending on horse-drawn deliveries as their distribution network. The retention and expansion of market share depended to a very large degree on the personality of the brewer whose ability to "sell" his products hinged on maintaining a good relationship with the retail trade; in other words, marketing was done at the point of sale. Given this approach and growing consumption, direct factory advertising to the general public was not considered advantageous. Direct advertising was normally confined to listings of brewers in annual business directories, product entries in local agricultural fairs and show cards in the windows of public houses. The "good-will" note was also important, taking the form of special reports in local newspapers introducing readers to new facilities or new products.(95)

The personal approach also included the ethnicity of the brewer and his standing in the community. Although, ethnicity probably had little impact, especially in the gold rush period, when the quality and availability of beer was more important, the ethnic distribution of local brewery proprietors is of interest.

Of the total of 87 private brewery proprietors recorded during the entire period of this study, 60 have been identified by ethnic origin.

[See Appendix H] Individuals giving the British Isles (England, Scotland, Wales and Ireland) as their place of birth, made up 44% of this group, while individuals of German origin (Germany, Austria and Switzerland), represented 30% --the second largest percentage. Twelve percent were born in various parts of Canada, while those born in the United States and Denmark, represented 5% and 1%, respectively. A similar pattern is found in the ethnicity of employees. Of the 190 employees recorded, the ethnic origin of 57 has been established. [See Appendix J] This identified group illustrates a trend not unlike that of the proprietors with 40% listing themselves as of British origin and 26% of German origin. Canadian-born employees made up 11% of the workforce, while 4% each listed themselves as Danish and Swedish and 2% as American-born. The only noticeable difference is the 13% who listed themselves as being of Italian origin, a group not represented among proprietors.(96)

This sample indicates that the industry's private proprietors and employees were dominated by individuals of British and German origin. The British, of course, had been dominant within the permanent population since the inception of Colony of Vancouver Island. What is notable, is the over representation of individuals of German origin in comparison with the ethnicity of the population as a whole. While there are no definitive studies on the exact percentage of Germans within the population of Vancouver Island during 1858 to 1917, some idea can be gauged by a brief study of Victoria's inhabitants in 1871. Of the 178 individuals surveyed, 56% listed the British Isles and possessions as place of origin, 29% as various parts of Canada, 7% as the United States and 8% as originating in foreign countries.(97) Even if Germans made up the bulk of "foreigners," they still would have been a distinct minority when compared with the British population.(98)

While the overrepresentation of Germans is not surprising, given that brewing is deeply ingrained in the culture of German speaking countries, the number of Italians is, as they are not known for brewing. It would appear that Italians began to work in local breweries after failing to find long-term work in the British Columbia mining industry of the 1880s, a view supported by the fact that they do not appear as

brewery employees until the Dominion Census of 1891. The rapidly growing local brewing industry provided employment opportunities for these largely un-skilled workers.

Germans, on the other hand, were well positioned to play an important role in shaping the Island's brewing industry. By the 1860s they were already exercising great influence on the industry in the United States that would eventually ensure both their dominance as leaders of the industry and of lager over ale in that country. While they did not exert quite the same domination of the Island industry, they did emerge as a strong and astute block of individuals within the ranks of brewery proprietors and employees.

While British and Germans dominated both the ranks of brewery proprietors and employees, Americans were under represented in the brewing industry when compared to the general population. The reasons for this are unclear but may reflect the fact that most early American entrepreneurs left after the gold rush while the majority who arrived later, sought work in resource extraction industries and not in manufacturing concerns such as brewing. Canadian born proprietors and employees, however, are only slightly under represented which is surprising considering that so much of the early industry, in both Eastern Canada and on the Island, was initiated by foreign born individuals.

More important than ethnicity was respectability. Brewers were traditionally respected members of the community. In Great Britain in the late 1770s when a large number of brewers became landed gentlemen and successfully entered politics. Brewing's long compatibility with the gentry's style of life, based on a mutual interest in the land and its harvests, allowed brewers to overcome the built-in prejudice against businessmen rising to high social status.(99) While Island brewers were not landed gentry, they benefitted from the respectability that the European-based, North American brewing profession had achieved within the general community.

Respect and mutual ties at a professional level were also important. While it is not known if Island brewers organized themselves along trade lines locally, the opportunity had existed at the national

level since 1878, when the Canada Brewers and Maltsters Association was founded with Toronto brewer John Severn as its first president.(100) Like the older National Brewers Association in the United States, the Canadian organization was initiated to promote collective interests.(101) While the issues that initially brought brewers of all ethnic origins in Canada together remain unidentified, by the early years of the twentieth century, the temperance movement, union organization of brewery workers and price regulation, occupied the agenda of the organization.(102) The role played by Island brewers in this national body, unfortunately, is unclear.

It is evident, however, that they were interested in furthering their economic welfare and position in the community through developing strong fraternal affiliations or entering political life. Island brewers were, like their fellow businessmen, well represented in fraternal organizations such as the Ancient Order of Foresters, the International Order of Odd Fellows, the Knights of Pythias and the Masonic Lodge. In addition to comradeship, membership in these organizations established valuable business connections, while fostering a genuine sense of philanthropy which was manifested through Island brewers supporting causes such as hospital building funds, volunteer fire departments and local agricultural development.

Recognition as a successful and philanthropic businessman could be an asset in the political arena where several brewers had careers. Arthur Bunster, was elected to both the Provincial Legislature and the House of Commons,(103) while Charles Gowen served for many years on Victoria City Council.(104) In Nanaimo, Richard Nightingale was a long-serving councilman, while John Mahrer served for eight years.(105) Not all brewers were successful at politics. Arthur Keast failed to become a councillor and mayor of Victoria but was later rewarded for his general service to the community by being appointed Clerk of the Small Debts Court in 1898 and Deputy Registrar of the Supreme Court in 1904.(106) Similar appointments were granted to other brewers. In 1863, Alfred Welch was appointed a Revisor of Real Estate(107), while in 1875, George Isaac Stuart was named Chilean Consul in British Columbia.(108)

While community status could be important in conducting business, the real challenge was whether local brewers could exercise the business skills necessary to ward off the effects of outside competition. The appearance of the national brewers and their modern distribution and marketing methods meant that simple and personal point-of-sale marketing techniques were no longer adequate. A new age of marketing was dawning, built largely around the development of trade names, more commonly called labels or trade marks today, a phenomenon that American brewers began promoting in the 1870s. One of the most effective ways to display their products, often at great cost, was in competitions at world fairs and expositions. With their images carefully applied to serving trays, calendars, beer steins and similar items destined for the retail trade, they increased public awareness nationally so that their products became household words.(109)

The new immigrants who arrived during the boom of the 1880s, the majority of whom were from the more settled parts of Eastern Canada and the United States, were likely to seek out some of the comforts and products of home, such as a recognizable lager beer perhaps produced by a brewery of a significant regional or national status.(110) These new immigrants, many of whom believed in the long-term future of the Island, as opposed to a majority of the immigrants of the early 1860s whose philosophy rested on short term, quick profits, represented a new market. The challenge lay in convincing them that locally produced beer, particularly lager, was just as acceptable as that produced in their home environment. These immigrants, probably unknowingly, were part of changing times that would re-shape the Vancouver Island brewing industry over the following three decades.

In conclusion, the first thirty-two years of the Vancouver Island brewing industry were marked by several distinct characteristics, the most obvious being the domination, in keeping with the industry worldwide, of the local industry by private proprietors, the majority of whom were of British or German origin. Such proprietors initiated the local industry during a time of strong economic, social and technological ties to the brewing industry of San Francisco, a link that provided a firm base, particularly from the perspective of raw brewing

materials for the fledgling industry. Such a positive factor was likely welcome as the local industry was initiated within in a frontier "boom" economy, marked by quick profits, shortages of materials and labour, and high prices, the latter reflected in the high capitalization costs experienced in the construction and equipping of a brewery. While the latter might be offset by the leasing of property or the retro-fitting of existing buildings as breweries, dealing with the instability of a boom economy was difficult.

The local industry, however, did not crumble after the excitement of the gold rushes of the late 1850s and early 1860s subsided. While the entire thirty-two year period was marked by economic fluctuations, the local brewing industry, on average, weathered the storm rather well. The primary reasons for this are numerous. To begin, local beer was fresh, consistent in quality and was produced by a cadre of experienced brewers. Considered a staple product by people of Northern European extraction, its importance as a beverage remained constant, resulting in a steady if not always spectacular market. In addition, the market provided by the Imperial Armed Forces stationed at Esquimalt was substantial and was especially instrumental in keeping the production of ale within the product range of the majority of local breweries.

Until the coming of the Canadian Pacific Railway to the mainland in 1886, beer drinkers on Vancouver Island were very much a captive market. While imports were always a fact of life for local brewers (Vancouver Island was after all not that isolated given the proximity of San Francisco), the appearance of a transcontinental railway signalled complex changes. For one thing, Vancouver emerged as a commercial rival to Victoria in all facets of economic life, eventually even brewing. More importantly, the railway drew Vancouver Island into the double-edged sword of a continental economy. While providing access to the continental marketplace for Island manufacturers, high freight rates gave local brewers little chance of significantly penetrating the North American market. Conversely, many large brewers, particularly in the United States, realized the potential of Vancouver Island as a market for their products. The ever increasing speed offered by the continental railway network ensured that Vancouver Island became an

easier market to penetrate for national brewers with their large, highly mechanized factories, pasteurized products (a distinct advantage over earlier, often unstable imports), vast distribution networks and modern marketing techniques.

In the final analysis, the emergence of the national brewer in the United States, the arrival of the Canadian Pacific Railway, and the wave of immigration in the 1880s, exerted tremendous pressure on the uncomplicated yet vital entrepreneurial spirit that had served local brewers so well. The potential competition of the large continental producers, the increasing demand for lager and the growing sophistication of consumers, forced local brewers to re-think their business strategy for the future; a future that in large measure began in the 1890s.

The challenges brought to bear on the local brewing industry by forces within the continental economy would ultimately affect all Island brewers, even the long-standing and successful partnership of Joseph Loewen and Ludwig Erb. By the end of the 1880s, their production had reached between 100,000 and 150,000 gallons of beer annually.(111) While significant by local standards, their products were being produced in a facility that was rapidly becoming obsolete. Loewen and Erb recognized the profits to be made by catering to the growing market for lager and light ales, while recognizing that their facility was inadequate to meet it. They reacted to the situation in a way synonymous with the spirit of the times. Illustrating the same energy, commitment, "application" and innovation that had marked brewers from the very inception of the Island's brewing industry, they, like many of their counterparts, decided to explore new business structures, finally settling in the early 1890s on the concept of incorporation as a limited, joint stock company. Such a decision, rooted in a realistic and well-informed view of the industry as a whole, clearly illustrates two things: that the Vancouver Island brewing community was maturing; and, that the same emphasis on long-term success, a notable trait that had allowed local brewers to withstand many years of economic fluctuations, still prevailed in the thinking of individuals who had done much to fashion the early years of the Island's brewing industry.

Notes

1 This thesis does not examine several breweries that popular history maintains existed but for which no real evidence has ever been found. This group includes the Salt Spring Island Brewing Company, the Somenos Lake/Hotel Brewery, the Langford Brewery and the Esquimalt Brewery of 1890. It also does not include the Duncan Botanical Brewery which, while actually existing, does not appear to have produced alcoholic beverages despite comments that have been made to the contrary.

2 Peter A. Baskerville, Beyond the Island: An Illustrated History of Victoria (Burlington: Windsor Publications Ltd., 1986), pp.3,8,13,16-22.

3 J. M. S. Careless, "The Business Community in the Early Development of Victoria, British Columbia," Historical Essays on British Columbia, eds J. Friesen and H.K. Ralston. (Toronto: Gage, 1980), pp.178-179; Careless argues that the hierarchical ways of the Hudson's Bay Company not only led to a restrictive climate for business opportunities but also did little to alleviate problems related to transportation and access to markets. Baskerville, however, argues that these issues were being dealt with when the gold rush arrived--in short, the gold rush did not lead to the birth of the city.

4 Careless, "The Business Community," p.179.

5 Margaret Ormsby, British Columbia: A History (Toronto: Macmillan, 1958) p.141.

6 Careless, "The Business Community," p.181.

7 Alexander Rattray, Vancouver Island and British Columbia: Where They Are; What They Are; and What They May Become (London: Smith, Elder, & Co., 1862), p.16. His observations are reinforced by Mathew MacFie, Vancouver Island and British Columbia. Their History, Resources and Prospects (Toronto: Coles Publishing Company, 1972. Originally published, London: Longman, Green, Longman, Roberts & Green, 1865), p.378.

8 H. K. Ralston, "Patterns of Trade and Investment on the Pacific Coast, 1867-1892: The Case of the British Columbia Salmon Canning Industry," Historical Essays on British Columbia. p.167.

9 Stanley Baron, Brewed in America: The History of Beer and Ale in the United States (Boston: Little Brown and Company, 1962), p.208.

10 The Victoria Gazette, 13 September 1858.

11 Brewers Association of Canada, Brewing in Canada (Ottawa: Brewers Association of Canada, 1965), p.92.

12 While no primary document has been located to substantiate this claim, brewers subsequent to Steinberger commonly advertised that the brewery had been established in 1858. For example see, The Colonist, 1 January 1884; L. G. and James Henderson, British Columbia Directory, 1882-1883, p.15. For a more comprehensive overview of the manner in which the brewery came into being, see The Colonist, 10 March 1957 article by Tom Taylor.

13 William R. Sampson, "McKenzie, Kenneth", in Dictionary of Canadian Biography (Toronto: University of Toronto Press, 1972, Volume X), pp.477-479.

14 The exact location of the brewery has not been ascertained but popular history maintains that it was located on the east side of the lake, a fact supported by a reference in the Colonist, 10 February 1901. In all likelihood it was situated on a flat area overlooking the lake, to the west of Saanich Road, today bounded roughly to the north and south by Lodge Avenue and Falmouth Road. This was approximately the site of the Swan Lake Hotel of later years. Interestingly, residents of the area were still finding hops growing wild in the vicinity as late as 1957 (Colonist, 10 March, 1957).

15 Canada, Census, 1881, District 191, Saanich.

16 The British Colonist, 10 May, 1860; see also James E. Hendrickson, ed. Journals of the Colonial Legislatures of the Colonies of Vancouver Island and British Columbia 1851-1871 (Victoria: Provincial Archives of British Columbia, 1980), Vol.II, p.197.

17 The acquiring of a reliable water system for Victoria is described in Chapter 4.

18 British Columbia Archives and Records Service (hereafter BCARS), Great Britain, Colonial Correspondence, Steinberger and Tormay to E.H. Sanders, Resident Magistrate, 16 August, 1865; F1650.

19 Colonist, 26 April 1866, 4 April 1879, 4 June 1879, 17 June 1879, 4 July 1894.

20 Vancouver Island and British Columbia, pp.167,175. Rattray, a doctor with the Royal Navy, reported that the scarcity of skilled labour was in many ways more serious than the cost of having buildings constructed, a situation that led to skilled artisans being able to charge exorbitant sums.

21 Charles Lillard, Seven Shillings a Year: The History of Vancouver Island (Ganges: Horsdal & Schubart, 1986), p.109.

22 F.G. Pennance and Arthur Seldon, comps., Everyman's Dictionary of Economics (London: J. M. Dent & Sons Ltd., 1975), pp.34-35. By definition, boom economies in general meant fluctuations in activity, where upward movement eventually lost momentum due to a variety of monetary, political and psychological reasons. "Slumps" could quickly replace "booms" with attendant unemployment and few investment opportunities.

23 Victoria City Archives, Victoria City, Real Estate Assessment Rolls 1861-1917.

24 H. S. Rich, One Hundred Years of Brewing (Chicago: H.S. Rich and Co., Publishers, 1903), p.135.

25 John Cass, interview, 17 September 1989, Nanaimo, B.C. Several popular history articles have been published over the years concerning the use of the abandoned salt sheds by the proprietors of the original Millstream Brewery. These persistent accounts are based on the reminiscences of Nanaimo pioneers.

26 Colonist, 1 January 1886.

27 The Nanaimo Free Press, 23 October 1886.

28 BCARS, Arthur Keast and George Isaac Stuart, Company Papers, Add. Mss. 1902, Vol.2 Account Ledger.

29 Colonist, 14 May 1868, 18 August 1868, 29 August 1868.

30 Victoria City, British Columbia Fire Insurance Plans - 1885; reveal that the Lion Brewery, the Colonial Brewery and the Phoenix Brewery, were larger than their contemporaries.

31 Colonist, 14 March 1885.

32 Baskerville, Beyond the Island, p.34.

33 Thomas C. Cochran, The Pabst Brewing Company: The History of an American Business (New York: New York University Press, 1948), p.23.

34 J. B. Kerr, Biographical Dictionary of Well-Known British Columbians (Vancouver: Kerr & Begg, 1890), pp.224-225.

35 BCARS, Arthur Keast and George Isaac Stuart, Company Papers, Add. Mss. 1902, Vol.2 Account Ledger, This form of financing may have been used earlier when the brewery was expanded in 1863. See Colonist, 14 April 1863.

36 Peter Ward, "Class and Race in the Social Structure of British Columbia, 1870-1939." BC Studies, No. 45 (Spring 1980), pp.24-26.

37 Larry Huck, interview, 20 December 1990, Victoria, B.C.

38 Brewers on Vancouver Island appear to have been relatively lucky in terms of the character of their partners. Only one case has been identified where a partnership dissolved due to illegal activities. The Nanaimo Free Press of 5 January 1887, reported that John W. James of the partnership of Preece and James of the Red Lion Brewery, had decamped with $600 of the firm's money. In a few instances employees ran afoul of their employers. Such was the case of Alfred Welch of the James Bay Brewery who charged that Thomas Lavery and a man named Beddard had stolen ale and materials worth in excess of $300. Both men had been hired to manage the brewery in Welch's absence. Thomas Lavery may have been the same individual who was a principal in the founding of the Lion Brewery. See Colonist, 1 April 1865.

39 Cochran, Pabst Brewing Company, p.29.

40 Baron, Brewed in America, pp.251-252.

41 BCARS, Charles Gowen, Autobiography, G74A.

42 Colonist, 13 July 1864, 3 July 1866, 4 May 1868, 2 February 1869, 8 March 1874, 16 December 1951.

43 Colonist, 24 September 1862, 11 March 1863.

44 Colonist, 12 May 1903. See also the unpublished family history written by Charles J. Loewen, a copy of which is in the possession of Phyllis Groos.

45 Colonist, 12 October 1897.

46 The Cariboo Sentinel, 21 May 1870.

47 Kerr, Biographical Dictionary, pp.217-218. See also Colonist, 12 August 1894, 15 April 1896.

48 Colonist, 26 March 1871.

49 Arnold Morris, interview, 16 March 1987, Nanaimo, B.C.; confirmed by Canada, Census, 1891.

50 Colonist, 1 January 1891; confirmed by Canada, Census, 1891.

51 Canada, Census, 1891.

52 Nanaimo Gazette, 2 October 1865.

53 Norman Rosewall, interview, 6 January 1988, Nanaimo, B.C. and information obtained from his private collection.

54 Canada, Census, 1881 and 1891.

55 Martin Ian Bowering, "The Art and Mystery of Brewing in Nineteenth Century Toronto" (M.A. Thesis, University of Toronto, 1978), pp.4-5.

56 Colonist, 18 November 1862. This is at least partially corroborated by the brewing records of the Lion Brewery for the years 1868 and 1869 which show production throughout the entire year. See BCARS, Arthur Keast and George Isaac Stuart, Company Papers, Add. Mss. 1902, Vol. 2, Ledger.

57 British Colonist, 18 July 1859; Colonist, 18 August 1862, 22 December 1862, 15 May 1863, 27 July 1863, 16 September 1875.

58 Nanaimo Gazette, 2 October 1864; The Price Brothers ran into problems fairly early in the history of the operation. In April 1865, they petitioned the Governor of the Colony to allow them to establish a retail outlet on the grounds that they needed it to make a living, See Colonial Correspondence, F1350, John Rees Price & Co. to Kennedy, 24 April 1865.

59 Their easy access to the Millstream River also got them into trouble. In June, 1866, the Government Agent, W. H. Franklin, reported to the Colonial Secretary, that the principals of the company were using the water access at the back of the brewery to supply beer and liquors to Native Indians. The final outcome of the situation is not clear. See Colonial Correspondence, F601, Franklin to Colonial Secretary, 25 June 1866.

60 Nanaimo Free Press, 2 October 1865 refers to the fact that Elliott and Stuart's Victoria Ale was available in Nanaimo.

61 Rattray, Vancouver Island and British Columbia, p.17.

62 Baskerville, Beyond the Island, pp.22,30.

63 BCARS, Great Britain, Colonial Correspondence, Bunster to Seymour, 18 March 1867, F231.

64 Colonist, 16 September 1875; This flurry of activity offset the closure of the Half-way House Brewery in 1875, despite concerted attempts by James Bland to sell it.

65 Nanaimo Free Press, 2 June 1875.

66 Some speculation surrounds the relationship of the Millstream Brewery and the Nanaimo Brewery. The supposition can be made that the salt shed site was revived as a brewery by Henry Pemble Smith and John Galbraith in the early 1870s who operated it under the name of the Nanaimo Brewery. The facility was later purchased by John Mahrer, who completely re-built it, as the new Nanaimo Brewery. In 1880, he purchased the property on which stood the defunct Millstream Brewery of Stuart and Keast. He may have combined the two operations in some way, but it is more likely that he removed the machinery and some building materials from the structure for use in the building of his new facility. Not only would he have saved costs, but he might have dissuaded any competition from moving into the area, See Nanaimo City, Real Estate Assessment Rolls 1875-1917.

67 Brewers Association, Brewing in Canada, p.6.

68 Brewers Association, Brewing in Canada, pp.6-8.

69 Colonist, 10 August 1883.

70 A listing for the Tiger Brewery appears for the first time in the 1884/85 edition of R. T. Williams, British Columbia Directory; it also appears in Victoria City, British Columbia Fire Insurance Plans - 1885. There is good reason to speculate that this became the City Brewery in 1886, as the two appear to have occupied the same site, See Victoria City, Real Estate Assessment Rolls 1861-1917.

71 The Pacific Brewery remains a mystery. Little is known other than it operated under the guidance of Joseph Deacon during 1884/85. The evidence rests on Victoria City, British Columbia Fire Insurance Plans - 1885 and, R. T. Williams, British Columbia Directory, 1884/85.

72 Colonist, 14 March 1885, 19 September 1894.

73 Nanaimo Free Press, 1 January 1880, 23 December 1885, 23 October 1886.

74 Baskerville, Beyond the Island, pp.46-48.

75 Little formal research has been done on the origins and development of the brewing industry on the Mainland. The information that has been collected, has been done so largely through the efforts of Thomas Bown and George and Ilene Watson. Using a variety of sources, mainly directories, newspapers and interviews, they have provided a picture that depicts a small industry on the Mainland until the late 1880s. This is corroborated to some extent by the fact that malt liquor production was not reported separately for the mainland until 1890--an indication perhaps of its smallish nature, See Thomas Bown, "A Brief History of the Breweries Represented in the Labatt's Collection of Early B.C. Brewery Artifacts" (B. A. Essay, University of Victoria, 1978) and, George A. Watson and Ilene Watson, Pioneer Breweries of British Columbia (Nanaimo: Westward Collector Publishing Ltd., 1974).

76 Rich, One Hundred Years, pp.607-609; in addition, Bill Yenne, Beers of North America (Greenwich: Connecticut, Bison Books Corp, 1986), p.78.

77 Canada, Annual Reports, Department of Inland Revenue (Ottawa, Queen's/King's Printer, 1875 to 1917).

78 Rich, One Hundred Years, p.619. He uses data relevant only to 1902.

79 Colonist, 13 June 1859, 16 November 1859.

80 Colonist, 17 March 1883, 12 August 1884, 7 January 1886.

81 Colonist, 19 August 1890.

82 H. S. Corran, A History of Brewing (Newton Abbot: David & Charles, 1975), pp.223,227.

83 F. S. Spence, The Facts of the Case (Toronto: Coles, 1973. Originally published, Toronto: Newton and Treloar, 1896), p.21.

84 Bowering, "Brewing in Toronto," pp.31,36.

85 Rich, One Hundred Years, p.621. Regional differences in product preference were still being echoed in the 1960s, See Brewers Association, Brewing in Canada, pp.38-39.

86 Rich, One Hundred Years, p.634.

87 Walter Spershott, interview, 17 January 1988, Victoria, B.C. The debunking of this myth is reinforced by Spershott, who recalls longtime employees of the Victoria-Phoenix Brewing Co. Ltd. telling him, in the late 1930s, that lager had been significantly out producing ale well before Prohibition.

88 It is virtually impossible to ascertain the percentages of overall production during the period of this study as they relate to the various types of beer brewed on Vancouver Island. This endeavour is made all the more difficult by the term beer itself which was sometimes used to denote lager or steam beer as opposed to ale, while at other times it denoted "common beer" or "small beer," a weak form of ale that was meant to be consumed immediately after being brewed. The potential confusion that can arise from these terms should not overshadow the important fact that a great variety of beers were produced on Vancouver Island.

89 Colonist, 1 January 1885, 1 January 1886, 11 April 1891.

90 Richard Coleman, Brewing Collection, Royal British Columbia Museum - Uncatalogued.

91 Bowering, "Brewing in Toronto," p.36.

92 British Columbia non-military beer exports, are found in Canada, Sessional Papers, Department of Customs; Tables of Trade and Navigation (Ottawa: Queen's/King's Printer, 1872 to 1917). For export totals to Imperial Armed Forces, See Canada, Sessional Papers, Department of Inland Revenue (Ottawa, Queen's/King's Printer, 1875 to 1917).

93 Rattray, Vancouver Island and British Columbia, p.105.

94 Colonist, 11 April 1891.

95 Baron, Brewed in America, p.257.

96 The 190 employees surveyed does not represent anything close to the average the size of workforce in the Vancouver Island brewing industry during the period of this study. In actual fact, it was very much smaller. If we estimate that it took six men to process 3,000-4,000 barrels of beer a year, a generally accepted figure, we can deduce that for the years 1860 to 1885, the total number of men employed in the local industry was likely between 35-45, with some variation given to extra workers employed in the busy season of June to September. By the late 1880s, the workforce may have grown slightly to about 70 men, given that eleven breweries were in operation. From 1890 to 1917, the workforce may have averaged between 70-90 workers. This number, which includes a generous margin for seasonal workers, was encountered when the union movement arrived in 1912.

97 Walter N. Sage, "British Columbia Becomes Canadian, 1871-1891." Historical Essays on British Columbia, p.61.

98 Norbert Macdonald, "Population Growth and Change in Seattle and Vancouver, 1880-1960." Historical Essays on British Columbia, Table, p.214. This phenomenon is supported to a degree by studies of the foreign born population of Vancouver for the years 1891, 1901 and 1911. During these individual years, 49.3%, 40.3% and 54.4% of individuals listed themselves of British origin, as compared to 2.1%, 1,9% and 2.2% of German extraction, respectively. Those listed of Scandinavian origin made up 3%, 3.5% and 3.3% of the city's population, of American origin 16.8%, 17.2% and 18.4%, while percentages of 1.1%, 1.0% and 3.4%, marked individuals of Italian birth.

99 David W. Gutzke, "The Social Status of Landed Brewers in Britain since 1840." Histoire Sociale-Social History, Vol.17 (May 1984) pp.93-113.

100 Rich, One Hundred Years, p.626.

101 Baron, Brewed in America, p.216.

102 Bowering, "Brewing in Toronto," pp.44-47.

103 Colonist, 16 December 1951.

104 BCARS, Charles Gowen, Autobiography, G74A.

105 For John Mahrer, see J. B. Kerr, Biographical Dictionary, p.225; for Richard Nightingale, see Nanaimo Free Press, 18 October 1875.

106 Colonist, 17 January 1888, 5 November 1898, 26 November 1898, 27 November 1898, 25 August 1904.

107 BCARS, Great Britain, Colonial Correspondence, Welch to Young, Colonial Secretary, 29 June and 14 November 1863; F1641a.

108 Colonist, 14 February 1875.

109 Baron, Brewed in America, pp.261-265.

110 Norbert Macdonald, "Population Growth and Change," p.211,212. While he speaks of the issue of immigration to Vancouver during the 1880s and 1890s, he does so within the larger context of British Columbia.

111 Colonist, 1 January 1886, 1 January 1891.

CHAPTER THREE
WINDS OF CHANGE, 1890 - 1917

Between 1890 and 1917, Vancouver Island breweries experienced substantial change. Large, modern facilities, owned by incorporated, limited joint stock companies began to compete with the traditional, privately-owned plants. Much that happened in this period had been foreshadowed in the 1880s. Local brewers were increasingly caught up in a world of mass production, marketing and communication--phenomena that exerted change on technology and business practices in both the larger world of commerce and within the brewing industry. This chapter examines how and why they survived and prospered or, conversely, perished as a result of other worldwide trends and more localized phenomena, such as Prohibition.

Generally, in the last two decades of the nineteenth century, especially in the United States, national brewers, while not entirely replacing small to medium sized operators with their clearly defined and relatively localized markets, came to fashion the industry's direction. A brewer aspiring to national status had to extend his market beyond traditional city-wide boundaries. Success came through the adoption of a five-point strategy: distribution through the continental railway network; development of an agency network; adoption of sophisticated mass production techniques; a systematic approach to marketing; and the adherence to improved bio-chemical processes.(1)

Thus, the national brewer, often hundreds of miles from his market, could compete locally. Being a national brewer, however, did not necessarily imply massive production. Initially, the distinction between a local and a national brewer was often one of distribution rather than volume.(2) Gradually, extensive and efficient distribution networks brought extensive markets and growing economic clout to the national brewers, which in turn led to "tooth-and-nail competition" during the latter third of the nineteenth century in the United States.

Several options were available to local brewers trying to resist the power of the nationals. A brewer could buy out and shut down local competitors in an effort to consolidate his market share; he could

retain, or even expand his market share, by operating the purchased facilities in tandem with his own plant; or, he could merge with his former competition to present a united front to the outside world.

The competitive and often unpredictable climate resulting from these attempts to "jockey" for market share led to heated "price wars," which were particularly devastating to the very small producer who could not "ride them out" as comfortably as the larger producers. Many small brewers who were unable to develop profitable, specialized market niches saw involvement in local amalgamation schemes as a means to surviving in an increasingly competitive industry.

Such mergers had an external as well as a domestic impetus. An industrial depression in the late 1880s caused British investors to look elsewhere for stable investments.(3) In North America they formed syndicates which, by purchasing several medium and large local and regional breweries at a time, could crowd out the remaining local competition with price and production control.(4) As a result of British investment and the aggressive policies of American national brewers, many North American brewers feared being engulfed by industry leaders no matter what the location of their home base or the source of their financial backing.(5)

Consolidation in itself did not offer any guarantee of long-term prosperity. Success was often best secured through investing in new equipment and facilities, the combination of which could lead to expanded markets and hence, economic strength. This direct approach to meeting the competition demanded new business practices.

One such approach was incorporating a joint stock company, an advantageous re-structuring of the businessplace that reflected the growing complexity found in all forms of North American commerce. Where this concept of the public company was adopted, it did away with private proprietorship and normally separated ownership from management.(6) In return, it attracted the investment needed to finance expanded new operations and the skills necessary to oversee new business practices and marketing strategies, such as the development of "tied houses"--retail outlets purchased by breweries as exclusive marketplaces for their products.(7)

While the Canadian experience is less well documented than that in the United States, the pattern of growth and development that does emerge suggests a somewhat different situation. Although brewery take-overs and mergers occurred in Canada, they appear primarily to have been designed to increase the share of a local and then a regional market rather than to make inroads into the national marketplace.

One can surmise that the reasons for this are threefold. Firstly, there was the sheer vastness of the country and the high cost of transporting goods across it. Secondly, the country had a much smaller population than the United States, with fewer urban centres and hence, smaller markets for branch operations. Finally, provincial control of the distribution of beer had a very real impact. In the United States, the Federal Government wrote many of the regulations concerning the manufacture and distribution of beer while in Canada both the provincial and federal governments legislated the activities of breweries. The resulting regulations, often confusing and heavy-handed, discouraged many brewers from building plants beyond their hometowns.(8)

These factors, however, may not have affected the equation when British investors and American national brewers first showed interest in the Vancouver Island brewing industry in the early 1890s. The local industry's production had, after all, grown consistently throughout the latter half of the 1880s, somewhat in contrast with the national trend. In addition, the Island's prosperity and growing population made it a viable market for both local and imported products.

In 1891, a British syndicate "with practically unlimited capital" and a reputation of having acquired much brewing property in the United States came to Victoria with a view of consolidating the brewing interests of four British Columbia cities. Nanaimo brewer John Mahrer co-ordinated their visit and assisted them in testing the quality of the water, interviewing city brewers and checking sales of local and imported beer. While some brewers temporarily held out for a better deal, within four days even the E. & N. Brewery agreed to join other breweries in Victoria, Vancouver, Nanaimo and New Westminster in the scheme.(9) The syndicate immediately issued bonds and promised to meet the full purchase price would be met and possession of the properties

taken by August 1891. The amount of capital involved was reported to be close to $1,000,000. Even with the work of Mahrer, who went to Great Britain with Nanaimo accountant E. Pollexfen, to finalize financial arrangements, the deal ultimately collapsed, perhaps because a decline in beer production on the Island in 1891 soured the expectations of investors.(10)

Despite this failure, by the fall of the same year, Loewen and Erb of the Victoria Brewery and J. Byrnes of the Vancouver real estate and investment firm, Rand Brothers, acting on behalf of another, unidentified group of British capitalists, tried to consolidate all the breweries in the province.(11) By mid-December, all Victoria's breweries were bonded together in a scheme, apparently good until January 1, 1892, to establish "a large and thoroughly modern brewing and malting establishment in the city."(12) How the consolidation would work in other cities is not known. In any case, this attempt soon failed, perhaps because some breweries held out in other communities or because decreased local production discouraged investors.(13)

Although other British Columbia industries, such as salmon canning, mining and public utilities, experienced consolidation during the 1890s, the notion of consolidation in the local brewing industry did not reappear until the end of the first decade of the twentieth century. The likely reason for this was low production. The Island industry, which recovered slowly from the disappointing year of 1891, did so in modest fashion. Production after this year might be best described as stagnant, as the years 1892 to 1907 were characterized by relatively small increases and decreases in volume; a situation contrary to the general prosperity and steady gains of the national industry after 1896. [See Appendix C] Not until 1908, a year that signalled eight years of unprecedented growth, did the Island breweries become attractive investments but several consolidation schemes ultimately failed.

In 1909, John Mahrer in partnership with well-known local entrepreneur Frank Stillman Barnard and unidentified British backers, attempted to float an amalgamated company to "monopolize the trade" in British Columbia. By increasing the price of a barrel of beer by $1.00, the monopoly would yield investors an annual increase in profits of

$230,000. While not all the individual components of this scheme are known, the Victoria-Phoenix Brewing Company and the Vancouver Breweries Ltd. were among the "principal breweries" involved. The notion was timely as British and American brewing companies were in "bad odour" and unpopular with British investors, a situation compounded by pending British taxes on breweries. Barnard recommended that the "Amalgamated B.C. Breweries" be incorporated in British Columbia to reduce financial and legal complications. Despite such apparent advantages, the scheme came to naught.(14)

Interestingly, two years later on February 20, 1911, four prominent British Columbia brewers, Henry Reifel of the Canadian Brewing and Malting Company Ltd. in Vancouver, Edward Quennell of Nanaimo's Union Brewing Company Ltd. and Charles Doering and John Williams of the Vancouver Breweries Ltd. consolidated their companies into the B.C. Breweries Limited. While the degree to which these brewers were tied to the 1909 scheme is unknown, they were likely inspired by the earlier attempt at consolidation and the establishment of a monopoly. With an initial capital of $2,000,000, the Vancouver-based company soon expanded by acquiring the Pilsener Brewing Company Ltd. in Cumberland in May of the same year.(15) On November 1, 1912, this large firm was sold for $3,000,000 to the newly organized British Columbia Breweries Ltd., an enterprise backed by a British syndicate, possibly containing members involved in the earlier attempt.(16) The new company had major problems. Doering and Williams reported irregularities in operation, bookkeeping and filing with the Registrar of Companies and claimed that director Clarence Marpole, the lawyer who negotiated much of the sale, had overstepped his bounds from the company's inception. Their complaints to the Registrar of Companies resulted in a lengthy and complex investigation and the appointment of a liquidator who wound up the affairs of the company in 1917.(17)

Not all outside interest in the local brewing industry emanated from Great Britain. As early as January 1891, a prominent Milwaukee brewer arrived in Victoria to assess the feasibility of establishing a brewery and "importing expensive machinery which cannot be obtained here" to make "the best beer on the coast." For some reason his opinion

changed and there is no further record of his proposed brewery.(18)

Direct ownership in a brewery was not the only approach tried by American investors to penetrate the Island market. In 1890, Gregory Sauer, a local saloon owner and restaurateur, recognizing the potential of lager sales, proposed that the Anheuser-Busch Brewing Association of St. Louis ship bulk beer to Victoria where he would bottle it for local consumption. The American brewing giant expressed some interest but does not appear to have taken any firm action.(19) Sauer did not abandon the idea and in 1897 became the local bottler for the Pabst Brewing Company. He leased the upper floor of a cold storage warehouse on Wharf Street filling it with "a full carload of bottling machinery and patent bottles."(20) His Victoria Bottling Works, which commenced delivery throughout the city on November 20, 1897, could bottle a boxcar load daily but whether it ever operated at full capacity is unknown.(21)

Reflecting the shift in economic domination of Canada's Pacific Coast from Victoria to Vancouver, Sauer re-located in 1898 to assist Pabst in making Vancouver their centre of operations on the west coast. Pabst's main interest was not the local market, which Vancouver brewers were beginning to dominate, but the export possibilities offered by regular Canadian Pacific Steamship service to Asian ports. Other national American brewers, such as Lemps & Co., also studied the feasibility of opening bulk bottling facilities in Vancouver, although it is not clear if they had the same Asian market in mind.(22)

Outside interest in their industry at the opening of the 1890s encouraged local brewers, some of whom had originally consented to sell out to the proposed syndicates, to rethink their plans. Some, like the E. & N. Brewery, continued under private ownership, while others, like the Victoria Brewery and the Nanaimo Brewery, decided on incorporation. For them, this was a link to the new investment needed to produce lager a light ale and to secure a share of a growing local market which could offer some protection from the encroachment of outside competition.

In addition to attracting investment and diverse business skills, incorporation had other advantages. An incorporated company was a self-perpetuating legal entity that was not disrupted by the death or retirement of a director, who could be easily replaced. Shareholders

could dispose of shares through a simple transaction, whereas a private company might restrict the transfer of ownership. In addition, financial institutions were more likely to make large loans to a well-grounded incorporated company than to a proprietor or partnership.

Incorporation also offered an effective method of raising development capital through share sales in the stock market, either privately or publicly. Because incorporated companies had, by law, to comply with basic financial and administrative reporting procedures, investors at least had an opportunity to question the state of their investments. As well, incorporation allowed original proprietors to maintain a role in the ownership and management of the company while the limited liability provisions of the legislation protected them from a heavy debt in case of failure. Finally, the continued participation of the original proprietors gave shareholders the benefit of their experience while the proprietors benefitted from the varied business and political skills of their fellow directors,(23) a vital factor if breweries diversified into other business ventures. Diversification itself could strengthen a company's financial base in a rapidly changing business world in which brewers had to compete with the purveyors of new leisure and sporting activities and the producers of "ready-made clothing and shoes, machine-produced furniture and packaged foodstuffs" for the consumer's dollar.(24)

Several of the first incorporated, limited joint stock companies came into being during the early 1890s when local production totals were lower than those of the late 1880s. [See Appendices B and C] The initiation of these incorporated companies at this time can be ascribed to three factors. Firstly, many brewers and investors undoubtedly shared the popular belief in the long-term, future prosperity of British Columbia and hence, of the brewing industry on Vancouver Island. Secondly, local investors realized that the incorporation of breweries was rapidly finding favour elsewhere in the country. In Ontario, for instance, although several incorporations had been formed even earlier, the movement accelerated in the early 1890s to finance the facilities needed to serve the growing market of southern Ontario. This group included the Toronto Brewing and Malting Company Limited in 1874, the

Cosgrove Brewing Company Limited (Toronto) in 1882 and the Carling Brewing and Malting Company Limited (London) in 1883. To the west, the incorporation of the Calgary Brewing and Malting Company Limited in 1892, marked the first joint stock company on the Prairies. Breweries in the Maritimes and Quebec, however, remained largely in the hands of families, private partnerships or under the full or partial control of British syndicates, well into the early decades of the twentieth century--probably because of the general lack of interest in lager production, the impetus for the construction of the majority of the new large, facilities in Ontario and in the West.(25)

Finally, incorporation in slow economic periods undoubtedly made sense to some investors. Eager to shelter their capital, and recognizing that the legislation governing such enterprises offered the protection of limited liability, they invested in joint stock companies. For many investors, brewing companies with their "staple" product, were an attractive investment, particularly as the 1890s was a decade of economic fluctuation. While the fortunes of breweries may have suffered in slow economic periods, their chances at a fair return, not to mention significant long-term recovery, were likely better than many other sectors of the business community. The ability of incorporated companies to weather economic storms or provide shelter for investments was not guaranteed. This was well illustrated by the fact that three companies, ironically including the province's first attempt at an incorporated brewery, failed during the 1890s. [See Appendix G]

In July 1890, the British Columbia Brewing Company Limited was formed "for the purpose of acquiring and extending the well-known and old established business of the 'Vancouver Ale, Porter and Steam Beer Brewery' in the City of Victoria." The new company's provisional board of trustees was made up of prominent local businessmen: shipping magnate, Captain John Irving; chartered accountant, James Chesney Bales; and, merchant, George A. Perrin. Thomas Watson retained an interest as managing director. The promoters of the British Columbia Brewing Co. Ltd. had a clear focus: "to be able to meet the demand and preference in this province for lager beer." They informed potential investors that for the six months ending December 21, 1889, 26,135 gallons of imported

lager beer had passed through the Victoria Customs House, proof of the potential market for a home produced lager.(26) The promoters, who paid $12,000 for the old facility and its goodwill, estimated that $75,000 of working capital would be needed to extend the brewing plant to produce both lager and spirits, the implication being that ale and porter would diminish in importance.(27)

Their intention to add a distilling department also demonstrated the flexibility of incorporation in allowing companies to diversify to meet changing business conditions. Local incorporated breweries commonly listed, in addition to the obvious carrying "on the business of brewers and maltsters in all its branches," such activities as coopers, bottlers, manufacturers of and dealers in aerated and mineral waters, licensed victuallers, hotelkeepers, restaurateurs, tobacconists and farmers.(28)

Despite early positive signs in assigning shares and astuteness in using the flexibility of incorporation, the British Columbia Brewing Company Ltd. failed probably because it could not attract sufficient investors. The operation of the brewery reverted to the ownership of Thomas Carter who, after dissolving his partnership with William Ferris Jr., took William Fraser Tolmie Jr. into partnership. Without additional capital, Carter could not, it seems, produce his own lager but instead took on an agency for the Enterprise Lager Beer Brewery of San Francisco by January 1891, to augment his locally produced ale, porter and steam beer.(29)

The other two companies appear to have been little more than paper enterprises. The Comox Brewery Company Ltd. of 1895 was initiated by three Comox Valley businessmen who owned minimal real estate in Cumberland in the company's name. While there is no evidence to support the actual operation of a brewery, one of the principals, Alexander Duncan Williams, purchased or attempted to purchase, parcels of property in Cumberland before a representative of Nanaimo's Union Brewing Company Ltd. arrived in town. The partners may have hoped to parlay their real estate holdings into a mutually beneficial agreement with the much larger brewing company with little or no risk to themselves. The Union Brewing Company did purchase a lot in Cumberland (the exact use of which

is unknown) while the Comox Brewing Company Ltd. faded from the scene.(30)

Incorporation could also lead to the demise of an established brewery. In 1897, the Milwaukee Brewing Company Ltd., an outgrowth of the older Colonial Brewery, announced it would enlarge the old brewery and introduce such modern technology as artificial refrigeration. Local investors, John Delahanty and Heinrich Siebenbaum, in tandem with Hermann Kurth, a German brewer recently arrived from Milwaukee, acquired the interests of John Leahy, the proprietor of the Colonial Brewery, while promising to produce "the beer that made Milwaukee famous".(31) It produced for only a very short time, if at all, and by the end of 1897 had closed ending with it the 38 year operation of the Colonial Brewery.

The failure of these three ventures did not curtail enthusiasm for the concept of incorporated companies. Seven others achieved varying degrees of success during the period 1890 to 1917, thus vindicating the faith that many had in the future of such ventures. The first successful venture was the Nanaimo Brewing Company Ltd., which three Island investors formed on September 23, 1890 to acquire and expand John Mahrer's Nanaimo Brewery to "manufacture and introduce Lager Beer, of a quality fully equal to the best imported from the Eastern States." The new company proposed to spend $25,000 to enlarge Mahrer's existing facility and to pay him $25,000 in cash and stock in the new company for the building and customer goodwill. Prospective investors were lured by reports that Mahrer had earned a profit of twenty per cent in each of the three previous years and by a moral appeal that making local beer available might diminish liquor abuse and keep money within the community. By October 1890, sufficient investment was in place to erect a new building, the second largest brick structure in the city. Careful construction allowed the continuation of brewing in Mahrer's old facility while the new structure rose virtually at its side. According to local lore, the Nanaimo Brewing Company Ltd. bought the machinery from one of its competitors, the Red Lion Brewery which had gone out of business after its proprietors, John Marwick and Max Hoefle, failed to reorganize their enterprise into a joint stock company. Despite initial

optimism and Mahrer's management, the new company does not appear to have produced any lager by the anticipated date of January 1891. By November, the brewery was for sale and on April 10, 1892, it was handed over to its new owner, the Union Brewing Company Ltd.(32)

The Union Brewing Company Ltd. of Nanaimo, in which Mahrer had an interest for some years, was the second incorporated brewing company to operate on Vancouver Island. Incorporated on January 22, 1891, it had already called for tenders for the construction of its new brewery and cleared its property on Dunsmuir Street. With the three storey brewery completed by the late spring of 1891, the company's directors set about to raise another $25,000 of capital stock to equip the new facility and secure an ample supply of brewing materials. The brewery, with a capacity of 2,000 gallons per day, commenced brewing at the end of October. The first beer became available in December and the favourable public reaction supported the directors' view that the brewery and its products were a credit to Nanaimo. The positive tone carried on throughout 1892 as the company completed the ice house and other improvements and purchased the Nanaimo Brewing Company Ltd. for a rumoured price of between $30,000 and $40,000 in stock, an amount raised by increasing the capital stock of the Union Brewing Company to $100,000.(33) On May 20, the company produced what it erroneously claimed to be the first lager manufactured in British Columbia. It was pronounced "equal in quality to the famous Milwaukee brand" and capable of tickling "the palate of the most fastidious German."(34)

By 1896, the company had attained an annual capacity of 15,000 barrels of lager, bock and steam beer and the emphasis had clearly shifted away from ale. This fact probably explains why the company could boast that its beers had all but replaced Canadian and American lager brands in Nanaimo and north. To secure the southern Island market, the company opened an agency and depot in Victoria in 1898.(35)

The marketing talents of manager Henry Reifel, who had risen from employee to managing director, led him to become one of the province's most influential brewers. His aggressive style is best illustrated by the opening of a bottling plant in Vancouver in 1906, as a means of expanding into the Mainland.(36) In 1909, Reifel moved to Vancouver

where, backed by unnamed capitalists from Nanaimo, he built the Canadian Brewing and Malting Company at a cost of over $200,000.(37) He maintained an interest in the Union Brewing Company Ltd., now under the successful management of his brother Conrad, while laying the groundwork for the amalgamation of his company into the B.C. Breweries Ltd.

Victoria brewers, perhaps still hoping for an arrangement with the British syndicates, were slightly slower to incorporate than their Nanaimo colleagues but when they did they set off a rapid series of events. The first incorporation was the Phoenix Brewery Company Ltd. on December 7, 1891 with an authorized capital of $150,000. The plans grew out of an announcement almost a year earlier by Charles Gowen and Sons to spend $25,000 to $30,000 to construct a new lager brewery. They later abandoned this idea, perhaps due to a lack of personal capital, and formed a joint stock company to build a new modern facility on property in Esquimalt. Production began on May 31, 1892; a week later the original and now obsolete Phoenix Brewery was demolished.(38) The Victoria Brewing and Ice Company Ltd. had become the city's second incorporated brewery on December 30, 1891 when Joseph Loewen and Ludwig Erb of the older Victoria Brewery realized that a British syndicate could not consolidate Victoria's breweries. While Loewen and Erb were not able to conclude a deal with the British investors, they did attract the financial support of Andrew Hemrich of the Bay View Brewery of Seattle, whose lager they had sold under license for several years. Hemrich, served for a year as the new company's vice president.(39) By the early spring of 1892, Victoria businessmen had subscribed close to $150,000 to the company, $70,000 of which was set aside for constructing the new brewery. The new facility, the Island's largest, opened in advance of the first summer sales in May after undergoing extensive tests of its brewing and refrigeration systems.(40)

A year later the Victoria Brewing and Ice Company Ltd. amalgamated with the Phoenix Brewery Company Ltd. to form the Victoria-Phoenix Brewing Company Limited, possibly to meet competition from imports and the aggressive Union Brewing Company Ltd. Whatever the case, both facilities produced beer until 1903 when the Phoenix facility was phased out. Much of its equipment was sold to other breweries and a machinery

supply company in Victoria. The building itself, on which little had been spent in deference to its larger "sister brewery," became a storehouse.(41)

One should not lose sight of the continued existence of smaller, privately operated breweries in this discussion of the new way of doing business. While some, like the E & N Brewery, provided real competition for the larger companies throughout the 1890s, others faltered. The long-standing Lion Brewery lived on only in the name of the Lion Brewery Saloon (also known as the Lion Tap), the public house which stood on the brewery property for thirty years although evidence suggests that it was selling the products of other breweries as early as 1889.(42)

While some uncertainty surrounds the demise of the Lion Brewery, the Bavaria Brewery (often called the Bavarian Brewery) was the first certain casualty of the 1890s. It appeared to be "flourishing" in 1891 under the ownership of William Stichnoth, whose steam beer, lager, ale and porter, were being shipped "extensively to Nanaimo and other places on the coast."(43) By 1893, however, the city directory listed the facility as vacant; in fact it had been leased to John Lawson of the nearby City Brewery, who may have used it to increase his capacity and perhaps, the variety of his products.(44) After changing partners in 1893, Lawson retired in July 1894 and the brewery closed. His last partner, John Bennett, moved to a short-lived partnership with John Leahy at the Colonial Brewery.(45)

In October 1896, John Leahy of the Colonial Brewery purchased "all the plant and rolling stock of the old City and Bavaria breweries, which have been closed for the past two years." He most likely intended to transfer the equipment to his partnership with Kurth and Siebenbaum of the Milwaukee Brewing Company Ltd. The relationship of the investors and the ultimate failure of the Milwaukee Brewing Company Ltd. probably provided Kurth with a brief opportunity to operate his own lager, ale and stout brewery on the Bavaria site in late 1897 and early 1898.(46)

Victoria's E & N Brewery, however, had entered the 1890s in a flourishing condition. In 1893 Henry Smith Fairall purchased Alfred Napier Barry's one-third interest but in July 1894, he sold out to local publican and real estate owner Steven O'Brien and his partner, G.

Varrelman, the German brewer who had come to Victoria from New York's Staten Island Brewing Company to be the brewmaster at the Phoenix Brewing Company Ltd. The new partners adopted the name Excelsior Brewery and continued producing ale and stout, while increasing the production of lager which Fairall had added to the product range in 1892.

After Varrelman retired in December 1894, the growing influence of the mainland industry was felt when John Williams of Vancouver's Red Cross Brewery purchased Varrelman's half-share in the brewery. Early in April, 1896, more Vancouver brewers briefly became involved in the brewery through a partnership that included Charles Doering and Otto Marstrand of the Alexandria Brewery and Ernest Barker, John Williams's partner in the Red Cross Brewery.(47) The reason for their investment was likely linked to the fact that the Excelsior Brewery was competing very effectively with the Victoria-Phoenix Brewing Company Ltd, thus indicating a relatively strong position in the well-established Island market.(48)

Change in the ownership of the Excelsior Brewery continued but it returned to full Victoria control in the fall of 1896, when John Leahy of the Colonial Brewery bought the firm, possibly to secure its artificial refrigeration system and money-making ice plant while effectively doing away with a main competitor. His tenure was short-lived; the Fairall family re-purchased the brewery sometime late in 1896 or early 1897.(49)

Interestingly, Henry Smith Fairall had not left the brewing industry after selling his original facility to O'Brien and Varrelman in 1894. After a brief hiatus he opened another, smaller brewery in July 1895, to produce ale, stout and soda water.(50) After re-purchasing the Excelsior Brewery, and abandoning his other facility, Fairall and his sons retained ownership until 1908, when, they sold out to the Silver Spring Brewery Ltd. The Fairalls appear to have concentrated more on ale, stout and soda water than on lager. This may indicate their strategy of concentrating on that market niche rather than going "toe to toe" with the larger lager producers. The brewery also operated under various names; the Anglo-Canadian Brewing Co.(1899-1900), Fairall's

Brewery (1900-1903) and, following the death of Henry Smith Fairall in 1903, as Fairall Brothers Brewery and Soda Water Works. In fact, the brewery operated its local wholesale license under the name Fairall Brothers (1897-1908) denoting that a partnership had actually existed between Henry Smith Fairall and his sons, with the father assuming the role of silent partner.(51)

It is important to note that this was Victoria's only private brewery of the nineteenth century to survive into the twentieth century. By 1908, it too would be gone, its demise signalling the end of private breweries in the capital city.

In Nanaimo, however, two private enterprises operated continuously until Prohibition. While the 1890s had opened on a negative note, with the closure of the Red Lion Brewery in December 1891 after an unsuccessful attempt at incorporation, the Lansdowne Brewery and Empire Brewery prospered.(52)

The Lansdowne Brewery, established in 1885, entered the 1890s under the ownership of John Lee Cawthorn. After he reportedly left the city in 1891, August Hasenfratz purchased the facility in partnership with Leo Barnard but later assumed full control and retained it until the business finally closed in the 1920s.(53) At first he operated in the original premises built by Henry Rosewall, but in 1897 or 1898, he constructed the "New Lansdowne Brewery" on property purchased on the opposite side of Comox Road.(54) His new, larger and better equipped, two-storey stone and frame structure could produce 400 gallons of finished lager and ale per day.(55)

The other privately owned brewery, the Empire Brewery, was founded by Peter Weigle and Thomas Anderson in 1891 but Weigle took over the operation in February 1892.(56) An experienced brewer, he gained a reputation at the Nanaimo Brewery for the quality of his steam beer, lager and ales. With his earnings and supposedly the backing of Anderson, he opened his rather modest facility on Kennedy Street within sight of both versions of the Lansdowne Brewery.(57) Unlike other breweries which sold to retail outlets, Weigle, a one-time saloonkeeper, served only the family trade. Home delivery offered him a specialized market niche from which he could profit by providing quality products

and service. Thus, despite a lack of insurance, he was able to rebuild quickly after fire destroyed his recently improved brewhouse on June 13, 1900; a loss estimated at between $8,000 and $10,000. By 1907, his brewery, "one of the most complete for its size in this Province," was annually producing upwards of 3,500 barrels, the equivalent of a quarter of the production of the much larger Union Brewing Company Ltd.(58)

The success of these private breweries in the face of the competition of larger operations may have inspired Charles Napier Gowen to open his privately owned Lion Brewery on View Street in Victoria on January 12, 1901.(59) By 1901, he had sold almost all of his significant shares in the Victoria Phoenix Brewing Company Ltd. and may have used the proceeds to establish his own brewery.(60) Why he did so is unknown, since his connection with the Victoria-Phoenix Brewing Company Ltd. must have made him aware of that firm's strength in the Victoria market. Nevertheless, he revived the name Lion Brewery and retro-fitted a building located on property that had been in his family since 1897.(61) His equipment may have come from the several Victoria breweries that had ceased operation in the 1890's. By May 1903, his enterprise had failed. The Victoria-Phoenix Brewing Company Ltd. somewhat ironically claiming that because the Lion Brewery had "become financially embarrassed...it was thought in the best interests of the Company to buy the buildings and plant to avoid possible costly competition," purchased the property for $9,000 and rented it out in order to earn the interest on the invested capital.(62) Subsequently, the president of the Victoria-Phoenix Brewing Company Ltd., David Russell Ker, sold the brewing equipment of the Lion Brewery to the Seabrook Machinery and Supply Company of Victoria.(63)

A successful private company, however, could attract outside investors. This is illustrated by the Silver Spring Brewery whose founders, Robert Tate and his sons Frederick and Reginald, began producing ale in a modest two-storey wooden brewery in Victoria-West sometime in the Spring of 1902.(64) Their reputation for an excellent product attracted a group of investors including Sir R. J. Musgrave of County Waterford, Ireland and his wife, who likely invested in the enterprise through their son, John Musgrave who resided in Victoria.(65)

While little is known of the company's inner workings, a significant change took place on May 18, 1908, when the original company was wound up and re-incorporated under the same name as five new investors took over. Harry Maynard was the driving force behind the takeover and the subsequent success of the brewery. Arriving in Victoria from Bude, Cornwall in 1884, he worked for his uncle's express company and the E. & N. Railroad before becoming a driver with the Victoria-Phoenix Brewing Company, a position he held from 1894 until 1908. Anxious to invest in a business venture, he persuaded several local investors to support his plans to make the Silver Spring Brewery one of the Pacific Coast's finest facilities.(66) In November 1908, Maynard purchased the Fairall Brewery and its adjoining soda works, residential and non-brewing retail properties. Spending close to $10,000, he immediately added three stories to the brewhouse, constructed a new power house, purchased new brewing vessels and machinery, up-graded the artificial refrigeration equipment, introduced electricity throughout the facility and installed automatic gravity roller carriers to move beer from the warehouse to rail cars. To carry out these improvements, the company increased its authorized capital from $25,000 to $75,000.(67)

The intention from the outset was to use the "new" facility exclusively for lager production and the original plant, always known as "Tate's Brewery," to produce the ales that had made the brewery famous. Frederick Tate continued to oversee the production of ale while the task of producing the company's first lager was given to either Adolph "Otto" Brachat or George Douglas. The first lager reached the public early in 1910. The quality of the company's products and Maynard's "progressive business methods" in promoting them throughout the region resulted in an almost constant need to increase production. The lager brewery received the greatest attention, particularly between 1911 and 1913, when a new 1,400 barrel storeroom, a new engine room and ice plant and an enlarged bottling shop were added to the plant. By late 1913 a reported doubling of the company's overall production to 250 barrels a day each, of ale, porter and lager, established it as a significant producer.(68)

While the Silver Spring Brewery Ltd. and the Victoria-Phoenix Brewing Company Ltd. competed with each other, a new company that

appeared in July 1914 challenged them both. The Esquimalt Brewing Company, the last brewery on the Island to be incorporated prior to Prohibition, was located near the E. & N. Railway in Victoria West. It started out as the private concern of brewery architect and contractor James Fairall and lumberman W. J. Hagan. After about a month of operation they transferred their ownership to a group of investors for 150 shares in the new company. Unlike most other breweries, the Esquimalt Brewing Company Ltd. specialized in ale and stout in competition with British imports. Possibly as a marketing ploy, it packaged its products in now archaic stone jars as well as in bottles and casks. James Fairall may have put forward the idea; his family had years of experience in producing and selling soda water in similar containers.

The company's history was short and unstable. Directorships were in a constant state of flux and, in its seventeen month life span, it had two managing directors, James Fairall and James Islay Mutter. Mutter, a financial agent from the Cowichan Valley and his two farming brothers, George and Alexander, eventually acquired control of the company in the fall of 1915. After retiring a loan or mortgage from Theresa Hagan on behalf of the company, they received majority shares in the company.(69)

Unfortunately, soon afterwards, during the early morning of January 14, 1916, the wooden brewery burned to the ground. Only the stables were saved, a small consolation to the owners who had just completed negotiations to lease the brewery for a five year period to another company made up of unidentified Victoria and Vancouver businessmen. Despite talk of re-building, a $7,000.00 shortfall in insurance coverage and legal complications among the company's principals ended the plan, so they switched to operating a wholesale liquor outlet on Wharf Street.(70)

The joint stock company also appeared in smaller communities. In December 1908, two brewers of German origin, Frank Xavier Dillman and John Schnoor established the successful Pilsener Brewing Company Ltd. in the coal mining centre of Cumberland. Dillman had worked as a brewer at the Henco Brewery and later as brewmaster at the Spokane Brewing and

Malting Company in Spokane, Washington, while Schnoor had been both a cooper at the Galland-Burke Brewery in Spokane and business manager with several other firms.(71) When they began constructing the brewery, Schnoor, the manager and company president, claimed his company would establish a regional market throughout British Columbia through its single, high quality product, a non-chemical, Bohemian Pilsener beer, flavoured only with genuine Bohemian hops. When detractors questioned the honesty of the new arrivals, Schnoor replied that "information regarding the reputation, character or standing, financial or otherwise, of himself, or of Mr. Dillman," was readily available at their barrister's office. This apparently did not satisfy doubters. In July 1909, the shareholders and directors dismissed John Schnoor and his brother, Johannes Schnoor, secretary of the company. Peter Dillman assumed temporary control of the company and produced the company's first pilsener in January 1910. While there is no evidence of the Pilsener Brewing Company Ltd. distributing its products widely, it did establish a vibrant market throughout the mining and agricultural communities of the Comox Valley.(72)

The variety of investors to be found in the joint stock breweries reflects the degrees of economic complexity found on the Island. [See Appendix I] The relative simplicity of the economies of Nanaimo and Cumberland, for instance, are apparent in the make-up of the directors of the Union Brewing Company Ltd. and the Pilsener Brewing Company Ltd. Of the directors of the Union Brewing Company Ltd., whose professions have been positively identified, half were hotelkeepers. Their participation was an effective sales strategy. In Cumberland, miners held half of the directorships which was not surprising in a community built so overwhelmingly on the fortunes of the coal mining industry.

In contrast, the directors of Victoria's joint stock breweries, the Victoria-Phoenix Brewing Company Ltd, the Silver Spring Brewery Ltd. and the Esquimalt Brewing Company Ltd., represented the variety of occupations to be found in a community of greater economic sophistication and diversity. No one profession dominated; occupations ranged from medical doctor, lawyer and real estate agent, to farmer and lumberman.(73)

A significant number of investors were of German origin. Unlike the majority of German brewers in Toronto who believed that private ownership allowed them to be more responsive to forces in the marketplace, Island brewers of this ethnic background such as Joseph Loewen, Ludwig Erb, Max Hoefle, Henry and Conrad Reifel, Frank Dillman, John Schnoor and John Mahrer, were all principal investors in joint stock brewing companies, suggesting a less conservative approach than their Eastern counterparts.(74) Only Peter Weigle and August Hasenfratz fell into the Toronto pattern but were apparently very successful as private brewers. The survival of these smaller, private competitors in the face of an industry quickly becoming the domain of incorporated companies was likely based on customer loyalty, product quality, specialization and distribution.

Customer loyalty to a quality product and the skill and integrity of its producer allowed a small brewery to survive. This important relationship was often reinforced by specialization whereby a small brewery produced a specialized product. The market segment may have been modest in size but therein lay the strength for the small brewer; large producers had no desire to introduce small-run products into a large scale production environment.

Sometimes, distribution equalled specialization. An example was Peter Weigle of the Empire Brewery who, as mentioned earlier, catered solely to the local home delivery market. Although dealing with a smaller volume than provided by retail establishments, he could have carved out a profitable niche in the local market if he combined cost effectiveness with highly personal service.

All brewers, no matter their size, knew the importance of distribution. Prior to the 1890s, most Island brewers appear to have relied heavily on liquor wholesalers and saloon and hotelkeepers in other communities to sell their products. A company like the Victoria Brewery would ship its products via a steamer or the E.& N. Railway to Wellington, Nanaimo and Comox, where a liquor wholesaler or publican, who received a commission on sales, would distribute the beer to retailers. By the 1890s, the idea of agents operating out of company owned or leased depots began to appear--a logical progression from the

previous approach, given that markets were growing and becoming more competitive. Following the American model, the agent's duty was to ensure that his brewery's products maintained and increased their market share. As early as 1895, the Union Brewing Company Ltd. established an agency and depot in Victoria. The Victoria-Phoenix Brewing Company Ltd. replied by appointing James Gordon as agent in Nanaimo. In some communities, several companies had agents. In 1903 or 1904, the Silver Spring Brewery Ltd. responded to an agency and depot opened by the Union Brewing Company Ltd., by setting up a bottling plant in Ladysmith so its products, shipped in bulk from Victoria, could be distributed throughout the district. Smaller centres were served by salesmen or "travellers" from head office who, working with local delivery contractors, visited customers in all but the most remote settlements.(75)

An efficient distribution network was vital to building sales volume and taking advantage of economies of scale. Thomas Cochran, in his study of the Pabst Brewing Company, however, argues that economies of scale do not apply in the brewing industry as larger producers face the same volatility in the price of their main raw materials as their counterparts. In reality, Cochran's argument on the irrelevance of the economies of scale cannot be pushed beyond the cost of raw materials.(76) For example, the Victoria-Phoenix Brewing Company Ltd. had certain cost savings because of its large, continuous run of a single product. Simply stated, a brewer in a small facility could boil 300 gallons of wort at one time in a brew kettle of that capacity whereas a brewer at the Victoria-Phoenix Brewing Company Ltd. could, with only a modest extra cost for manpower and fuel, boil 5,250 gallons in a much larger brew kettle--a significant leap in production capability that lowered unit costs. The larger producer could increase this advantage through technological improvements to increase efficiency and reduce the unit cost of production. Such savings, magnified by a large brewery's sheer volume, could be used to improve quality, introduce new products, enter new markets, increase profit margins and improve distribution. Striving for efficiencies in distribution and production costs, derived from economies of scale, was a more realistic way to push smaller competitors out of business than struggling to gain

an advantage on the commodities market.(77)

Unfortunately, the few surviving financial records do not permit comparisons of efficiency, profitability and the market reach of companies, large and small. Yet, an examination of the surviving financial statements of the Victoria-Phoenix Brewing Company Ltd. for the years 1895-1897, 1899, 1901, 1903, 1906, 1908-1912, and 1918, offers an insight into the success of one company while illustrating some of the economic factors that likely affected all breweries on the Island.(78) While incomplete, these records probably represent a fair sample of the whole period up to 1912, a time of general prosperity for British Columbia. The absence of financial records covering 1913-1918, the years of general depression, the war years and the early part of Prohibition, may mean that the averages presented here give an unduly favourable view of the company's position. Thus, the following is really a study of the prosperous, developing years of 1897-1912 and, for contrast, the atypical Prohibition year of 1918.

Starting with net profit (sales revenues minus all costs) their showing was excellent by any standard with an average of 23.17%, in the years examined. The year 1908 was the best year with a profit of 39.91% but 1909 almost matched it with a profit of 38.26%. Only the post-Prohibition year of 1918 was disappointing, with a net profit of 7.22%, the only time the percentage dipped below 10% in the years examined. Such profits would be envied by modern brewers. For instance, from 1980 to 1989, the Molson Companies Ltd., experienced net profits (recorded as net earnings) that fluctuated between a low of 1.25% and a high of 2.65%. The profitability of the Victoria-Phoenix Brewing Company Ltd. allowed the directors to pay respectable dividends during the nine years for which there are records. The documentation shows six years at 10%, one year at 7%, and one year, 1897, at only 4%. This range, dominated by 10% dividends, would be considered to be good today, where typical dividends in the brewing industry average 3% to 7%.(79)

In terms of working capital ratio, that is current assets (working capital) divided by current liabilities, the company was secure and well managed, with an average ratio of 11 to 1, with 1908-1910, being outstanding. During this three year period, the ratio hit highs of

36.35, 28.26 and 48.55 to 1, in that order. Only with the 1.46 to 1 ratio of 1895, a year in which much of the debt of the merger was retired and 1918, with 1.09 to 1, did the situation indicate high risk and over-leverage, and hence possible difficulty in repaying loans. The weakness of 1918 was foreshadowed in 1917, when a partial financial statement showed an 1.25 to 1 equation, clearly indicating the downward slide in sales brought about by Prohibition.

Inventory turnover is also a good measure of a company's overall efficiency as it indicates the number of times a year that capital is fully and profitably employed. In manufacturing generally, a turnover of inventory three times a year suggests a profitable enterprise, able to gauge and service demand and use capital, plant and equipment efficiently. This general efficiency, of course, has a direct link to earnings. Succinctly, if you earn 5% after each time you employ your capital, you will earn 15% annually if you turn your product over three times a year.

Bearing this in mind, the Victoria-Phoenix Brewing Company Ltd. was very successful, with an average turnover of 6.47 over the years examined. Only in 1896 and 1897, did the turnover drop below three, to 2.9 and 2.3, respectively. By the very prosperous years 1908-1912, the average had surged to 8.14. The only anomaly was 1918, when the turnover reached 18.4. This was undoubtedly the result of a massive effort to sell off beer that was stockpiled for export, just prior to the enactment of restrictive federal prohibition legislation.

An examination of inputs or cost components provides an insight into the major production expenses and the company's ability to control overhead. In terms of product costs, malt, bottles, duty, fuel and labour, represent the major inputs. While their individual averages are interesting, they are also somewhat deceiving. Taken individually, malt averaged 25.9%; bottles, 14.3%; duty, 19.2%; fuel, 7.0%; and, labour, 19.5%. What is significant, however, are the annual variations of each. For instance, fuel remained a relatively stable input, never varying more than 3.5% over the years. The same cannot be said for malt, which displayed great volatility, such as between 1906 and 1908, when a 36% increase in cost was experienced. Hops, while not a major input,

displayed much the same volatility. In one year alone, 1909, outlay on this commodity, increased by 105.8%. Such variations in agricultural prices made it nearly impossible for local breweries to predict annual product costs. The cost of three other items, bottles, duty and labour, experienced much change. Individual bottles became a larger input as breweries increased their use of standardized "packaging." The percentage of product costs represented by bottles remained under 10% until 1906 thereafter rising steadily in conjunction with improvements to the plant that often included new and automated bottling machinery. From 1908 onwards, with the exception of 1909, the cost of bottles remained at over 29% of the total inputs. The cost of duty, however, declined, from an average in excess of 20% prior to 1903, to as low as 10.9% in 1918. This was partially explained by a drop in excise duties on whole malt between 1894 and 1914.(80) Labour expenses fell equally dramatically, from an average of 21.7% from 1895 to 1903, to a range of between 13.5% to 14.5%, from 1908 onwards. The year 1918, again is the only anomaly, with labour costs rising to 21.7%. While wages were rising, due to unionization after 1912, the directors of the Victoria-Phoenix Brewing Company Ltd., were using their plant and equipment more efficiently. Indeed, while in 1895, product costs, that is costs related to beer were 66.8%; in 1912, they increased to 81.6%. In other words, non product costs, such as stable expenses, office supplies and insurance, had declined from 33.2% of the company's costs to only 18.4%. This, more than any other indicator, illustrates the increasing efficiency of the facility.

In summary, the Victoria-Phoenix Brewing Company Ltd. was a profitable and efficiently run operation during the fourteen years for which records are available. Most notable was an excellent average product turn-over, good shareholder dividends, outstanding net profits and low non-product overhead. These phenomena not only illustrate efficiency but foresight, the latter borne out by the profits made in years of great volatility in agricultural prices. Such foresight and competency also no doubt explains why it took only nine years to retire the major debts resulting from the merger that established the company in 1893. Little did the principals of the company realize how important

such business acumen would be when unionization and Prohibition became facts of life.

The Island brewing industry operated within a non-union tradition for most of the period covered by this study. One reason appears to have been the historically harmonious--even paternalistic--relationship between employer and employee that offered the union little bargaining power.(81) But such contentment was likely slowly eroded by the reduction in manpower brought about by mechanization, a growing awareness of economic gains made by workers elsewhere and, perhaps most significantly, consolidation in the local industry which threatened reduced job opportunities and worker mobility.(82)

It was against this background and the expansionist mood of the union itself that in August, 1912 local #280 of the International Union of United Brewery Workmen (I.U.U.B.W.) was formed in Victoria. The impetus came from Seattle, Washington, home of an aggressive union local which was often used by head office in Cincinnati to break new ground in the Pacific Northwest.(83)

The union movement had long ties with the American brewing industry. Starting out more like mutual aid societies than unions, early workers' groups were usually small and had little communication with similar societies throughout the country. The Brauer Gesellen Union, formed in Cincinnati in 1879, was the first recognized brewery workers union. Two years later, the union struck the city's brewers. Despite winning few concessions, their demands were important as they were at the heart of contractual negotiations with owners throughout the continent for the next forty years.(84) Workers wanted work hours reduced from as many as fourteen to eighteen hours daily, seven days a week with shorter shifts only on Sundays; payment for overtime; a minimum wage; the opportunity to room and board at their discretion rather than being forced to live in what many labour activists saw as a "serf-like" existence within a brewery; and a provision that a union brewery must have at least 50 per cent of its workers in the union--the first step towards the concept of "closed shops."(85)

In 1884, a national brewery workers organization was formed under the auspices of the Knights of Labor in New York City. By 1887, this

National Union of United Brewery Workmen of America had a membership of over 4,000 including allied workers such as engineers, firemen and maltsters. In the same year, it excluded brewery foremen and saloon-keepers while at the same time, breaking away from the Knights of Labor whose president favoured prohibition. Instead, the union received a charter from the anti-prohibition American Federation of Labor granting them the right to organize all brewery workers. This charter was tested in the 1890s when other unions insisted on the right to organize brewery workers along trade lines. The brewery workers' union, by now renamed the International Union of United Brewery Workmen to reflect an expansionist philosophy, eventually emerged the victor with the American Federation declaring "that they were to have jurisdiction over all types of workers in their industry."(86)

The union was operating from a position of strength when Ben Barfus, the international agent for the Seattle local, arrived in Victoria in the summer of 1912. Working in concert with the Victoria Labour Council, he convinced them to approve a motion to "render further assistance by interviewing the employers with the view of having them sign an agreement." (87) However, despite his abilities and the resolve of the local labour council, initial attempts at gaining union recognition failed. Although they were rivals in the marketplace, brewery owners, like nearly all industrialists at the time, were accustomed to joining forces to oppose unions. In this case, they argued that Vancouver and Nanaimo breweries were not organized and, ignoring the unionization of some breweries in the interior early in the century, suggested there was no need to embrace the union movement.(88)

The result, not surprisingly, was growing frustration among the workers some of whom were still working in excess of ten hours per day. When the workers complained bitterly to the local labour council, that body reminded brewery owners of its policy of patronizing local union industries and warned, "as there is no union beer in the city the unionist may find it necessary to secure union-made beer, unless arrangements can be made for local union-made products..." In other words, the Council threatened a product boycott, a strategy which had been well developed by the union in the United States.(89)

The situation finally changed in November, 1913, when brewery workers in Victoria, Nanaimo, Cumberland and Vancouver, signed an initial two-year agreement with their employers which included "improved working conditions and in some cases higher wages."(90) The signing of the contract also defined jurisdiction on Vancouver Island: brewery workers in Victoria reported to Local #280; those in Nanaimo and Cumberland, being part of the British Columbia Breweries Ltd., reported to Local #281 in Vancouver. The exact reasons for the change of heart by the breweries are unclear, but earlier the same year, Barfus apparently convinced Vancouver workers to re-form a local they had dissolved in 1908. That may have been the signal to owners in the province's two major urban centres that the union movement was becoming unified and that resistance would ultimately prove futile.(91)

Late in 1915, Local #280 began negotiating a new agreement with brewery owners in Victoria.(92) On January 31, 1916, they signed with the Victoria-Phoenix Brewing Company Ltd., an isolated achievement given that the Silver Spring Brewery Ltd., despite a declaration of "unfair practices" by the Victoria Labour Council, did not settle for the same terms until mid-September.(93) The contract itself reflected issues common to earlier examples elsewhere in the country such as the establishment of a closed shop, the hiring of seasonal workers, grounds for discharge and grievance and arbitration mechanisms.

In addition, the contract articulated hours of work and salary levels. As might be expected, the former had decreased for the majority of local workers, in this case to fifty hours per week (five days at nine hours and one day at five hours) from a work schedule likely close to that experienced by brewery workers in Guelph in 1907, namely, fifty-six hours per week (five days at ten hours and one day at six hours). [See Appendix K] Engineers and firemen, however, were still compelled to work seven days a week even in the slow months of November to March. While apparently unable to claim overtime, these individuals, who were often described as "second only in importance to God and the brewmaster," were compensated by higher salaries and an annual two week vacation after one year's service. In overview, the weekly wages in all categories were significantly higher, not only over those achieved nine

years earlier by the Guelph local, but also over those negotiated a year later in Kitchener, Ontario. [See Appendix L] This fact can be somewhat misleading. Because of their higher cost of living, the Victoria workers were probably not measurably much better off than their eastern counterparts.(94)

At the same time the movement towards Prohibition worried both workers and owners. Interestingly, a new contract signed by the Vancouver local in 1916 stressed that it would not expire until six months after the First World War ended. This particular focus perhaps illustrates a belief on the part of both brewers and workers that Prohibition would not be enacted during the war. The contract signed by Local #280 in Victoria, however, represented a more realistic view of the political situation in the province, because it was good only until December 31, 1916 and would expire earlier if Prohibition came into effect.(95) The tone of the Victoria contract suggests a strategy agreed upon by owners and employees to offset some of the damage expected from prohibition. If this was indeed the case, it may partially explain why Victoria's unionized breweries survived while those in Nanaimo and Cumberland did not. In fact, the British Columbia Prohibition Act was proclaimed on May 31, 1916 after a referendum on the issue during the provincial election of that year.(96) The adoption of the corresponding legislation, not enforced until October 1917, did not entirely surprise the local brewing industry. Its advocates, like the People's Prohibition Movement of British Columbia,(97) were the heirs to organizations that had been calling for moderation, abstinence or prohibition, since the earliest days of colonization on Vancouver Island.(98)

As the prohibition cause in North America gained significant strength in the years just prior to the First World War, American and Canadian brewers, many of whom had misjudged the resolve of the movement, found themselves charged with allegations ranging from the adulteration of beer to the brutalization of the human spirit. Brewers countered with a strategy depicting beer as a family drink rooted in the everyday life of early settlers. They also pointed out that beer was the drink of moderation and that its production made enormous

contributions to the economic wellbeing of the community.(99)

When the British Columbia government responded to prohibitionist pressure in 1911 by imposing regulations "to stop pseudo-hotels from selling liquor" by requiring all licensed hotels to provide a specified number of guest rooms, local brewers reacted.(100) For companies like the Victoria-Phoenix Brewing Company Ltd. which had a string of hotel and saloon properties, complying with the legislation meant a considerable financial outlay. Many brewers hoped that accepting this legislation would stand them in good stead should the prohibitionists gain the upper hand.

The brewers were ultimately to be disappointed. In the final analysis, British Columbia was caught up in a sentiment that argued that prohibition was a "progressive and righteous reform that would regenerate a society under stress." This was no better illustrated, than by the drunkard, his pay cheque consumed by the temptations of the saloon, totally ignoring the needs of his neglected family. Even though the sentiment of "going dry" was far from unanimous in British Columbia, with its "economy dominated by young male wage earners in resource-based industries" and their propensity for drinking, the rhetoric of the prohibitionists was persuasive.(101)

Local brewers and many of their workers had lobbied vigorously against prohibition through the "B.C. Equal Rights Association."(102) It may, however, have been a case of "too little, too late." Faced with the reality of defeat and the imposition of restrictive legislation, they had to make the best of the situation. Any last minute sympathy that local brewers might expect for their cause was dashed with the election of province's first Liberal premier, Harlan Brewster. While his Conservative predecessor, William Bowser, was inclined towards restricting the sale of alcohol, Brewster, a Baptist and total abstainer, was adamant that it should be banned altogether.(103)

The final legislation, however, represented a compromise. Brewers were allowed to continue to produce beer of all types except now it was strictly divided into two categories. The first was "near beer," set at 2.5% by British Proof Spirits or roughly 1.4% alcohol by volume. Any beer brewed above this alcoholic percentage was referred to as "full

strength." The former could be legally consumed in licensed premises while the latter could be produced only for shipment to markets outside of the province. In addition, full strength beer could be obtained for medicinal, scientific, sacramental or manufacturing purposes through government dispensaries and drug stores, upon submitting a legal permit.

This situation was further compounded by the Federal Government in 1918 when legislation was enacted that entirely prohibited the production and manufacture of all full strength beer. This legislation, which was enforced in April 1918, lasted until December 1919 in order to meet the requirement that it should be in effect until one year after the end of the First World War. In reality this legislation was much more harmful to local brewers than that enacted by the province in 1917 as it took away sales to other provinces. Legally, the only market now available was that for near beer, a commodity that was never popular with the public.(104)

This turn of events, does much to explain subsequent developments within the local industry. The most drastic effect was in Nanaimo and Cumberland. The Lansdowne Brewery operated until 1918 then disappears from the city directory, not re-opening for business until 1920 when the federal legislation was repealed and the export trade once again became an option. Peter Weigle of the Empire Brewery, on the other hand, "hedged his bets," against an uncertain future. In 1918, he became proprietor of the O. K. Shingle Company while continuing to produce minimum quantities of legal beer.(105)

Perhaps more surprising is the fact that, according to local legend, the Union Brewing Company Ltd. ceased production in 1919. The directors of the parent B.C. Breweries Limited claimed that slow business conditions on the Island brought about by the limited near beer market did not warrant continuation of the Nanaimo brewery. The brewery, apparently used later as a distribution centre for beer produced in Vancouver, appears to have continued to manufacture ice for commercial and residential use, as well as the aerated waters which were introduced in 1918.(106) This product combination at least assured that a minimum number of workers were retained and some profit derived from the site. The combination of the company's withdrawal from the beer

market in Nanaimo, the defeat of prohibition in the province in 1920 and the restoration of exports, likely explains why August Hasenfratz re-opened his brewery in the same year.(107)

The Pilsener Brewing Company Ltd. in Cumberland also fell on hard times. According to tradition, when Peter Dillman retired in either 1915 or 1916 the brewery, part of B.C. Breweries Ltd., became merely a bulk bottling plant for beer from the Union Brewing Company Ltd. in Nanaimo. The facility was managed by Alex Maxwell, owner of a moving and delivery service, who was in turn overseen by Conrad Reifel. The bulk bottling operation ceased in 1918, no doubt due to the decreasing interest on the part of the B.C. Breweries Ltd. in the Island market and the federal legislation. The facility apparently never re-opened.(108)

On the surface, the Victoria-Phoenix Brewing Company Ltd. and the Silver Spring Brewery Ltd. seemed to have fared well during 1917. Their ice making capabilities provided a steady business and with the exception of "Phizz," manufactured by the former company in small quantities in 1917, neither appears to have produced aerated waters in any quantity. Both breweries also had extensive export sales to other provinces; a deliberate focus as near beer was not a large revenue earner in the local community.(109) Its unpopularity and unprofitability was graphically seen in December 1919 when the Victoria-Phoenix Brewing Company Ltd. began an action against the provincial government for compensation for loss of trade at its saloon and hotel properties. This had resulted in several of their owners going out of business or being unable to pay debts incurred when they up-graded to meet the requirements of the legislation of 1911.

The brewery's directors, claiming that the average yearly trading profit of $50,482.42 experienced in the years 1911-1913, had been reduced to a mere $3,826.49 in 1918, remarked that the resulting loss of $46,655.93 represented an investment value of $311,039.53 when capitalized at fifteen per cent--a loss that was no doubt felt for many years despite the profits that once again resulted from the brewery's export trade. While the outcome of their action is unknown, the fact remains that the Victoria-Phoenix Brewing Company Ltd. and the Silver Spring Brewery Ltd., along with their smaller private competitors in

Nanaimo, survived provincial and federal prohibition legislation to one degree or another. This may well have been a testament to their ability to maintain efficient business practices, which allowed them to survive on less, and a positive attitude in a time of restrictive legislation.(110)

In retrospect, throughout this period, the Vancouver Island brewing industry continued the maturation process that had begun in the 1880s. This was most graphically illustrated by the dramatic shift away from traditional private ownership to the incorporated company, a trend witnessed throughout the industrial sector of the province. With the shift came a steady reduction in the number of breweries from an all time high of eleven in the heady days of the late 1880s to a level as low as that in the 1870s. Yet by the outbreak of the First World War, production was ten times greater than it was forty years earlier. This is not surprising, as consolidation generally meant fewer breweries with higher production capabilities. Consolidation also represented a way to fend off the competition, both external and internal, through mergers and subsequent expansion. In this way local brewers could ensure that despite the efforts of British trusts and American brewers, who pursued the outright acquisition of Island breweries or pushed their products into the Island market, they could control their own regional market.

Physically, consolidation took the form of large-scale, modern facilities built particularly for the production of lager which was clearly the customer's preference after the withdrawal of the Imperial Armed Forces, the last significant market for ale. Construction of such facilities was beyond the financial capabilities of most private brewers. The solution was the incorporated, limited joint stock company, which, due to its legal and business structure, attracted individuals with the skills and finances needed to construct the new, expensive facilities, undertake diversification if desired, and meet the challenges of a rapidly changing business world. Here, the Island industry generally mirrored the timing of this phenomenon elsewhere in Canada and throughout the continent.

While many private brewers participated in these new, investor-driven ventures, a handful of others continued on much as they always

had. Their reaction demonstrates that not all brewers were interested in fully embracing new technical or business structures. Rather, they met a changing world in a more selective and what one might call traditional way, a reaction often tied to limited capital, personal experience or market emphasis. The presence of the larger incorporated companies did not spell the immediate doom of the small producers who made profits through product and distribution specialization. Despite large profits and economies of scale relevant to some areas of production, the Island large brewers with their expanded distribution networks could not entirely eliminate the small operators; a testament perhaps to both the stubbornness and efficiency of the latter.

This period also saw the arrival, in 1912, of organized labour in a local industry with a non-union tradition. Its comparatively late arrival may have been due to generally good relations between owners and employees and the small size of the work force itself, its numbers being insufficient to attract the attention of union headquarters in Cincinnati, Ohio, much before this time. Whatever the case, the perceived loss of mobility brought about by consolidation within the local industry after 1900 seemed to be the spark that caused Island brewery workers to embrace the union movement.

All of the Island's incorporated breweries were unionized when Prohibition became a reality in 1917. While some such as the Union Brewing Company Ltd. and the Pilsener Brewing Company Ltd. closed, others, like the Victoria-Phoenix Brewing Company Ltd., and the smaller Empire Brewery, survived due primarily to overall efficiency and flexibility in meeting new forces in the marketplace.

Overall, the Vancouver Island brewing industry changed forever during this 27 year period. It was fully drawn into the world of modern brewing and all that it entailed--large facilities with large volumes, widespread distribution networks, an emphasis on light ales and lager and a big business view of the world. In short, it was now fully integrated into the large-scale business organization of the twentieth century.

NOTES

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2 William Downard, The Cincinnati Brewing Industry (Cincinnati: Ohio University Press, 1973), pp.46-47;80.

3 Baron, Brewed in America, pp.228; 258-269.

4 Thomas C. Cochran, The Pabst Brewing Company: The History of an American Business (New York: New York University Press, 1948), pp.151-152.

5 Baron, Brewed in America, pp.269-272.

6 Downard, Cincinnati Brewing, pp.43-44.

7 Baron, Brewed in America, pp.272-273.

8 Bill Yenne, Beers of North America (Greenwich: Bison Books Corp., 1986), p.132.

9 Colonist, 11 March 1891. The Nanaimo Free Press, 13 March 1891.

10 British Columbia Commercial Journal, 17 March 1891. Nanaimo Free Press, 20 March 1891, 4 June 1891, 24 June 1891, 20 July 1891.

11 Nanaimo Free Press, 20 November 1891.

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13 Colonist, 3 January 1892.

14 BCARS, Hat Creek Ranch Collection, Barnard to Mahrer, 11 August 1909. Add. Mss. 1145, Vol.24, File 13.

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16 Nanaimo Free Press, 1 November 1912. The syndicate, which retained local management, was headed by the Harmsworth publishing interests of London.

17 BCARS, British Columbia, Attorney General, Companies Branch Records.

18 Colonist, 23 January 1891.

19 Gregory Evans, Private Collection.

20 Colonist, 7 November 1897.

21 Colonist, 12 November 1897.

22 Colonist, 9 December 1898.

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24 Richard G. Wilson, Greene King: A Business and Family History (London: The Bodley Head Ltd., 1983), pp.130-131.

25 H. S. Rich, One Hundred Years of Brewing (Chicago: J.H. Rich and Company, 1903), pp.622-635.

26 Colonist, 19 August 1890.

27 Colonist, 25 July 1890.

28 BCARS, British Columbia, Attorney General, Companies Branch Records, GR 1438.

29 Colonist, 1 January 1891.

30 BCARS, A. F. Buckham, Collection, Add. Mss. 436, Vol. 162, File 9.

31 Colonist, 1 April 1897.

32 Nanaimo Free Press, 2 May 1890, 17 October 1890, 14 November 1890, 12 December 1890, 31 October 1891, 18 November 1891, 5 April 1892.

33 Nanaimo Free Press, 10 January 1891, 12 January 1891, 26 January 1891, 2 February 1891, 2 July 1891, 20 October 1891, 6 January 1892, 6 February 1892, 24 February 1892, 3 March 1892, 5 April 1892, 20 May 1892.

34 Nanaimo Free Press, 20 May 1892.

35 Colonist, 5 April 1896, 16 December 1898.

36 Nanaimo Free Press, 17 January 1906, 2 July 1907.

37 Vancouver Daily Province, 11 August 1909.

38 Colonist, 1 January 1891, 1 June 1892, 1 January 1893.

39 BCARS, Labatt's Breweries of British Columbia, Company Papers, Add. Mss. 1883, Vol.1, File 21. See also, Rev. Harvey Kimball Hines, An Illustrated History of the State of Washington (Chicago: The Lewis Publishing Co., 1893), p.486.

40 Colonist, 1 January 1891, 3 January 1892, 8 March 1892, 12 March 1892, 22 May 1892, 1 January 1893.

41 BCARS, R.H.B. Ker Collection, Ker to T.W. Lines, 22 December 1903, 6 January 1904, Add. Mss. 793, Box 26, File 19, Letterbook. See John Erb, interview, October 27, 1989, Victoria, B.C. and also, Colonist, 25 July 1893.

42 VCA, Real Estate Assessment Rolls 1861 - 1917, Victoria City. In addition, R.T. Williams, British Columbia Directory, 1890, pp.507;608.

43 Colonist, 11 April 1891.

44 VCA, Water Applications 1893 - 1917, Victoria City.

45 British Columbia Commercial Journal, 14 February 1893, 24 October 1893, 27 November 1894.

46 Colonist, 18 October 1896, 12 October 1897. In addition, Victoria City Archives, Retail and Wholesale Liquor Licenses 1897 - 1917, Victoria City.

47 The Victoria Times, 11 April 1891, 19 September 1894, British Columbia Commercial Journal, 31 January 1893, 24 July 1894, 19 September 1894.

48 Richard Coleman, Brewery Collection, Royal British Columbia Museum, Uncatalogued.

49 Colonist, 21 July 1896, 20 October 1896.

50 British Columbia Commercial Journal, 30 July 1895, Colonist, 1 January 1896. See also, Victoria City Archives, Real Estate Assessment Rolls 1861 - 1917, Victoria City.

51 VCA, Retail and Wholesale Liquor Licenses 1897 - 1917, Victoria City. In addition, Charles Fairall, interview, February 7, 1988, Victoria, B.C.

52 Nanaimo Free Press, 25 November 1890, 20 October 1891, 4 December 1891, 6 January 1892. The Vancouver Sun, 31 December 1912. In addition, John Cass, interview, September 17, 1989, Nanaimo, B.C.

53 Nanaimo Free Press, 6 October 1891, 5 July 1892.

54 R.T. Williams, British Columbia Directory, 1897-1898, p.671.

55 BCARS, British Columbia, Attorney General, Companies Branch Records, GR 1526. The prospectus of the Nanaimo Breweries Ltd., produced in June, 1924 listed the equipment used in its newly acquired Lansdowne Brewery.

56 Nanaimo Free Press, 7 July 1891, 23 February 1892.

57 Arnold Morris, interview, March 16, 1987, Nanaimo, B.C.

58 Nanaimo Free Press, 13 June 1900, 2 July 1907.

59 Colonist, 27 May 1903.

60 BCARS, British Columbia, Attorney General, Companies Branch Records, GR 1438.

61 VCA, Real Estate Assessment Rolls 1861 - 1917, Victoria City.

62 Richard Coleman, Brewery Collection, Royal British Columbia Museum, Uncatalogued.

63 BCARS, R. H. B. Ker Collection, Ker to Lines, 6 January, 1904, Add. Mss. 793, Box 26, File 19, Letterbook.

64 VCA, Retail and Wholesale Liquor Licenses 1897 - 1917, Victoria City.

65 BCARS, British Columbia, Attorney General, Companies Branch Records, GR 1438.

66 Joan Sloan, interview, October 26, 1987, Victoria, B.C., Joan Sloan, Private Collection.

67 Colonist, 20 November 1908, 13 December 1908, 30 March 1909. In addition, Richard Coleman, Brewery Collection, Royal British Columbia Museum - Uncatalogued.

68 The Victoria Times, 4 January 1913. There is some confusion as to who exactly brewed the first lager for the Silver Spring Brewery company Ltd. There is evidence suggesting that either individual may have had the honour. This is based on interviews with Walter Spershott, January 17, 1988, Victoria, B.C. and Victor Brachat, August 9, 1988, New Westminster, B.C.

69 BCARS, British Columbia, Attorney General, Companies Branch Records, GR 1526. Information on the background of the Mutter family, who had a tradition of distilling in their native Scotland, provided in an interview with Jack Fleetwood, June 3, 1990, Duncan, B.C.

70 Colonist, 15 January 1916, 18 October 1961. In addition, Victoria City Archives, Retail and Wholesale Liquor Licenses 1897-1917, Victoria City.

71 Doug Olson, interview, October 8, 1988, Spokane, Washington.

72 The Cumberland News, 4 May 1908, 29 December 1908, 4 May 1909, 20 July 1909, 4 January 1910.

73 BCARS, British Columbia, Attorney General, Companies Branch Records, GR 1438.

74 Martin Ian Bowering, "The Art and Mystery of Brewing in Nineteenth Century Toronto" (M.A. Thesis, University of Toronto, 1978), p.43.

75 Walter Spershott, interview. Walter Spershott, Private Collection. Distribution was made more effective, at least initially in urban areas, with the introduction of mechanized transport. Both the Victoria-Phoenix Brewing Company Ltd. and the Silver Spring Brewery Ltd. had acquired trucks by 1913, the latter purchasing a "Peerless" with a capacity of 25 barrels. See Colonist, 4 January 1913. See also Colonist, 4 August 1877, which provides but one example of the traditional agency system, whereby the proprietor of the Black Diamond Hotel in Nanaimo acted as the agent for the Victoria Brewery.

76 Cochran, Pabst Brewing Company, pp.98-101.

77 John Erb, interview, October 27, 1989, Victoria, B.C.

78 BCARS, Labatt's Breweries of British Columbia, Company Papers - Statements of Business, Add. Mss. 1883, Box 1, Vol. 1, File 26. In addition; Richard Coleman, Brewery Collection, Royal British Columbia Museum, Uncatalogued.

79 The Molson Companies Limited, Annual Report-1989 (Montreal, The Molson Companies Ltd., 1989), p.10. In addition, John Erb interview, October 27, 1989, Victoria, B.C..

80 Dominion Brewers Association, Facts on the Brewing Industry in Canada (Ottawa: Dominion Brewers Association, 1948), pp.70-71.

81 John Erb, interview, July 14, 1986, Victoria, B.C. It was customary in many breweries for the paternalistic bond between owner and employee to be strengthened through such common practices as sharing daily meals, company sponsored picnics and the provision of company owned housing, the latter being a feature of the Victoria Brewery for some years. There is evidence to suggest that by the early twentieth century, this type of relationship was becoming frayed in Canada. Seven strikes between 1902 and 1912 affected 13 breweries and resulted in the loss of 5,170 working days. See, Canada, Department of Labour, "Report on Labour Organizations in Canada - 1913" (Ottawa, King's Printer, 1914), p.11.

82 Robert Fox, interview, August 18, 1989, Victoria, B.C.

83 Special Collections, University of Victoria, Victoria and District Trades and Labour Council Minute Books - October 1909 to October 1917, pp.273-274, 279, 280-281. See also, Robert Fox, interview.

84 Hermann Schluter, The Brewing Industry and the Brewery Worker's Movement in America (Cincinnati: International Union of United Brewery Workmen of America, 1910), pp.97-100.

85 Downard, Cincinnati Brewing Industry, p.100.

86 Schluter, Worker's Movement in America, pp.133,227. See also, Downard, Cincinnati Brewing Industry, p.113.

87 UVic, Victoria Trades and Labour Council Minute Books, pp.273-274.

88 The Rossland Miner, 1 February 1901. Rossland's Lion Brewery became the site of British Columbia's first unionized brewery. It was organized by John Tidaman of Spokane, Washington. By 1910, there were at least three locals in the interior,located at Nelson, Trail and Cranbrook. See Canada, Department of Labour, Labour Gazette, (Ottawa: King's Printer, 1904), Vol. IV, pp.40-52. and Vol. VII, p.981.

89 UVic, Victoria Trades and Labour Council Minute Books, pp.293, 297-298.

90 Canada, Department of Labour, Report on Labour Organizations in Canada, 1913, (Ottawa: King's Printer, 1914), pp.126-133.

91 B.C. Federationist, 6 February 1914.

92 B.C. Federationist, 28 January 1916.

93 UVic, Victoria Trades and Labour Council Minute Books, pp.297-298.

94 Ray Wainright, Private Collection, Copy of Original Contract.

95 Ibid.

96 British Columbia, Ministry of Consumer and Corporate Affairs-Liquor Control and Licensing Branch, "The Grapevine," March-April, 1982; in addition, K. G. Stewart, Director of Policy, Research and Administration, Correspondence, Mrs. A.C. Niehaus, 22 January 1981.

97 Cumberland Islander, 29 January 1916.

98 Harold Tuttle Allen, Forty Years Journey: The Temperance Movement in British Columbia to 1900 (Victoria: Privately published, 1981), p.13.

99 Baron, Brewed in America, pp.301-302; 311.

100 H. Gregson, A History of Victoria, 1842-1970 (Victoria: Victoria Observer Publishing Company, Ltd., 1970), p.215.

101 Robert A. Campbell, "Liquor and Liberals: Patronage and Government Control in British Columbia, 1920-1928." BC Studies, Number 77, (Spring 1988), p.34.

102 B.C. Federationist, 31 March 1916, 7 April, 1916.

103 Gregson, A History of Victoria, p.215.

104 Robert Campbell, interview, November 20, 1990, Vancouver, B.C. Full strength beer could be legally "exported" to other provinces even though they may have had prohibition legislation in place. Residents of "dry" provinces could not consume full strength beer produced locally but could, under the confusing prohibition legislation adopted virtually across Canada, consume beer produced in other provincial jurisdictions. In 1918, the Federal Government, which controlled the manufacture and movement of liquor, disallowed all so-called inter-provincial exports.

105 R.P.Wrigley, British Columbia Directory, 1917-1920. See also, Arnold Morris, interview, 16 March 1987, Nanaimo,B.C.

106 John Cass, interview, September 17, 1989, Nanaimo, B.C.

107 Campbell, BC Studies, p.36. Prohibition was rejected by the electorate of British Columbia on October 20, 1920, to be replaced by legislation that placed the control of liquor traffic in the hands of the provincial government.

108 E. Somerville, interview, April 30, 1987, Cumberland, B.C.

109 John Erb, interview, October 27, 1989, Victoria, B.C. In addition, Colonist, 1 March 1925.

110 BCARS, Labatt's Breweries of British Columbia, Company Papers, Add. Mss. 1883, Box 1, Vol.1, File 36.

CHAPTER 4
BREWING MATERIALS

Beer is "a beverage produced by the alcoholic fermentation of a saccharine liquid, called wort...produced by the saccharification of starchy material obtained from grain, usually by diastase...formed in the grain by the germination (malting) of the same."(1) Water and barley-malt are beer's basic ingredients; hops and yeast are the agents of flavouring, preservation and fermentation. Despite attempts to make Vancouver Island self-sufficient in the cultivation of barley and hops, local brewers became dependent on outside sources for these ingredients as well as yeast; ironically, they often found it difficult to secure pure water.

Water, both the solvent and the medium for the fermentation process, is significant in determining the quality of beer. Consistently clear water, free of debris, organic pollutants and concentrations of undesirable ions, has always been of primary concern to brewers who required it for malting as well as mashing, the cleaning of brewing vessels and the generation of steam. Scientific advances allowed the determination of the biological purity of water and, if necessary, rectification with antiseptic treatment. Similarly, research in chemistry led to the identification of a water's "hardness"; that is, the concentration of calcium and magnesium ions in a given volume, a matter of considerable importance to brewers.(2) Vancouver Island has an abundance of soft water(3) preferred by many brewers as the prime medium for mild ales, stout and, especially, lager; moreover, its marked lack of mineralization made it more suitable for cleaning boilers, as feed water and for dissolving finings in the clarifying and aging process of beer.

At the same time, other brewers preferred hard water, with its higher alkalinity and larger concentrations of minerals for pale and bitter ales; the calcium sulphate it contains enhances the flavour of these beer types by producing the required bitter taste. Some also considered it better suited to keg, bottle and yeast washing as it appeared more resistant to bacteria.(4) In its natural state, water is

"hardened" by dissolving minerals such as limestone, dolomite, gypsum or anhydrite, none of which are prevalent on the Island.(5) To compensate for the lack of these minerals, some breweries, like the Silver Spring Brewery Ltd. and the Victoria-Phoenix Brewing Company Ltd "burtonized" their water, a technique which adds calcium sulphate to achieve the appropriate chemical composition. (6)

"Burtonizing" was but one of many chemical and mechanical water modification techniques emerging at the time: various filtering processes, aeration, distillation, and fluoride and lime water treatments were also available.(7) The evidence, however, suggests that Vancouver Island brewers consistently focussed on filtration. While relatively untutored in chemistry, they recognized that any form of solids or debris in the water could be detrimental, and while the water might be biologically impure, they knew that it would be sterilized in the boiling process prior to mashing. In short, while all brewers yearned for biologically pure water, it was not as imperative as water free from both organic and inorganic debris, some of which could not be broken down by boiling. Consequently, they concentrated on filtration--the installation of fine, wire-mesh filters in water mains to trap solids.(8) In fact, some breweries, like the Silver Spring Brewery Ltd., reassured their customers by advertising that their water was filtered, boiled and pasteurized.(9)

Local brewers had few concerns about the mineral content of water. The abundance of soft water left them well supplied for the production of lager, mild ales and stout, the former clearly the customer's choice by the turn-of-the-century, while pale and bitter ales could be produced with the assistance of chemical additives. This rather mundane reality, however, was often lost in the claims of some brewers who took liberties in comparing their water to that used in some of the world's most famous breweries. The Silver Spring Brewery Ltd., for instance, advertised that the water drawn from its natural springs was of the same type at Burton-on-Trent, the critical factor in the success of the Bass Brewery and its pale ale. This is an apparent contradiction. Burton Water is hard, whereas the advertisement claimed that the local spring water was soft, like that in the St. James Wells in Dublin--the latter credited

for the production of the Guiness Brewery's outstanding sweet stouts. The key word in this either muddled or clever advertising is "constituents;" the waters of Burton and Dublin contain the same constituents, but in very different concentrations.(10)

Chemistry permitted adjustment in mineral content but, despite increasing knowledge of bacteriology and the introduction of sterilizing techniques to augment the pre-mash boiling, brewers still had to pay, or be seen to be paying, close attention to their water supply. In any event, claims of immaculately pure spring water owed more to advertising imagination than to scientific reality. The myth of pure spring water producing exquisite beer (or whiskey for that matter) is an enduring one. Victoria brewers like Peter Henning Peters of the Empire Brewery were quick to embrace its potential in their advertising:

> The Brewery is situated on Spring Ridge and is built over a well of pure, ever-running Spring water. This fact enables me to manufacture The Very Finest Brands Equal to any Imperial ale, beer or porter...(11)

His claim was hardly unique as many other Victoria breweries drew their water directly from springs or wells. Three breweries of the 1860s secured their supply in this way; the Lion Brewery at Spring Ridge;(12) the James Bay Brewery which drew water from a 78 foot deep, brick-lined well;(13) and the Half-way House Brewery in Esquimalt which relied on three nearby wells.(14) Two others, the brewery opened by the Phoenix Brewing Company Ltd. in 1892(15) and the Silver Spring Brewery Ltd. facility of 1902, completed the roster of Victoria breweries drawing on spring or well water.(16)

The difficulty of obtaining clean water in Victoria made the desire to locate near a natural spring, well or even a lake understandable. The Victoria Brewery's William Steinberger, however, quickly discovered the unsuitability of Swan Lake as a source. Its polluted condition and a rumour that water mains would soon be installed persuaded him to relocate closer to the city.

The rumour was premature. The Victoria Water Works Company, which had proposed in 1862 to pipe water eight miles from Elk Lake to the city, was overtaken two years later by the rival Spring Ridge Water

Works Company which used steam pumps to draw water from a well at Spring Ridge. The water was distributed throughout the city in six-inch iron pipes and soon spelled the end of the water carriers who had previously supplied the city. Unfortunately, the water from Spring Ridge proved unsatisfactory; consumers regularly complained of contamination.(17) In 1873, to overcome the problem and prevent an outbreak of water-borne epidemics, Victoria borrowed $100,000 towards the construction of a city-owned system.(18) At least one brewer, Arthur Bunster, saw a potential for sales, advertising (tongue-in-cheek) that readers should drink his products rather than spend vast sums to construct a water delivery network.(19)

As it turned out, even the eventual expenditure of $200,000 did not solve the problem. In 1883, the Colonist complained:

> The supply [of water] is not only not sufficient or good. It is decidedly bad. Offensive to the taste and smell, prejudical [sic] to health and dangerous to the reputation of this otherwise delightful city....Bugs and water spiders in glasses, and leeches and worms and small fish in bath tubs...are palpable facts...of impure water... (20)

Naturally, this problem dismayed the brewers--most of whom relied on city supplied water--and prompted Joseph Loewen and Ludwig Erb of the Victoria Brewery and Charles Gowen of the Phoenix Brewery to solicit a reduction in water rates from City Council.(21) Meanwhile, the city, spurred by problems in fighting fires caused by low water pressure and an outbreak of smallpox finally installed a new filtering system and built a 16,000,000 gallon reservoir at Smith's Hill in 1908. After 50 years of problems, inaction and debate, the water quality issue in Victoria was finally resolved.(22)

While water mains and natural springs were the main sources for Victoria brewers,(23) Nanaimo brewers relied heavily on river water until the early 1890s. The Millstream River supplied the Millstream Brewery in its various manifestations and the Nanaimo Brewery; both probably used a flume system to carry water to their facilities. The first Lansdowne Brewery, situated some distance above the Millstream River, and the Red Lion Brewery at Cedar on the Nanaimo River may have

used a combination flume and pump system(24) while later, the Union Brewing Company Ltd., Empire Brewery and the second version of the Lansdowne Brewery on Comox Road were connected to the city's water mains. In any case, there is no evidence of Nanaimo brewers experiencing the same contamination problems as their Victoria counterparts; nevertheless, as was the case almost universally, they probably practised some form of basic filtration and sterilization.(25)

To the north, the Pilsener Brewing Company Ltd. of Cumberland experienced few problems with its water which was drawn from a series of dammed lakes to the west of the town. The waterfall, crested by the overflow at the first dam, appeared as the cascade symbol on the bottled products of the brewery.(26)

As important to brewers as suitable water was the quality and availability of barley. While brewers had their preferences about varieties of barley,(27) they all demanded that barley kernels be plump, free of mould, staining and foreign seeds, and uniform in size and colour.(28) These criteria were essential because, unlike water, the quality of barley could not be improved by chemical or mechanical means.

Initially, Vancouver Island seemed well suited to barley growing. It was claimed, for example, that the yield per acre was superior to that of Ireland, equal to that of England and only slightly behind that of Scotland.(29) Moreover, its high saccharine content produced "malt just as good as the English malt." Indeed, the Colonist claimed that because local barley was superior to that of the imported California product, its price should therefore be at least 25 per cent higher.(30)

The truth seems to be that Vancouver Island did not offer ideal, nor even superior conditions for the cultivation of barley. The optimism expressed in many quarters was probably the result of boosterism rather than objective judgement; and local farmers were reluctant to grow more barley even though the brewers offered a ready market at good prices.(30) In 1862, Charles Gowen told local farmers that he wished to "purchase No. 1 Malting barley, in any quantity from 50 to 5000 bushels."(31) Elliott and Stuart (who often acted as grain brokers) advertised that they "are Purchasers of Barley, grown on the Island or the [Puget] Sound, at the Highest cash Prices".(32) "Highest

cash prices" suggests a limited supply and the necessity to compete aggressively to secure the commodity. Furthermore, the publicist Matthew Macfie pointed out the $44,230 worth of barley imported into Victoria in 1863 should encourage expansion of this crop throughout Vancouver Island.(33)

These references, however, foreshadowed a recurring theme in the cultivation of Island barley--an apparent ability to produce good quality barley but in insufficient quantities to satisfy local needs. This situation resulted in a longstanding reliance on imported malting barley and malt, particularly from California, Washington, Oregon, Eastern Canada and later, the North American Prairies.

Undaunted, local brewers continued to urge local farmers to grow barley. At the 1864 Agricultural Society Dinner, Arthur Bunster "offered $100 for the best samples from ten acres of barley exhibited at the next agricultural show". The Colonist's reporter, who attended the banquet, observed:

> These exceedingly generous offers [referring as well to other inducements made at the dinner] on the part of our brewers ought to stimulate agriculturalists to the bestowal of increased attention on the growth and manufacture of three important and lucrative branches of industry.[hops and oak barrel staves] Our Island barley has already been shown "to be second to none on the Pacific Coast."(34)

Evidently the inducements had some effect. In January 1865, the Colonist reported that "several hundreds of acres of barley will be cultivated this year expressly for our Island brewers". The article repeated earlier statements about the fine quality of local barley, claiming that, in terms of gravitation, it was superior to the California type that was being used primarily for local brewing.(35)

Despite this apparent advance, the situation had not improved dramatically by 1867, when Arthur Bunster lobbied the Colonial Government to reconsider a proposed tax on imported barley. After stating that he was the principal manufacturer of ale on Vancouver Island, and pointing out that British Columbia barley was second to none for brewing, he warned that it would be ruinous to have:

> ... a Tax levied on Barley to the Brewing Industry of Thirty - cents per 100 lbs in as much as there is not found enough on the whole of Vancouver Island to supply me for Six Months under cultivation and as a Further Proof of what I say the people have to import from the United States there [sic] Chicken Feed.

Speaking as a farmer and brewer he predicted that such a tax would result in an inferior beer since his experience as partner in "the largest Farm on the Island for the last two years" had convinced him that there never would "be Quarter enough Barley raised on the Island to supply a Brewery...."(36)

While the Island's climate seemed suitable for barley cultivation, particularly at seeding time, when the generally moist spring soil got the crop off to a good start, cool and sometimes damp summers could result in immature crops and inconsistent quality--a phenomenon known as "hard harvesting." The resulting damp and under-sized barley was less attractive to brewers than that fully matured in a consistently warm but not arid climate. Since Island farmers could earn a good income from forage crops, they were not inclined to expand their barley acreage or to experiment to any great degree with new, hardier barley types.

The Legislative Council engaged in a lively debate on the barley duty. Although one member moved that brewing barley be admitted duty free, while barley used for other purposes be set at twelve and a half per cent, and another suggested deferring the collection of the duty at the present rate for three months because there was really no barley available on the Island, most members thought it more important to offer local farmers as much protection as possible as they had "struggled long enough against foreign importations" while their "produce lay rotting on the ground because it would not pay to bring to market." A high duty, they erroneously claimed, would encourage more local production--the vast tracts of the Island being better adapted to barley than any other on the Pacific Coast. In the end, the Legislators rejected the brewers' appeal. As one of them rightly pointed out, the duty only amounted to one and a half cents per gallon of beer, a cost unlikely to ruin the industry.(37) While it did not cause the industry's demise, it did not

encourage more local production of barley, either.

No more than 500 acres were ever devoted to growing both feed and malting barley on Vancouver Island.(38) As late as 1910, a booster pamphlet admitted that although "barley and wheat do well [in the Comox District--a principal grain growing area]...not enough is raised for home consumption.(39)

Compounding the problem was the fact that as beer production increased, so too did the need for barley malt. For instance, in 1869, it was estimated that Victoria's brewers combined used 600 tons of barley malt annually.(40) During the sixteen years 1874-1890, British Columbia brewers combined used a total of 6,592 tons of barley malt, the bulk being used on Vancouver Island due to the small size of the Mainland industry. Between 1891 and 1917, Island brewers alone used 26,063 tons of malt.(41)

Assuming ideal growing conditions, experienced growers, and a maximum of 400 acres devoted to malting barley (the other 100 acres being devoted to feed barley), it can be estimated that the Island was capable of producing 272 tons of malt per year; or, approximately 47% of the needs of Victoria's brewers in 1869, roughly 70% of the province's needs for 1874 to 1890 and 17% of the Island's requirements for 1891 to 1917.(42) While it can be argued that the Island could theoretically produce sufficient malting barley in some years, government records and the press reveal a different reality.

The reports of the British Columbia Ministry of Agriculture for the years 1889 to 1896 and 1900 illustrate the real scope of the situation. During these nine, non-consecutive years, a total of 57,332 bushels of barley, of all types, were imported into the province, and only 3,213 bushels exported. The more telling story, however, is portrayed by the figures for barley, already malted. These show a huge imbalance towards imports, with 405,930 bushels of malt, worth $305,704.00, imported as against total exports of only 312 bushels, worth a mere $308.00.(43) While these statistics were generated on a provincial basis, they demonstrate the absence of a strong barley growing sector within the province. Similarly, in January 1884, the Colonist, as part of a continuing campaign to encourage farmers to grow

more barley, reported that all of the 13 tons of malt used per week by the Victoria's breweries was imported from San Francisco, at loss to the local economy of approximately $150,000 a year.(44)

Scattered references, however, suggest that some Island farmers were attempting to meet the demand. At least one brewery, the Colonial, procured some supplies locally, while the E.&N. Brewery boasted that "all the material used is grown on Vancouver Island, the barley and hops coming from North Saanich". It is likely that brewers such as Fairall and Barry had worked out a satisfactory arrangement with local farmers and may have encouraged them to grow particular varieties especially suited to some of their products. Others, like the City Brewery and the Victoria Brewery, felt it was safer to contract for a more reliable supply of quality barley from California and eastern Canada.(45)

Yet, in 1904, the Union Brewing Company Ltd. attempted to encourage local farmers to grow more barley by constructing a $10,000 malting facility. An analysis of samples of malting barley sent to California from the Western Fuel Company's farm near Nanaimo had indicated that the local barley was "admirably adapted" for malting.(46) Satisfied with the outcome, manager Henry Reifel completed his malting works in 1905 and convinced Fraser Valley farmers to grow 500 tons of malting barley.(47) By 1907, the malting facility, claiming to be the only one in the province, was fully operational. Although the Union Brewing Company Ltd. had promised both Island and Fraser Valley farmers a "ready Market" for all the barley they could raise, there is no evidence that the farmers responded with any zeal.(48)

The establishment of the Union Brewing Company Ltd's malting facility was, in a sense, a throwback to an earlier era. Roughly speaking, until the late 1880s, the majority, if not all local brewers, produced their own malt.(49) In fact, the first independent malting facility did not operate on the Island until 1886 when Siewerd and Barthel spent $3,500.00 to construct the Victoria Malt House. The erection of this three-storey facility with the latest equipment caused considerable excitement in the community:

> Farmers will now have a sure and safe market for their barley, and the local brewer will be able to patronize home industry, while the quality of the beverage he supplies will be largely improved by the superior quality of the malt used.(50)

Construction of a separate malt house reflected the sharp increase in the number of Island breweries and their collective productivity during the mid-1880s since malted barley, with the exception of the small local distilling industry, had few applications outside of brewing.

Traditionally, the art of malting was an integral part of a brewer's training. Indeed, it was considered a cornerstone of the trade. By learning the malting process, brewers could ensure a degree of control over the quality of the malt required for their particular products. As beer production and the demand for malt increased, some brewers began to look to independent maltsters to supplement or replace the malt stocks traditionally produced in their own facilities.

To understand their position, one has to understand the complex process of malting. It is best described as a controlled method of inducing partial germination in barley to produce enzymes which, in turn, convert the bulk of the starch in the grain into fermentable sugars. The process consists of three phases: steeping, germination and kilning. The raw barley was first screened and then steeped in tanks of water for four days. The grain swelled and softened, initiating the actual germination process. After steeping, the water was drained off and the damp barley "floored"-- spread out evenly on a floor for seven to ten days. To control the rise of temperature and provide ventilation, the barley was regularly stirred and turned over. During this, the germination phase, natural enzymes, including "diastase," are generated. The enzymes break down and make soluble the food reserves in each kernel. The resulting biochemical process produces maltose and dextrin; the former eventually being converted into alcohol and carbon-dioxide; the latter imparting flavour to the beer.

When the enzyme action reached the optimum stage, germination was terminated by a delicate and slow heat-drying of the germinated barley in a kiln (kilning) to remove the remaining moisture. Both the time and

the kiln temperature determined the type of malt produced. A light-coloured malt, suitable for lager and other mild beers, was produced by raising the temperature gradually over the duration of the "curing" process to 150-180 F. For darker and more flavourful beers, such as stout and porter, higher curing temperatures, up to 225-240 F. and longer curing times, up to three or four days, were used. Simply put, the longer the malt stays in the kiln, the more it becomes roasted and caramelized, and the darker, sweeter and more fully-flavoured the subsequent brew. The dried, "fully malted barley, now ready for the brewing process, had undergone more internal than external changes. Apart from a slight change in colour and consistency, its appearance was much as it was to the naked eye at the outset of the process.(51)

Unfortunately, no inventory of equipment from the Victoria Malt House has survived, so its degree of sophistication is unknown. We do know that the partnership was brief. In the very year that it was formed, Siewerd withdrew, leaving Barthel, whom the Colonist credited with being largely responsible for the firm's success, to carry on the business.(52) He continued malting operations at least through 1886, but a lack of profits may have caused him to turn part of his premises into a boarding house for brewery workers known as the Malt House.(53)

Barthel's operation probably failed due to an inability to produce either an acceptable standard or quantity of malt. Had he succeeded, however, he would have faced the economic pressure being exerted on localized maltsters by the growing number of large-scale, commercial malting facilities being established in the expanding grain growing areas of the American Prairies, an area that by 1900 had replaced the traditional barley growing areas of the continent, the northeastern states and Ontario. Only California, Oregon and Washington managed to retain some of their prominence as barley growing states. By the early twentieth century, maltsters close to the vast grain-growing acreage of the prairies, and to a lesser degree on the west coast, had developed large, mechanically sophisticated and highly capitalized malting companies, which could ship vast quantities of malt to any brewery in North America in a matter of days.(54)

By 1891, British Columbia brewers relied heavily on American

malting companies and imported 39,942 bushels of malted barley that year. The British Columbia Commercial Journal suggested that the import of only 2,562 bushels of raw barley did not "indicate the presence of malting establishments there" and blamed protective duties for the problem.(55) While Canada placed a duty of only 15 cents per bushel on barley and malt, the United States imposed a 30 cent per bushel duty on barley and a 45 cent per bushel duty on malt. The latter resulted from the McKinley Tariff of 1890, a tariff that all but obliterated the very significant export trade of Ontario, the major centre of both malting and barley production in Canada at the time.(56) The British Columbia Commercial Journal argued that Canada should adopt the same tariff as the United States to ensure that "Canadian farmers would have exclusive control of the home market," a situation that would lead to Canadian maltsters fully supplying Canadian brewers. The Journal concluded that the expansion of the Canadian malting industry would be "particularly desirable in British Columbia where there are no malting houses; the dependence there being upon California."(57)

In fact, several Island breweries maintained malting licenses during the early 1890s. In Victoria, the E.& N. Brewery and the Colonial Brewery had maintained licenses until 1892, while in Nanaimo, the Empire Brewery appears to have undertaken malting for some years.(58) Nevertheless, this minimal activity ended sometime in the 1890s. In 1903, H. S. Rich reported that no British Columbia brewer made his own malt, the industry instead securing nineteen per cent of its needs from Owen Sound, Ontario, Winnipeg and Calgary, the other "eighty-one per cent being imported from the United States."(59)

Given this account, the modern malting facility constructed by the Union Brewing Company Ltd. in 1905, is an anomaly. While the company may have anticipated revenues from malting for other local breweries, its initial success relied largely on greater barley production on both the Island and in the Fraser Valley, which the brewery itself encouraged. However, given the Island's history of limited barley production, protective tariffs that effectively barred exports of any surplus to the United States, and the competition of the huge commercial malting houses on the North American continent, revenues most surely

would have been marginal. In 1910, the Union Brewing Company Ltd. was still advertising itself as a malting facility, but without any great vigour for it still relied on imported barley to augment the 500 tons annually that Henry Reifel had encouraged Fraser Valley farmers to grow some five years earlier.(60)

In the final analysis, the attempt by the Union Brewing Company Ltd. to profit from its own malting facility and foster increased local barley production was reminiscent of the periodic but largely unsuccessful attempts throughout the nineteenth century to establish a self-sufficient barley growing and malting industry. Even with the potential for financial gain, bolstered by patriotic sentiment, the evidence suggests only short-term gains toward self-sufficiency. As a consequence, as the needs of local brewers grew, so too did their reliance on and preference for, the consistent products of the major commercial maltsters on the continent.

While local barley cultivation was inadequate and unpredictable, hop production was, for several decades, more plentiful and reliable. Centered primarily at the northern end of the Saanich Peninsula, hop cultivation began because a dependence on imports, stimulated pioneer brewers and farmers to raise hops in a climate and soil believed to be ideally suited for its growth.(61)

In the 1860's, Victoria merchants, like St. Our's & Co., imported hops from California. At the time, the only other sources were New York State and England. The close trading ties between San Francisco and Victoria no doubt facilitated the importation of both the American commodity and the trans-shipment of the English varieties but importing hops was costly.(62) The Colonist reported that in the last six months of 1862, a total of $23,000 worth were imported from England, and $50,000 worth was anticipated for 1863. Always keen to support local agricultural endeavours, the newspaper asserted "there is nothing to prevent the culture of hops here. We possess the climate and the soil, and we have in our population experienced hop growers." Local cultivation also appeared commercially viable as the vines could be imported safely from England at small cost and the "capital necessary would be insignificant in comparison with the prospective return."(63)

The article touched off a brief debate. When a correspondent questioned the suitability of Vancouver Island for hop growing, Victoria brewer Alfred Elliott replied that the cold and wet weather that caused mould and vermin in England were not

> ...likely to frustrate the efforts of the colonial cultivator, and the best proof that a mild, equitable temperature is most suited for the purpose of hop growing, is found in the fact that in the English Market hops grown in the States, or Germany, do not bring within 40 per cent of the price of the home grown, resulting from their yielding too much of a rank acrid bitter, in place of that delicate aroma which the latter possesses.

He claimed that the success of some hops planted at Cadboro Bay suggested "that the investment of a limited amount of capital in this branch of agriculture would be far from a failure."(64) In order to demonstrate his faith, Elliott and his partners, by the following August, had cultivated a field of vines near the brewery, a sample of which was described as a "splendid specimen of native hops."(65) They also "offered a prize of $100 for the best acre of Island hops to be competed for at the next show" of the Agricultural Society of which Elliott was a key member. Rival brewer Arthur Bunster countered with the offer "of a farmer's wagon and two draught horses complete, of a value of $1,000, for the best two acres of hops grown on the Island within the next two years."(66)

Such offers had some effect. By the following year, at least two local farmers, Isaac Cloake and William Towner (reputed to be partners), had several acres under cultivation. They are generally accepted as the pioneers of the industry on the Saanich Peninsula and were the forerunners of approximately fifteen other farmers who specialized, to one degree or another, in growing this crop. [See Appendix M] The new crop seemed to hold promise. By July 1865, Isaac Cloake had "two and a-half acres of hops, planted last March, now standing about ten feet high." Cloake, who had been a hop grower in his native Sussex, claimed that "he never saw anything equal to it at home" and planned to increase his crop area to ten acres because it would offer a return "infinitely better than any other production."(67) His prediction of profitability

was borne out; three years later another farmer expected to earn over $2,000 for his crop of fine hops--a small fortune by 1868 standards.(68) Nevertheless, $7,000 worth of hops were imported into Victoria in 1869, a sign that local producers could not completely satisfy the needs of Island brewers.(69)

Seemingly, the next decade held the key to alleviating concerns about imports. Reports from the early 1870s proudly announced that local hop growers were achieving "from 900 to 1000 pounds (of hops) to the acre" and that "some idea of the profitable character of this crop may be formed from the fact that the price never falls below 50 cents and has frequently reached $1.25 a pound. At the former, the acre would yield about $500 a year; at the latter $1,250."(70)

Despite outstanding yields, some felt that too little scientific attention was being paid to future levels of cultivation and the suitability of the types of hops grown. The Colonist, by now a longtime booster of the cause, pointed out in the Fall of 1870 that while hop culture was attracting a good deal of serious interest in California, the same could not be said locally where "it is about time this branch of industry attracted some attention in British Columbia."(71) Yet, a year later the Colonist noted that California did not seem capable of producing enough of its inferior hops for home use and suggested shipping that year's large surplus of excellent quality Vancouver Island hops to California.(72)

By the middle of the decade the export potential seems to have been at least partially realized. In 1875, when local growers experienced a severe drought, the Colonist pointed out that if significant rain did not fall, the American Government would earn little duty from Island hops that year. The oblique reference implies that some exports southward had previously been undertaken. Fortunately the rains came. In October samples of local hops were "forwarded to England, and as their quality is excellent, a market is hoped for." This shipment was likely in response to a failure of 20% of the English crop that year.(73) Despite the crop failure in England, prices were low. This discouraged some local growers and fewer raised crops the following year. However, a second crop failure in England, made all the

worse by a failure on the European Continent, gave local producers enhanced prices in 1876.(74)

Little is known about the situation over the next fifteen years except that William Towner sold 5,000 pounds of his hops to unknown buyers in San Francisco in 1880 for the considerable price of $1 per pound.(75) This figure, significantly higher than the 20 to 25 cents per pound offered just five years earlier, indicates severe international shortages. Similar prices may have again been offered to local producers due to failures in both the English and Canadian crops in 1883, although there is no direct evidence of this.(76)

Late in the 1880s, however, an Ontario brewer reportedly agreed to a long-term contract with a Saanich hop grower. A retrospective article reported:

> In about 1888 Thomas Haliday, of Guelph, Ontario, was making a trip to Washington to purchase his year's supply of hops. Arriving in Victoria, he met an old friend, Henry Clay, who drove him out to the Downey farm to inspect the hops there. He was so satisfied with what he saw that he signed a contract to take their whole crop for term of five years. More and more pleased with the Saanich hops, Mr. Haliday made a second trip to British Columbia and, the five-year contract having expired, agreed to take the whole crop, about eighty bales, as long as the two parties were in business, at New York prices plus two cents freight, and this continued for twenty-two years.(77)

By the 1890s, however, Saanich growers were facing serious competition from the British Columbia mainland. In 1884, John Broe of Aldergrove, planted a small experimental crop that thrived in the rich alluvial soil of the Fraser Valley. While his initial output was small, his plants, adapting well to local conditions, provided the root stocks for subsequent mainland producers.(78) Eight years later, in February 1892, T. Thrace Sich purchased 100 acres at Agassiz for hop cultivation, his acquisition signalling the initiation of large producers within the province.(79) A month later, the Squamish Valley Hop Raising Company Ltd was incorporated to raise hops in the Squamish Valley.(80)

Several Fraser Valley growers, like E. C. Horst (B. C. Hop Co.) and H. Hulbert, were well financed by American and Canadian investors.

This fact was important, considering the initial costs faced by hop growers, particularly those who sought to cultivate large tracts of land. Fertilizer, stock roots, poles, wire, labour and kilns, all contributed to high up-front costs which could only be recovered through efficient technology, high yields and secure markets. By 1912, hop producers of varying sizes and levels of capitalization, accounted for 583 acres in the Fraser Valley, 24 acres at Squamish and 39 acres at Vernon, for a total of 637 acres under cultivation on the mainland.(81) In contrast, the total area devoted to hop cultivation on the Saanich Peninsula probably never exceeded 100 acres.(82)

At roughly the same time as the industry was beginning to expand on the mainland, major Saanich Peninsula growers began to go out of business. By 1898, Daniel David Moses and Henry Wain had retired apparently initiating a trend that continued until 1912, when the local industry virtually ceased to exist, the hop gardens having been largely ploughed up and used for other farming activities.(83)

The reasons for the demise of the local crop are varied. The death of the pioneer growers was certainly a factor, as some families had little interest in carrying on an enterprise with an uncertain future, particularly in light of the larger and better financed operations on the mainland. The one experiment at a limited company on the Saanich Peninsula, the Oakhurst Hop Company Ltd, was formed in 1899. A group of local investors, no doubt inspired by the trend to large, incorporated hop farms on the mainland, offered 20,000 shares at $5.00 each and took over the existing farm and hop acreage of R. Henry Breeds for the main purpose of "purchasing, cultivating, drying and growing of hops and vegetables." Including vegetables was normal practice since it improved the chances of profitability, should nature retard hop production. For unknown reasons, the company failed and was struck from the Companies List in October, 1911.(84)

Disease and insect infestation also played their part. Hops are susceptible to such insects as aphids, green fly, red spider and flea beetle. Local growers who did not or, financially could not, embrace new methods of pest control, may have suffered irreversible damage. And, one hop grower, who did know of an effective spray against aphids,

apparently refused to share his knowledge or his sprayer with his fellow growers. Compounding this problem was the climate. While the local soil may have been rich, spring and summer temperatures, due to the close proximity to the ocean, were cooler than those experienced in the Fraser Valley. There, warmer summers with less rainfall, lessened mould growth which was one of the hops' greatest enemies.(85)

It must not be assumed, however, that local growers were idle in the face of biological threats. In 1898, the Downey brothers, on behalf of other growers, travelled to Washington to learn how growers there were combating a widespread infestation of aphids. The Island growers were impressed by the way in which the American growers applied scientific knowledge to their harvesting and drying techniques. When they returned, the Downeys reportedly introduced many improvements including the one-pole system for supporting the hop vines. In addition, they brought home the latest in sprays and sprayers, the knowledge of which they shared with their fellow growers.(86)

The new technology gave local growers short-term gains but did not resolve their problem of finding a variety of hops that was a reliable producer and seller. Growers experimented with many types over the years but the high producing "Pacific" seems to have become the most widely cultivated. Although one observer claimed that it was heavy and coarse with an unpopular taste, the Colonist replied that this was so only in the first year, the hop acquired a pleasant taste and aroma in its second season. It was also pointed out that Washington and Oregon growers shipped large quantities of the Pacific to London and its quality was also recognized in California and Eastern Canada.

Another variety planted locally in the 1890s, the East Kent Golding, while sometimes successfully grown, was temperamental and costly to cultivate. When R. Henry Breeds sent samples to London, they were praised for their quality. But until they could be supplied in 300 to 400 pound bales, they would be listed as Pacific Coast Hops on the London market. Breeds found this unacceptable and turned to the Australian market but saw much of his profit eaten up by shipping charges. Furthermore, rising duties in the 1890s, effectively cut off the American market. Shipping costs and high duties realistically left

local producers with the limited market of Vancouver Island and the occasional accounts, such as that with Thomas Haliday of Guelph, that could be secured elsewhere in Canada.(87)

Moreover, by the 1890s local brewers were more frequently mixing local hops with imported varieties to produce beers more compatible with the increasing public preference for the lighter and more subtle taste of lager and light ales.(88) The generally milder, imported varieties were secured from many locations. Growers and hop merchants in Eastern Canada and Oregon, provided much of the local requirement. Such companies as F. A. Barrett of Toronto, Munderloh & Co. of Montreal, Harry L. Hart of Portland and T. A. Livesley & Co. of Salem, supplied the Silver Spring Brewery Company with German, Bohemian, English and choice Oregons in large quantities during 1909 and 1910.(89)

The demise of the local hop industry was caused by several factors: the dying off and non-replacement of the pioneer growers; a slow embracing of new technology; slightly inferior growing conditions to those of the Mainland; the difficulty of developing export markets because of external forces, such as minimum quantities, high shipping costs and duties; a growing preference for hops other than those that could be successfully produced on the Saanich Peninsula; and, most important of all, small acreages that could not compete with the much larger and better financed Mainland hop farms.

A discussion of yeast, the final raw material required by brewers, must be divided into two periods: an earlier, non-pure period and a later, pure-yeast period. The necessity for a pure "house" or "stock" yeast, free from bacterial contamination and with predictable fermentation patterns, had attracted a great deal of attention in the nineteenth century as it was recognized as a critical ingredient. Before the 1890s, when pure yeast became available from outside sources, local producers had to rely on yeast stocks they themselves had built up. These could have originated in wild yeasts, trapped and then cultivated within the breweries or, more likely, secured in the form of cultures, ordered from brewing supply houses or from larger breweries in the United States.

Maintaining purity was the main difficulty. In addition to the

threat of contamination, the internal make-up of yeast posed problems. While each brewer strove to maintain a single strain of either top-fermenting or bottom-fermenting yeast, and probably both, what he had in reality was a variety normally made up of several distinct strains that more or less behaved in unison. Their multi-faceted make-up was, however, a cause for concern because less than perfect fermenting conditions could cause each strain to behave differently and result in inferior beer.(90)

When the house yeast became severely contaminated or weakened by old age, the local brewer would normally seek a replacement culture from the original source. This was an attempt to secure, on a continual basis, yeast that at least demonstrated the same basic characteristics as before. The main source of local house yeast cultures was likely California. The typical shipping method was to wrap the yeast in hop sacking or a special sawdust and then pack it in wooden boxes, thus providing ample protection over long distances.(91)

During the 1890s, pure yeast, propagated in the laboratory, generally became more available to the brewing industry. As discussed earlier, Emil Hansen's work in the 1880s, had made it possible to isolate and propagate a single cell of a desirable yeast, thus eliminating harmful variations and ensuring that a particular flavour could be consistently repeated. This could be achieved through various devices such as Hansen's Pure Yeast Culture Apparatus and the Bergh and Jörgensen Propagating Apparatus--each capable of producing quantities sufficient to supply the brewing needs of several breweries at one time.(92)

Normally, because of the expense of acquiring such equipment and training employees to oversee the process, most smaller breweries could not establish a pure yeast laboratory. Instead, they relied on outside sources. Wallersteins, of New York, for instance, was one source of pure yeast for the Victoria-Phoenix Brewing Company Ltd. It arrived in Victoria in 25 pound portions, shipped in sterilized, wax-lined cardboard containers and handled by brewery workers wearing sterilized gloves and aprons. The fact that pure yeast was not produced on Vancouver Island until 1934, when John Erb, newly returned from the Wahl

Henius Brewing School in Chicago, established a laboratory at the Victoria-Phoenix Brewing Company Ltd., clearly indicates the dependence of local brewers on outside suppliers.

Once obtained, several techniques were employed to make the yeast last as long as possible. After fermenting the wort, the yeast was removed from the fermenting tubs and dried on a number of mediums including plates and metal sheets. From there it was stored in special bottles or jars, kept at cool temperatures and re-introduced into new wort when required, the process continuing until it had become too weak or, by chance, been contaminated. The longevity of yeast varied from one brewery to another and usually depended on the care with which it was handled. New yeast was ordered, on average, every three to four months at the Victoria-Phoenix Brewing Company Ltd.,(93) an interval fairly consistent with averages elsewhere, although some brewers claim to have used a batch of yeast for almost unlimited periods.(94)

In conclusion, local brewers were faced with irony in securing basic brewing materials. Water was abundant, but often of inconsistent quality, at least in Victoria. If we are to believe early reports, barley had an auspicious start as a commercial crop but despite incentives, never reached its potential on Vancouver Island and as a result could never be fully integrated into the local brewing industry. Locally grown hops on the other hand, were available until internal and external factors brought about the collapse of the industry by 1912. The securing of stock yeast was of less consequence. Because of its special production nature, importing from larger breweries or brewing supply houses, was logical.

While the soft water of the Island was well suited to the production of lager, mild ales and stout, and could be chemically adjusted for successful pale and bitter ales, the real concern, at least for Victoria brewers, lay not so much with biological purity but with the removal of organic and inorganic debris. This led to filtration systems for brewers relying on water mains and a desirability on the part of others in Victoria, Nanaimo and Cumberland to use spring or river water, the latter becoming synonymous with a quality product. This, however, became less of an issue with advances in chemical and

mechanical means of water purification. By the turn of the century the use of spring water had more to do with public perceptions and myths than chemistry.

In many ways, barley and hop cultivation suffered from the effects of the same factor that brought change to the brewing industry itself, the continental economy. In both cases, larger continental agricultural concerns played a part in retarding or terminating local production. In the case of barley, the millions of acres devoted to this crop on the rich North American Prairies, with their attendant malting factories, ultimately assured that Island production would never amount to more than a few hundred acres. No doubt local brewers were disappointed by the failure of local farmers to produce readily available and sufficient quantities of barley. By the 1880s, however, when it was apparent that the Island was unlikely to become a major source of malting barley, local brewers had to accept their reliance on imports and made a virtue of necessity by pointing out that nothing but the best was good enough for their customers. In any case, this may have been less onerous than it appears for the majority of local brewers were realists and businessmen with a long-term view, who recognized that importation was the price of doing business on an island. This fact was physically and psychologically offset, by the abundant supply of quality barley available from the continent's grain producing areas, all of which was readily accessible by rail after 1886. The "bottom line" was that an adequate and guaranteed supply of barley was vital to their long-term survival and the cost of importing it had to be accommodated within the overall financial structure of individual breweries and not passed on to the customer.

In the case of Island hop growers, competition from the much larger and better financed hop farms of the British Columbia mainland and the western United States coupled with a slower embracing of new technology and slightly inferior growing conditions, spelled the demise of the industry on the Saanich Peninsula. In addition, high shipping costs and duties precluded success in export markets, which in themselves would have diminished over time for the simple reason that local growers were unwilling or unable to produce varieties more in line

with changing tastes. In the end, local brewers came to rely on imported hops, barley and yeast; in short, with the exception of water, the manufacture of their product was based on external sources.

Notes

1 H.S. Rich, One Hundred Years of Brewing (Chicago: H.S. Rich and Co., Publishers, 1903), pp.43-44.

2 Leo Bernstein and I. C. Willox, "Water," in The Practical Brewer: A Manual For the Brewing Industry, ed. Harold M. Broderick (Madison: Master Brewers Association of the Americas, 1977), p.16.

3 John MacRae, interview, 11 April 1990, Victoria, B.C.

4 Rich, One Hundred Years, pp.50-51.

5 MacRae, interview.

6 Calcium sulphate is the principal component of "Burton Salts," so named because of their abundance at Burton-on-Trent, England, the home many feel, of the world's definitive pale ales. A mineral sulphate, it is leeched from gypsum deposits and its absence in other geographical locations can be compensated for by adding calcium sulphate or "Plaster of Paris," the technique being called "Burtonizing." A succinct description of this treatment and the impact of this city on world brewing is provided in Jackson, World Guide, p.160. The evidence for the actual use of calcium sulphate by the Victoria-Phoenix Brewing Company Ltd. and the Silver Spring Brewery Ltd. is not conclusive. A degree of sulphate is necessary in all brewing water to aid in preserving enzymes and in improving malt extract yield. See BCARS, Labbatt's Breweries of British Columbia, Company Papers, Add. Mss. 1883, Vol.1, Files 20 & 26.

7 Rich, One Hundred Years, p.51.

8 John Erb, interview, 27 October 1989, Victoria, B.C.

9 Colonist, 13 December 1908.

10 Colonist, 13 December 1908. "The absence of chemical salts in this spring water accounts for its softness and this is shown appreciably in the brewing results. Analysis shows that the Silver Spring water has the same constituents as the Burton Waters and those of St. James Wells in Dublin."

11 Colonist, 22 April 1885.

12 British Columbia, Crown Lands, Surveyor General Branch, Survey Notes and Maps, Map 24 T 2, September, 1860, shows three springs in close proximity to a building believed to be the Lion Brewery; springs closer to the brewery are also noted on subsequent city maps.

13 Colonist, 18 September 1866.

14 Colonist, 16 September 1875.

15 Walter Spershott, interview, 17 January 1988, Victoria, B.C.

16 Colonist, 13 December 1908.

17 Colonist, 28 November 1862, 8 March 1864, 25 March 1864, 1 October 1867, 23 October 1869.

18 Harry Gregson, A History of Victoria 1842-1970 (Victoria: The Victoria Observer Publishing Co. Ltd., 1970), p.59.

19 Colonist, 10 January 1873.

20 Colonist, 4 September 1883.

21 Colonist, 11 October 1883.

22 Peter Baskerville, Beyond the Island: An Illustrated History of Victoria (Burlington: Windsor Publications Ltd., 1986), p.60.

23 Using a combination of available sources, mainly newspapers, applications for water service, fire insurance plans and, in the case of the Victoria-Phoenix Brewing Co. Ltd., financial records, it appears that 12 facilities relied on city water mains for most or all of their operational years and 6 facilities relied on spring water.

24 John Cass, interview, 17 September 1989, Nanaimo, B.C. Notes in his private collection indicate that a flume that brought water to the Nanaimo sawmills was tapped by Stuart & Keast when they constructed their brewery near the Millstream River. The information is attributed to the Nanaimo Free Press, 20 April 1875, but this report has not been located.

25 Alf Ettinger, interview, 6 December 1988, Nanaimo, B.C.

26 Stan Douglas, interview, 15 April 1990, Victoria, B.C.

27 Three principal types of barley are used in brewing, each distinguished by the number of rows of grain per ear. Each type has its own distinct characteristics such as varying degrees of protein and nitrogen content. The effect these characteristics have on the make-up of beer, has been long been widely debated.

28 E. B. Adamic, "Barley and Malting," The Practical Brewer p.27.

29 Matthew Macfie, Vancouver Island and British Columbia. Their History, Resources and Prospects (Toronto: Coles, 1972. Originally published London: Longman, Green, Longman, Roberts & Green, 1865), p.194.

30 Colonist, 18 November 1862.

31 Colonist, 24 September 1862.

32 Colonist, 24 October 1863.

33 Macfie, Vancouver Island, pp.199-200.

34 Colonist, 1 October 1864.

35 Colonist, 13 January 1865. Gravitation is an archaic term for bushel weight, this being important in assessing the quality of the grain; 48 pounds to the bushel was considered standard, while 50 to 51 pounds indicated well developed, large individual kernels. See, John Zacharias, interview, April 3, 1990, Victoria, B.C.

36 BCARS, Great Britain, Colonial Correspondence, Bunster to Seymour, 18 March 1867, GR 1372.

37 Colonist, 26 March 1867.

38 John Zacharias, interview.

39 Vancouver Island Development League, Vancouver Island, British Columbia, The Treasure Island (Victoria: The Vancouver Island Development League, 1910?), p.32.

40 Colonist, 21 December 1869.

41 Canada, Department of Inland Revenue, Annual Reports, (Ottawa: Queen's/King's Printer, 1875 to 1917).

42 Phillip Townsley, interview, 19 May 1991, White Rock, B.C. The hypothetical barley production figure was arrived at in the following manner. The per acre yield was set high, with each acre producing 40 bushels of six-row barley for a total of 16,000 bushels produced per year for the entire Island. The individual, non-malted bushel weight was set at 48 pounds per bushel, a good weight for six-row barley by modern standards. Given this weight, local farmers would have produced 768,000 pounds of malting barley annually, which, when converted to actual malt set at 34 pounds per bushel, the Island would have produced 544,000 pounds or 272 tons of malt, per year. Because of the lack of historical information, modern industry figures were used for six-row barley in terms of yield per acre and pounds per bushel; this was also the case with malt weight, where today on average, 34 pounds is extracted from each bushel of un-malted barley, the weight difference being attributed to loss through the extractive processes of malting. It is likely that the yield was less during the earlier decades of Island brewing, where less sophisticated malting techniques probably resulted in closer to 26 to 30 pounds of malt per bushel of barley.

43 British Columbia, Ministry of Agriculture, Annual Reports, (Victoria: Queen's/King's Printer, 1892-1895, 1897 and 1917).

44 Colonist, 1 January 1884. "The question of raising barley should be studied by our farmers. It pays elsewhere to raise this grain. Some years ago barley was raised in this country to a considerable extent but a slight discolouring of the berry rendered it in the eyes of brewers unfit for use unless to be had at a very much reduced rate. Then there was not so much demand as now, nor the amount of stock as be fed in the country. In general barley is to [sic] safe a crop as any of the other coarse grains."

45 Colonist, yearly or special industrial reports: 1 January 1886, 1 January 1885, 1 January 1891, 11 April 1891.

46 Nanaimo Free Press, 1 December 1904.

47 Nanaimo Free Press, 20 July 1905.

48 Nanaimo Free Press, 2 July 1907.

49 Using a combination of available sources, mainly newspaper references, maltsters licenses register, fire insurance plans, census records, photographs and real estate assessment roles, it would appear that at least 10 brewing companies operated their own malting facilities at one time or another.

50 Colonist, 1 January 1886.

51 Walter J. Sykes, The Principles and Practice of Brewing (London: Charles Griffin and Company, 1907), pp.446-466.

52 Colonist, 28 March 1886.

53 Edward Mallandaine, British Columbia Directory, 1887.

54 U.S. Department of Agriculture, Barley: Origin, Botany, Culture, Winterhardiness, Genetics, Utilization, Pests Agricultural Handbook No.338 (Washington: Agricultural Research Service, 1968), pp.4-5.

55 British Columbia Commercial Journal, 23 June 1891.

56 Dominion Brewers Association, Facts on the Brewing Industry in Canada (Ottawa: Dominion Brewers Association, 1948), p.45.

57 British Columbia Commercial Journal, 23 June 1891.

58 Maltsters License Book, Bb3, Entries cover years 1889-1892; 1905-1909 - Walter Spershott, Private Collection, See also Nanaimo Free Press, 3 October 1928 for inventory of equipment from Empire Brewery.

59 Rich, One Hundred Years, p.634.

60 BCARS, British Columbia, Attorney General, Registrar of Companies, Companies Branch Records, GR 1526.

61 Hops, a perennial climbing vine of the mulberry family, grow on poles. The part used in brewing is the female seed-cone, known as the berry, pod or catkin. Shaped like small pine cones, they contain a sticky yellow resinous substance called lupulin which gives beer its distinctive bitter taste.

62 Colonist, 27 April 1863.

63 Colonist, 9 March 1863.

64 Colonist, 12 March 1863.

65 Colonist, 31 August 1864.

66 Colonist, 1 October 1864.

67 Colonist, 4 July 1865.

68 Colonist, 1 September 1868.

69 Colonist, 28 September 1869.

70 Colonist, 21 June 1870.

71 Colonist, 17 September 1870.

72 Colonist, 2 August 1871.

73 Colonist, 20 August 1875, 30 October 1875. The year 1875 came close to being a disastrous year for crops of all types on Vancouver Island, until rain arrived late in August.

74 Colonist, 30 September 1876.

75 Colonist, 18 November 1928.

76 Colonist, 28 January 1883, 29 September 1883.

77 Colonist, 7 October 1928.

78 Vancouver Daily Province, 28 October 1933.

79 Colonist, 19 February 1892.

80 British Columbia Commercial Journal, 22 March 1892.

81 The British Columbian, 27 November 1912.

82 Moran Brethour, interview, 6 February 1990, Victoria, B.C. and Ron Denman, interview, 19 October 1989, Victoria, B.C. The research of Moran Brethour indicates mainly small, hop farms on the Saanich Peninsula, normally ranging from 5 to 15 acres each, while the research of Ron Denman, indicates a stronger entrepreneurial approach to hop farming in the Fraser Valley from the very beginning--an essential trait in what was becoming a more competitive and sophisticated form of agriculture.

83 The British Columbian, 27 November 1912 reported that all the hop fields on the Saanich Peninsula had been ploughed up, this being the sad conclusion to a story reported by the Colonist (9 September 1898) which noted that respected local hop growers, Daniel David Moses and Henry Wain, had retired.

84 BCARS, British Columbia, Attorney General, Registrar General, Companies Branch Records, GR1438.

85 The British Columbian, 27 November 1912.

86 Colonist, 7 October 1928. Centered largely in the Puyallup Valley, the industry in Washington had its beginnings in the 1860s. The exact degree to which technology was exchanged is not clear, but it is believed that the drying techniques employed by the American growers influenced change on the Saanich Peninsula. The drying process was likely as follows. After the hops had been picked, usually by Native Indians, they were taken to the hop kilns, two-storey buildings with cone-shaped roofs. There they were spread to a depth of 18 inches on a heated drying floor, usually made of canvas. The floor was usually heated by stoves or small furnaces, located below. Sulphur was often heated on the stoves, the vapours both brightening the colour of the hops and acting as a fungicide. After drying for 16 to 18 hours, the hops were taken to the baling room where, after a 24 hour period they were put into presses and packed into canvas-covered bales of 200 pounds each. Descriptions of this process are given in the Colonist of 7 October 1928 and in Weiner Leggenhager and Lucile McDonald, The Look of Old Washington (Seattle: Superior Publishing Company, 1971), p.65. A good description of the tradition of Native Indian hop pickers, is provided by George B. White, "Development of Eastern Fraser Valley," British Columbia Historical Quarterly, Vol. XII, No 4, 1948, p.282.

87 The suitability and the development of the local hop industry was discussed in great length in the 21 October and 18 November 1928 issues of the Colonist, with the newspaper and hop expert Charles St. Barbe unable to agree on several issues.

88 John Erb, interview, 27 October 27 1989, Victoria, B.C. He indicated that hops had been mixed prior to World War I; mild Hallertauer and Spalter hops were often purchased for mixing with the slightly coarser Cascade and Late Cluster varieties.

89 Richard Coleman, Brewery Collection, Royal British Columbia Museum, Uncatalogued. See, Silver Spring Brewery Company Ltd., receipts and correspondence with various Canadian, British, and American hop merchants, 1909-1910.

90 Thomas C. Cochran, The Pabst Brewing Company: The History of an American Business (New York: New York University Press, 1948), p.15.

91 John Erb, interview.

92 Sykes, Principles of Brewing, pp.385-386.

93 John Erb, interview.

94 Sykes, Principles of Brewing, p.533.

CHAPTER 5
TOOLS OF THE TRADE

During the 59 years covered by this study the physical manifestation of the Vancouver Island brewing industry changed dramatically. There is a misconception that local breweries were, from the earliest days, massive brick and stone structures, rising five or six storeys high. In fact, such monuments to wealth and progress were not seen on Vancouver Island until late in the nineteenth century. [See Appendix N-- photograph 1] They represented the growing sophistication of the industry, illustrating the move from hand operations to steam power, the need for increased production and a more scientific approach to brewing--in short, a striving for efficiency and larger profits.

All these factors transformed breweries, both inside and out, and firmly entrenched in the minds of many brewers the world over the conviction that the tower or gravitation brewery was an efficient arrangement. This resulted in one part of the plant being higher than the rest. The raw materials were raised to the highest storey of the brewhouse, then descended by gravity through the main stages of the brewing process. In this arrangement, each brewing vessel was said to "command" the next in order of use, effectively doing away with much of the inter-vessel pumping required in other brewery designs.(1) Although a proliferation of technical publications such as Breweries and Maltings - Their Arrangement, Construction, Machinery, and Plant, first published in England in 1871, promoted the use of gravity, the idea was an old one.

By promoting functional architectural, mechanical design and biochemical science, such publications contributed much to the evolution of the modern brewery.(2) The technical journals and texts argued, that breweries must be designed for efficiency, cleanliness and opportunities for future expansion with new technology. Secondly, they re-emphasized the importance of using gravitation rather than pumps, for example, in moving boiled wort from the brewhouse to the "cellarage" or "stock house," where fermentation and maturing took place. Finally, they spelled out the effect of steam on the delicate stages of cooling and

fermentation and advised isolating all steam producing vessels from the rest of the brewery.

The first tower-style brewery built on Vancouver Island was probably Victoria's Empire Brewery, constructed in 1885. A full three storeys in height, it represented the transition between the smaller gravity breweries of earlier years which were largely without real towers and the much larger, mainly lager-producing gravity breweries that appeared in the 1890s.(3) Before the Empire Brewery, Island breweries came in a variety of forms as was the case in other parts of North America: small facilities, using gravity in production; others adopting a style known as "horizontal"; or a third variety, the "hybrid," combining both styles.

To gauge the level of sophistication of the local industry, and to measure a brewer's success against the size of his facility, it is important to have a picture of physical plants. Unfortunately, few photographs or drawings, exterior or interior, have survived especially for the decades prior to the 1890s. This interpretation of the Island's physical plants is therefore based on fire insurance plans (not always the most detailed source), newspaper references, equipment lists from a few breweries (some more detailed than others), and a small collection of photographs. When carefully linked together and placed against brewery development elsewhere, they allow for the drawing of a reasonably representative picture.

Many early breweries, were unimposing structures that were probably of the "same character as was shown by their surroundings."(4) Throughout North America's frontier areas, many breweries could easily be mistaken for barns, residences, or a variety of general mercantile premises. The first Lansdowne Brewery, though built in 1884, is an example of this phenomenon and doubtless reflected the features of many of the wooden-frame breweries that preceded it. [See Appendix N--photograph 2] The floor space of the Island's breweries, technically defined as the brewhouse and cellarage proper, measured anywhere from 25 feet by 65 feet to 100 feet by 100 feet.(5) Breweries in the latter category, such as the Colonial Brewery and the Phoenix Brewery, were probably considered imposing before 1890.

In several instances, the brewhouse and cellarage were in the centre of a ring of out-buildings, serving as stables, storage sheds and carpenter's shops. Many breweries were rambling complexes made up of many buildings of various heights and modes of construction as was the case with the Victoria Brewery. [See Appendix N--photograph 3] Such arrangements pointed to a rather piecemeal approach to improvements, not always based on long-term planning but rather linked to arising needs or the incorporation of new labour-saving machinery.

However, size or physical characteristics may be deceptive. While some of these breweries would appear primitive by later standards, many of North America's largest breweries began as operations that would not have been called model breweries in any country. Molson Breweries of Canada, Ltd. and Annheuser-Busch, Inc. in the United States, for instance, began as diminutive operations: the former in a building measuring only 36 feet by 60 feet;(6) the latter in a building described as not much better than a shanty.(7) Expansion and profitability depended on the brewmaster's talents and management's marketing skills.

Of particular interest is how individual brewers viewed efficient production; a question best answered through a brief examination of the three types of breweries that appeared on the local landscape.

For many, gravity was the key factor in reducing costs, because in the boom years of the early 1860s, and throughout the 1880s, the cost of both labour and materials was high. This may have been particularly important in smaller operations where marginal profits did not permit the inclusion of vertical and horizontal pumping systems. Gravity freed up manpower for use in those steps of the brewing process, such as the cleaning of vessels and the stirring of liquids, which could not be made more efficient through gravity. This attention to what became known as "production flow," a concept recognized as one of the lessons of the Industrial Revolution, reduced the wage-bill and fostered further efficiency in brewery designs, leading in many cases to a steady rise in the size of utensils employed or their multi-purpose use and hence, the scale of brewing. The principle of gravitation applied in buildings at least one-and-a-half to two storeys high; a modest drop for the liquor but sufficient if the brewing vessels, and hence production runs, were

kept in scale. It is technically possible, but not certain, that many local breweries operated on the gravity principle.

The "horizontal" style of brewery is less well documented. Ranging from modestly sized to large operations they were, theoretically, relatively low in height but elongated in appearance. The Lion Brewery at Spring Ridge, 25 feet by 90 feet in length and only one-and-a-half storeys high at its highest point, may have been an example of this type. Because of their low height, these breweries required extensive pumping and the pattern of the building traced the production of the beer as it moved through the brewing vessels which were normally set out at equal level. These breweries were costly. Pumping systems were expensive to acquire and maintain and the brewery often needed more land area than the smaller gravity breweries because of its layout.(8)

At this point, the question of cellarage calls for brief mention--brief because on the Island, with its equable climate, deep cellars were not required. And while lager, which required consistently cool temperatures, was produced early in the Island's brewing history, it did not become dominant until the 1890s when refrigeration had solved the problem. Consequently, earlier Island brewers very likely managed with conventional cellars constructed of stone or brick, possibly with double walls which allowed dead air space in between to provide additional insulation.

In summary, many Island breweries were probably of the hybrid style, reflecting the personal preferences of proprietors who often changed and, above all, rapidly changing technology. This was probably the case with breweries constructed on what were then considered the latest scientific principles. Faced with technical and bio-chemical advances, demands for increased production, the inclusion of new products such as lager and the wear and tear on the site itself, few scientific or "model" breweries would have remained unmodified over time. Hence, the industrial landscape was probably dotted with breweries representing a less than efficient amalgam of technologies.

This situation was probably even more apparent in breweries, retro-fitted into buildings constructed for other purposes. However, as recorded in Chapter Two, increasing attention to the rational

arrangement of breweries, meant new facilities were more often than not purpose-built.(9)

The demise of the retro-fitted structure was hastened after the 1870s as two specialized professionals, the brewery architect and the brewery engineer,(10) gradually overshadowed the influence of practical brewers. At least three professionals designed local breweries late in the nineteenth century: Herman Steinmann and Richard Ullrich of Seattle and James Fairall of Victoria. Herman Steinmann, formally trained as an engineer and architect in Germany, designed or re-designed facilities in Seattle, Tacoma and Victoria between 1887 and 1898.(11) He designed the Victoria Brewing and Ice Company Ltd.'s facility in 1892,(12) six years before moving to New York to continue his practice in that city. Richard H. Ullrich, on the other hand, advertised himself as a millwright and contractor with "malt house and brewers machinery a specialty".(13) While apparently without formal training as an architect or engineer, his practical experience put him in demand. His major credit was the re-building of Fairall's Brewery in 1908 for the Silver Spring Brewery Company Ltd. His work in designing and overseeing virtually every aspect of the brewery's re-configuration and expansion, earned him the respect of brewers throughout the Pacific Northwest. Locally, James Fairall, son of Henry Smith Fairall, co-founder of the E. & N. Brewery in Victoria-West, became a brewery design expert after training in England at the turn-of-the century.(14) Advertising himself as a brewery engineer he designed the Esquimalt Brewery and was responsible for the modernization of Nanaimo's Lansdowne Brewery after its post prohibition re-organization.

Even with the advent of this expertise, no two breweries were entirely alike, externally or internally, because each illustrated the owner's or brewmaster's personal preferences, often in subtle ways. One preference shared by many, however, was the choice of building materials. Despite the vulnerability of wooden buildings to fire--four local breweries were destroyed in this manner--wooden breweries predominated during the period of this study. Sixteen breweries were substantially or totally constructed of wood, as opposed to ten substantially constructed of brick, stone or a combination of both.(15)

Although bricks were readily available and were later augmented by the use of cement for foundations and flooring, the move away from wood was less rapid than might be expected. Even in the twentieth century, the Pilsener Brewing Company's Cumberland facility of 1909 and the Esquimalt Brewing Company's plant of 1914 employed wood for construction; and when the Silver Spring Brewery rebuilt and expanded the former Fairall's brewery beginning in 1909, only the power house and bottling shed, the latter a former movie theatre, were built of brick.(16) The logical explanation seems to be that timber was plentiful and inexpensive, and that carpenters represented a large and easily accessible pool of labour--probably more so than bricklayers and certainly than stone masons.

Examining the exterior of local breweries presents only a partial picture. To appreciate the physical dimensions of the art of brewing, and to compare the local industry with the larger scale industry of North America and Great Britain, one needs to examine procedures and equipment. This examination and comparison can best be accomplished by hypothetical tours of three gravity breweries: the James Bay Brewery of the 1860s; the Empire Brewery of 1885; and the Victoria-Phoenix Brewing Company Ltd. of 1917, a fine example of a large, modern brewery.

Because the following is based in incomplete data, the reader must bear in mind that detailed equipment lists from local breweries are scarce and those surviving are more indicative of facilities built in the final 25 years of this study. To illustrate a facility of the early period, a partial equipment list from the James Bay Brewery has been combined with scattered references from other breweries of the era, both local and non-local, to illustrate accepted brewing practices of the 1860s. In brief, all the equipment and processes described existed on Vancouver Island, if not all in one place at one time. In addition, there are no clear-cut dates by which older methodologies and equipment were abandoned. Change happened at varying speeds, often indicating the circumstances in which individual brewers found themselves. Preferences in methodology were often based on a brewer's ethnic origin and formal training. Local breweries reflected the proprietors' individual operational style and attitude towards progress.

With these reservations, the first tour is of the James Bay Brewery, a plant specifically constructed as a brewery by the proprietor, A.J. Welch, with machinery installed "on the most scientific principles for economizing labour" to produce ales of superior quality.(17) This assertion, could simply be construed as free advertising but taken at face value it implies that Welch's brewery had many modern features.

While there is no evidence that Welch ever produced lager or steam beer, the manufacture of all three types is included in the tour because a similar facility could manufacture a variety of products--as did the Colonial Brewery and the Victoria Brewery.

In addition, the use of steam as a source of heat and motive power is included in the James Bay Brewery's operation even though the evidence for this is based on an ambiguous reference. On December 22, 1862 the Colonist reported that a Mr. E. Cocker had "commenced to make the boiler for the works," but it was probably a brew kettle for the cooking of the beer(18) since no steam plant is mentioned in the list of equipment drawn up for disposal in 1866.(19) Moreover, it was reported on August 30, 1866 that:

> Steam was got up for the first time in any of our Island breweries on Monday last by Mr. Bunster in his Brewery on Johnson Street. The boiler and engine which work admirably were erected under the special supervision of Mr. J. R. Hoare.(20)

Clearly, steam was a viable source of power especially since boilers and engines had been available locally since the early 1860s.

In technical terms, the James Bay Brewery used a system sometimes known as the "underback system," a term reflecting the use of a holding vessel called an underback. Its inclusion meant that the brew kettle was used to boil the liquor before mashing and, later, to boil the wort. Because of its dual purpose, the brew kettle was placed higher than the mash tun, contrary to the breweries of more modern times. Water was first pumped vertically by a steam pump to a holding tank, or directly to the brew kettle, the latter on a brick arch at a height greater than all the other brewing vessels. Steam pumps were more efficient than hand pumps or buckets carried to the brew kettle since larger quantities

of liquid could be moved directly from the source, in this case a well on Welch's property. The other methods should not be discounted, however, for smaller Island breweries, may have used them.

Once the desired amount of water, henceforth known as "liquor," had entered the brew kettle, which served as the "hot liquor tank," it was heated in preparation for its descent into the "mash tun" or "tub." Some local breweries may have had two kettles, an older and smaller version acting as the hot liquor tank while a newer and larger model was used solely for the later boiling of the wort.(21) Brew kettles came in a variety of shapes and sizes. German brewers preferred the open, square pan; the British, the lidded, round or conical vessel. The latter was almost certainly used in the James Bay Brewery.

The method of heating also varied. Direct flame from wood or coal was the traditional system but proved problematic. More difficult to control than steam heat, direct flame was less efficient in maintaining a consistently even heat on the kettle. One solution in heating these "fire-coppers" (kettles were called coppers because they were often the only vessels in the brewery fabricated from this superior heat-conducting material) was to construct the vessel with a concave bottom to allow for a more even distribution of the flame and thus avoid hot spots that could cause imbalances in the cooking of the wort. Normally, such a kettle was placed in a brick or stone surround to retain heat and confine sparks and rested on a fire grate through which the flames could heat the liquor. The portion of the vessel contacting the flames often had a double bottom to better withstand the intense heat. At least five local breweries, the Phoenix, the Bavaria, the Pacific, the City and the Victoria, appear to have used this system well into the mid-1880s, even though they probably used steam in their other operations.(22) The James Bay Brewery probably also used this method, a small furnace being built in the brick arch just underneath the kettle.(23)

While steam was first used for power its possible application for the heating of brewery vessels had already been studied elsewhere. After experiments with several ineffective mechanical devices to inject steam into a kettle, the steam coil was introduced in the 1860s and proved successful. The device was lowered into the kettle to boil the

liquor and removed so the vessel could be cleaned. While relatively efficient for heating the liquor, this system did not immediately find favour because it tended to be cumbersome and time consuming in its application. In time, refinements made it more adaptable; it could have been added to some Island breweries because it could be used within the older fire-coppers in a hybrid of the two systems.

The modern brew kettle, known as a "steam copper," evolved from developments with the steam coil and gained widespread acceptance starting in the 1870s. In addition to a more oblong and conical shape than fire-coppers, the steam copper had a dome attached to its base which provided, in effect, a double bottom with a cavity of three to four inches through which pressure steam could be admitted through a valve to heat the liquor. The bottom of the kettle itself was of extra thick construction to withstand the pressure of the steam. This system was considered very efficient because it could be mechanically controlled, thus using 70 per cent of the available heat as opposed to just 30 per cent on the part of the direct-flame method.(24)

Once the liquor had reached the boiling point, it was released by gravity through the "wort pipe" to the mash tun, which likely rested on a timber framework just below the kettle. Here it was combined with the grist, the name given to the malt which had been ground in the "malt mill"--a box-like device containing a pair of smooth rollers that crushed the grain to a powder. Fed from "hoppers" and resembling inverted pyramids, mills of this kind had been used since the 1820s and were powered by steam through a strap and pulley arrangement.

Some brewers preferred to grind the malt directly into the tun while others ground it and then stored it in "grist cases" positioned above the mash tun; the grist descending into them by a gravity chute. In this second stage of the brewing process, the starch in the grist is converted, through enzymic action, to malt sugar and dextrins, the dissolving of these results in a syrupy liquid called the wort (pronounced wert) or more accurately, the "sweet wort".

Mash tuns were normally constructed entirely of wood, although in some larger breweries, copper, cast iron or wood lined with copper were used. The mash tun of the James Bay Brewery was probably fabricated

from wood and cylindrical in shape with a slight tapering towards the top and was probably provided with a cover. It also had to be large enough to accommodate both the contents of the brew kettle and the froth produced in the action of mashing.

The hot liquor may have simply flowed into the tun from above through a single outlet, although this method was losing popularity by the mid-nineteenth century because it did not ensure even distribution over the grist in the vessel. To rectify this, the liquor could be piped to the mash tun in several places to ensure better distribution, or more likely, the tun was fabricated with a false or double bottom, known as an "under-let", allowing the hot water from the kettle to be admitted from the bottom to rise evenly over the grist. The under-let, a set of copper, iron or gun-metal perforated plates which could be removed for cleaning, also acted as a strainer, allowing the liquid to flow out of the vessel while the spent grains remained. The mashing process was likely preceded by the admission of some hot liquor into the mash tun to aid in uniform heating before the arrival of the grist and main liquor. This warming liquid was run to waste when the pre-heating was concluded.

While the even distribution of the liquid and grist was important, it was no more important than the uniform stirring of the "mash." The traditional stirring of the mash by hand-powered wooden paddles was gradually replaced by a variety of mechanical stirring devices, the earliest of which were operated by sets of bevelled gears, powered by human or horse power. Ultimately, steam power proved the most suitable motive force in stirring the mash because it "ensured additional uniformity by making it easy to regulate the mixing of the malt with warm water"(25) and in doing so allowed more starch to be converted into sugar. The "internal mashing-machine," in reality a raking device that came in a variety of subtle variations, was the first effective stirring apparatus. It consisted of a vertical metal shaft which revolved in the axis of the mash tun and could be driven from above or below by a series of bevelled wheels. Attached to this shaft, usually by a collar, was a horizontal shaft that carried multiple rakes which, when viewed endways, gave the effect of the spokes of a wheel. Usually, a rack or rail was

attached to the interior walls of the mash tun. This caused the horizontal shaft, and thus the rakes, to revolve slowly and evenly around the vertical shaft.

The development of "external mashing-machines" provided a more equable admixture of the hot liquor and grist. The first such machine was developed in 1853 by the Englishman, Steel. His patent laid the basis for all subsequent machines. The machine consisted of a horizontal metal cylinder, containing rotating vanes, which was attached to the mash tun. Ground malt and hot water were admitted simultaneously and rapidly mixed into a thick, homogeneous liquid that flowed readily from the end of the mashing cylinder into the mash tuns.(26) It is unlikely, however, that any Island brewery used such a device.

Mechanization was not important locally until the introduction of larger brew kettles made the stirring of its contents by hand tedious and inefficient. Whatever the mashing method used at this stage, known as the "hot break," the brewer's skills were paramount.(27) Improperly mashed wort, due to mistakes in timing and temperature, could cause irreversible problems such as insufficient conversion of the enzymes in the starch. This, in turn, could lead to problems in fermentation and the subsequent character of the beer.(28) Here, the knowledgeable use of the thermometer and hydrometer allowed the brewer some control over the complex processes.

After mashing for two to three hours, the wort was released through the bottom of the mash tun and descended by gravity through a pipe to the underback, a round wooden vessel situated at ground level where the "clarified" wort was stored.(29) While the wort was in the underback, additional hot water was sprayed over the grain caught by the perforated plates in the mash tun. This extracted more sugar and further diluted the wort. In its simplest form, this important procedure, called "sparging," was achieved with a watering can or a hose with a spray nozzle. This process used very hot liquor to dislodge stubborn sugars; variance in liquor temperature and sparging times could produce worts of varying strength for different qualities of beer should the brewer wish to produce more than one kind from a single batch of wort. Although the sparging process was long and tedious, mechanical

sparging devices had not yet been perfected by the mid-1880s. While sparging was underway in the mash tun, the wort in the underback was kept hot, probably with a steam coil, while it awaited transfer to the brew kettle so the whole could be brought to a boil as quickly as possible.(30) When sparging was completed, the spent grain was shovelled or scooped out of the tun and removed from the premises.

The now clarified sweet wort, essentially the extract of a highly nutritious grain which constitutes the "body" of the beer, was pumped back up to the brew kettle for stage three of the brewing process, the all-important "boiling." This could last from one to two hours and at some point, depending on personal preference, hops were added. These were kept in constant motion by hand stirring to avoid sticking and burning. A mechanical mixing device, known as a "rouser," had been used for some decades in Britain but was not normally used in smaller kettles.(31)

The boiling process required uniformity and temperature control which was difficult to achieve with direct flame. The management of exact temperatures in organic chemical processes is important; a shift in temperature of 15 to 20 degrees at the wrong time could change the character of the beer drastically. The control available with steam heat brought uniformity to the heating process and the more rapid boiling of the contents of the kettle. The probable use of direct flame by Welch and his staff required constant attention and care, as well as an even fuel source.

Boiling sterilized the wort, coagulated unwanted protein matter, and arrested further diastatic activity (the conversion of starch to sugar), thus giving the brewer a means of controlling the strength of the finished beer. The hops had imparted their particular properties. Their resins and aromatic oils added a bitter taste and rich aroma (or nose) while their mild antiseptic quality acted as a preservative against airborne infections that could sour the beer.

At the conclusion of this step, the now concentrated wort was cleansed of the spent hops, either with a strainer placed in the kettle itself or by release down to a "jack back" or "hop back," a separate vessel placed under it. At the time of the James Bay Brewery, this

vessel had gained great popularity. It normally consisted of a rectangular or circular wooden box with a perforated bottom. Here the spent hops filtered out the unwanted protein matter from the draining wort which would otherwise prevent the finished beer from being clear and bright. Sometimes straw was first placed in the hop back to ensure that the hops did not clog the perforations.(32) If the brewer desired, a quick sparging could ensure that as much wort as possible was removed from the hops. The wort was immediately collected in a pan suspended below the hop back which was in turn connected to a steam pump that moved the "hopped wort" directly to the "cooler," or "coolship," thus initiating the fourth stage of the brewing process, the cold break. Here the wort received its initial cooling before proceeding to the fermentation stage. The placement of the cooler in the brewery was as important as its individual design. Because it was an open vessel, it had to be kept at the greatest distance possible from the steam generated by the brew kettle and mash tun. Steam kept the ambient air at a high temperature and condensed on dusty beams causing the growth of bacteria that could fall, when agitated, into the open cooler and nearby fermenting tubs.

While brewers had personal preferences regarding the final disposition of the cooler, the majority sought to place them where air could freely circulate.(33) By putting the cooler close to baffles or louvres installed in the walls or roofs, fresh air could circulate from the outside while excluding the heat of sunlight. If the height of the building allowed, the cooler could be placed well above ground level to ensure air circulation around the entire vessel.

As in most contemporary breweries, the James Bay Brewery's cooler was probably constructed of wood, with sheet iron, tin or copper lining. The use of coolers fabricated entirely of iron was gaining popularity by the middle of the nineteenth century, particularly in North America and Britain, where many brewers felt that they had a superior ability to dissipate the heat. Welch may have invested in one because he recognized the relative ease of cleaning iron vessels when compared to the more porous wooden vessels which could harbour stubborn bacteria. Such bacterial infection often resulted in unstable and highly acidic

worts, especially in hot weather, and beer of poor keeping qualities and inferior flavour. While surviving evidence indicates the James Bay Brewery had only one cooler, its contemporaries may have used two or more, based on the traditional practice of producing several different kinds of beer from the same brew.

During the cooling process, the wort was exposed to many biological dangers. Nineteenth century brewers recognized the problem, although later research would show that the wort had a greater resistance to many of the perceived biological threats than originally thought. The acidification of the wort was the real threat, particularly as it rested in coolers for up to seven or eight hours in favourable conditions and up to 12 to 15 in warm weather, the periods necessary for adequate cooling. Accordingly, coolers were as large and shallow as possible, often only four to six inches deep, so that the wort could take up oxygen as quickly as possible. In this chemical bonding, the oxygen cooled the wort, accelerated clarification and helped induce the separating out of the unwanted "cooler sludge."(34) To aid the cooling process, steam driven fans were placed over the coolers. Since this technology had been known from the beginning of the nineteenth century, it is likely that fans of this type were present in the James Bay Brewery.

Near the cooler was the "fermenter" or "fermenting tub," where yeast was added to the wort to produce the primary fermentation. During this, the fifth stage of the brewing process, known as "pitching", the action of the yeast converted the bulk of the saccharine matter into alcohol and carbon dioxide to produce the alcoholic, fermented beverage.

The fermenter held one brew and was probably constructed of wood with a metal lining, a combination of materials popular by the mid-nineteenth century. While the James Bay Brewery could manage with only one cooler, it probably had several fermenters, the number corresponding to the batches of beer produced each week. This contrasted with smaller breweries that produced "one batch" at a time. The small productivity of such breweries, however, does not necessarily mean that they were primitive operations; limited space often precluded the production of several brews.

The difference between ale and lager became noticeable at this point in the brewing process. Prior to fermentation, brewing techniques were roughly the same for each; differences centered largely on the type and the quantity of the barley and hops that were used in production. Now ale and lager took divergent paths, based on the distinct yeast types used in their fermentation. Before discussing this phenomenon, it is worth noting three important considerations in the production of both types of beer. The first was maintaining the wort at a temperature conducive to proper fermentation. The second was the need to recover and maintain the stock yeast in as pure a state as possible to maximize its life expectancy. The third was the meticulous maintenance of all equipment in contact with the yeast as it fermented and matured, to limit contamination of subsequent brews.

Having adopted these principles, brewers could use the same equipment to produce ale and lager, particularly if they paid special attention to cleaning and sterilizing their fermenting tubs and maturing tanks, thus ensuring that the distinct ale and lager yeasts would not contaminate each other. This cleaning process became more effective each time the secrets of the fermentation process were unlocked, particularly after the 1870s. A greater understanding of these processes led to the development of a wider range of effective sterilization compounds to augment improvements in cleaning with pressurized hot water and steam.

At this critical stage of fermentation, the tour can take two main paths. The first leads to the production of ale which required the use of top-fermenting yeast strains and a shorter fermentation period than lager. Specifically, the yeast was "pitched" when the liquid had reached and maintained a temperature ranging from 55 to 68 degrees F. Slight adjustments in this range could be allowed based on the strength of the beer and the ambient air in relation to the season of the year. Although top-fermenting yeast required high temperatures to activate it, care had to be exercised not to let the temperature exceed 75 degrees F., the point at which lactic acids formed, thus ruining the batch. When the desired temperature had been reached, yeast was added and evenly distributed throughout the fermenter by "rousing." The wort

remained in the fermenter for four to seven days, until the vigorous "primary" or "principal" stage of fermentation had been reached.

A variety of methods were used to remove the yeast, which rose to the top of the wort during fermentation. In the oldest, known as the "cleansing system," the pitched wort was held in the fermenter for approximately 36 to 48 hours after which fermentation was "finished" off in a series of smaller vessels known as "butts" or "puncheons." The still active yeast was discharged using its own momentum, through a bung hole in the inclined puncheon, after which it ran down the side of this vessel into a long trough called a "stillion" from which it could be collected for re-use. This contact with the exterior of the vessel was always a cause for concern from a sanitary standpoint.

Because this system required constant monitoring, it quickly gave way to another, known as "skimming," or removing the yeast from the surface of the wort while it was still in the main fermenting vessel. Hand-held wooden blades pushed the yeast into an opening attached to a chute known as a "parachute" where it was collected for re-use.

The fermentation of lager required a longer maturing period and lower wort fermentation temperatures before the yeast could be added. Before the full application of artificial refrigeration in the 1880s, several methods including cooling by ambient air were devised to achieve the necessary low temperatures.

A more satisfactory system had the pipes linking the cooler with the fermenter pass through a trough of cold water, either pumped from a deep well or cooled by the addition of ice. This provided a final cooling of the wort as it made its way into the fermenter. Once in the fermenter, low temperatures were achieved by floating ice on its surface in metal vessels called "swimmers" or "floaters". This method, however, needed a constant supply of ice and steady supervision.(35)

The degree to which local brewers relied on natural ice is not known but it was available as early as July 1861 when a shipment from the Fort Hope Company sold for five cents a pound in Victoria(36); in March 1867, Captain Hewitt of the Schooner Nanaimo Packet returned to Victoria from Langley with 25 tons of ice on board.(37) While the regularity of the natural ice supply is unknown, its occasional

availability made the brewing of lager possible before the introduction of artificial ice and refrigeration on Vancouver Island, a situation rectified with the opening of a plant at Spratt's Wharf in August 1889.(38)

The use of ice was more critical in the production of lager than in the production of ale, which could be fermented and matured at temperatures ten to fifteen degrees higher. Relatively cool ambient air coupled with moderate to deep basements often provided the environment necessary to achieve the desired ale temperatures. On the other hand, because it had two distinct fermentation sub-stages, brewers had to be particularly careful with the production of lager. In the primary fermentation, the yeast manifested itself in an increasingly thick white froth that normally covered the entire surface of the tub within 20 to 24 hours. This was followed by a ruffling of the wort's surface and a covering of curly froth and light foam known as the "kraeusen." The final phase of the primary fermentation, the sinking of the kraeusen in the fermenter, signalled the completion of primary fermentation.

The sixth stage of brewing was maturation and racking for both ale and lager--lager normally being matured for a longer period than most ales. The brewer at the James Bay Brewery could allow the ale to mature either by moving his product immediately to the filling room for shipment to the retail outlet in barrels or bottles, where it was "cask conditioned"; or by allowing it to mature or be "brewery conditioned" at the source. The former produced a beer that was available for consumption within two weeks of the beginning of the brewing process.

The principal problem with ale to be shipped immediately was that "racking" or filling of individual barrels from the larger "racking vat," which held the ale run-off from the fermenter, had to be done after the most active phase of fermentation had ceased or the barrels might burst. Conversely, if racking commenced too long after fermentation, the ale could go flat and turn stale. The proper moment was determined by using a saccharometer to measure the beer's specific gravity and hence its suitability for racking.

The individual barrels were prepared by inserting red-hot sulphur-coated wood chips through the bung hole to kill any bacteria inside. A

rinse with cold water completed the process and the barrel was ready for the partially filtered ale. Boiled, dry hops were added to improve the flavour and aroma and to counteract the priming sugars, which were introduced to activate secondary fermentation. Finings, such as Isinglass, were added to coagulate the remaining yeast and cause it to drop to the bottom of the barrel, ensuring a clear product when conditioned and dispensed at the site of consumption.(39)

The second method, in which the ale was run into tanks for a period of maturing, was favoured at the James Bay Brewery. The maturing vats, reputedly holding several thousand gallons, were made of stone, a material that appears to have been out of the norm.(40) Here, too, the ale was clarified while undergoing a slow secondary carbonation. It remained in the maturing vat at temperatures similar to those maintained in fermentation. These could normally be achieved in a deep cellar without the use of ice. Maturing time depended on the particular type of ale being produced. Bitter and pale ales, unlike porter, normally required less time than light ales. A. J. Welch probably allowed at least seven to fourteen days for maturing the majority of his products before racking because this represented the minimum requirement for secondary fermentation.

Brewing steam beer was a viable option for most breweries--only the addition of clarifiers was required--but the moderate Island climate did not make it necessary. However, the popularity of a product familiar to beer drinkers along the Pacific Coast may have encouraged some Island brewers to produce it.(41)

The next tour takes place in the 1880s, the decade of transition for Vancouver Island brewers. Lager, produced on the Island since commercial brewing began, was now making a real impact. Peter Henning Peters recognized its potential when he built the modern Empire Brewery at Spring Ridge in 1885. His venture may have been the first Island brewery constructed from the outset to include the production of lager on a large scale. A full three storeys high and making full use of gravity, it illustrated the move towards the modern tower style brewery. Innovative features included a steam heated hot water system that distributed 1,500 gallons of hot water to all parts of the brewery from

a tank placed on the top storey of the building. This system placed the mash tun, with its steam operated mashing rakes, above the 900-gallon brew kettle, an arrangement common to modern breweries.(42) Steam, provided by an 8-horsepower engine, also drove its machinery. It was particularly useful in pumping the wort to the zinc-lined cooler on the top floor, just before its 30- or 40-foot descent to the fermenting tubs on the ground floor.

Supplies were moved between floors by an elevator which extended into the spacious cellar divided into two areas--one half dedicated to bottled beer and the other to beer shipped in barrels. Unfortunately, there is no mention of the degree to which the bottling and kegging operation was automated. Although effective refrigeration systems were available, Peters does not appeared to have installed one possibly because of the prohibitive cost or a genuine preference for cellar and ice-conditioned beer.

Of equal interest is a contemporary description that "on the first floor is also a room for steaming bottled beer," a clear indication of a pasteurizing system, perhaps the Island's first, installed in a room separated from other brewing operations.(43) The pasteurizer at the Empire Brewery may have been of a simple design commonly used in the early 1880s: a large metal vessel fitted with steam injectors at various points. The bottled beer (keg beer was not pasteurized) was placed in a basket or on a tray and submerged by filling the tank with cold water heated by steam to a temperature in the range of 150 to 160 degrees F. After heating, the bottles, sealed with corks held in place by strong wire to withstand the heat-induced pressure, were cooled with fresh water. The beer was now ready for distribution.

While one cannot say with certainty that the Empire Brewery was the Island's first modern facility, it nevertheless indicated how breweries were built in the following three decades and as such, acted as a bridge between the old and the new.

The final tour at the Victoria-Phoenix Brewing Company Ltd. in 1917 illustrates technological advances. Much of the methodology, nevertheless, resembled in scale as well as technical and scientific refinement, that described in the earlier breweries.(44)

Here, we specifically examine the brewing of lager, a process that began with the conveying of sacks of malt from street level, up to the top of the six-storey brewhouse [See Appendix N-- photograph 1] by an electrically-powered "bucket elevator," a series of buckets attached to a continuous rubber belt. After delivery, it was weighed on the malt scales, screened in a revolving "drum screen", passed under magnets to catch any metal objects that may have entered the sacks while in transit, and dumped into storage hoppers. On brewing day, the weighed malt was conveyed to the malt mill to be crushed between revolving, self-adjusting metal rollers. The brewer was careful not to leave the malt in the mill too long because the heat generated by the rollers could damage it. The resulting grist was stored in cases to await descent to the mash tun below on the third floor. The grist was sometimes produced several days before it was needed because some brewmasters believed that by letting it sit for a short time it became softer and sweeter.

Close to the malt hopper were the rice hopper and rice cooker. When rice was used as an "adjunct" in mashing, it had to be cooked to make its starches soluble.(45) We do not know how extensively the Victoria-Phoenix Brewing Company Ltd. used rice and other adjuncts, although it acquired a rice cooker in 1893 and undoubtedly used it because the demand for clear, bright beer, particularly lager, in which adjuncts are primarily used, increased sharply throughout the 1890s. An examination of the records of malt production on Vancouver Island, suggests an increasing use of adjuncts in the years before Prohibition.(46)

In any event, the barley grist, and the adjunct, after pre-cooking in the rice cooker to make its starch soluble, now entered the iron mash tun. Here the barley and/or adjunct was thoroughly mixed with hot liquor supplied through a pipe from the hot liquor tank which was heated by a steam coil and situated at the top of the brewhouse. The liquid in the tun was stirred for several hours by a mechanical raking device fastened on two arms and revolving in opposite directions within the vessel. This provided a quick yet gentle and uniform mixing. Exact mashing temperatures were achieved by introducing hot and cold water as

required.

Before entering the brew kettle, the grain was sparged by a more sophisticated method than the one in the James Bay Brewery. Driven either by a pivot or friction wheels connected to the shaft which rotated the mashing rakes, two or three finely perforated sparge arms revolved in the mash tun. Hot water, under pressure from the hot-liquor tank, was sprayed onto the wort to wash out more soluble starches from the barley and push the spent grains to the bottom of the tun in readiness for dumping. The clear wort proceeded through pipes to the "grant" where, through the use of hand cocks, it made its way to the brew kettle below, leaving the spent grain behind.(47) The 5,250-imperial-gallon brew kettle, situated a few feet below the mash tun, was fabricated of iron and lined with copper and was normally used to brew 100 barrels or 2,500 gallons at one time. [See Appendix N--photograph 6] It was significantly larger than those in earlier breweries.(48)

Heated by steam injected directly through a double bottom or "jacket," the kettle's conical shape ensured that currents flowed smoothly and an even temperature was maintained. Like earlier kettles, it was covered with an arched lid connected to a flue which allowed the release of steam. An opening in the lid could be drawn back for the addition of hops. The cooking took from two to four hours depending on the type of beer being produced. The wort's specific gravity was monitored every 30 minutes with a hydrometer and later, after being weighed and conveyed down from the fourth floor, the hops were added by hand. The wort next descended from the brew kettle to the hop-jack on the ground floor of the brewhouse. Hop-jacks had not changed noticeably from earlier decades except now they were all fabricated from metal. Here, the hop-jack was a rectangular iron tank with a bottom made of interlocking, perforated copper plates. The wort, flowing down through valves from the kettle, passed slowly through these plates where the used hops and other undesirable materials were held back, the whole process normally taking only 20 minutes. Unlike spent grain, used hops had little value except for cheap garden mulch. The wort, now bright and brilliant, was pumped under steam pressure from the hop-jack to the top floor of the brewhouse to cool and ferment. It entered a large,

shallow, rectangular surface cooler, fabricated of iron and treated with tannic acid so the wort would not pick up an "iron flavour." The liquid was held here only long enough to reduce its temperature to 140 degrees F. by using strong electric fans to augment the fresh air admitted through louvres in the roof.

At the end of this cooling and aeration process, the beer flowed down through a perforated trough to a Baudelot Cooler, a vertical refrigerator first patented in 1859. Here its temperature was lowered to 60 degrees, stabilized and the liquid further aerated. After being cooled, the beer fell into a perforated pan draining into a pipe leading to the wooden "settling tank"(49) which acted as a starting tank. Here the yeast was dissolved in a pail and added to the wort to work for one day, thus assuring a good start to fermentation. Next, the liquor containing the active yeast was pumped directly to a fermenting tub, leaving behind a coating of sludge. After this material, which normally included inactive yeast, was removed, the tank was sprayed with hot water and a sulphur solution to sterilize it for the next batch.

The Victoria-Phoenix used thirteen, 2,700-gallon fermenting tubs, laid out in rows far enough apart to ensure that yeast did not slop from one to the other. Eleven were open tubs; the other two were closed and trapped the carbon dioxide generated by the fermenting yeast. This was pumped out through a compressor at approximately 250 pounds per square inch and sent directly to a Wittemann Carbonating System on the ground floor. Each tub was equipped with a fixed "attemperator," a long stationary copper coil, attached to the inside of the vessel, which circulated refrigerated brine. This coil adjusted the temperature of the liquid, ensuring the proper environment for a full and effective fermentation and replaced the older less reliable swimmers.(50) These technical developments, the Baudelot Cooler, the carbon dioxide recovery and the attemperator represented significant advances by allowing the brewmaster to control the fermenting process more accurately than his predecessors and thus ensure consistent quality.

When the seven to ten-day fermentation process was finished, the "green beer" was drawn by gravity to the floor below to ripen in the stock tanks; the brewery had twelve, each with a capacity of 5,400

gallons. The yeast removed from the bottom of the fermenting tubs as they were emptied into the stock tanks was stored under refrigeration until used to ferment later batches of beer.(51)

The stock tanks installed in 1893 were constructed of wood but additional tanks introduced in 1912 were made of steel lined with glass.(52) Each tank was closed with a self-regulating wooden bung in the top which would pop off if the pressure in the tank built up beyond the desired two to three pounds per square inch. The beer was conditioned at temperatures of 33 to 34 degrees and underwent a secondary fermentation for eight to twelve weeks. As long as the beer was not exposed to oxygen, the flavour slowly improved through the action of the yeast, which generated carbon dioxide and alcohol. The net result was partly aged and partly clarified beer.

The final process was to transfer the beer to the oak "chip casks" or "finishing tanks" on the ground floor of the southern building. The brewery had thirteen tanks, each with a capacity of 2,700 gallons. All were closed vessels with a bung and release valve apparatus similar to those on the stock tanks. The pressure in these tanks was slightly higher at five to eight pounds per square inch. Here the beer underwent the third stage of fermentation and received its final aging and clarification--a process normally lasting two weeks.

Traditionally, clarification, or "fining", was effected by using boiled and washed beechwood chips (hence the name chip casks), which attracted and held muddy particles. Because beechwood clarification was an incomplete process, needing continuous cleaning and changing of the beechwood chips, the Victoria-Phoenix Brewery dissolved Isinglass, a gelatinous substance made from the air bladders of the sturgeon, in hot water and added it to the finishing tank as the beer entered from the stock tank. Here it swelled and spread like a fibrous tissue, attracting the fine particles that cause turbidity. In addition to Isinglass, the enzyme Collupulin was used during conditioning to accelerate the process of clarification.(53)

As well as a final clarification, the beer received additional carbonation, because carbon dioxide, despite all precautions, could escape from the tanks. The type of re-carbonation used depended on the

personal preference of the brewer and the type of beer being produced. In the kraeusening system, small amounts of partially fermented beer were added to the fully fermented article, the whole tank being brought to life when the unfermented sugars of the young beer began to ferment. The priming process added corn or grape sugar to the mature beer. Any live yeast cells would then devour the newly introduced sugars and produce an effervescence.

A third method involved injecting the naturally produced carbon dioxide from the brewery's two closed fermentation tubs into the finishing tanks. It had already been dehydrated, purified with activated carbon to remove undesirable volatile aromatics produced during fermentation and then liquefied. The carbon dioxide was injected into the beer through a porous stone, known as a "diffuser," suspended in the finishing tank. The beer, now clear, was pumped, again using carbon dioxide gas from the Wittemann Carbonating System, to the holding tank to await racking in the bottling shop. En route, it underwent a final filtering in the Keifer Filtering System, a series of two-and-a-half-inch thick cakes made up of layers of cotton pulp held between fine wire screens--in reality the first truly effective filtration system and more carbon dioxide was introduced "in-line" into the beer. As it entered the holding tank the beer was cooled to aid in the absorption of the carbon dioxide.(54)

From here, the beer went to the bottling shop. In the James Bay Brewery, the bottles were washed by hand and placed under the racking vat or keg. They were filled through a rubber hose and when full, a cork was driven into the foaming neck of the bottle by a simple pressing machine and wired on by hand. This slow, sloppy process was open to contamination from the surroundings.(55)

Advances in technology made it likely that the Victoria-Phoenix Brewing Company Ltd's first bottling works, housed in a shed left over from old private Victoria Brewery, was only semi-automated at first and partially operated by steam power. The installation of new machinery in 1903 and again in 1906, necessitated expansion which was furthered magnified in 1912, when an automatic, electrically-powered, crowning machine was introduced.(56)

While we do not know the details of the system that the automatic crowning machine replaced, it was probably as follows. First, the beer was released from the holding tank and moved by steam pressure through pipes culminating in a set of hoses which were inserted into bottles set on a revolving table. The operator moved the bottles under each hose in turn using a foot pedal to revolve the table and regulated the flow of beer through a tap located at the juncture of the pipe and hose. From there, he passed the bottles on to be sealed by hand-power.

The automatic crowning machine, on the other hand, was coupled to an automatic filling machine. First the beer was moved by air pressure or carbon dioxide from the holding tank to the revolving filling table where one hundred bottles were filled in one complete revolution of the table each minute. To remove the air from the empty bottle, a mechanical "knocking device" caused the beer to foam and fill the head space of the bottle, thus ensuring that no air was trapped in the sealed package. Using air pressure or carbon dioxide to jet the beer into the bottle quickly forced the beer up to the top of the bottle where the knocking process forced out the last remnants of air. The filled bottles were then passed off mechanically to a capping machine that sealed or "crowned" them. This system replaced numerous hand operations with a continuous and much faster automated process. The filled bottles were then placed on a truck (pallet on wheels), 200 dozen at a time and wheeled into the pasteurizer where the beer was subjected to a temperature of 140 degrees F. for 20 to 30 minutes by distributing steam evenly over the bottles. This minimum degree of pasteurization inactivated the organisms responsible for the spoilage of beer but did not damage other harmless constituents. After this period of high temperatures, the beer was allowed to cool, usually for a period of 30 minutes.(57) Bottles sealed with a crown stopper did not, unlike earlier versions, require additional wires to help withstand the pressures built up in the pasteurizer.

The bottled beer, now biologically stable, was then transported to the labelling machine where labels, hand-fed by the operator, were mechanically pasted to each bottle. The labelling machine was circular and turned once each time a bottle received a label to release an

already labelled bottle onto a conveyor belt. In the next step, the bottle was given a final visual inspection, covered in a cardboard sleeve and carried on by the conveyor to packers who wrapped and packed the bottles into wooden barrels for shipping.

Kegs were filled from the holding tank through racking arms, a technology that was greatly improved in the 1890s. Possibly the machinery introduced between 1903 and 1906 included this type of technology. A rigid, metal filler tube controlled by a lever attached to the racking arm was inserted into an empty keg and used for pressurizing and filling. A sight glass in the arm allowed the filler to gauge when the keg was full and when to release the lever. A wooden bung was immediately hammered into the keg's bung-hole. The unpasteurized and filled kegs were then lifted onto the "outlet slide" where they rolled down into delivery wagons waiting in the yard or to a storage shed to await pick-up at a later date.

Next to the bottling shop was the wash house where bottles and kegs were washed and repaired and in the case of kegs, re-pitched. Dirty bottles were first washed in a machine soaker that cleaned the bottle and removed old labels in a hot alkali solution, a caustic soda with the trade name of Wyandotte. At the conclusion of the washing process, the bottles were placed up-side down on a revolving table designed so that a brush was automatically forced up into them. This new machine, purchased 1903 at a cost of over $2,000, replaced an older, semi-automatic machine. Kegs were also thoroughly cleaned after being inspected for damage and, if necessary, repaired by the cooper. Their interiors were coated with hot pitch (the resin of various pine and fir trees) which was evenly reapplied with a steam driven "cask roller" at regular intervals to ensure that the beer did not acquire the taste of the wood. Kegs were also thoroughly washed on a "keg washer," which, by 1917, was completely automated.(58) Interestingly, more men still worked in the bottling and wash house than in the brewhouse, suggesting that, despite automation, brewing was still remarkably labour-intensive.

The large two-storey building to the north of the brewhouse served a dual purpose. The top floor housed the brewery's offices and accommodation for workers and managers who preferred or were compelled

to stay on the site for greatly extended work periods. The ground floor was the site of the steam plant and artificial refrigeration system.

The brewery relied heavily on steam for a variety of functions: to drive machinery in the machine shops, the bottling plant and brewhouse; to serve the artificial refrigeration system; and to heat liquids used in the brewing process and the office and accommodation areas. It may also have been used to drive an electrical generator or turbine, although this practice lapsed because a growing reliance on electricity to power machinery, particularly in the bottling shop, made it more practical to connect to the City's expandable electrical system.

For many years, the motive power described above was produced by the original 25-five horsepower, high speed steam engine installed in 1892, which was described as spider-like and graceful.(59) Nothing is known about the size or type of its boiler. In 1912 and 1913, however, new boilers of increased capacity were installed to either power this or an additional, larger engine put into operation just before Prohibition.

Close to the steam plant was the ice-making and refrigeration machinery. The 25-ton ice-making and cold brine refrigeration system, purchased from the Milwaukee firm of Weisel and Vilter in 1892, was powered separately by a slow speed, large, horizontal Corliss steam engine of unknown horsepower with a 12-foot steel fly-wheel, which was in turn directly linked to an ammonia compressor and condenser. Such a system could produce 10 to 12 tons of ice in a 24-hour period, of which an average of approximately 9 tons was sold to the public daily.(60) Because of refrigeration, the use of ice in the brewery declined and eventually it sold all of output to the public or to businesses such as the Victoria Ice Company.

Ice was produced by pouring water, which may have been distilled, into galvanized tanks or "cans," approximately two feet by four feet, each capable of producing 200-pound blocks. The cans were set into a much larger galvanized tank filled with brine, and when frozen, the ice was removed by block and tackle. The brine itself was manufactured by dissolving calcium chloride in water. It was less corrosive than sodium chloride and other solutions and had the lowest freezing point at - 58 degrees Fahrenheit. The brine tank could be easily replenished from a

6,700 gallon tank on the roof of the building. The temperature of the brine was lowered to below the freezing point of water, normally 25 to 28 degrees, by use of an ammonia compression system. In this system, high pressure, low temperature liquid ammonia, which loses heat when pressurized, was released from an iron tank known as a "receiver" by means of an expansion valve connected to a set of expansion coils placed in the brine tank. In the coils, the ammonia "refrigerant," no longer under pressure, expanded or vaporized, and absorbed the heat from the brine, illustrating the basic principle that heat migrates from the higher temperature, in this case the brine, to that of the lower temperature, the ammonia. The brine in turn absorbed or drew the heat from the water-filled cans thus producing ice. This heat was also passed on to the ammonia through the medium of the brine.(61)

The cold brine was circulated by a steam pump through cooling pipes attached to walls and ceilings of every room in the brewery requiring low ambient temperatures. It was an efficient, clean and safe cooling system which did away with the mess and damaging high humidity of ice cooling systems and the threat of contamination because it did not circulate the actual refrigerant except for the direct line of refrigerant circulated to the Baudelot Cooler.(62)

Meanwhile, the heat-laden, vaporized ammonia had been drawn from the brine tank by a compressor through return piping. Here the ammonia gas was compressed and forced into an atmospheric condenser where the heat was absorbed by the circulating air. This step brought the ammonia back to its original liquid state and it flowed to the receiver, ready for repeated use in a continuous process that operated 24 hours a day.

The Victoria-Phoenix Brewing Company Ltd. was not the first Island brewery to use artificial refrigeration. Based on available evidence, this distinction belongs to the E. & N. Brewery, which apparently installed a five-ton ice-making machine and refrigerators when it was constructed in 1888,(63) only two years after the first artificial refrigeration was introduced into a Canadian brewery, that of H. A. Ekers in Montreal,(64) and ten years before the first one was installed in Toronto at the O'Keefe Brewery Company.(65) All in all, Island brewers appear to have embraced artificial refrigeration with some

vigour, systems of one type of system or another being installed in the Nanaimo Brewery in 1890 and the Phoenix Brewery and the Union Brewing Company Ltd.in 1892. While comparisons to the North-American industry as a whole cannot be deduced, in Cincinnati, a major American brewing centre, only five breweries had artificial refrigeration systems by 1886.(66)

The Victoria-Phoenix Brewing Company Ltd. was a modern brewery with up-to-date appliances that made it both productive and efficient. Regular improvements to the machinery and plant indicate the owners' desire to remain competitive through modernization. It was not, however, the only modern brewery on Vancouver Island. References to the equipment of the pre-merger Phoenix Brewing Company, the second version of the Silver Spring Brewery Ltd. in Victoria, the Union Brewing Company Ltd. and the Empire Brewery of Nanaimo and the Pilsener Brewing Company Ltd. of Cumberland, demonstrate that they adopted similar modern principles. Some differences existed in the mechanics of the brewing process, in the choice of the machinery utilized, in plant layout, and in the practical preferences of brewers, but these are marginal when measured against the desire and ability of local brewers to match the progress of the industry.

Central to the day-to-day operation of Island breweries was the availability and quality of equipment of all types and, naturally, the potential for procuring it from local manufacturers. The surviving evidence suggests that Vancouver Island manufacturers were capable of fabricating the less sophisticated brewing vessels and machinery required by the local industry in its more formative years. This ability was, however, probably one of degree. As new and more sophisticated brewing equipment appeared, local manufacturers were unwilling, or more likely unable, to meet this challenge. Thus, proportionally, local manufacturers began to play a smaller role in equipping and servicing the Vancouver Island brewing industry.

This phenomenon is illustrated by the James Bay Brewery's purchase of its copper boiler from a local manufacturer, E. Cocker, in 1862. The Lion Brewery followed a year later with the purchase of a new 600-gallon copper boiler fabricated by J. S. Drummond on Yates Street.(67)

Obviously, the presence of skilled metalworkers and the availability of raw materials gave brewers flexibility in the design and qualities of their equipment. Similarly, in 1866 J. R. Hoare of Victoria fabricated and installed a boiler and accompanying steam engine for the Colonial Brewery.(68) The ability of local foundries and machine shops to produce pressure vessels (boilers) and engines was part of the diversified manufacturing sector that had emerged in Victoria by the mid-1860s.(69) This, coupled with the bountiful supply of wood and the presence of coopers who could fashion it into tanks, tubs and barrels, meant that Island manufacturers were well positioned to supply the brewing industry. Some breweries may have purchased their engines and brewing vessels elsewhere, but the fact remains that, at least theoretically, Island brewers could secure many of their needs locally.

This trend appears to have continued as indicated in a reference to the equipping of the Empire Brewery in 1885:

> With the exception of the large copper boiler, the machinery has been manufactured in Victoria, whose industries will soon be such that it will not be necessary to purchase in a foreign market for ordinary machinery.(70)

It is unlikely that the ability to fashion copper had disappeared entirely, but the owner, Peter Henning Peters, may have preferred copper from a known outside source to meet his particular needs. What is important is that, with the possible exception of the pasteurizer, the majority of the Empire Brewery's equipment, which included an 8-horsepower steam engine and boiler, an elevator, pasteurizer and mash tub with steam masher, was fabricated by the Albion Iron Works. This firm had survived various economic hardships to emerge as pre-eminent among the manufacturing industries of Victoria. Established in 1861, by 1891 this company employed some 230 men and used 1,920,000 pounds of pig iron annually to manufacture such diverse items as boilers, stationary, marine and hoisting engines, cocks, valves, gauges, steam pumps, pipes, and specialized equipment for the fishing and mining industry, and to compete successfully with San Francisco and Eastern manufacturers. In 1892, for example, Albion Iron Works also manufactured a mash tun, brew kettle, ice tanks, water tanks and boilers for the Victoria Brewing and

Ice Company Ltd. and tubs, portable work and a 30-horsepower engine for the Phoenix Brewery Company Ltd. in Esquimalt.(71)

Brewers also looked to local manufacturers to build and repair delivery wagons. Between 1886 and 1912, William Grimm and Sons, Carriage Makers and Blacksmiths fabricated minor metal work for a number of local breweries, (i.e. strapping, pipe racks and keg hangers) and supplied and repaired carriages and wagons.(72) The existing evidence suggests that while brewers patronized local manufacturers to make and repair the less complicated machinery and vessels, they imported the more complicated equipment requiring specialized tooling processes and expertise from the United States and Eastern Canada. Well known manufacturers such as De La Vergne of New York (ice-making machinery), Fairbanks and Morse of Chicago (steam pumps), Loew and Company of Cleveland (pasteurizers), and The Linde British Refrigeration Co. Ltd. of Montreal (refrigeration equipment), were but a few of the non-Island manufacturers who served the Island brewing industry in the 1890s.

The inability of local manufacturers to compete in the production of increasingly complicated equipment was not due to lethargy but to several factors beyond their control. The cost of re-tooling in an Island market that saw a shrinking number of breweries, precluded a reasonable economy of scale; and freight rates discouraged any sort of export trade if Island manufacturers sought to sell specialized brewing equipment to the industry elsewhere.

At the same time, Vancouver Island as a whole was experiencing a general decline in manufacturing. As John Lutz points out, Victoria, which ranked tenth among Canadian urban centres in manufacturing output in 1890, was, by 1915, producing "fewer manufactured goods than it had twenty-five years before." Initiatives and investment in manufacturing had shifted and the province, "which in 1890 had a diversified and growing manufacturing sector, had instead slipped into the specialization of extracting natural resource products."(73)

As well, Eastern Canadian and American manufacturers gradually displaced local products as Vancouver Island was integrated into the continental economy. Supported by an expanding continental railroad network, the continental economy offered Island brewers, just as it had

with barley and hops, access to the major eastern manufacturers of brewing equipment, as well as to traditional San Francisco suppliers. With stiff competition in the market, local brewers embarking upon a new or up-graded facility, had a very real need for alacrity in securing equipment. The major "continental" manufacturers advertised that equipment could be supplied upon the shortest notice,(74) while local manufacturers might have to tool up to meet an order. Speed in securing equipment was more important than saving freight charges or, in the case of American goods, customs duties. The same factors applied to repairs.

In conclusion, Vancouver Island breweries were established during a time of world-wide change in the industry. The pace of technological and scientific change accelerated during the latter half of the nineteenth century, particularly in the field of bio-chemical processes. Inevitably, this put Island brewers in the position of having to make some hard choices. Not all innovations would be applicable to their physical situation or financial resources. In short, immediate expansion and the adoption of new technology did not necessarily smooth out the road to prosperity.

As well, Island breweries established before the mid-1880s were sometimes housed in buildings constructed for purposes other than brewing, a feature not uncommon elsewhere in North America. More commonly, though they were built for the single purpose of brewing, many provided little flexibility for expansion and they became rambling structures made up of many buildings lumped together in an attempt to increase capacity or accommodate new equipment. This trend probably led to a hybrid style, merging both gravity and horizontal brewing techniques under one roof; a trend still evident into the 1880s, even though more attention was then being paid to design and layout from the outset, as attested by the growing number of architects and engineers who specialized in meeting the particular needs of the industry.

At the same time, the style of facility chosen--gravity, horizontal or hybrid--represented how brewers viewed efficient production. While personal preference once played a large part in how brewers viewed efficient production, the increasing competition brought about by the rise of the national brewers, left less room for sentiment

and more for thoughtful, pragmatic innovation and expansion.

However, the size of facilities, particularly before the 1880s, did not necessarily signify a primitive approach that was bound for failure. The Lansdowne and Empire breweries in Nanaimo, for example, were small by post-1880s standards but succeeded because of their relevance to their market and the skill of their brewmasters and workers.

In most cases, however, brewers increased capacity and efficiency, in response to both competition and increasing demand, by constructing new facilities rather than constantly retro-fitting existing structures. This approach was given impetus by the rapid growth in popularity of lager beer and the critical need for artificial refrigeration for its production. The result was the emergence of the modern tower-style brewery on Vancouver Island, a phenomenon that clearly took hold in the 1890s after being foreshadowed in the Empire Brewery of 1885.

The local industry appears to have kept pace with the mechanization of the industry elsewhere. While no innovations with an industry-wide impact emerged from the Island brewing community, the eagerness with which many brewers embraced new technology from outside is apparent. The early point at which several local breweries acquired artificial refrigeration systems indicates a positive and realistic understanding of the importance of technology in the quest to remain competitive. But growth in sophistication was not the only imperative. By the 1890s, scale was equally important and was a major driving force for new and larger facilities to house more complex machinery. In turn, sophisticated machinery, such as artificial refrigeration systems, intricate filters and pneumatic malting equipment, needed a sophisticated manufacturing capability that, like the raw materials of brewing, could not be sustained locally. This was another factor that pulled the local brewing industry into the continental economy.

In summary, although it was never an innovator, and despite its relative isolation and limited market, Vancouver Island's brewing industry was a strong economic factor in the local economy.

Notes

1 Walter J. Sykes, The Principles and Practice of Brewing (London: Charles Griffin and Company, Ltd., 1907), p.480.

2 H.S. Corran, A History of Brewing (Newton Abbot: David & Charles, 1975), pp.204-205.

3 Colonist, 14 March 1885.

4 H.S. Rich, One Hundred Years of Brewing, (Chicago: H.S. Rich and Co., Publishers, 1903), p.135.

5 UBC, British Columbia Fire Insurance Plans - 1885, Victoria City

6 Merrill Denison, The Barley and the Stream (Toronto: McClelland and Stewart, 1955), p.27.

7 Rich, One Hundred Years, p.348.

8 Martin Ian Bowering, "The Art and Mystery of Brewing in Nineteenth Century Toronto" (M.A. Thesis, University of Toronto, 1978), pp.12,34. In the Toronto area all large facilities before the 1880s were designed horizontally. This may have been because the larger breweries considered gravity a primitive method. Then, as now, the desire to be at the leading edge of high-tech could be misleading.

9 Major renovations of unspecialized structures resulted in complicated and ill-contrived facilities, and made no economic sense. This was particularly true in growing and competitive markets where according to Rich, One Hundred Years, p.145, the "scale of production had forced the problems of design upon the brewer."

10 John Erb, interview, 27 October 1989, Victoria, B.C.

11 Rev. Harvey Kimball, An Illustrated History of the State of Washington, (Chicago: Lewis Publishing, 1893), pp.485-486.

12 Colonist, 12 March 1892.

13 Richard Coleman, Brewery Collection, Royal British Columbia Museum, Uncatalogued. See, Silver Spring Brewery Ltd. Correspondence, December 30, 1909 - February 19, 1910.

14 Colonist, 8 October 1961.

15 This information is derived from photographs, fire insurance plans, and a variety of newspaper sources.

16 BCARS, Labatt's Breweries of British Columbia, Company Papers, Add. Mss. 1883 Vol. 1, File 20, Appraisement of the Silver Spring Brewery Ltd. 1928.

17 Colonist, 5 May 1863.

18 Colonist, 22 December 1862.

19 Colonist, 18 September 1866.

20 Colonist, 30 August 1866.

21 As may have been the case with the Lion Brewery in 1863. See, Colonist, 11 March 1863.

22 UBC, British Columbia Fire Insurance Plans - 1885, Victoria City.

23 Rich, One Hundred Years, p.136. See diagram of "Levesque's Improved Plan For A Brew-House, 1853" which provides an excellent diagram of a furnace arrangement under both a hot water copper and a wort copper, situated on a brick arch.

24 Sykes, Principles of Brewing, p.498.

25 Cochran, Pabst Brewing Company, p.105.

26 Corran, History of Brewing, p.188.

27 John Erb, interview. Mashing techniques developed in the nineteenth century included "downward fusion," "upward fusion" and "decoction". The first remained dominant in North America until the shift to lager made it obsolete; the initial temperature was high, then dropped back by the introduction of cold water. Upward infusion was started at a lower temperature, then increased by the infusion of hotter liquids, a method that eventually came to dominate brewing as it was well suited to lager. Decoction involved several vessels in which portions of the heated liquor were drawn off and heated in another vessel before being returned to the original; thus the temperature was gradually raised. This method was complicated and labour intensive and gradually fell out of favour.

28 Sykes, Principles of Brewing, p.513.

29 Corran, History of Brewing, p.119.

30 Sykes, Principles of Brewing, p.521.

31 Corran, History of Brewing, p.165.

32 Rich, One Hundred Years, p.90.

33 John Erb, interview.

34 Sykes, Principles of Brewing, p.527.

35 A complete description of the various methods of yeast collection is provided in Sykes, Principles of Brewing, pp.535-538.

36 Colonist, 15 July 1861.

37 Colonist, 27 March 1867.

38 Colonist, 7 August 1889.

39 Wadworth & Company Limited, Wadworth: The Taste of the Century 1885 - 1985 (Devizes: Wadworth & Company Ltd, 1985), pp.13-14.

40 Colonist, 29 May 1863.

41 On steam beer production, see Rich, One Hundred Years, p.360.

42 Colonist, 14 March 1885. Interestingly, the Empire Brewery also contained an underback, a vessel that was supposedly losing favour by the 1880s. Its inclusion in the brewing process may have meant that Peter Henning Peters practised the decoction method of mashing whereby the underback acted as holding vessel for portions of the mash as they were removed from the mash tun.

43 Simple but fairly effective pasteurizing units were available to breweries of all sizes by the 1880s. The impetus came from the ever increasing demand for bottled beer that was biologically stable, and longer lasting, an important feature for the export trade. Pasteurization provided this stability.

44 The tour of the Victoria-Phoenix Brewery is based on the following: BCARS, Labatt's Breweries of British Columbia, Company Papers; Richard Coleman, Brewery Collection, Royal British Columbia Museum, Uncatalogued; Colonist, 12 March 1892, 22 May 1892, 1 January 1893, 1 March 1925; VCA, Edward MacKenzie, Collection; Interviews with John Erb, Walter Spershott and Bill Dunaway.

45 Phillip Townsley, interview, 19 May 1991, White Rock, B.C. An adjunct is best defined as non-malt carbohydrate materials of suitable composition and properties which beneficially complement or supplement the principal brewing material which is barley. The American brewing industry was distinct from others; it systematically used adjuncts, such as corn, rice and wheat. Some have suggested that this was as a result of deficiencies in American barley--deficiences that led to beers of inferior stability. The use of adjuncts brought improved stability, chill-proof properties and beer of greater brillance--important attributes with the advent of packaged beer. In addition, adjuncts could be utilized as a cost-saving measure by increasing production in a brewhouse of limited capacity, an important consideration in an increasingly competitive marketplace.

46 Canada, Department of Inland Revenue, Annual Reports, passim. During the years 1874 to 1884, the records show no use of rice, sugar or sugar by-products within the British Columbian brewing industry. From 1885 to 1887, however, 5,180 pounds were used. From 1888 to 1892, none were used but the situation changes drastically thereafter. From 1893 to 1896, 13,400 pounds of sugar, syrup and "other commodities," taken to mean adjuncts, were used by Vancouver Island breweries. From 1897 to the advent of Prohibition, 401,741 pounds, of what were by then known as "other materials" had been used on the Island, only the years 1897, 1899, 1903 and 1910, indicating no use. This suggests that such materials were stockpiled or under-utilized from time to time, resulting in a surplus for use in the following year. Though exact figures are not available on how other materials broke down into specific categories, it is reasonable to assume that adjuncts were a part of the Island brewing industry, at least in the products of some breweries.

47 Spent grain, still rich in undissolved starch and albumins, was valuable to dairy farmers, who thought it enhanced the quality of milk. It was shovelled from the mash tun onto a landing accessible through a door leading directly to the alley between the brewhouse and the powerhouse to the north to be picked up by local farmers, who were contracted to the brewery to remove it on a daily basis. Many years later, a chute allowed the spent grain to be shovelled from the mash tun directly into a waiting truck in the alley below.

48 The Lion Brewery installed a new 600-gallon kettle in 1863, the largest manufactured in Victoria up to that time. (Colonist, 11 March 1863) The kettle installed in the Empire Brewery in 1885 had a capacity of 900 gallons (Colonist, 14 March 1885), yet the Union Brewing Company installed a kettle of only 750 gallons capacity in 1891. (British Columbia Commercial Journal, 3 November 1891) But sheer size was not a limiting factor because a kettle could be used several times during the same day. The Silver Spring Brewery Ltd. had the second largest kettle after the Victoria-Phoenix. It had a capacity of 2,187 gallons, was manufactured by the Oscar Krinz Copper and Brass Works of San Francisco, and was incorporated into the plant in 1909 or 1910. (BCARS, Labatt's Breweries of British Columbia, Company Papers, Add. Mss. 1883, Box 1, Vol 1, File 20) Unfortunately, too few references of kettle size have survived to allow for any sort of in-depth analysis of capacity.

49 The top half of the Baudelet consisted of flattened copper pipes, cooled by refrigerated brine, while the lower half was steel pipes cooled directly by liquid ammonia. The beer slowly dripped over the cooler, where it took up further oxygen to help stimulate the yeast when pitched shortly after.

50 Loose or "floating" attemperators, with coils fixed in a wooden or metal frame, were also available to brewers, but do not appear to have been used at the Victoria-Phoenix.

51 John Erb, interview, 27 October 1989, Victoria, B.C. In this careful yeast collection the brewer normally avoided the bottom layer because it contained dead cells and other unwanted materials. The top layer was also undesirable because it contained young undeveloped cells and bacteria, particularly if the fermenting tubs were of the open variety. Consequently, the brewer collected the middle layer because it contained the healthiest yeast. The closed fermenting tubs posed a problem because the yeast could not be removed manually. A mechanical system consisted of a chute connected to the bottom of the tub which had a conical bottom to accommodate this mechanism.

52 For details on the cellarage of the Victoria-Phoenix Brewing Company Ltd. see, VCA, Edward MacKenzie, Collection; BCARS, Labatt's Breweries of British Columbia, Company Papers; Richard Coleman, Brewery Collection, Royal British Columbia Museum, Uncatalogued.

53 Rich, One Hundred Years, p.102.

54 Such carbonation collection systems had been demonstrated as early as 1798 but it was not until the 1890s that the first practical examples were made available. Many brewers saw this as preferable to both kraeusening and to the use of artificially produced, and commercially available, carbon dioxide.

55 Increasing demand for beer during the 1880s and 1890s spurred the invention of many new mechanical bottling devices. Some of the more important were: the Goulding Bottle Washing Machine; the Birkholz-Theuer Soaking Tank; the filling machines of the Vilter Manufacturing Company, which replaced rubber hoses with metal filling rods; and, the Bottler's Specialty Company machine that corked, capped and wired bottles all in one operation. By the 1890s, corks had fallen in popularity and were largely supplanted by the "Bottle Seal," which was attached to the bottle or wired into place. Though reliable, they had to be applied by hand; brewers wanted a stopper that could be machine-applied. The answer came in 1892 with the invention by William Painter of the tin plate crown, which is still in use today. A cover more than a stopper it could be moulded down to fit snugly over the mouth of the bottle when pressure was applied. A thin disc of cork on the underside, ensured that the carbonation of the beer in the bottle would not be lost.

56 The relative lateness of acquiring such a machine is not unusual. Cost and the on-going refinement of the machines were important considerations as was the issue of the standardization of bottles. Early crowning machines came into existence when most bottles were hand made with varying sizes and shapes of lips. This factor could be accommodated by the early machines because they were foot operated, thus allowing variance in the amount of pressure applied. As the machines became more automated, this flexibility was lost. This was a great impetus to the standardization of bottles but posed a problem to many brewers who had to replace thousands of bottles.

57 Bill Dunaway, interview, 28 September 1990, Victoria, B.C. He recalls that by the 1930s the brewery was using a continuous pasteurizing system. In this system bottled beer was conveyed to the pasteurizer, replacing beer already pasteurized - all in a continuous process. This unit could pasteurize 1,000 dozen an hour.

58 The process was likely a version of the following; in phase one, the keg's exterior received a rinse of cold water; in phase two, it was partially filled with warm water while the exterior received a warm water rinse; in phase three, the keg was drained and then rotated, the exterior brushed and rinsed at the same time; a hot caustic wash of the interior and pressure rinse followed in phase four; during the final phase both the interior and exterior were rinsed once again with cold water and the keg allowed to drain and dry, before its re-use.

59 Colonist, 12 March 1892.

60 Ibid.

61 Frederick E. Matthews, Elementary Mechanical Refrigeration (New York: McGraw-Hill, 1912), p.1.

62 Walter Spershott, interview, 17 January 1988, Victoria, B.C. He explained that initially several combinations of liquids and refrigerants had been experimented with in the Baudelot Cooler - ice water refrigerated brine, ammonia - even carbon dioxide. In the end the combination of refrigerated brine or ice water with ammonia, proved to be the most effective.

63 Colonist, 1 January 1891.

64 Dominion Brewers Association, Facts on the Brewing Industry in Canada (Ottawa: Dominion Brewer's Association, 1948), p.7.

65 Martin Ian Bowering, Brewing in Toronto, p.34.

66 William L. Downard, The Cincinnati Brewing Industry: A Social and Economic History (Cincinnati: Ohio University Press, 1973), p.41.

67 Colonist, 11 March 1863.

68 Colonist, 30 August 1866.

69 Peter A. Baskerville, Beyond the Island: An Illustrated History of Victoria (Burlington: Windsor Publications Ltd., 1986), p.30.

70 Colonist, 14 March 1885.

71 Corporation of Victoria, Victoria Illustrated, (Victoria: Ellis & Co., 1891), p.81.

72 BCARS, William Grimm & Sons, Account Books, Add. Mss.1219, Vols. 1 & 2.

73 John Lutz, "Losing Steam: The Boiler and Engine Industry as an Index of British Columbia's Deindustrialization, 1880-1915." Canadian Historical Association, Historical Papers, (1988), p.169.

74 Nanaimo Free Press, 20 July 1905. This report graphically illustrates the speed with which suppliers could meet the needs of Island brewers. The Union Brewing Company Ltd. received pneumatic malting equipment only sixteen days after it was ordered from Boston.

CHAPTER 6
THE INDUSTRY IN RETROSPECT

The Vancouver Island brewing industry began in a time of great change. Globally, the latter half of the nineteenth century witnessed rapid change in the technology of beer production and the conduct of the business of brewing. Locally, the industry was born into a colony undergoing a rapid transformation from a small outpost of the Hudson's Bay Company to the staging area for thousands of fortune seekers en route to the goldfields along the Fraser River.

While this influx of individuals, many from the beer drinking countries of Northern Europe, provided pioneer brewers with a healthy market, it was not without a cost. The high labour, material and land costs of a boom economy increased the amount needed to capitalize brewing facilities which, because of their relative technological sophistication, were expensive to establish. The very same economic situation that created high capitalization and operating costs, however, allowed brewers to charge relatively high prices for their products. Local consumers, as in other frontier communities, considered beer a staple of daily living and were willing to pay premium prices for a fresh and readily available product. Such availability was made all the more possible by the close proximity of San Francisco, already a reliable source of raw brewing materials and equipment by the 1850s.

The boom economy attracted individuals of diverse backgrounds to the fledgling brewing industry. Some were practical brewers of considerable experience: others learned the profession upon arrival. While some individuals devoted all their energies to brewing, others, better called investors, left the brewing to a professional or to a partner and devoted their energies to a variety of commercial ventures. These variations illustrated the vigorous and ultimately important entrepreneurial spirit at work in the frontier industry and the fact that an individual could advantageously incorporate brewing into a larger commercial perspective.

No economy, however, stands still. Global and regional market forces are always at work, leaving no area of the world untouched.

Vancouver Island was no exception and experienced economic slumps and gains throughout the period of this study. The local brewing industry, though, rode out the economic storms better than some other Island industries. Several factors appear to be responsible for this long-term resiliency. The presence of the Imperial Armed Forces, most notably the Royal Navy, assured local brewers of a steady market. Working in conjunction with this was the relative isolation of the Island itself. Before the coming of the Canadian Pacific Railway to Burrard Inlet in 1886, the market represented by Vancouver Island was penetrable only by ship; a slow and sometimes unreliable means of transportation. This fact meant the local brewers had a captive market on Vancouver Island, and, as long as they maintained their standards of quality, they were largely able to fend off the damaging effect of imports.

Imports and the niche they had developed, had been a fact of life on the Island from the earliest days of the industry; exports, however, had not and were insignificant from the perspective of inter-provincial trade. Undoubtedly, Island products had found a market on the Mainland before Vancouver and New Westminster breweries gained prominence there in the late 1880s. Still, the Mainland market was modest when compared to the potential for exports beyond the Rockies; potential that could not be tapped without efficient transportation and later because of restrictive rail rates that precluded any significant sales there. Instead, the Imperial Armed Forces came to represent a significant export.

The 1880s was a pivotal decade that foreshadowed great change. Perhaps most importantly, product preference was changing. By the 1870s, the shift from ale to lager was all but complete in the United States. In Canada, due in part to the presence of the Imperial Armed Forces, the preference for ale remained stronger than it was to the south, but gradually lager came to the forefront. While lager had been brewed on Vancouver Island since the first breweries began operating, the potential for significant sales had become apparent by the mid-1880s and likely explains the building of the Empire Brewery by Peter Henning Peters in 1885. This facility exemplified the transition to the modern tower style brewery, and illustrated the particular production demands

of lager--demands that would force many brewers to abandon old, inefficient plants in favour of new facilities built to accommodate the artificial refrigeration requirements of lager production.

The fact that the major American national brewers were producing lager was significant. The maturation of the railway network on the North American continent, while working against Island beer exports, allowed outside competitors to export their mass produced beer into Vancouver Island. Local brewers of any vision and business acumen realized the potential consequences. National brewers stood poised to dictate to the Island beer market. With huge mechanized facilities geared to lager brewing, continental distribution networks, strings of company agencies and a knowledge of mass communications and marketing, they could gain control of the local industry as they were beginning to do elsewhere in North America. The several attempts to form brewing trusts and establish new breweries or bulk bottling plants locally, with both American and British backing, shows the attractiveness of Vancouver Island to outside investors in the 1890s. Ultimately, though, such factors as loyalty to local brews, new business practices and the ability of Island brewers to meet the changing product preferences of their clientele, provided sufficient protection against this threat.

Nevertheless, the awareness of the trend toward breweries with a big business approach and a national perspective helped to foster a transition that made its impact felt beginning in the early 1890s. This was the dawning of the age of the incorporated limited joint stock company, then popular in such other British Columbia industries as mining and canning and with breweries elsewhere in Canada. This business structure could attract the skills and the capital necessary to ward off the effects of the continental competition mainly through the production of lager in large, new, local facilities. New forms of marketing were also essential. Gone were the days when individual brewers simply marketed at the point of sale. As important as their personality and community standing had been in this activity, they were now required to focus on aggressive distribution, advertising and market strategies that would net them and the company's investors, an expanding share of the Vancouver Island market.

Between 1890 and 1917, limited companies simply overtook the traditional private proprietorships and partnerships that had governed the local brewing industry for so long. This is not to say that private proprietors totally vanished. Several used their experience within the framework of the limited joint stock company, where their skills, creativity and astuteness were augmented by the board of directors, while they themselves continued to bring something of the tradition of the original company to the customer. This worked both ways. The limited company drew upon the experience of the private brewer who in turn was involved in an enterprise that he could not finance on his own. In this way, partnerships such as Loewen and Erb lived on and played a vital role in continuing the successful growth of a company which they had guided since 1870. Interestingly, despite the apparent dominant presence of large incorporated producers, several smaller, private operators, most notably in Nanaimo, were able to survive. This was largely because of their ability to cater to a special market niche within the community and their proximity to it--an advantage over the brewer who had to ship over a distance. Large companies could not simply put smaller ones out of business because of their size. Economies of scale for instance only favoured the larger producer in certain areas, such as manufactured materials and production run. When it came to agricultural materials, no one size of brewery benefited from economies of scale as the supply and cost of agricultural materials, because of their very nature, fluctuated wildly.

The large producer had to work hard to put the smaller competitor out of business. This was done most effectively through constant equipment up-grading, marketing and distribution over a significant geographical area, using agents, salesmen and depots. Only through these means could the small producer be marginalized.

Above all, an operation, no matter what its size, had to be efficient to survive and grow. The Victoria-Phoenix Brewing Company Ltd. records show a highly efficient operation where the original debt was paid off quickly, where net return ratio was consistently strong, where product turnover was outstanding and where input costs fell each and every year. While not necessarily indicative of all Island

breweries, the financial records of this firm indicate something of the costs born by all brewers of the time.

From a technological perspective, breweries, before the arrival of lager and limited companies, were, either of the gravitational style, the horizontal style or a hybrid of both. No doubt, the degree of sophistication varied as did the size of facilities. This changed gradually, most likely beginning in the 1880s, by which time the volume of production was beginning to influence design. This factor helped in the emergence of the brewery architect and engineer, whose influence did much to ensure the ultimate dominance of the gravitational facility. The obsolete facilities and the hodge-podge of buildings of previous decades, indicative of differing economic situations and personal preferences, were slowly but assuredly replaced by scientifically designed plants and a steady increase in production.

Island brewers could rely on local manufacturers to produce relatively un-sophisticated equipment and vessels, but as the needs of the industry grew more technically sophisticated, suppliers from elsewhere were called upon. Local manufacturers could not be expected to re-tool for the limited market that the Island represented. High rail transport costs also precluded them from establishing markets for specialized equipment elsewhere--markets that could have justified their re-tooling of their facilities.

The raw materials for brewing also presented a problem. Soft water, ideal for lager and light ales was plentiful but, in Victoria at least, often of poor quality. In time this was overcome by the use of chemical compounds to adjust water quality, thus alleviating problems experienced by brewers in any part of the Island. Barley had to be imported in huge quantities as local farmers could never provide the amount required, despite regular incentives. Hops could be obtained locally until the 1890s when the industry declined, eventually ceasing altogether in 1912, when outside sources, better financed and much larger, monopolized supplies. In short, the local industry ultimately came to rely on the outside world for barley, hops and yeast, specialized equipment and many of its technological and business practices. In this way it followed the pattern of so much of industry

in the province in the late nineteenth century--it was influenced by major economic developments in eastern North America. This meant that local brewers had to re-think their business structure in order to ward off competition while relying on major and often economically influential continental suppliers for many of the goods needed in their operations. The latter, however, should not be taken as a sign of poor performance but rather as a fact of life when living and working on an island--a fact that could be turned to their advantage for it allowed them the opportunity to assure Island customers that only the best in raw ingredients and equipment was used in the manufacture of their beer.

In the case of labour, the situation appears to have been less influenced by the outside world. Relations between employer and employee in the relatively small workforce, were amicable throughout most of this period and only a reduction in the number of local breweries and the resulting loss of mobility spurred workers into action. Once unionized in 1912, wage settlements were in keeping with settlements elsewhere in the country and industry in general.

The local industry's biggest test came in 1917 with the introduction of Prohibition. Some brewers may have expected protection from its effects as they were the producers of the moderate alternative to hard liquor. Ultimately neither this view nor, for those brewers with retail establishments, their compliance with government regulations did them any good. With the production of full strength beer limited to export markets, curtailed from April 1918 to December 1919, and the general unpopularity of near beer, some companies like the Union Brewing Company Ltd. did not survive. Others, like the financially diversified Victoria-Phoenix Brewing Company Ltd. and the creatively operated Empire Brewery, survived the years of Prohibition.

In summary, the Vancouver Island brewing industry changed dramatically throughout the 59 years covered by this study. With its beginnings in a frontier boom economy, the industry, guided predominantly by determined and skilled brewers of British and German origin, grew more sophisticated every decade. Such sophistication was spurred on by the significant financial, scientific and technical innovations of the latter decades of the nineteenth century--an era that

re-shaped brewing on a world-wide scale. These developments, influenced by the dramatic shift from ale to lager, led to the demise of the private brewery owner. In reality, though, the limited companies that largely replaced the small, private entrepreneur, were a more sophisticated form of that important frontier activity--the pioneer brewer.

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APPENDIX A

BREWERIES - CHRONOLOGICAL OVERVIEW BY DECADE OF INCEPTION

VICTORIA

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
1850s		
Victoria Brewery	William Steinberger	1858-1859
" "	William Steinberger & Christian Ochsner	1860
" "	Charles Gowen & Frank Laumeister	1860-1866
" "	A. John Vogel, Jacob Loerz & John Himmen	1866-1870
" "	Joseph Loewen & Ludwig Emil Erb	1870-1891
Colonial Brewery (Called Colonial Srings Brewery- Summer of 1859)	Arthur Bunster	1859-1882
" "	John Leahy & Ralph Borthwick	1882-1883
" "	John Leahy	1883-1885
" "	John Leahy & C.W. Horth	1886
" "	John Leahy	1887-1893
" "	John Leahy & John Bennett	1894
" "	John Leahy	1894-1897
1860s		
Half-way House Brewery	J. Bland	1861-1875

1860s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Lion Brewery	Alfred Elliott & Thomas Lavery (Alfred Elliott & Co.)	1862
" "	Alfred Elliott & George Isaac Stuart	1862-1864
" "	Alfred Elliott, George Isaac Stuart & Hugh Moore (Elliott, Stuart & Co.)	1864-1867
" "	Stuart & Co. (partner(s) unknown)	1867-1871
" "	George Isaac Stuart & Arthur Keast	1871-1879
" "	Arthur Keast	1879-1883
" "	Peter Henning Peters & Heinrich Siebenbaum	1883-1884
" "	Peter Henning Peters & Jacob Davis	1884-1885
" "	Jacob Davis & J. Gutman (Davis & Co.)	1885
" "	Jacob Gutman (Guttman) & August Frank	1885-1888
" "	August Frank	1888-1889
James Bay Brewery	Alfred James Welch	1862-1866
Bavaria Brewery (Also known as Bavarian Brewery)	Martin Goetz	1863-1864
" "	Martin Goetz & Jacob Loerz	1865
" "	Jacob Loerz & John Himmen	1865-1866
" "	John Vogel, Jacob Loerz & John Himmen	1866-1868

1860s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Bavaria Brewery (cont.)	Unknown	1868-1871
" "	J.W. Lunblad & Peterson	1872
" "	Daniel Madden & J.W. Lunblad	1873
" "	J.W. Lunblad & John Smith	1873
" "	John Smith & Henry Walther	1874
" "	Henry Walther & John Wagner	1874-1880
" "	Henry Walther	1880-1887
" "	Charles Zoelle	1887-1889
" "	Wm. Stichnoth & Hermann	1889
" "	Wm. Stichnoth	1890-1892
" "	John Lawson	1893
Phoenix Brewery	Charles Gowen	1868-1887
" "	Charles Gowen, Charles Napier Gowen, George Nelson Gowen, Frederick August Gowen (known as Charles Gowen & Sons)	1887-1891

1870s

None Established

1880s

Vancouver Brewery (Also known as the Vancouver Ale, Porter and Steam Beer Brewery)	Carter & Co. (Thomas Watson Carter, Robert Carter & George Raywood)	1883

1880s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Vancouver Brewery (cont.)	Carter Bros - Thomas Watson Carter & Robert Carter	1884-1888
" "	T.W. Carter & Wm. D. Ferris Jr.	1888-1890
" "	British Columbia Brewing Company Limited (limited company failed)	1890
" "	Thomas Watson Carter & W.F. Tolmie	1891-1892
" "	Thomas Watson Carter	1892-1894
Tiger Brewery	Thomas Breece & Co.	1884-1885
" "	J. Williams	1885-1886
City Brewery (Formerly known as Tiger Brewery)	Joseph Hunt	1886-1887
" "	Jacob Hasenfratz & John Lawson	1887-1893
" "	John Lawson	1893
" "	John Lawson & John Bennett	1893-1894
Pacific Brewery	Joseph Deacon	1884-1885
Empire Brewery	Peter Henning Peters	1885-1886
" "	Alvina Peters	1886-1887
E. & N. Brewery	Henry Smith Fairall	1888-1890
" "	Henry Smith Fairall & Alfred Napier Barry	1890-1893
" "	Henry Smith Fairall	1893-1894

1880s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Excelsior Brewery (Formerly known as E. & N. Brewery)	Steve O'Brien & G. Varrelman	1894
" "	Steve O'Brien	1894-1895
" "	Steve O'Brien, John Williams, Charles Doering, Ernest Barker & Otto Marstrand	1895-1896
" "	John Leahy & Michael Morrisey	1896-1897
Fairall's Brewery	Henry Smith Fairall	1895-1897
Fairall Brothers Brewery (Re-acquire Excelsior Brewery)	Henry Smith Fairall William Fairall, Charles Fairall & Henry Fairall	1897-1908

1890s

Phoenix Brewery Company, Limited Liability (Incorporated Dec.7, 1891)	Charles Napier Gowen, William P. Sayward, John Coughlin, Frederick Sherborne & William G. Stevenson;	1891-1892
" "	William P. Sayward, G. Varrelman & Charles Napier Gowen	1892-1893
Victoria Brewing & Ice Company, Limited Liability (Incorporated Dec. 30, 1891)	Ludwig Emil Erb, Joseph Loewen & Andrew Hemrich;	1891-1892
" "	Ludwig Emil Erb, Joseph Loewen	1893

1890s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Victoria-Phoenix Brewing Company, Limited Liability (Merger of Victoria Brewing and Phoenix Brewery- Incorporated May 4, 1893)	Joseph Loewen, William Parsons Sayward, Charles Napier Gowen, William Wilson & Frank Stillman Barnard;	1893
" "	unknown	1893-1898
" "	Joseph Loewen, David R. Ker, Charles Napier Gowen, William Wilson, George H. Barnard, Andrew Bechtel & Dennis Harris	1898
" "	Joseph Loewen, William Wilson, David R. Ker, George Barnard & Andrew Bechtel	1899-1900
" "	Joseph Loewen, David R. Ker, William Wilson, George Barnard & Forrest Angus	1901-1903
	Frank S. Barnard, David R. Ker, Forrest Angus, William Wilson & Joseph Bridgman	1904
" "	David R. Ker, Horace Edward Newton, Forrest Angus, William Wilson & F.S. Barnard	1905
" "	David R. Ker, Horace E. Newton, Forrest Angus, F.S. Barnard, William Wilson & Emil A. Erb	1906-1907
" "	David R. Ker, Horace E. Newton, William Wilson, Forrest Angus & Emil A. Erb	1908
" "	David R. Ker, Horace E. Newton, F.S. Barnard, William Wilson, Emil A. Erb & Arthur W. Jones	1909

1890s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Victoria-Phoenix Brewing Co. Ltd. (Re-Incorporated June 17, 1910)	Horace Edward Newton, William Wilson, Arthur Wm. Jones, Joseph Charles Bridgman, Frank Stillman Barnard & Emil August Erb	1910
" "	Unknown	1910-1917
Milwaukee Brewing Company, Limited Liability (Never operated was to have operated in the Colonial Brewery)	Hermann Kurth, John Joseph Delahanty & Heinrich Siebenbaum;	1897
Kurth's Brewery (Occupied former Bavaria Brewery)	Hermann Kurth	1897

1900s

Lion Brewery	Charles Napier Gowen	1901-1903
Silver Spring Brewery	Robert Tate, Reginald Tate, Frederick Tate	1902
Silver Spring Brewery, Limited (Incorporated August 13, 1902)	J. Musgrave, Sir R.J. Musgrave, J.S. Musgrave, C.A. Bury, F.J. Tate	1902
" "	unknown	1902-1905
" "	Sir R.J. Musgrave, John Musgrave, C.A. Bury, R.S. Stuart & Robert Tate	1905-1906
" "	John Musgrave, others unknown	1906-1908

1900s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Silver Spring Brewery, Limited (Re-Incorporated May 18, 1908)	Philip Crombie, John E. Day, Frederick Tate, Dr. Frank Hall & Harry Maynard	1908
" "	Harry Maynard, Frederick Tate, others unknown	1909-1917

1910s

Esquimalt Brewing Company	James Fairall & W.J. Hagan	1914
Esquimalt Brewing Co. Ltd. (Incorporated August 3, 1914)	James Fairall, S.A. Baird, W.J. Hagan, Alfred Harvey, Frederick Smith, W.H. McKeon,	1914
" "	Theresa Hagan, Wm. James McKeon, Samual Arthur Baird, Mark Long Hardy & Alex Wm. Staples	1914
" "	G.E. Wilkinson, James Fairall, Alfred Harvey & Frederick Smith	1914-1915
" "	James Islay Mutter, Alex Allan Mutter, George Mutter	1915-1916

NANAIMO

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
1860s		
Millstream Brewery (Also known as Millstone Brewery)	John Rees Price & Thomas Rees Price (J.R.Price & Co.)	1864-1865
" "	John Rees Price & Richard Nightingale	1865-1866
" "	Richard Nightingale & Thomas W. Butler	1866-1867
" "	Richard Nightingale	1867
" "	Closed	1867-1875
" "	George Issac Stuart & Arthur Keast	1875-1876
" "	Frank Pagden	1877
1870s		
Nanaimo Brewery	Henry Pemble Smith & John Galbraith	1874-1877
" "	Henry Pemble Smith	1877-1879
" "	John Mahrer & William Keddy	1879-1882
" "	John Mahrer	1883-1890
Nanaimo Brewing Co. Ltd. (Incorporated September 23, 1890)	Edward Quennell, William John Goepel & Angus S. Johnston	1890
Nanaimo Brewing Co. Ltd. (Merged with Union Brewing Co. Ltd.)	Unknown	1890-1892

1880s

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Lansdowne Brewery	Henry Rosewall	1885-1887
" "	Henry Rosewall & C.W. Horth	1887
" "	John Lee Cawthorn & Henry Rosewall	1888-1889
" "	John Lee Cawthorn	1890-1891
" "	August Hasenfratz & Leo Barnard (Hasenfratz & Co.)	1891-1892
" "	August Hasenfratz	1892-1917
Red Lion Brewery	Thomas Preece & John W. James	1886-1887
" "	Thomas Preece & John Marwick	1887
" "	John Marwick	1887-1889
" "	John Marwick & Max Hoefle	1889-1891

1890s

Empire Brewery	Peter Weigle & Thomas Anderson	1891-1892
" "	Peter Weigle	1893-1917
Union Brewing Co. Ltd. (Incorporated January 22, 1891)	Thomas Eric Peck, Robert Evans, John Hough, James Williams, Charles Martin & Thomas Peters	1891
" "	Thomas Wall, John Marwick, Max Hoefle & W.E. Norris	1891
" "	James M. Brown, C. Martin W. Delahay, J. Perry, D. Adams & W.E. Norris	1892

1890s - continued

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
Union Brewing Co. Ltd. (cont.)	J. Perry, J. Hough, C. Martin, W.S. Chandler, Edward Quennell & W.E. Norris	1893
" "	Unknown	1894-1895
" "	John Perry, W.A. Young & E. Quennell (others unknown)	1896
" "	Unknown	1897
" "	Ed. Quennell, W.A. Young, Marshall Bray, John Pawson, H.A. Simpson	1898
" "	John Pawson, W.A. Young, W.E. Norris, M. Bray, H. Reifel	1899
" "	Unknown	1900-1904
" "	Ed. Quennell, J.M. Rudd, Marshall Bray, W. Sinclair, & Geo. Williams	1905
" "	Ed. Quennell, John Rudd, Marshall Bray, Robert Evans, & William Sinclair	1906-1908
" "	Directors Unknown	1909
(Malting was added to company title)	Ed. Quennell, John Rudd, Geo. Williams, William Sinclair & William Craig	1910
(Amalgamated - B.C. Breweries Ltd.)	Ed. Quennell, John Rudd, Geo. Williams, William Craig & E.M. Yarwood	1911
" "	Charles Doering, John Williams, Henry Reifel, E.M. Yarwood, B.C. Breweries Ltd.	1912
" "	Directors Unknown	1913-1917

CUMBERLAND

NAME	PROPRIETOR(S) OR DIRECTORS	DATES
1890s		
Comox Brewing Company, Ltd. (Incorporated October 9, 1895- did not operate)	Alexander Duncan Williams, Daniel Kilpatrick & William Stuart Dickson	1895
1900s		
Pilsener Brewing Company, Ltd. (Incorporated January 18, 1909)	John Carl Christian Schnoor, Hubert Howard Shaudley, Frank Xavier Dillman, Johannes Karl Christian Schnoor & Frank Higgens	1909
" "	Frank X. Dillman, Thomas H. Richards, Wm. F. Ramsay, Daniel P. Marsh, Joseph Walker, Rinaldo Marinelli & George Stevens	1910
" "	Joseph Walker, Thomas Richards, John E. Biggs, Edward Parkin, Frank X. Dillman, James Monks & Richard Col. Jr.	1911
" "	Charles Doering, John Williams, Henry Reifle, Edmund Montagu Yarwood & the B.C. Breweries Ltd.	1912
Pilsener Brewing Company, Limited - Re-named - Island Brewing Company, Limited	Directors Unknown	1913-1917

(Name change granted on August 22, 1913 - apparently never used)

Sources: Newspapers; British Columbia Directories; Real Estate Assessment Rolls; Companies Branch Records; Labatt's Collection; Books and Articles; Interviews; Private Collections.

APPENDIX B

Malt Liquor Production - British Columbia, 1874-1890*
(Thousands of Gallons)

YEAR ENDED JUNE 30	GALLONS
1874	109,376
1875	134,307
1876	140,532
1877	135,542
1878	132,886
1879	124,492
1880	130,466
1881	140,616
1882	150,445
1883	187,220
1884	230,422
1885	261,934
1886	292,882
1887	313,738
1888	383,813
1889	467,195
1890	510,047

* As reported at the Victoria, B.C., Revenue Division, which, at the time, included the entire province.

Source: Canada, Department of Inland Revenue, "Annual Reports", Sessional Papers, 1875-1891

APPENDIX C

Malt Liquor Production Totals Vancouver Island and the British Columbia Mainland, 1891-1917* (Thousands of Gallons)

VANCOUVER ISLAND

YEAR ENDED JUNE 30	GALLONS
1891	391,609
1892	434,373
1893	506,860
1894	450,692
1895	442,666
1896	502,550
1897	469,468
1898	501,798
1899	519,407
1900	514,475
1901	563,571
1902	585,544
1903	546,270
1904	499,626
1905	432,572
1906	495,278

YEAR ENDED MARCH 31	
1907	371,408
1908	633,223
1909	732,858
1910	891,749
1911	1,053,572
1912	1,327,008
1913	1,484,777
1914	1,342,669
1915	1,123,959
1916	954,982
1917	852,939

MAINLAND

YEAR ENDED JUNE 30	GALLONS
1891	185,755
1892	195,280
1893	228,781
1894	228,485
1895	237,870
1896	272,791
1897	394,284
1898	620,074
1899	889,353
1900	989,711
1901	875,921
1902	901,996
1903	868,043
1904	1,019,247
1905	1,186,628
1906	1,156,892

YEAR ENDED MARCH 31	
1907	915,525
1908	1,586,035
1909	1,402,660
1910	1,857,550
1911	2,361,715
1912	3,064,336
1913	3,581,937
1914	3,690,700
1915	3,152,118
1916	2,128,649
1917	2,460,719

* As reported at the Victoria and Vancouver, B.C. Revenue Divisions.

Source: Canada, Department of Inland Revenue, "Annual Reports", Sessional Papers, 1892-1918

APPENDIX D

Malt Liquor Production Totals - British Columbia, 1891-1917*
(Thousands of Gallons)

YEAR ENDED JUNE 30	GALLONS
1891	577,364
1892	629,653
1893	735,641
1894	679,177
1895	680,536
1896	775,341
1897	863,752
1898	1,121,872
1899	1,408,760
1900	1,504,186
1901	1,439,492
1902	1,487,540
1903	1,414,313
1904	1,518,873
1905	1,619,200
1906	1,652,170
YEAR ENDED MARCH 31	
1907	1,286,933
1908	2,219,258
1909	2,135,518
1910	2,749,299
1911	3,415,287
1912	4,391,344
1913	5,066,714
1914	5,033,369
1915	4,276,077
1916	3,083,631
1917	3,313,658
1918	2,517,685**

* Combination of production totals as reported at Victoria, B.C. and Vancouver, B.C., Revenue Divisions.

** The individual production figures of the province's two revenue divisions, were not recorded in 1918.

Source: Canada, Department of Inland Revenue, "Annual Reports", Sessional Papers, 1892-1918

APPENDIX E

Malt Liquor Production - Canada, 1870-1917
(Thousands of Barrels) *

YEAR	BARRELS	YEAR	BARRELS
1870	291,622	1894	731,985
1871	338,284	1895	705,152
1872	382,293	1896	720,588
1873	442,421	1897	715,530
1874	430,861	1898	794,869
1875	463,369	1899	844,075
1876	372,767	1900	932,367
1877	364,610	1901	1,004,330
1878	343,123	1902	1,104,951
1879	353,928	1903	1,030,206
1880	368,048	1904	1,093,439
1881	397,247	1905	1,213,203
1882	481,479	1906	1,330,026
1883	510,298	1907	1,552,015
1884	523,948	1908	1,492,718
1885	482,870	1909	1,542,328
1886	531,291	1910	1,670,098
1887	591,452	1911	1,900,746
1888	637,760	1912	2,092,576
1889	654,534	1913	2,242,434
1890	687,845	1914	1,920,943
1891	722,772	1915	1,584,123
1892	677,849	1916	1,397,987
1893	687,015	1917	1,148,702

* A barrel contains 25 Imperial Gallons, at 160 fluid ounces per gallon; prior to 1876, the measurement "wine gallon" was used, set at 128 fluid ounces per gallon.

Source: Brewers Association of Canada. Brewing in Canada. Ottawa: Publ. Brewers Association of Canada, 1965, Appendix I.

APPENDIX F

Malt Liquor Imports - British Columbia, 1872-1900
(Thousands of Gallons - "Entered for Home Consumption")

YEAR ENDED JUNE 30	QUANTITY
1872	4,435
1873	27,871
1874	25,402
1875	28,131
1876	33,884
1877	8,889
1878	25,099
1879	29,835
1880	16,098
1881	22,730
1882	17,913
1883	27,516
1884	39,069
1885	34,809
1886	33,340
1887	46,551
1888	44,025
1889	54,766
1890	85,889
1891	122,945
1892	179,831
1893	62,783
1894	57,818
1895	44,347
1896	94,885
1897	133,765
1898	124,192
1899	119,668
1900	121,527

Source: Canada, Department of Customs, Annual Tables of Trade and Navigation", Sessional Papers, 1873-1901

APPENDIX G

Incorporated Brewing Companies - Vancouver Island, 1890 - 1914

Company Name	Authorized Capital	Date of Incorporation (As Per Memorandum of Association)
	Companies Act of 1878	
The British Columbia Brewing Co. Ltd., Liability	$ 150,000.00	June 25, 1890 (Did Not Operate)
	Companies Act of 1890 (All Limited Liability)	
The Nanaimo Brewing Co. Ltd.,	$ 75,000.00	September 23, 1890
The Union Brewing Co. Ltd.,	$ 50,000.00	January 22, 1891
The Phoenix Brewery Co. Ltd.,	$ 150,000.00	December 7, 1891
The Victoria Brewing & Ice Co. Ltd.,	$ 200,000.00	December 30, 1891
The Victoria-Phoenix Brewing Co. Ltd.,	$ 300,000.00	May 4, 1893
The Comox Brewery Co. Ltd.,	$ 50,000.00	October 9, 1895 (Did Not Operate)
The Milwaukee Brewing Co. Ltd.,	$ 20,000.00	March 30, 1897

Company Name	Authorized Capital	Date of Incorporation (As Per Memorandum of Association)
Companies Act of 1897		
The Silver Spring Brewery, Co. Ltd.	$ 20,000.00	August 13, 1902
The Silver Spring Brewery, Co. Ltd.	$ 25,000.00	May 18, 1908
The Pilsener Brewing, Co. Ltd.	$ 15,000.00	January 18, 1909
The Victoria Phoenix Brewing Co. Ltd.	$ 300,000.00	June 17, 1910
Companies Act of 1910		
The Island Brewing, Co. Ltd.	$ Unknown	June 16, 1913 (Re-incorporated Name of Pilsener Brewing Company Ltd. - its final status is unclear)
The Esquimalt Brewing Co. Ltd.	$ 35,000.00	August 3, 1914

Sources: British Columbia, Attorney General and Registrar General, "Incorporated, Licensed and Registered Companies", Company Registration and Annual Reports. British Columbia, Legislature, British Columbia Gazette, 1890-1917.

APPENDIX H

PRIVATE BREWERIES - PROPRIETORS *

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Anderson, Thomas	Empire Brewery	1891-1892	---	---
Barker, Ernest	Excelsior Brewery	1895-1896	England	Partner-Red Cross Brewery (Vancouver)
Barnard, Leo	Lansdowne Brewery	1891-1892	---	---
Barry, Alfred Napier	E.& N. Brewery	1890-1893	Ireland	---
Bennett, John	City Brewery Colonial Brewery	1893-1894 1894	---	Commission Agent; Contractor
Bland, James	Half-way House Brewery	1861-1875	---	Saloon Keeper
Borthwick, Ralph	Colonial Brewery	1882-1883	England	Iron Moulder, (prop. Albion Iron Works); Saloon Owner
Bunster, Arthur	Colonial Brewery	1859-1882	Ireland	Maltster; Miller; Farmer; Real Estate Agent/Speculator; Liquor Merchant; Politician
Breece, Thomas	Tiger Brewery	1884-1885	---	---
Butler, Thomas W.	Millstream Brewery	1866-1867	England	Attorney

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Carter, Robert	Vancouver Brewery	1883-1888	Canada (Ontario)	Provincial Tax Collector
Carter, Thomas Watson	Vancouver Brewery	1883-1894	Canada (Ontario)	Saloon Keeper; Farmer; Agent for Enterprise Lager Beer Brewery San Francisco; Manager-San Juan Fishing Co.
Cawthorn, John Lee	Lansdowne Brewery	1889-1891	England	---
Davis, Jacob	Lion Brewery	1884-1885	---	---
Deacon, Joseph	Pacific Brewery	1884-1885	---	---
Doering, Charles	Excelsior Brewery	1895-1896	Germany	Partner-Alexandrea Brewery Vancouver, B.C.
Elliott, Alfred Thomas	Lion Brewery	1862-1867	England	Stock & Produce Merchant; Liquor Merchant; Liquor Manufacturing Supplier; Speculator; Hardware; Maltster
Erb, Ludwig Emil	Victoria Brewery	1870-1891	Germany	Maltster; Hotel Owner
Fairall, Charles	Fairall Bros. Brewery & Soda Water Works	1897-1908	Canada (Ontario)	Soda Water Manufacturer
Fairall, Henry	Fairall Bros. Brewery & Soda Water Works	1897-1908	England	Soda Water Manufacturer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Fairall, Henry Smith	E.& N. Brewery Fairall's Brewery Fairall Bros. Brewery & Soda Water	1888-1894 1895-1897 1897-1902	England	Soda Water Manufacturer
Fairall, James	Esquimalt Brewing Co.	1914	England	Brewery Engineer; Contractor
Fairall, William	Fairall Bros. Brewery & Soda Water Works	1897-1908	England	---
Ferris, Wm. Douglas Jr.	Vancouver Brewery	1888-1890	Canada	---
Frank, August	Lion Brewery	1885-1889	Germany	---
Galbraith, John	Nanaimo Brewery	1874-1877	---	---
Goetz, Martin	Bavaria Brewery	1863-1865	---	---
Gowen, Charles	Victoria Brewery Phoenix Brewery	1860-1866 1868-1891	England	Distiller; Maltster; Saloon Keeper and Miner; Politician
Gowen, Charles Napier	Phoenix Brewery Lion Brewery	1887-1891 1901-1903	U.S.A.	Entrepreneur
Gowen, Frederick August	Phoenix Brewery	1887-1891	Canada (B.C.)	Clothing Business
Gowen, George Nelson	Phoenix Brewery	1887-1891	Canada (B.C.)	Feed Store Business

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Gutman, Jacob	Lion Brewery	1885-1888	---	Merchant
Hagan, William John	Esquimalt Brewing Co.	1914	---	Lumberman
Hasenfratz, August	Lansdowne Brewery	1891-1917	Switzerland	---
Hasenfratz, Jacob	City Brewery	1887-1893	Switzerland	---
Hermann, ?	Bavaria Brewery	1889	---	---
Himmen, John	Bavaria Brewery Victoria Brewery	1865-1868 1866-1870	---	---
Hoefle, Max	Red Lion Brewery	1889-1891	Germany	---
Horth, Charles William	Lansdowne Brewery	1887	England	Livery & Express Business; Hotel Owner
Hunt, Joseph	City Brewery	1886-1887	---	---
James, John W.	Red Lion Brewery	1886-1887	---	---
Keast, Arthur	Lion Brewery Millstream Brewery	1871-1883 1875	England	Accountant; Mining Speculator
Keddy, William	Nanaimo Brewery	1879-1882	Canada (Ontario)	Butcher; Teamster; Stable & Tack Shop
Kurth, Hermann	Kurth's Brewery	1897	Germany	Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Laumeister, Frank W.	Victoria Brewery	1860-1866	Germany	Distiller; Frieghting Business
Lavery, Thomas	Lion Brewery	1862	England	Saloon Keeper
Lawson, John	City Brewery Bavaria Brewery	1887-1893 1893	Scotland	---
Leahy, John	Colonial Brewery	1882-1897	Ireland	Maltster
Loerz, Jacob	Bavaria Brewery Victoria Brewery	1865-1868 1866-1870	Germany	---
Loewen, Joseph John	Victoria Brewery	1870-1891	Germany	Prop. Victoria Gardens; Hotel Owner; Shingle Maker; Distiller; Furniture Manufacturer; Maltster; Saloon Keeper
Lunblad, J.W.	Bavaria Brewery	1872-1873	---	---
Madden, Daniel	Bavaria Brewery	1873	---	---
Mahrer, John	Nanaimo Brewery	1879-1890	Austria	Baker; Owner-Opera House; Hotel Owner; Soda Water Mfgr.; Wholesale Wholesale Liquor Merchant; Soap Maker; Restaurateur
Marstrand, Otto	Excelsior Brewery	1895-1896	Danish	Partner, Alexandria Brewery-Vancouver
Marwick, John	Red Lion Brewery	1887-1891	Scotland	Stables; Express Service; Butcher

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Moore, Hugh	Lion Brewery	1864-1867	---	---
Morrisey, Michael	Excelsior Brewery	1896-1897	England	Farmer
Nightingale, Richard	Millstream Brewery	1865-1867	England	Contractor; Hotel Owner
O'Brien, Stephen	Excelsior Brewery	1894-1896	U.S.A.	Saloon Keeper; Real Estate Investor
Ochsner, Christian	Victoria Brewery	1860	---	---
Pagden, Frank	Millstream Brewery	1987	---	Auctioneer
Peters, Peter Henning	Lion Brewery Empire Brewery	1883-1885 1885-1886	Germany	---
Peters, Alvina	Empire Brewery	1886-1887	---	---
Peterson, ?	Bavaria Brewery	1872	---	---
Preece, Thomas S.	Red Lion Brewery	1886-1887	---	Contractor
Price, John Rees	Millstream Brewery	1864-1866	Wales	Hotel Owner; Miner
Price, Thomas Rees	Millstream Brewery	1864-1865	Wales	Hotel Owner; Miner
Raywood, George	Vancouver Brewery	1883	---	Saloon Keeper
Rosewall, Henry	Lansdowne Brewery	1885-1889	England	Miner; Farmer (Produce & Dairy)
Siebenbaum Heinrich	Lion Brewery	1883-1884	---	Saloon Keeper

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Smith, Henry Pemble	Nanaimo Brewery	1874-1879	Canada (Manitoba)	---
Smith, John	Bavaria Brewery	1873-1874	---	---
Steinberger, William	Victoria Brewery	1858-1860	Germany	Distiller; Farmer; Miner
Stichnoth, William	Bavaria Brewery	1889-1892	Germany	---
Stuart, George Isaac	Lion Brewery Millstream Brewery	1862-1879 1875	England	Maltster; Liquor Merchant; Hardware
Tate, Frederick James	Silver Spring Brewery	1902	Canada (Ontario)	---
Tate, Reginald H.	Silver Spring Brewery	1902	Canada (Ontario)	---
Tate, Robert	Silver Spring Brewery	1902	Canada (Ontario)	---
Tolmie, William Fraser Jr.	Vancouver Brewery	1891-1892	U.S.A.	---
Varrelmann, G.H.L.	Excelsior	1894	Germany	---
Vogel, John V.	Bavaria Brewery Victoria Brewery	1866-1868 1866-1870	---	Baker
Wagner, John	Bavaria Brewery	1874-1880	Germany	---
Walther, Henry	Bavaria Brewery	1874-1887	Germany	---

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OTHER OCCUPATIONS
Weigle, Peter	Empire Brewery	1891-1917	Germany	---
Welch, Alfred James	James Bay Brewery	1862-1866	England	Consulting Physician (no credentials); Auctioneer; Real Estate Agent and Developer; Saloon Keeper
Williams, J.	Tiger Brewery	1885-1886	---	---
Williams, John	Excelsior Brewery	1895-1896	England	Partner-Red Cross Brewery-Vancouver
Zoelle, Karl (Charles)	Bavaria Brewery	1887-1889	Germany	---

* There is some evidence to suggest that several breweries were rented by their proprietors to other brewers for short periods of time. The following appear to fall into this category:

Chick, Henry	Phoenix Brewery	1871
Cooper, Perkins & Co.	James Bay Brewery	1864
Donohue, Andrew	Colonial Brewery	1883
Howell, H.H. & Howell, Thomas F.G.	Lion Brewery	1873

Sources: Newspapers; 1881 and 1891 Dominion Census; British Columbia Voters Lists, 1874-1899; Companies Branch Records; British Columbia Gazette; British Columbia Directories; Books and Articles; Private Collections.

APPENDIX I

INCORPORATED BREWING COMPANIES - DIRECTORS

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Adams, David H.	Union Brewing Co. Ltd.	1892	Wales	Hotel Owner
Angus, Forrest	Victoria-Phoenix Brewing Co. Ltd.	1901-1908	Scotland	Entrepreneur
Baird, Samuel Arthur	Esquimalt Brewing Co. Ltd.	1914	—	Stock Broker
Barnard, Frank Stillman	Victoria-Phoenix Brewing Co. Ltd.	1893 1904-1907 1909	Canada (Ontario)	Capitalist; President-Victoria Transfer Co.
Barnard, George H.	Victoria-Phoenix Brewing Co. Ltd.	1898-1903	—	Lawyer
Bechtel, Andrew	Victoria-Phoenix Brewing Co. Ltd.	1898-1900	U.S.A.	Hotel Owner
Biggs, John	Pilsner Brewing Co. Ltd.	1911	—	Miner
Bray, Marshall Bidwell	Union Brewing Co. Ltd.	1898 1906-1909	Canada (Ontario)	Provincial Government Agent

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Bridgman, Joseph Charles	Victoria-Phoenix Brewing Co. Ltd.	1904 1910	___	Clerk Accountant
Brown, James M.	Union Brewing Co. Ltd.	1892	England	Tailor
Bury, Charles A.	Silver Spring Brewery Ltd.	1902 1905-1906	___	Barrister
Chandler, W.S.	Union Brewing Co. Ltd.	1893	U.S.A.	Mgr. East Wellington Coal Mines
Coe, Richard Jr.	Pilsener Brewing Co. Ltd.	1911	___	Miner
Coughlin, John	Phoenix Brewing Co. Ltd.	1891-1892	Ireland	Brick Maker; Director-Pacific Asphalt Co.
Craig, William G.	Union Brewing Co. Ltd.	1910	---	Miner
Crombie, Philip	Silver Spring Brewery Ltd.	1908	---	Saloon Owner
Cumberbatch, Lavington	Silver Spring Brewery Ltd.	1912-1918	---	Accountant; Office Manager
Day, John E.	Silver Spring Brewery Ltd.	1908-?	Gibralter	Hotel Owner

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Delaney, W.	Union Brewing Co. Ltd.	1892	---	Blacksmith
Dickson, John Ferguson	Victoria-Phoenix Brewing Co. Ltd.	1898-1918	---	Accountant
Dillman, Frank Xavier	Pilsener Brewing Co. Ltd.	1909-1911	Germany	Brewer
Doering, Charles	Pilsener Brewing Co. Ltd. Union Brewing Co. Ltd.	1912-?	Germany	Brewer
Elrick, James	Silver Spring Brewery Co. Ltd.	1917?	Scotland	---
Erb, Ludwig Emil	Victoria Brewing and Ice Co. Ltd.	1891-1893	Germany	Brewer
	Victoria-Phoenix Brewing Co. Ltd.	1894-1897		Brewer
Erb, Emil August	Victoria-Phoenix Brewing Co. Ltd.	1906-1917 (B.C.)	Canada	Brewmaster and Managing Director
Evans, Robert	Union Brewing Co. Ltd.	1906-1909	Wales	Hotel Keeper; Gentleman
Fairall, James	Esquimalt Brewing Co. Ltd.	1914-1915	England	Contractor; Brewery Engineer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Fraser, Donald	Silver Spring Brewery Ltd.	1905	---	---
Goepel, William John	Nanaimo Brewing Co. Ltd.	1890	England	Real Estate Agent
Gowen, Charles Napier	Phoenix Brewing Co. Ltd. Victoria-Phoenix Brewing Co. Ltd.	1891-1893 1893 1898	U.S.A.	Brewer; Gentleman
Hagan, Theresa	Esquimalt Brewing Co. Ltd.	1914	---	Housewife
Hagan, William John	Esquimalt Brewing Co. Ltd.	1914	---	Lumberman
Hall, Dr. Francis (Frank) Walter	Silver Spring Brewery Ltd. (1908)	1908	Ontario	Medical Doctor
Hardy, Mark Long	Esquimalt Brewing Co. Ltd.	1914	---	Clerk
Harris, Dennis R.	Victoria-Phoenix Brewing Co. Ltd.	1898	---	Real Estate Agent
Harvey, Alfred	Esquimalt Brewing Co. Ltd.	1914 1916	---	Merchant
Hemrich, Andrew	Victoria Brewing and Ice Co. Ltd.	1891	---	Owner of Bay View Brewery-Seattle

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Higgins, Frank	Pilsner Brewing Co. Ltd.	1909	---	Barrister
Hoefle, Max	Union Brewing Co. Ltd.	1891 (Interim Director)	Germany	Brewer
Hough, John	Union Brewing Co. Ltd.	1892 1893	---	Hotel Keeper
Jones, Arthur William	Victoria-Phoenix Brewing Co. Ltd.	1909-1910	Scotland	Real Estate Agent
Johnstone, Angus	Nanaimo Brewing Co. Ltd.	1890	Scotland	Grocer (Wholesale and Retail); Building Supplies; Fishing
Ker, David Russell	Victoria-Phoenix Brewing Co. Ltd.	1898-1902 1903 1904 1905-1909	Canada (B.C.)	Miller
Ker, R.H.	Victoria-Phoenix Brewing Co. Ltd.	1904	---	---
Loewen, Joseph John	Victoria Brewing and Ice Co. Ltd. Victoria-Phoenix Brewing Co. Ltd.	1891 1893 1898 1899-1903	Germany	Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
McEnnery, J.J.	Silver Spring Brewery Ltd.	1905	---	Farmer
Marinielli, Rinaldo	Pilsner Brewing Co. Ltd.	1910	Italy	Miner
Marsh, Daniel P.	Pilsener Brewing Co. Ltd.	1910	---	Miner
Martin, Charles	Union Brewing Co. Ltd.	1891 1892-1893	Scotland	Hotel Keeper
Marwick, John	Union Brewing Co. Ltd.	1891 (Interim Director)	Scotland	Brewer; Farmer; Butcher; Miner
Maynard, Harry	Silver Spring Brewery Ltd.	1908-1917	England	Brewer; Hotel Keeper
McKeown, William James	Esquimalt Brewing Co. Ltd.	1914	---	Stockbroker
McLaren, William	Pilsner Brewing Co. Ltd.	1913	---	---
Monks, James	Pilsener Brewing Co. Ltd.	1911	---	Miner
Musgrave, John	Silver Spring Brewery Ltd.	1902 1905-1908	---	Real Estate Agent

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Musgrave, Lady J.S.	Silver Spring Brewery Ltd.	1902	---	---
Musgrave, Sir. R.J.	Silver Spring Brewery Ltd.	1902 1905-1906	---	Bart
Mutter, Alexander Allan	Esquimalt Brewing Co. Ltd.	1915-1916	Scotland	Farmer
Mutter, George	Esquimalt Brewing Co. Ltd.	1915-1916	Scotland	Farmer; Storekeeper
Mutter, James Islay	Esquimalt Brewing Co. Ltd.	1915-1916	Scotland	Financial Agent; Insurance Salesman
Newton, Horace Edward	Victoria-Phoenix Brewing Co. Ltd.	1905-1910	---	Gentleman; Financial Agent
Norris, William E.	Union Brewing Co. Ltd.	1891-1896	---	Accountant
Parkin, Edward	Pilsener Brewing Co. Ltd.	1911	---	Miner
Pawson, John	Union Brewing Co. Ltd.	1898	England	Hotel/Saloon Keeper
Peck, Thomas Eric	Union Brewing Co. Ltd.	1891	England	Hotel Keeper

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Perry, John	Union Brewing Co. Ltd.	1892-1893 1896-1897	Wales	Hotel Keeper; Land Owner
Peters, Thomas	Union Brewing Co. Ltd.	1891	---	Hotel Keeper
Quennell, Edward	Nanaimo Brewing Co. Ltd. Union Brewing Co. Ltd.	1890 1893 1896-1898 1906-1910	England	Butcher; Produce Business; Farmer
Ramsay, William Frank	Pilsener Brewing Co. Ltd.	1910 1911	---	Accountant
Reifel, Conrad	Union Brewing Co. Ltd.	1910-1917	Germany	Brewmaster; Managing Director
Reifel, Henry	Union Brewing Co. Ltd.	1896-1910	Germany	Managing Director
Richards, Thomas (Sr.)	Pilsener Brewing Co. Ltd.	1910-1911	---	Miner
Ross, E.P.	Union Brewing Co. Ltd.	1913	---	---
Ross, J.C.	Pilsener Brewing Co. Ltd.	1912-1913	---	---

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Rudd, John M.	Union Brewing Co. Ltd.	1906-1909	England	Insurance Agent; Hotel Keeper
Sayward, William Parsons	Phoenix Brewing Co. Ltd.	1891-1893	U.S.A.	Sawmill Operator
	Victoria-Phoenix Brewing Co. Ltd.	1893		
Schnoor, John Carl Christian	Pilsener Brewing Co. Ltd.	1909	---	Brewery Manager; Cooper; Box Manufacturer
Schoor, Johannes Karl Christian	Pilsener Brewing Co. Ltd.	1909	---	Carpenter
Shaudley, Karl	Pilsener Brewing Co. Ltd.	1909	---	Barrister
Sherborne, Frederick Thomas	Phoenix Brewing Co. Ltd.	1891-1892	England	Building Contractor
Simpson, H.A.	Union Brewing Co. Ltd.	1898	---	---
Sinclair, William	Union Brewing Co. Ltd.	1906-1910	---	Teamster
Smith, Frederick Lewis G.	Esquimalt Brewing Co. Ltd.	1914-1915	---	Drayman
Staples, Alexander William	Esquimalt Brewing Co. Ltd.	1914	---	Clerk

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Stevens, George	Pilsner Brewing Co. Ltd.	1910	---	Farmer
Stevenson, William G.	Phoenix Brewing Co. Ltd.	1891-1892	---	---
Stuart, Roland S.	Silver Spring Brewery Ltd.	1905	---	Farmer
Tate, Frederick James	Silver Spring Brewery Ltd.	1902	Canada (Ontario)	Brewer
		1908-1917		Brewmaster
Tate, Robert	Silver Spring Brewery Ltd.	1903-1905	England	Brewer
Varrelman, G.H.L.	Phoenix Brewery Co. Ltd.	1892-1893	Germany	Brewer
Walker, Joseph	Pilsener Brewing Co. Ltd.	1910-1911	---	Engineer
Wall, Thomas	Union Brewing Co. Ltd.	1891	England	Hotel Keeper; Carpenter
Whitelaw, Russell	Esquimalt Brewing Co. Ltd.	1916	---	---
Whiteside, Frederick S.	Union Brewing Co. Ltd.	1900-1908	Canada (Ontario)	---

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	OCCUPATION(S)
Williams, George	Union Brewing Co. Ltd.	1910	---	Millowner
Williams, John	Pilsner Brewing Co. Ltd.	1912	England	Brewer
Williams, James	Union Brewing Co. Ltd.	1891	Australia	Hotel Keeper
Wilkinson, Geroge E.	Esquimalt Brewing Co. Ltd.	1914-1915	---	Brewers Assistant
Wilson, William	Victoria-Phoenix Brewing Co. Ltd.	1893 1898-1910	England	Clothier
Yarwood, Edmund Montagu (sic)	Union Brewing Co. Ltd. Pilsner Brewing Co. Ltd.	1912 1912	Canada (Ontario)	---
Young, Willard	Union Brewing Co. Ltd.	1896-1898	U.S.A.	Manager, Hamilton Powder Co.

Sources: Newspapers; 1881 and 1891 Dominion Census; British Columbia Voters Lists, 1874-1899; Companies Branch Records; British Columbia Gazette; British Columbia Directories; Books and Articles; Private Collections.

APPENDIX J

PRIVATE AND INCORPORATED BREWING COMPANIES - EMPLOYEES

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Allan, Joseph	Esquimalt Brewing Co. Ltd.	1915	---	Labourer
Anderson, Harry	Victoria-Phoenix Brewing Co. Ltd.	1911	---	Bookkeeper
Anderson, Joseph	Victoria-Phoenix Brewing Co. Ltd.	1915-1917	---	Cellarman
Anderson, P.	Pilsener Brewing Co. Ltd.	1910-1911	---	---
Anderson, Thomas	Bavaria Brewery Nanaimo Brewing Co. Ltd.	1889 1890-1891	England	Bottler; Foreman of Bottling Dept.
Andrew, John	Victoria Brewery	1874	---	Labourer
Anscomb, Herbert	Victoria-Phoenix Brewing Co. Ltd.	1915-1917	England	Accountant
Aris, James E.	Victoria-Phoenix Brewing Co. Ltd.	1915-1917	---	---
Avons, William	Lion Brewery	1874-1876	---	Labourer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Baker, Charles	---	1891	England	Brewers Assistant
Bauman, Frederick	Silver Spring Brewery Ltd.	---	---	---
Beddard, ?	James Bay Brewery	1865	---	Manager
Bertz, George	Victoria Brewery	1882-1883	---	Brewer
Bostock, Alfred	E. & N. Brewery	1893	---	Cellarman
Brachat, Adolph	Silver Spring Brewery Ltd.	1908-1917	Germany	Brewmaster
Brain, George A.	Colonial Brewery	1893	---	Brewer
Brand, James	Lion Brewery	1878-1879	---	Labourer
Brown, Arthur George	---	1890-1893	---	Brewer
Brydon, P.	Colonial Brewery	1868	---	Miller; Maltster
Burrell, James	Colonial Brewery	1868-1869	---	Brewers Assistant
Cantieni, George	---	1887	---	Brewer
Clements, D.	Lion Brewery Vancouver Brewery	1887-1888 1889	---	Labourer; Brewer
Clovis, Peter	Empire Brewery (Nan)	1898	---	Brewer
Costello, M.	Colonial Brewery	1884-1885	Ireland	Maltster

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Crockford, William	Colonial Brewery Millstream Brewery Nanaimo Brewery	1869-1875 1875 1881	England --- ---	Brewer; Manager
Crusoe, Edward	Victoria Brewery	1891	Germany	Brewer
Cullen, Alfred A.	Victoria-Phoenix Brewing Co. Ltd.	1910-1914	---	Cellarman
Davis, George	Nanaimo Brewery ---	1882-1889 1890-1898	--- ""	Brewer ""
DeBac, Oetal	Colonial Brewery	1890-1893	---	Brewer
Delahanty, John J.	Colonial Brewery	1891-1897	Ireland	Brewer & Maltster
Denoni, Joseph	Silver Spring Brewery Ltd.	1914-1917	Italy	Brewer; Cellarman
Denoni, Lewis	Silver Spring Brewery Ltd.	1915-1917	Italy	Bottler
Deporten, John J.	Colonial Brewery	1890-1891	---	Brewer
Douglas, George	Silver Spring Brewery Ltd.	1908-1914	---	Brewmaster
Downey, James	Colonial Brewery	1889-1893	Canada (B.C.)	Brewer
Dunaway, Otto	Victoria-Phoenix Brewing Co. Ltd.	1915-1917	U.S.A.	Engineer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Dunbrack, Frank Allen	Victoria-Phoenix Brewing Co. Ltd.	1914	---	Agent
Eccles, James	Empire Brewery (Nan)	1894	---	Asst. Brewer
Elrick, John	Silver Spring Brewery Ltd.	1915-1917	---	Driver; Chauffeur
Erb, Emil August	Victoria-Phoenix Brewing Co. Ltd.	1893-1903	Canada	Apprentice; Brewers Assistant
		1903-1906		Brewmaster
Fahrenbacker, Victor	Silver Spring Brewery Ltd.	1914-1917	---	Brewer
Fairall, Charles	Fairall's Brewery	1895-1897	Canada	Brewers Assistant
Fairall, Henry	E. & N. Brewery	1888-1894	England	Brewing Hand
	Excelsior Brewery	1894-1895		Labourer
	Fairall's Brewery	1895-1897		Brewer
Fairall, James	E. & N. Brewery	1888-1894	England	Brewing Hand
	Excelsior Brewery	1894		Brewer
Fairall, William	Excelsior Brewery	1894-1895	England	Engineer
	Fairall's Brewery	1895-1897		Manager-Aerated Water
Fern, Charles	Colonial Brewery	1893-1897	---	Driver
Ferris, Wm. Douglas Jr.	---	1893-1898	---	Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Frank, August	Bavaria Brewery	1891	Germany	Brewer
Frazer, George	Victoria-Phoenix Brewing Co. Ltd.	1914	---	Bottler
Fuglepe, W.	Victoria Brewery	1871	---	---
Gasson, F.	---	1890-1891	---	Cellarman
Gehrung, Daniel	Nanaimo Brewery	1887	---	Brewer
Gehrung, Paul	Bavaria Brewery	1884-1885	---	Brewer
Gibson, James	Colonial Brewery	1868-1897	Scotland	Foreman
Glassey, Samuel	Lion Brewery	1880	---	---
Glover, A.D.	Colonial Brewery	1868	---	---
Glover, George	Vancouver Brewery	1889	---	---
Goerz, L.R.	Bavaria Brewery	1887	---	Labourer
Goldenberg, Bernard	Phoenix Brewing Co. Ltd.	1892-1893	---	Labourer
Graham, Frank E.	Lion Brewery	1879-1880	---	---
Graham, Victor	Lion Brewery	1879-1880	---	---
Grathwohl, Fritz	Victoria-Phoenix Brewing Co. Ltd.	1893-1903	---	Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Harper, Ernest	E.& N. Brewery	1893	---	Cellarman
Harper, James	Vancouver Brewery	1891	Italy	Brewer
Harpor, James	---	1891	Italy	Asst. Brewer
Harrison, G.B.	Union Brewing Co. Ltd.	1898-1901	---	Agent
Hasenfratz, August	Victoria Brewery City Brewery	1887-1888 1889-1891	Switzerland	Labourer "
Hasenfratz, Henry	City Brewery	1890-1892	Switzerland	Labourer
Hasenfratz, Jacob	Victoria Brewery	1884-1887	Switzerland	Brewer
Hein, Frederick	Lion Brewery	1877-1878	---	---
Hinston, H.W.	Bavaria Brewery	1881	Denmark	Brewer's Assistant
Hollman, Fred	Excelsior Brewery Fairall Bros. Brewery	1894-1897 1897-1898	---	Brewer "
Holm, P.	Victoria Brewery	1887	---	Labourer
Holzer, Ernest	Victoria Brewery	1884-1885	---	Brewer
Homan, Fred	Bavaria Brewery Phoenix Brewery	1889 1890-1891	Sweden	Labourer
Hooper, James	Vancouver Brewery	1890-1891	---	Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Hopf, Andrew	Bavaria Brewery	1891	Austria	Brewer
Horn, Jack	Victoria-Phoenix Brewing Co. Ltd.	1914-1917	---	Bookkeeper
Housman, ?	Lion Brewery	1867	---	---
Jeffray, R.	Lion Brewery	1867	---	---
Jeffray, W.	Lion Brewery	1867	---	---
Jones, David	Union Brewing Co. Ltd.	1897	---	Agent; Comox Valley
Jooss, William	---	1887	---	Brewer
Keast, Arthur	Lion Brewery	1867-1871	England	Accountant
Kenny, John	Colonial Brewery	1882-1885	---	Brewer
Kenny, Peter	Victoria-Phoenix Brewing Co. Ltd.	1904-1914	---	Driver
Klaucke, Henry	Victoria Brewery	1882-1883	---	Brewer
Knight, Henry	---	1891	England	Beer Bottler
Knights, Oliver J.	Victoria-Phoenix Brewing Co. Ltd.	1904-1914	---	Driver
Koenig, Fritz	Victoria Brewery	1890-1891	---	Assistant Brewer
Koenig, George	Victoria Brewery	1890-1891	---	Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Kruse, Edward	Victoria-Phoenix Brewing Co. Ltd.	1895	---	Cellarman
Langton, Stephen	---	1891	England	Brewer
Lavery, Thomas	James Bay Brewery	1865	England	Manager
Lawson, John	Victoria Brewery	1884-1886	Scotland	Brewer
Leahy, John	Colonial Brewery	1875-1882	Ireland	Brewer
Leahy, Robert	Colonial Brewery	1886	---	Brewer
Lind, Angus	Victoria-Phoenix Brewing Co. Ltd.	1892-1895	---	Labourer
Long, J.	Colonial Brewery	1869-1870	---	Labourer
Marocchi, John	Union Brewing Co. Ltd.	1913	Italy	Agent
Marwick, Wm. J.	Victoria-Phoenix Brewing Co. Ltd.	1916-1917	---	Apprentice
Maslen, Thomas Wm.	Lion Brewery ---	1867-1889 1890-1893	England	Brewer "
Maxwell, Alexander	Pilsener Brewing Co. Ltd.	1915-1917	---	Manager
Maynard, Harry	Victoria-Phoenix Brewing Co. Ltd.	1894-1908	England	Driver

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
McNeil, Alfred	Vancouver Brewery	1890-1891	---	Teamster
McRae, J.	Union Brewing Co. Ltd.	1912	---	Engineer
Mitten, Samuel	Colonial Brewery	1884-1889	---	Brewer
Menasher, G.	Victoria Brewery	1884-1885	---	Cooper
Morgan, Arthur	Lansdowne Brewery	1891	Canada (Ontario)	Driver
Morgan, Arthur	Victoria-Phoenix Brewing Co. Ltd.	1914-1917	---	Cellarman
Morris, Charles	Victoria-Phoenix Brewing Co. Ltd.	1914-1917	---	Bottler
Muirhead, A.	Vancouver Brewery	1889	---	Brewer
Myles, Walter T.	Empire Brewery (Nan)	1892	Scotland	Driver; Salesman
Nebel, Joseph E.	Victoria-Phoenix Brewing Co. Ltd.	1911-1914	---	Assistant Brewer
Nelson, Axil	Victoria Brewery	1890-1891	---	Stableman
Nelson, Nels	Victoria Brewery Nanaimo Brewery	1881-1885 1886	Denmark	Labourer "
Nilson, Andrew	Vancouver Brewery	1891	Sweden	Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
North, Joseph	Colonial Brewery	1895	---	---
Nuchey, George	---	1891	Italy	Labourer
Oesterle, John	Phoenix Brewing Co. Ltd.	1892-1893	---	Brewer
Ogilvie, Wilfred	Victoria-Phoenix Brewing Co. Ltd.	1911	---	Assistant Bookkeeper
Palmer, Benjamin	Union Brewing Co. Ltd.	---	---	Agent
Perkins, Charles	---	1882-1883	---	Brewer
Perry, Raffaile	Vancouver Brewery	1891	Italy	Labourer
Plan, Edward	Phoenix Brewing Co. Ltd.	1892-1893	---	Bottler
Postel, George	Phoenix Brewery	1871	---	Brewer
Pratt, O.C.	Silver Spring Brewery Ltd.	1914	---	Brewer
Priest, Thomas	Pacific Brewery	1884-1885	---	Brewer
Ramsay, Frank	Pilsener Brewing Co. Ltd.	1911	---	Secretary; Accountant
Randall, George	Victoria Brewery	1874	---	Labourer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Randle, Albert	Union Brewing Co. Ltd.	1912	---	Engineer
Raywood, George	Colonial Brewery	1884-1885	---	Brewer; Maltster
Rechenmacher, Fred	Nanaimo Brewery	1889	---	Brewer
Reifel, Conrad	Union Brewery Co. Ltd.	1895-1910	Germany	Brewmaster
Reifel, Henry	Bavaria Brewery Union Brewing	1890-1891 1891-1892	Germany	Brewmaster "
Reihberg, John	Empire Brewery	1887	---	Labourer
Reinhard, John	Excelsior Brewery	1895	---	Brewer
Renfree, J.	Phoenix Brewery	1889	---	Brewer
Revnigue, Fritz	Lion Brewery	1887	---	Brewer
Ridehalgh, Thomas	Excelsior Brewery	1895	---	Driver
Russell, Robert	Silver Spring Brewery Ltd.	1916-1917	---	---
Schuler, Karl	Victoria Brewery	1891	Switzerland	Brewer
Schultz, Richard	Lion Brewery	1884-1885	---	Brewer
Sheriff, W.	Victoria-Phoenix Brewing Co. Ltd.	1895	---	Fireman

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Sibley, E.	Victoria-Phoenix Brewing Co. Ltd.	1915	---	Bottler
Simpson, Robert	Victoria-Phoenix Brewing Co. Ltd.	1917-1919	Scotland	Bookkeeper & Cashier
Siton, Antonio	Silver Spring Brewery Ltd.	1914	---	Brewer
Smart, J.F.	Lion Brewery	1879-1880	---	Bookkeeper
Smith, John	Lion Brewery	1867-1868	---	Brewer
Smith, Robert	Lion Brewery ---	1879-1889 1889-1893	England	Brewer "
Statemann, D.	Victoria-Phoenix Brewing Co. Ltd.	1895	---	---
Steiger, L.	Victoria-Phoenix Brewing Co. Ltd.	1895	---	Stableman
Stelling, Otto	Nanaimo Brewing Co. Ltd.	1891	Germany	Labourer
Stockand, Samuel	Lion Brewery	1879	---	---
Stoffella, Luis	---	1898	---	Brewer
Stubbens, George	Nanaimo Brewery	1881	Canada (B.C.)	Assistant Brewer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Sutter, Albert	Union Brewing Co. Ltd.	1900	---	Driver
Tate, Reginald	Silver Spring Brewery Ltd.	1908-1914	Canada (Ontario)	Driver; Salesman
Taylor, J. McGregor	Bavaria Brewery	1884-1885	---	Brewer
Thomson, Arthur	Lion Brewery	1877-1878	---	Labourer
Toelle, Charles	Phoenix Brewing Co. Ltd.	1892-1893	---	Driver
Varrelmann, G.H.L.	Phoenix Brewery	1891	Germany	Brewmaster
Vogel, A.J.	Victoria Brewery	1868-1869	---	Brewer
Vogt, Richard	Lion Brewery	1879-1880	---	---
Wagner, John	---	1880-1893	Germany	Brewer
Warren, G.	Victoria-Phoenix Brewing Co. Ltd.	1895	---	Engineer
Wass, Leonard	Victoria Brewery	1891	England	Brewer
Weiss, Max	Victoria-Phoenix Brewing Co. Ltd.	1895	---	Cellarman
Westlake, W.	Colonial Brewery	1868-1869	---	Labourer

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Wheeler, Percy	Victoria-Phoenix Brewing Co. Ltd.	1914-1917	---	Bottler; Driver
White, James	Lion Brewery	1874	---	Labourer
Williams, Edmund A.	Phoenix Brewery Bavaria Brewery	1874 1877-1878	---	Brewer "
Williams, John	Colonial Brewery	1887	---	Labourer
Williams, R.	Excelsior Brewery	1895	---	Labourer
Wilson, Jack	Phoenix Brewing Co. Ltd.	1892-1893	---	Driver
Wistenhall, John	Union Brewing Co. Ltd.	1891	Germany	Labourer
Wolf, J.	Bavaria Brewery	1889	---	---
Wolf, Peter	Victoria-Phoenix Brewing Co. Ltd.	1884-1895	Germany	Brewer & Driver
Wood, John	Lion Brewery	1871	---	Labourer
Worlock, Frederick Hammett	Victoria-Phoenix Brewing Co. Ltd.	1905-1917	---	Accountant
Youlden, John	Union Brewing Co. Ltd.	1891	---	Salesman

NAME	BREWING CO.(S)	YEAR(S)	PLACE OF BIRTH	POSITION
Zoelle, Karl (Charles)	Victoria Brewery	1884-1887	Germany	Brewer
	Vancouver Brewery	1891-1894		"
	Colonial Brewery	1894-1897		"

Sources: Newspapers; 1881 and 1891 Dominion Census; British Columbia Voters Lists, 1874-1899; Companies Branch Records; British Columbia Gazette; British Columbia Directories; Books and Articles; Private Collections

APPENDIX K

Contract Settlement
International Union of United Brewery Workers of America

Guelph, Ontario - 1907 *

(Monthly Salaries)

Ale Department

Brewer's Assistant	$ 45.00
Kettleman	38.00
Fermenting Room	40.00
Racking Cellar & Washhouse	38.00
Engineer	55.00
Fireman (12 hrs. daily)	50.00

Lager Department

Fermenting & Cellarmen	$ 40.00
Washhouse	40.00

Bottling Department

Bottle Washers & Carrier Men	$ 33.00
Labellers	35.00
Bottlers	42.00
Stablemen & Hostlers	35.00
Drivers	45.00
Coopers	45.00
Carpenters (per day)	2.25

Maltsters (Seven-days-a-week schedule)

Maltsters (two seasons)	$ 35.00
Maltsters (more than two seasons)	38.00
Kiln Men	40.00

* In his thesis, "The Art and Mystery of Brewing in Nineteenth Century Toronto" (M.A. Thesis, University of Toronto, 1978) pp. 44-45, Martin Ian Bowering shows that in a settlement reached between the Toronto local of the International Union of United Brewery Workers of America and city brewers, workers in the lager department earned more than their counterparts in the ale department. He hypothesizes that this was because lager was relatively new in Canada and fewer men were experienced in its production; hence, enhanced salaries for their skills.

Source: Canada, Department of Labour, Labour Gazette, Vol. VII (Ottawa, King's Printer, 1907) p.1131.

APPENDIX L

Contract Settlements
International Union of United Brewery Workers of America

Victoria, B.C. - January 31, 1916 (a)

Kitchener, Ontario - April 19, 1917 (b)

(Weekly Salaries)

	Victoria	Kitchener
Brewers in cellar and kettle	$ 20.00	$14.50-17.00
Wash-house men	19.00	14.00-16.00
Coopers with tools	22.00	---
Engineers, seven days	23.00	24.00-26.00
Firemen, seven days	21.00	16.50-18.00
Bottlers, machine operators and packers	18.00	13.50-15.50
All other labourers, above above 18 years	16.50	---
Beer Drivers, automobiles and operators	21.00	14.50-16.00
Beer Drivers, horses	20.00	14.50-16.00
Helpers on automobiles or beer wagons	18.00	12.50-15.00
Stablemen	20.00	---

Sources

(a) Ray Wainwright - Private Collection.

(b) Canada, Department of Labour, Labour Gazette, Vol. XVII (Ottawa, King's Printer, 1917) p.651.

APPENDIX M

VANCOUVER ISLAND HOP GROWERS

NAME	LOCATION
Breeds, R. Henry	North Saanich
Bunster, Arthur	North Saanich
Cloake, Isaac	North Saanich
Downey, David Allen	North Saanich
Downey, James Thomas	North Saanich
Downey, John Henry	North Saanich
Downey, John James	North Saanich
Elliott, Alfred Thomas *	Spring Ridge
Higgs, George	North Saanich
Horth, Charles William	North Saanich
Horth, Rufus Philip	North Saanich
John, Richard	North Saanich
Lee, Thomas	Cadboro Bay
McDonald, Donald	North Saanich
Moses, Daniel David	North Saanich
Otto, John **	North Saanich
Smith, James Staple	Fairfield
Steinberger, William *	Swan Lake
Towner, William	North Saanich
Wain, Henry	North Saanich

* Hops grown by Alfred Elliott and William Steinberger were primarily for use in their own breweries.

** John Otto was a carpenter by trade who specialized in the construction of hop kilns. Legend has it that he built the majority of these structures in North Saanich.

Sources: 1881 and 1891 Dominion Census; Voters Lists, 1874-1899, Newspapers; Ministry of Agriculture Reports, Province of British Columbia.



APPENDIX N PHOTOGRAPH 1

The Victoria-Phoenix Brewing Company Ltd.
Circa 1890s, Courtesy, British Columbia Archives
and Records Service, Catalogue No. 68480



APPENDIX N PHOTOGRAPH 2

The First Lansdowne Brewery
Circa 1895, Courtesy, Arnold Morris



APPENDIX N PHOTOGRAPH 3

The City Brewery, Circa 1890
Courtesy, Arnold Morris



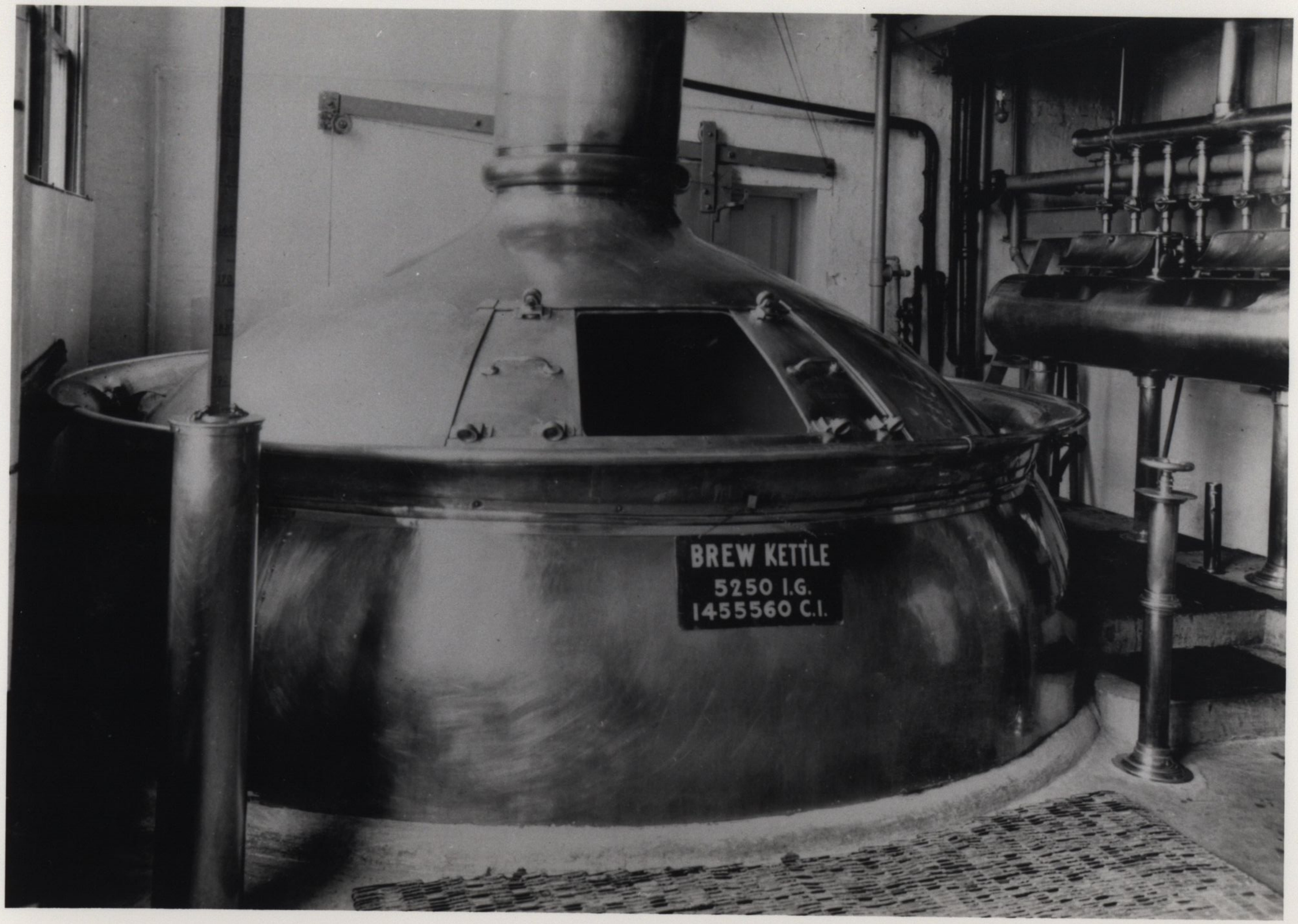
APPENDIX N PHOTOGRAPH 4

The Victoria Brewery, Circa Pre-1892
Courtesy, Walter Spershott



APPENDIX N PHOTOGRAPH 5

The Silver Spring Brewery Ltd., April 13, 1926
Courtesy, Vancouver Public Library, Catalogue. 11565



APPENDIX N PHOTOGRAPH 6

Brew Kettle in the Victoria-Phoenix Brewing Company Ltd.
Circa 1934, Courtesy, British Columbia Archives
and Records Service, Catalogue No. 97144

VITA

Surname: Evans Given Names: Gregory Mark

Place of Birth: Nanaimo, B.C. Date of Birth: 31 January 1951

Educational Institutions Attended:

University of Victoria	1969 to 1973
University of Victoria	1984 to 1991

Degrees Awarded:

B.A.	University of Victoria	1973

Honours and Awards:

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British Columbia Government Scholarship	1972
British Columbia Government Scholarship	1973

Publications:

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(Name in block letters)

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