

EXPANSION AND CONSOLIDATION IN THE BRITISH COLUMBIA SALMON PROCESSING INDUSTRY

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ABSTRACT

The industrial structure of British Columbia salmon processing is dominated by cycles of expansion and consolidation. This paper examines one of these cycles, the reasons for it, and its implications. The cycle starts with a consolidation of processors. The resulting increased industry profits encourages new firms to enter the industry and existing firms to grow. Processing capacity expands and, with more firms competing for a supply of raw fish, fishing capacity and pressure on the resource increase. Eventually excess capacity is created, losses suffered, and mergers again proposed. From 1902 to 1928 the industry went through such a cycle. In 1902 over half the processing plants were brought into one company. The next twenty-five years saw a gradual erosion of the dominance of the leading firm as new firms entered the industry and others expanded. The normal oligopolistic barriers to entry were not viable restrictions on entry into salmon processing. All canners produced an undifferentiated product primarily sold on world markets through brokers. Technological changes, while raising the initial cost of entering canning, also helped ease problems with labour shortages. Rapid adoption of many innovations was not necessary, the pace of adoption varied. Additionally, the variations in salmon runs encouraged overcapacity and the perishability of raw fish limited the concentration of processing. The absence of alternative uses for the processing plants and other inputs was a barrier to exit. Eventually over expansion resulted, losses occurred, and another series of mergers took place.

Keywords: fish processing; industrial structure; salmon; British Columbia

INTRODUCTION

The history of the British Columbia salmon canning industry is dominated by alternating periods of expansion and consolidation. A period of merger activity with an increased level of industry concentration and relatively high profits is followed by a decline in concentration due to new firms entering the industry and increased competition from existing firms. Eventually excess capacity is created, losses are suffered, and mergers are again proposed. This paper examines such a cycle between 1902 and 1928.

The 1902 Merger

One of the most significant consolidations in the British Columbia salmon canning industry took place in 1902 with the formation of the British Columbia Packers Association. Over half of the canneries operating in 1901 were brought into one company, some being closed and others expanded.¹ The result was a company that produced 43.7 percent of the British Columbia canned salmon pack in 1902.

The motivation for this merger appears to be directly related to the financial difficulties experienced by many canners after the 1901 fishing season. A large output or pack of canned salmon had been produced but a glut on export markets and quality problems made it difficult to sell. Lyons [2] states that many canners found themselves in difficulty with their bankers. Henry Doyle, the first general manager of the British Columbia Packers' Association, suggested to the banks an amalgamation of canners. The banks saw the

possibility of avoiding bankruptcies and encouraged canners to join the Association.

A somewhat different view is taken by Reid [1] in his examination of the reasons for the 1902 merger. He stresses the importance of the establishment of a monopsony with the power to control the prices of inputs such as labour and raw fish. Cost savings which may be achieved through internal economies of scale were of lesser importance. Stacey [3], however, points out that the new British Columbia Packers' Association was not successful in lowering fish prices. He observed no change in the price of fish between the peak seasons of 1901 and 1905. In summary, it appears that the financial difficulties of the canners precipitated the merger which, because of potential cost savings, was an attractive solution.ⁱⁱ

The next twenty-five years saw a gradual erosion of the dominance of the British Columbia Packers' Association and its successor companies. Their percentage of the total pack declined from 43.7 per cent in 1902 to 16.3 per cent in 1926. The extent of the market penetration by other companies, however, was not uniform. The B.C. Packers' Association maintained their dominance of sockeye canning on the Fraser River but had a much less dominant position in the canning of pinks and chums, where new entrants and smaller canners were particularly strong. At the same time the industry was shifting into northern waters from the Fraser River and shifting from a concentration on sockeye to a concentration on pink and churn. This was particularly true after 1913 as the markets for canned pink and chum salmon expanded and as the output of the Fraser River declined due to over-fishing and partial blockages of the river in 1913 and 1914. Opportunities were provided for new entrants and smaller canners were able to expand.

BARRIERS TO ENTRY

It is the hypothesis of his paper that this erosion of concentration was inevitable because there were no continuing strong barriers to entering the industry. Furthermore, the special circumstances associated with salmon canning mean that excess capacity will develop and eventually a painful period of readjustment will occur.

The most important condition required for the development and maintenance of concentration in an industry is the existence of at least one barrier to entry. The most pervasive barrier is substantial economies of scale due to such factors as the complexity of the technology necessary in the industry, the size of the machine units necessary, or the advantage of large-scale distribution systems. Other barriers to entry may be erected through government restrictions, absolute cost advantages due to control of superior production processes, and consumer preferences favouring established products. Each of the possible barriers to entry to salmon canning will be examined for its relevance and applicability in the 1903-1928 period.

These findings have implications for the study of open access resources. The prediction for the typical open access or common property resource is that it will be exploited until all potential economic rent is dissipated. Any economic rent simply looks like excess profit, and, in the case of a fishery, attracts extra effort and/or fishermen until the average cost of fishing is equal to the price received for the fish. However, if market power is exerted in the setting of fish prices, it is possible for fish processors to extract at least part of the economic rent. Price competition among fish processors, however, would tend to eliminate their share of economic rent. Thus, although oligopoly or, more precisely in this case, oligopsony is usually viewed as reducing efficiency; in certain cases it can lead to a reduction in excess fishing effort and a more efficient harvesting pattern.

Overall Development of the Industry

Besides illustrating one of the cycles of expansion and consolidation, the 1900-1930 period was one of overwhelming change. During this period many of the features which the industry currently has were put in place. Exploitation spread to all areas and all species, both fishing and processing were mechanized, the jurisdictional responsibilities of both the federal and provincial governments were settled, various regulatory techniques were tried and refined, biological research was started, and international agreements on conservation negotiated.

In 1902 the industry depended heavily on one species of salmon, the sockeye. The sockeye salmon was the first species exploited because of its uniform size, firmness of flesh, high oil content, and red colour when canned. Consequently, the major fishing grounds were first located on the larger river systems, first the Fraser, later the Skeena, and Nass Rivers and Rivers and Smiths Inlets - the spawning areas for sockeye. Here the simple gill-net fishery could be used. Nets were strung perpendicular to the river flow with the hope of entangling the fish as they swam upriver to the spawning grounds. Because of the limited mobility of the gill-net vessels and the lack of refrigeration, canneries tended to locate at the mouths of rivers where the fish converged before continuing upstream.

Over the next twenty-five years the industry shifted its emphasis from the sockeye species to the lower-quality pink and chum salmon and from the Fraser River to northern areas. Pink and chum salmon have a lower oil content and a paler colour and had been rarely canned in the early days of the industry. Several factors were responsible for these shifts. The Fraser River was partially blocked by a slide in 1913, preventing salmon from reaching the spawning grounds. Unfortunately 1913 was the peak year of the cycle and returns to the Fraser were greatly reduced after this. A market for pink and chum salmon first developed during World War I and continued into the 1920's.

In 1900 salmon were caught from oar and sail-powered vessels using gill-nets. Later these boats were motorized and purse seining became practical. Purse seining, which involves circling schools of fish with a net and then drawing them close to the fishing vessel, is particularly appropriate for pinks and chums. Since these species spawn in the shorter rivers and streams in all areas of the B.C. coast, many new fishing grounds and cannery sites were opened, especially in the north. Further technological improvements occurred in salmon canning, as the industry moved from manual methods to the use of various pieces of machinery.

Each of the potential barriers to entry will now be discussed and its effect on entry and exit from the industry noted. They are classified as government restrictions, marketing practices, and technological barriers. The circumstances unique to salmon canning are also discussed.

Government Regulation

Up to 1900 the federal government took a relatively relaxed attitude towards fisheries. Government revenues actually exceeded expenditures during this period. However, by 1900, increasing pressure, particularly from the British Columbia government, motivated the federal government to take a more active role. After 1900 federal expenditures, particularly on fish hatcheries, increased rapidly, no doubt a reflection of complaints from the British Columbia government.

Administration of the salmon fisheries was complicated by jurisdictional conflicts between the provincial and federal governments. The British North America Act of 1867 clearly stated that the legislative authority of the Parliament of Canada extended to "sea coast and inland fisheries". However, at the same

time, the provincial legislatures were given exclusive powers over "management and sale of provincial lands" and "property". Initially no problems arose as the provinces which were the original members of the Canadian confederation turned fisheries administration completely over to the federal government. But disputes between the federal and provincial governments later arose when several provinces enacted legislation to regulate fisheries, licence fishermen, and/or collect fees. A reference to the courts was decided upon to try and settle the issue.

The judgement of the Judicial Committee of the Privy Council, then the highest court for Canadian cases, did anything but settle the issue. The 1898 judgement stated that the federal government had sole power to make regulations concerning the manner of fishing and could enact fishery regulations. The provinces, however, retain the proprietary rights they had at the time of Confederation and therefore could legislate with respect to the disposition of fisheries but those to whom the fishery was allocated would be affected by the federal government's legislative power. The provinces took this as an opening to get involved in fisheries administration.

At the same time the government of British Columbia and the salmon canners were urging the federal government to become more involved in fisheries administration and conservation. To avoid jurisdictional conflicts and the Canadian government and the B.C. government signed a Modus Vivendi in 1901, pending settlement of the question of jurisdiction over sea coast fisheries. The federal government retained administrative control over all tidal fisheries plus the freshwater bodies in which the salmon migrated and also agreed to account for any licence fees which might in the future be ruled as belonging to the province.

In the same year the provincial government established its own fisheries department and became more active in fisheries management, inspecting spawning beds, sponsoring scientific research, and commenting on federal administration. The Modus Vivendi remained in force until the end of 1907. In 1908 the British Columbia government brought in legislation requiring licenses from all those engaged in fishing and canning.

The provincial government was now actively involved in fisheries administration and a dual system of licensing was established. Despite each government having similar objectives, perfectly harmonious regulations could not be expected and a further court reference was made in 1913. This time the Judicial Committee of the Privy was much clearer stating that the British Columbia Government could not grant exclusive fishing rights in tidal rivers including arms of the sea and estuaries of rivers. In the sea the right of fishing is a public right, not dependent on a proprietary title. The regulation of fishing rights, therefore, must rest exclusively with the federal government. After this the province issued fishing licences for revenue purposes only.

With minimal staff and a huge coastline to oversee the federal government sought ways of limiting fishing effort. Policies of limiting the number of canneries and the number of boats as conservation methods were recommended by a federal commission appointed in 1905. Maximum numbers of boats were recommended for Rivers Inlet, Skeena River, and the Nass River, beginning with the 1906 season. As for the allocation of these boats among the canners the Commission suggested:

"...that it should be officially suggested to the canners interested that they should mutually arrange to carry out a fair allotment of the boats amongst themselves on the lines followed by these canneries in previous seasons ... Failing such allotment by the local parties operating canneries in these areas referred to, then the matter to be adjusted by the fishery officer in charge of the waters concerned, and under the authority of the Department of Marine and Fisheries."ⁱⁱⁱ

Federal fishery regulations were amended in 1908 so that a licence was required for a cannery. No additional cannery licenses were allowed in the northern district of British Columbia. This restriction was reinforced by provincial licensing policy on canneries and a 1910 joint federal-provincial commission which reported against any increase in the number of canneries in northern waters.

However, additional cannery licenses were granted, starting in 1912 with one additional license. In 1913, one further license was issued, and in 1917 three. Lyons [2] suggests that there was political influence involved in the issuing of these licenses. Finally, in 1917, the federal government gave notice that, beginning in 1918, all restrictions on the number of cannery licences would be removed.

A further commission, in 1917 [6], however, declared that an unrestricted cannery licensing policy would have detrimental effects on conservation. To achieve conservation objectives and at the same time limit the excess profits resulting from the limitation of canneries the commission recommended keeping limitations on cannery numbers but substantially increasing cannery licence fees. This recommendation was partly adopted, cannery licence fees were increased but limitations on numbers were, in 1918, loosened and, in 1920, removed altogether. Finally, in 1922, after some difficulties caused by the post-World War I slump, salmon cannery licence fees were reduced. All limitations on canneries, both in the form of numbers and of fees, had been removed.

Restrictions on the amount of fishing gear were brought about through "boat rating", the assignment of a fixed number of fishing boats to each cannery. This scheme was first instituted in northern waters in 1903 through a mutual agreement among canners. Apparently this worked until 1908 when it became necessary to submit the question to an arbitration board. In 1909, however, it became clear that canners were unlikely to come to any form of agreement and many made preparations to increase the amount of fishing gear. The provincial government then decided to fix the number of fishing licences it would issue to each cannery. The responsibility for licence limitation was assumed by the federal government in 1910 and further regulatory changes in 1911 and 1912 prohibited the use of motor boats for gill-net fishing in the northern area. The major reasons for this policy appear to be the wish to canners to reduce fishing costs.^{iv}

After 1910, restrictions were gradually relaxed. Not all of the fishing licences under the federal plan were allocated to canneries. A proportion of the licences in each area were reserved for independent fishermen, fishermen owning their own boats and gear who could then sell their fish to whoever they wished. This was a measure to encourage settlement in northern British Columbia. Additionally, each new cannery was usually given an allocation of boats. With no reductions to other canneries, the total number of boats gradually increased. In 1917 boat ratings were removed from the Skeena River and by 1923 were removed from all northern areas.

There can be little doubt that these restrictions were effective barriers to entry and were of benefit to the canners. The American Consul General in Vancouver was reported in *Pacific Fisherman* [9] as writing:

"The canning industry in this province partakes of a monopoly element through the refusal of the government to grant licences for new canneries ... the licences already issued are held by the owners as very valuable ... enormous profits are being made ... Such a policy [of restricting canneries and boats] is no longer necessary because it has been ascertained that by the propagation of the fish in hatcheries, etc., the province can keep its supply unimpaired".^v

The faith in hatcheries plus pressures from those wanting to enter the industry undoubtedly hastened the end of these government-sponsored restrictions. The final restriction, that on the use of powered gill-net boats,

was removed in 1924 for all grounds except the Skeena River. Here, the restriction was finally removed in 1930.

Although many of these restrictions may appear to be the granting of unnecessary monopoly privileges they were, to a large extent, motivated by the government's responsibility in managing the resource. Effective management of the resource was hampered by lack of basic biological research. Although folklore about salmon no doubt existed, much of the basic life-history had to be confirmed by research. As early as 1902 it was known that runs to the various tributaries of the Fraser arrived at different times, with the earliest runs ascending to the uppermost reaches of the river. Research, sponsored by the provincial government starting in 1911, then confirmed that salmon return to spawn in the same river, stream, and tributary in which they were born. The implication of this was that each spawning ground and its attendant run of fish had to be managed separately. In other words, a complete conservation program required that escapements be monitored and fishing regulated for each of the several thousand runs. Given the knowledge of the resource, the manpower available, and isolated locations of many fisheries and spawning areas, this was clearly impossible at this time. Second best solutions were necessary, thus the broad, sweeping restrictions on inputs, fishermen and canneries. Generally restrictions were successful in achieving the conservation objective.

Marketing of Canned Salmon

Any discussion of the marketing of the canned salmon pack is dominated by two factors: the undifferentiated product produced by all canners and the fact that British Columbia canners were price takers. Each canner produced essentially the same product as any other canner, the same fish in the same sized containers, with only minor differences in quality. The cans and much of the machinery used came from common suppliers. Furthermore, the British Columbia product was virtually indistinguishable from that produced in the United States, Japan, or Russia, countries with which Canada competed for export markets.

The lack of price-setting ability is due not only to the undifferentiated product but also competition from other sources and the heavy dependence on export markets. During this period Canada produced approximately one-sixth of the world's supply of canned salmon and exported approximately two-thirds of what she produced. The most important export market was that in Britain where the British Columbia product competed with the output of the United States, Japan, and Russia. The British market was originally developed by American canners. Canned salmon provided a cheap source of protein for an industrializing country. The initial shipments were made by sailing ships around Cape Horn, following a route established to take grain from California to Britain. Russian and Japanese canned salmon first reached the British market in 1909. Strong [10] reports that during the 1920's Canada usually supplied somewhere between 10 and 30 percent of the British imports of canned salmon. The result was that the price for Canadian salmon was largely determined by worldwide supply and demand conditions.

The heavy dependence on export markets also meant that there was little development of brand names or labels by individual canners. Most canners did not consider it worth their while to market the pack beyond the wholesaler or broker. Brokers used their own labels or consigned the salmon to food merchants in importing countries who distributed the salmon under established labels.^{vi}

Technological Barriers

Stacey [3], in his comprehensive analysis of technological development and change in the salmon industry,

characterizes the 1903 to 1913 period as the period of transition from manual to mechanized canning. Each innovation eliminated significant amounts of hand labour and increased the output of a canning line. While 300 labourers were required to produce a pack of 3000 cases per day in 1905, the labour requirement for the same output had dropped to 150 labourers by the 1920's. Stacey [3] believes that although mechanized canning may raise the initial cost of entry it eventually makes entry easier by reducing the industry's chronic problems with labour shortages.

In 1900 canning was a manual, labour-intensive process. Can-making machinery was first introduced in 1897 but many cans were still being made by hand. This lag illustrates a principle of the adoption of innovations in canning. The development of new technology does not necessarily lead to its immediate adoption by all firms in the industry. For various reasons; lack of capital, lack of the appropriate scale to efficiently make use of the technology, a preference for certain manual processes, and the desire to provide a longer work period for seasonal workers; many canners are slow to adopt and may never adopt certain technological innovations.

Perhaps the major innovation of this period was the fish butchering machine. This machine removed the head, tail, fins and internal organs of the salmon, a task formerly entirely performed by hand. The machine reduced the demand for labour and was faster and cheaper, decreased waste, and gave consistent quality of butchering. It was first used in Fraser River canneries in 1906 and was widely adopted, particularly as improved models were developed.^{vii}

The second major innovation of the period was the development of the "sanitary canning line" in 1912. Up to then tops were soldered on cans and a complex process of cooking, cooling, venting, and stopping was necessary to make the cans airtight. With the sanitary canning line, the use of an exhaust box and a double seamer, labour requirements were reduced and quality was increased. "Leakers" and "do-overs" were fewer. The combination of the sanitary canning line and the butchering machine approximately halved the number of workers required between 1905 and 1925. Towards the end of this period, in 1928, vacuum closing machines eliminated the need for the exhaust box by sealing the cans under vacuum.

The technological developments were not exclusively available to any one canner but were available to the industry in general. Both the butchering machine and the sanitary can were developed by firms not themselves involved in fish processing, the butchering machine by a firm specifically formed for that purpose and the sanitary can by the major can manufacturing companies. Any barriers to entry due to technological change come not from exclusive rights to these innovations but from any economies of scale resulting from the innovations. Gregory and Barnes [12] note that simplicity of plant and machine design and the narrow range of commodity types manufactured results in possible economies of scale, but only as long as other conditions are possible.

The other conditions which tend to set limits to the achievement of economies of scale in any one plant are the size of fish runs in an area, the effectiveness of competition in fishing, and the need for immediate processing. In this period most fish was processed very near the point where the fish were caught. Packing of fish to other areas for processing was rarely done. Thus, although economies of fish processing may have been possible they were limited by the availability of fish in the immediate area.

Mechanization was also taking place in the salmon fishing fleet. The most important development was the application of the gasoline powered internal combustion engine. Local firms adopted these engines to the powering of small boats. Stacey states that the first gasoline powered vessels were probably used between 1902 and 1907. By 1913, over eighty percent of the Fraser River gill-net fleet was motorized. The engines

were installed directly in the round-bottom "Columbia River" boats then in use, with usually a small cabin being built over the forward part of the boat. Engines greatly improved the fishermen's mobility, eliminated the need for a "boat puller", and made fishing easier and more comfortable. It was not, as noted earlier, until 1924 that gasoline engines were first adopted in gillnet fishing in northern waters.

The successful adoption of marine internal combustion engines had a greater impact on the expansion of purse seining. While gill netting is quite feasible without the use of mechanical power, purse seining, using manual methods, is much more difficult. In purse seining the fish are surrounded a net hanging vertically in the water, the bottom of the net is closed or pursed, the net is brought back onto the fishing vessel until the fish are concentrated beside the vessel, and the fish are transferred to the vessel. Without mechanical aids the process is slow, laborious, and limited in effectiveness.

A powered purse seine vessel first appeared in Puget Sound in 1902. While mechanical propulsion improved seiners' mobility, the development and adoption in 1907, of a powered winch for "pursing" the seine significantly enhanced the purse seine technique. The British Columbia purse seine fleet was first developed to exploit the Fraser River sockeye runs as they passed through the Strait of Juan de Fuca. This improved Canadians' ability to compete with Americans for Fraser River fish. By 1912, 100 powered purse seiners were active in these waters. Beginning at this time the purse seine technique was also used to fish for pink and chum salmon. This technique is particularly suitable for this species which spawn in the many shorter rivers and streams in all areas of the B.C. coast. As the market for pinks and chums expanded, purse seining became increasingly important. The vessels grew in size and numbers. The diesel engine, with its lower costs of operation and greater reliability, was perfected for marine use in 1922 and by 1924 was first installed in B.C. seiners. The process of hauling the net in was eased by the development of the "live roller". Through the use of a power take-off from the main engine, the roller on the edge of the seine "table" on which the net was piled turned. This, by itself, did not haul the net in but made it easier for fishermen to haul the net in. Mechanized gill-netters had the advantages of being able to make many more sets, work further offshore, travel faster to and from the fishing grounds, and fish in more adverse weather. The use of powered gill-netters with their greater mobility tended to free cannerymen from having to locate plants immediately adjacent to the fishing grounds.

Powered purse seine vessels were always allowed in northern waters. In these areas, also, they were responsible for increasing the catches of pink and chum salmon. Their introduction was partly responsible for increasing the number of canneries as new sites near the pink and chum salmon fishing grounds were utilized. This was particularly evident in the Queen Charlotte Islands which had a large cyclical run of pink salmon in even years.

Labour

One of the most consistent problems faced by cannerymen during this period was obtaining a satisfactory labour supply. A seasonal, labour-intensive industry often operating in isolated locations in a sparsely-populated province would inevitably find it difficult to obtain an adequate labour supply.

The labour supply problem was partially solved by the use of a contract system. Labour contractors, under various arrangements, would supply the labour necessary. Payment was based on the number of cases canned, usually with a minimum number of cases guaranteed. It was then the contractor's responsibility to arrange for the appropriate labour. The contractor would pay an advance and their steamship fare, if necessary, to induce these men to come to the cannery. The contractor would also furnish provisions and charge workers for them, sometimes making his greatest profits in this way. The system had certain

advantages to the canners; he got rid of the responsibility of supply in individual workers, he knew exactly what processing would cost per case, and the contractor took on the responsibility for worker supplies and, to some extent, accommodation. A somewhat different contracting system was used for fishermen. The contractors found fishermen and negotiated with canners on their behalf for gear and prices. For this they usually received a commission based on their fishermen's catch.

Work stoppages during this period were relatively few and far between. After the sometimes-violent 1900 and 1901 strikes of fishermen on the Fraser river, a period of relative labour peace prevailed. There are no recorded work stoppages in canneries, but some may have occurred at specific locations for short periods of time. Some strikes of fishermen did occur, usually confined to specific areas. Fairly general prosperity prevailed during much of this period, particularly during World War I and the last half of the 1920s. The result was a general increase in fish prices. Normally the canners, meeting as an association, set prices at the beginning of the season. However, this agreement was certainly not binding in a pinch since there are many instances where canners broke the agreement and paid higher prices. Competition among canners for a supply of fish would tend to place upward pressure on fish prices.

Various fishermen's organizations were formed during this time, but not normally with the primary objective of bargaining for higher prices. Many associations were formed to enhance or protect the positions of various groups in the industry. Isolation, poor communication, and a lack of mobility, especially in the northern areas, further contributed to the lack of strong fishermen's organizations.^{viii}

Circumstances Unique to Salmon Canning

Not only were many of the traditional barriers to entry ineffective in limiting those participating in salmon canning, but there are special circumstances which may further encourage entry into the industry or the building of excess capacity. The first of these is the nature of the primary input, raw fish. In this period the canner was faced with an inability to transport or inventory raw fish. If he wished to obtain a supply of fish from a particular area, it was necessary that he have a processing plant in that area. Constructing a cannery in an area was thus a method by which a new firm could enter the industry. However, this form of competition between canners in obtaining fish supplies tends to lead to duplication and over-capacity in the industry.

The biological characteristics of the salmon created further pressures for over-capacity. While during much of this period there was a general expansion in the industry as more species were exploited, the biological constraint of an inelastic supply function was eventually reached. The only way then for an individual canner to increase his pack was through an increased number of plants. Salmon runs also tend to vary widely from year to year and to have definite peaks during the season. Canners, in preparing for the maximum-sized run, eventually build plants which are under-utilized most of the time.

The nature of the fish cannery may also act as a barrier to exit from the industry. Most of the canneries are located in isolated locations and have few alternative uses. The canner views them as having a zero opportunity cost and leaving the industry means abandoning the facility. This could act to hold canners in the industry.

ENTRY AND EXIT, A SUMMARY

Possible barriers to entering the salmon canning industry have been examined. Only in the case of

government restrictions was a barrier of any consequence found. Over parts of this period both the federal and provincial governments were involved in limiting both the number of canneries and the number of fishing boats, particularly in the expanding northern fisheries. Since a cannery licence and an allocation of fishing boats were necessary for participation in the industry, these restrictions discouraged entry and created monopoly profits for those in the industry. However, by 1924 nearly all restrictions of this type had been removed.

Marketing methods and the nature of the product were such that any canner producing a product of reasonable quality would be able to sell it at the going market price. Since most of the product was sold in export markets using brokers', wholesalers', or retailers' brands, canners were not able to limit competition in this area. The development of a market for the lower quality species provided further incentives to enter the industry.

Technological change tended to lower barriers to entry by lessening labour supply problems. Technological development in fishing allowed the industry to expand by exploiting new fishing grounds, providing opportunities for entering the industry.

Another encouragement to expand production capacity comes from the special characteristics of the resource and the industry. Perishability, variations in yield, and an inelastic supply function all encourage the building of canneries. Once built these canneries have a low opportunity cost, acting as a barrier to exit from the industry. With the removal of the last of the government restrictions in the early 1920's, the result was an industry with practically no barriers to entry and a tendency towards over-capacity.

ANOTHER CONSOLIDATION

Despite the ease of entry, the period from 1920 to 1926 was a prosperous one in the British Columbia salmon canning industry. Large and expanding packs were being made, prices were high, and there were few marketing problems. For example, the *Pacific Fisherman* yearbook of 1927 reported that the market was exceptionally favourable for the record-breaking 1926 pack and it had sold rapidly at prices above the general level of the previous year.

Buoyed by this state of affairs, canners prepared for a successful 1927 season. Four new canneries were built and the amount of fishing gear increased.^{ix} However, light runs were experienced in many areas and little fishing was done in the Queen Charlotte Islands, an "off" year in that area. Although canned salmon prices were slightly higher than in 1926, the 1927 pack was 34 percent lower than in 1926.

Higher costs and lower revenues meant a financial crisis for many of the canners. Lyons [2] states that the British Columbia Fishing and Packing Co. Ltd. (the successor to the British Columbia Packers' Association) was strained by its purchase of Wallace Fisheries Ltd. in 1926 and had opened two new canneries, neither of which produced their expected packs. Similarly, the Gosse Packing Co. Ltd. was reported to have overextended its resources in an endeavour to put up a large pack. The trade magazine, *Pacific Fisherman*, reported that both deferred dividends on their preferred stock.^x

The result was the amalgamation in 1928 of two of the largest firms, British Columbia Fishing and Packing Co. Ltd. and the Gosse Packing Co. Ltd., as British Columbia Packers Ltd.^{xi} There was an almost immediate reduction in both the number of canneries and amount of fishing gear used. By 1933, the company was only operating 13 of the 42 canneries it owned. The cycle of expansion and consolidation had

again been completed.

SUMMARY AND CONCLUSIONS

From 1902 to 1928 the industry went through a cycle of concentration, followed by entry and expansion with a dilution of concentration, and then concentration again. Losses in 1901 precipitated the concentration of 1902; losses in 1927 precipitated the concentration of 1928. The lack of effective barriers to entry, a conservative leading firm, and unique industry characteristics led to a decrease in the dominance of the major firm. Eventually over expansion resulted, losses occurred, and re-adjustment was precipitated. The normal oligopolistic barriers to entry, except for government restrictions on inputs for a period, were not viable restrictions on entry into salmon canning. The federal and provincial governments, ostensibly for conservation purposes, restricted entry into salmon canning for a short period, but even this was not absolute, and for most of the period followed an "open door" policy for the industry. All canners produced an undifferentiated product primarily sold on world markets through brokers. Technological change, while raising the initial cost of entering canning, also helped ease chronic problems with labour shortages. Rapid adoption of many innovations was not necessary, the pace of adoption varied. Many locations for canneries were available, particularly as the industry moved away from relying on sockeye salmon and the major rivers.

Additionally, the primary input the salmon present characteristics encouraging entry and eventually over-expansion. Variations in runs encourage overcapacity, each season's limited supply encourages competition for the available fish, the perishability of raw fish limits the concentration of processing. With a short season the pack is put up before prices and markets are fully known. The canneries themselves and many other inputs have little use elsewhere, encouraging firms to stay in the industry. Eventually opportunities for entry, competition for fish, and unpredictable variations in output coincide to bring operating problems for many in the industry. A consolidation of firms, such as those of 1902 and 1928, is seen as a way of reducing costs and restoring profits.

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- [10] Strong, G. Gordon, 1934, *The Salmon Canning Industry in British Columbia*, Unpublished BA graduating essay, University of British Columbia.
- [11] O'Bannon, P. W., 1982, Technological Change in the Pacific Coast Canned Salmon Industry 1900-1925, *Agricultural History*, 56(1), pp. 151-166.
- [12] Gregory, H.E. and K. Barnes, 1939, *North Pacific Fisheries*, New York: American Council.
- [13] Gladstone, Percy, 1959, Industrial Disputes in the Commercial Fisheries of British Columbia", Unpublished MA thesis, University of British Columbia.

ENDNOTES

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- a. Reid [1] presents a good discussion of the events leading up to the merger.
 - ii. A key figure in the merger was Henry Doyle who became the first president of the new company. Doyle was familiar with the industry from his work in a fishing supply firm. His unpublished history of the industry [4] provides useful information on the process of amalgamating the canners and its result.
 - c. B.C. Fisheries Commission, 1905-06. Interim Report of the Commissioners. [5]
 - iv. The Special Fishery Commission of 1917 [6] and the British Columbia Fisheries Commission of 1922 [8] review these restrictions.
 - v. *Pacific Fisherman*, [9] Feb. 1913, page 51.
 - vi. Good discussions of marketing practices are available in Strong [10] and various issues of *Pacific Fisherman*.
 - vii. See O'Bannon [11] for a discussion of technical change in salmon canning.
 - viii. Gladstone [13] presents detailed information on labour in the industry.
 - ix. *Pacific Fisherman* [9] July 1927
 - x. *Pacific Fisherman* [9] October 1928
 - xi. These two companies together had produced 38.0 percent of the 1926 pack.