

BRITISH COLUMBIA PACKERS LIMITED

ANNUAL REPORT 1979

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APR 9 1980


MCGILL UNIVERSITY

British Columbia Packers Limited
Annual General Meeting, Monday,
April 14, 1980 at 09:30 a.m.
at Delta's River Inn
3500 Cessna Drive
Richmond B.C.



*Cover photo:
Sunset at
Lake Aleknagik in
Bristol Bay, Alaska.
(B. Rogers)*

*Sockeye salmon returning
to their stream of origin to spawn.
(Rollie Ostermick)*

A large number of salmon are swimming in a stream, surrounded by green grass and bushes. The fish are arranged in a line, moving from the background towards the foreground. The water is dark and rippling. The surrounding vegetation is lush and green, with some taller grasses in the foreground and some bushes on the right side. The overall scene is a natural, outdoor setting.

BRITISH COLUMBIA PACKERS LIMITED,
operating in the Pacific Ocean is engaged
in the catching, processing and marketing of a
wide range of fish and seafood products for
both domestic and export consumption.



*Richard I. Nelson,
Chairman and Chief
Executive Officer*

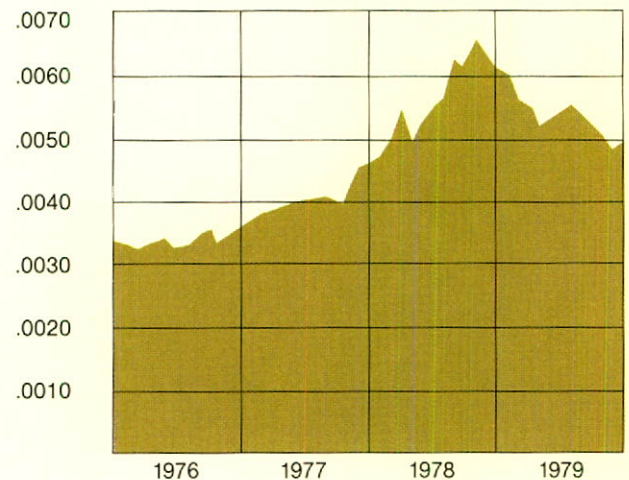
*J. Bruce Buchanan,
President and Chief
Operating Officer*

Although sales in 1979 increased by 7% and reached a record high level of \$265.6 million, earnings declined by 48% to \$6.5 million. Net earnings represent a return of 10.5% on the book value of the shareholders' equity, obviously unsatisfactory compared with alternative investments, particularly when the degree of risk is taken into account. Earnings of fishermen, in contrast, again reached record high levels.

Landings of salmon and herring in British Columbia were lower than in recent years, and considerably below the long term average. Because of excess capacity in the processing sector (a condition described in earlier reports) and an expected continuing strong market demand in Japan, competition for buying fish on the grounds became extremely intense, and prices paid to fishermen reached record levels.

As it turned out, the strong market conditions in Japan were not sustained, and in fact, deteriorated substantially. The weakening resulted from unexpectedly high Japanese catches and imports of Alaskan salmon, and a reduction in consumption of herring roe caused by consumer reaction to the very high retail prices that developed. The high retail prices in Japan reflected the deterior-

Value of 1 Yen per Canadian \$



ation in the value of the Yen compared with North American currencies that took place throughout the year, and continues.

The preceding graph depicts the strengthening of the Japanese Yen to the Canadian Dollar from a low in 1976 of \$.0033 to a high of \$.0065 in December of 1978 followed by a weakening during 1979 to \$.0048 in December.

Because of the high product costs that developed, Company inventory values reached record levels during the year. These higher values, combined with increasing interest rates, resulted in an interest expense double that of 1978. Working capital declined to \$37.7 million and at year end, short-term borrowings were \$38.9 million.

Dividends of \$2.1 million were paid to shareholders, the balance of earnings being re-invested in the business. Capital expenditure for the year was \$12.6 million, the major portion of which was devoted to completing the expansion of freezing capacity and to fleet improvement.

In 1979 the Company purchased more than \$100 million worth of fish from over 4000 fishermen. Wages, salaries and benefits of \$50 million were paid to 4300 employees, and taxes on income and property exceeded \$6 million. Sales values by species and by country are given in the accompanying charts. These relative values are substantially the same as in 1978.

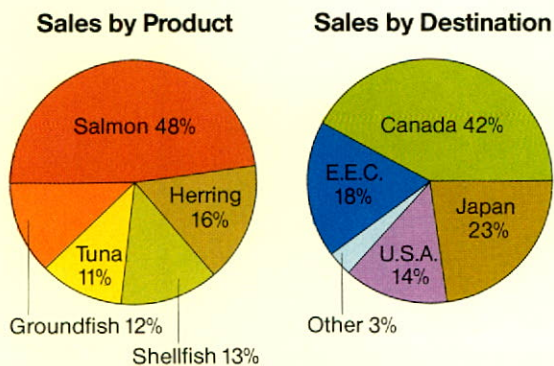
BRITISH COLUMBIA

The principal operations of the Company are carried out in the Province of British Columbia, utilizing commercially valuable marine species available in the region. Fish are purchased from fishermen who operate their own or Company vessels, and are delivered to processing plants located at strategic sites along the coast.

The Company provides many services to independent and Company fishermen on a coastwise basis. These include shipyards, vessel maintenance, net repair and storage, as well as tie-up facilities. Seasonal financing is also available, but demand for this service is declining as fish values increase. These necessary services preserve contacts with fishermen on a year-round basis, and provide the Company with some assurance of a fish supply in season.

Fish are processed into their highest-value market form, generally being either canned or frozen. These products are marketed in Canada through Company sales offices in major cities, or exported to foreign markets. In 1979, 65% of this production was exported, mainly to Japan and members of the European Economic Community. Products from species such as tuna, which are not available in quantity from local fisheries, are imported for distribution in Canada in order to "round out" product lines.

Residuals are rendered into products which re-enter the food chain as high protein components of feed for salmon and trout, poultry and hogs, or as oils used in other food products such as margarine.



1979 total company sales—\$265.6 million

Salmon

Industry landings totalled 120 million pounds in 1979—15% below 1978 which was a year of average abundance. Approximately 55% of landings was processed into canned products, while the balance was frozen primarily for foreign markets. The proportion of production that is frozen is expected to continue to increase, but at a slower rate than experienced in recent years.

International market demand indications early in the 1979 season combined with vigorous competition for fish to further increase prices paid to fishermen. At the same time, smaller volumes available for processing increased unit costs of production. As a result, profit margins for processors all but disappeared, even though prices to consumers advanced to higher levels.

Production in 1980 is expected to be approximately the same as in 1979, but the market forces which have led to processor difficulties are expected to moderate slightly.



Seiner making a set in the Strait of Juan de Fuca. (Gar Lunney)

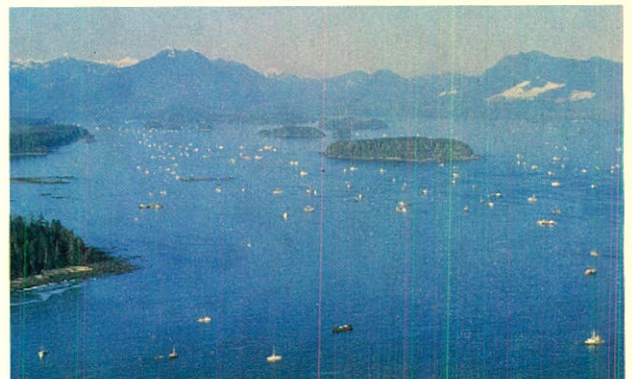
Herring

Industry landings of roe herring totalled 41,000 tons, a continuation of the decline experienced in recent years.

1976	87,000 tons
1977	81,000 tons
1978	70,000 tons
1979	41,000 tons

Because of the reduced volume available, and misconceptions regarding market values, prices paid for fish catches escalated quickly to disruptive levels. Although the single market, Japan, purchased the roe from these catches at extremely high prices, most processors in British Columbia suffered losses or, at best, broke even. The Company purchased 8000 tons of herring from this fishery in 1979 and marketed the roe therefrom at prices which covered fish and operational costs. This was achieved only through continuing careful attention to production yield and quality.

Some Japanese buyers of roe have suffered substantial losses because of consumer resistance to high prices. Moreover, a considerable inventory of 1979 production is being carried over into the current season. In British Columbia the 1980 catch target is 35,000 tons. The roe produced from this catch will move into consumption only if fish can be purchased from fishermen at realistic prices.



British Columbia herring fleet in Barclay Sound, Vancouver Island. (L. Webb)

In addition to industry catches during the roe herring period, smaller quantities (15,000 tons in 1979) are harvested for food and bait purposes. Processing of these products resulted in marginal profits in 1979.

The continuing decline in herring catches is of deep concern to the Industry. Although total herring stocks in British Columbia remain at levels in excess of 350,000 tons, the roe fishery, which concentrates its harvest during the sensitive roe-bearing period, has produced results unexplainable in scientific terms. In order to properly understand and manage this resource, which has made a significant contribution to industry revenue in recent years, it is vital that an increased allocation of research funds be made available.

Groundfish

Landings of groundfish continued at normal levels during 1979, but fishing and processing costs escalated because of advancing fuel and other operational costs. Markets, which were strong for most of the year, declined slightly toward year end and remain somewhat depressed.

UNITED STATES

The Company conducts business in the United States through three wholly-owned subsidiaries which are managed and operated independently. In 1979, each of these operations was profitable and together contributed substantially to consolidated results.

Salmon

Nelbro Packing Company, with its salmon canning and freezing plant at Naknek, Alaska, processed at capacity during the short season in Bristol Bay. In 1979, returns to the river systems in the area exceeded expectations, likely in part because of curtailment of foreign high-seas fishing effort on the salmon's migratory route.

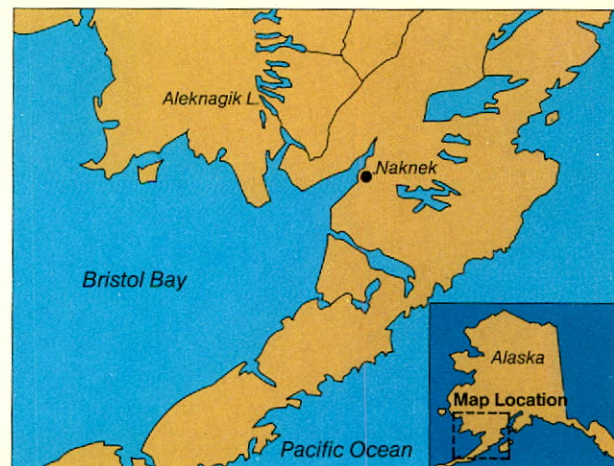
The year 1980 is again expected to be one of abundance and, providing operations proceed without interruptions caused by labour difficulties or weather conditions, another successful season is anticipated.

Shellfish

Coast Oyster Company, with its oyster growing areas and processing plants in the states of Washington and California, operated as planned in 1979. The oyster crops, which are on Company properties, have a growing period of from three to four years. They are re-seeded through natural reproduction augmented by hatchery procedures. Crop continuity has been and is expected to be maintained.

Groundfish

Rupert's Certi-Fresh Foods, Inc. has a plant in Santa Fe Springs, California, which reprocesses frozen fish into "breaded or battered" market forms. These products, together with frozen fillets, are marketed to retail and food service outlets in 11 Western States. Recent alterations to product lines and operating procedures continue to improve financial returns.



CAPITAL EXPENDITURES

During 1979, the Company invested \$12.6 million in the following categories:

Fish acquiring units	\$7.1
Fishermen's services	\$1.2
Processing facilities	\$4.3

The expenditures on "fish acquiring units" include the cost of the replacement program for Company-owned vessels, and the cost of purchasing shares in other vessels. At the same time, the Company is disposing of part interests in owned vessels to fishermen. This program is expected to continue through 1980, but at a somewhat slower pace.

Other than completion of projects initiated in 1978, very little expenditure was devoted to processing facilities in 1979. In 1980 industry conditions may provide opportunities to improve processing capability and capacity. Capital requirements in this sector will depend on the extent and timing of these opportunities.

PARTLY OWNED COMPANIES

United Oilseed Products Ltd. is a Canola (name for new varieties of rapeseed) crushing operation located in Lloydminster, Alberta. The Company holds a one-third interest in this venture in partnership with United Grain Growers Limited of Winnipeg, Mitsubishi Corporation and Nisshin Oil Mills Limited of Tokyo. Crushing margins (the difference between finished product values and seed cost) improved substantially in 1979, and operating returns were sufficient to more than recover losses experienced in the previous years. Current seed supplies and planting forecasts should ensure operating continuity through 1980, while markets, although subject to highly-variable conditions of supply and demand, are expected to sustain current margins.

Mar Fishing Company, Inc. is a Philippine corporation in which the Company holds a 30-percent interest. Through 1979 this operation has continued in an exploratory stage. Tuna has been purchased from local fishermen, frozen aboard two company-owned vessels and later exported. In December 1979 the decision was made to construct a tuna processing plant at Zamboanga, on the Island of Mindanao. This facility will be completed and in operation by December 1980, and will process tuna caught by vessels in adjacent waters. Production from the plant will be marketed domestically as well as exported. Mar Fishing has received licenses to operate fishing units and is planning to construct or purchase a number of seine vessels.

PERSONNEL

During 1979, E. L. Harrison, Vice-Chairman, attained normal retirement age and retired from full-time service with the Company. Mr. Harrison has served British Columbia Packers Limited faithfully and well for more than forty years. Not only has he made a substantial contribution to the progress of the Company, he has been very active in industry and community activities. Mr. Harrison continues as Vice-Chairman on a part-time basis, and as a member of the Board of Directors.

RESOURCE MANAGEMENT

During recent years, Canadian government resource management in fisheries has concentrated on socio-economic issues, at the expense of effort in the fields of research, conservation and habitat protection. The Company is very concerned over this shift in emphasis as it affects the well-being of a very valuable Canadian resource. Also, certain inadequacies in Provincial and

Federal resource management regulatory practices concerning vessel licensing, processing plant qualifications, and business conduct have eroded the security of traditional or new investment in the industry.

During this same period, an influx of working or fixed capital investment, primarily from our major market—Japan—has increased the number of operators and capacity in the British Columbian and Alaskan fish processing sector. This issue of "Foreign Investment" has created concern that traditional processors might fail, or be seriously damaged as a result of competitive forces and redundancy.

The Company believes that, providing appropriate government regulations relating to harvesting, processing and business conduct are upgraded and applied equitably, investment in the industry's processing sector does not require special control over nationality of capital.

SALMONID ENHANCEMENT PROGRAM

The vital factor affecting the results of the Company is the size of the salmon catch in British Columbia. This Report, and other recent similar reports have described a decline in average salmon landings in the Province. The Governments of Canada and the Province of British Columbia have embarked on a "Salmonid Enhancement Program" designed to reverse this trend. A description of the Program and its expected results are contained on pages 16-19 of this Report.

OUTLOOK FOR 1980

The outlook for the Company in 1980 is difficult to assess. Landings of salmon and herring in British Columbia are expected to be at, or below, 1979 levels. In Bristol Bay, Alaska however, landings are expected to be very good, as the peak cycle of the salmon run returns to the area.

Market demand has weakened, which will result in lower values of fish, and also, possibly, less competitive buying pressure for fish. Company product inventories are in balance with marketing requirements, and no abnormal carryover of product is anticipated. Interest rates are expected to remain relatively high.

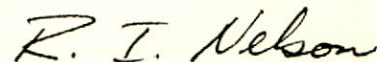
Agreements must be reached for the prices of net-caught salmon and herring and labour rates in British Columbia and Alaska. Because of supply and demand uncertainties, difficult negotiations can again be anticipated, but it is hoped that they will be concluded without a serious interruption to operations.

Although the final resolution of these various factors is difficult to determine, Company earnings in 1980 could approximate those of 1979.

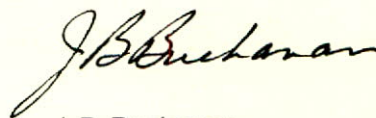
APPRECIATION

The Board of Directors wishes to thank all those associated with the Company for their contribution to the year's operations. Success in a fishing enterprise requires a high degree of teamwork and cooperation by many people.

The Board is confident that these attributes will again be demonstrated, as the Company adjusts to the changed conditions of 1980.



R. I. Nelson
Chairman of the Board and
Chief Executive Officer



J. B. Buchanan
President and
Chief Operating Officer

Consolidated Statements of Earnings and Retained Earnings

52 weeks ended December 30, 1979
and 52 weeks ended December 31, 1978

CONSOLIDATED STATEMENT OF EARNINGS	<i>(in thousands of dollars)</i>	1979	1978
SALES		\$265,626	\$248,532
EXPENSES			
Cost of sales		225,715	201,259
Selling and administrative		23,868	22,083
Depreciation		3,909	2,971
Interest			
Long-term debt		1,052	1,116
Other		5,511	2,945
		260,055	230,374
OPERATING INCOME		5,571	18,158
Gain on disposal of fixed assets		1,213	1,932
		6,784	20,090
INCOME TAXES			
Current (recovered)		(899)	7,590
Deferred		3,068	982
		2,169	8,572
EARNINGS BEFORE THE UNDERNOTED		4,615	11,518
Minority interests		(1)	(2)
Share of earnings of partly owned companies		1,880	195
		1,879	193
EARNINGS BEFORE EXTRAORDINARY ITEM		6,494	11,711
Extraordinary item		—	825
NET EARNINGS FOR THE PERIOD		\$ 6,494	\$ 12,536
Earnings per issued 'A' and 'B' share			
Earnings before extraordinary item		\$10.92	\$19.69
Net earnings for the period		\$10.92	\$21.08
CONSOLIDATED STATEMENT OF RETAINED EARNINGS			
RETAINED EARNINGS AT BEGINNING OF PERIOD		\$ 53,520	\$ 42,309
Net earnings for the period		6,494	12,536
		60,014	54,845
Deduct dividends			
Class 'A' shares at \$.75 per share		6	6
Class 'B' shares at \$3.50 (1978—\$2.25) per share		2,054	1,319
		2,060	1,325
RETAINED EARNINGS AT END OF PERIOD		\$ 57,954	\$ 53,520

Consolidated Statement of Changes in Financial Position

52 weeks ended December 30, 1979
and 52 weeks ended December 31, 1978

<i>(in thousands of dollars)</i>	1979	1978
SOURCE OF WORKING CAPITAL		
Operations	\$ 9,932	\$14,579
Proceeds on disposal of fixed assets	2,167	3,601
Reduction of investments and long-term receivables	909	92
	13,008	18,272
APPLICATION OF WORKING CAPITAL		
Additions to investments and long-term receivables	63	414
Additions to fixed assets	12,607	8,061
Reduction of long-term debt	2,520	2,908
Dividends	2,060	1,325
	17,250	12,708
INCREASE (DECREASE) IN WORKING CAPITAL	(4,242)	5,564
Working capital at beginning of period	41,953	36,389
WORKING CAPITAL AT END OF PERIOD	\$37,711	\$41,953

Consolidated Balance Sheet

As at December 30, 1979 and December 31, 1978

ASSETS

<i>(in thousands of dollars)</i>	1979	1978
CURRENT ASSETS		
Cash	\$ 162	\$ 90
Accounts receivable		
Trade and advances to fishermen	24,835	22,307
Affiliated companies	763	1,228
Income taxes recoverable	752	—
Inventories		
Product	72,877	62,082
Materials and supplies	10,006	8,513
Prepaid expenses	471	397
	109,866	94,617
INVESTMENTS AND LONG-TERM RECEIVABLES (note 2)		
	2,931	1,897
FIXED ASSETS, AT COST		
Land	1,721	1,603
Buildings, machinery and equipment	73,687	64,176
	75,408	65,779
Accumulated depreciation	40,278	38,051
	35,130	27,728
Equipment under capital leases, less amortization	342	—
	35,472	27,728
	\$148,269	\$124,242

Approved by the Board
R. I. Nelson, Director
F. L. Jones, Director

LIABILITIES

<i>(in thousands of dollars)</i>	1979	1978
CURRENT LIABILITIES		
Bank indebtedness	\$ 20,458	\$ 9,167
Notes payable	18,425	14,538
Accounts payable		
Trade and accrued liabilities	28,805	21,382
Affiliated companies	549	1,458
Income taxes payable	—	2,101
Deferred income taxes	1,256	809
Current portion of long-term debt (note 3)	2,588	3,209
Current obligations under capital leases	74	—
	<u>72,155</u>	<u>52,664</u>
LONG-TERM DEBT (note 3)	5,177	7,989
OBLIGATIONS UNDER CAPITAL LEASES	292	—
DEFERRED INCOME TAXES	8,465	5,844
	<u>13,934</u>	<u>13,833</u>
MINORITY INTEREST IN SUBSIDIARIES	83	82

SHAREHOLDERS' EQUITY

CAPITAL STOCK				
Authorized				
781,988 convertible non-voting non-redeemable Class 'A' shares without par value, entitled to annual cumulative dividends of \$.75 per share				
781,988 Class 'B' shares without par value				
Issued	Class 'A'	Class 'B'		
At December 31, 1978	7,783	586,833		
Converted during year	(109)	109		
At December 30, 1979	<u>7,674</u>	<u>586,942</u>	4,143	4,143
RETAINED EARNINGS (note 3)			57,954	53,520
			<u>62,097</u>	<u>57,663</u>
			<u>\$148,269</u>	<u>\$124,242</u>
Commitments and contingent liabilities (note 5)				

Notes to Consolidated Financial Statements

British Columbia Packers Limited

December 30, 1979

1. SIGNIFICANT ACCOUNTING POLICIES

(a) Basis of presentation

The financial statements consolidate the accounts of British Columbia Packers Limited and all its subsidiary companies.

(b) Advances to fishermen

As is the practice in the industry the company makes advances to fishermen to assist them in the financing of their operations, boats and gear, the repayment of which is dependent, in large measure, upon the catch of fish in future seasons. In the absence of fixed repayment terms it is impracticable to segregate these advances into current and long-term portions.

(c) Inventories

Inventories of product are valued at the lower of cost and net realizable value; inventories of materials and supplies are valued at the lower of cost and replacement cost.

(d) Investments

Investments in partly owned companies are accounted for by the equity method and are, therefore, carried in the balance sheet at cost adjusted for the company's share of their operating results less dividends received since acquisition. Other investments are accounted for by the cost method.

(e) Translation of foreign currencies

All U.S. balances have been translated at a rate approximating the current rate at each year end. The resulting net gain on the translation of long-term debt of the Canadian companies and the company's equity in the U.S. subsidiaries is included in fixed assets in the balance sheet.

(f) Depreciation

Depreciation is computed on the straight-line basis at rates varying from 2 1/2% to 25%.

(g) Leases

In accordance with recent CICA recommendations leases entered into after December 31, 1978 which transfer substantially all of the benefits and risks incident to ownership of property have been accounted for as the acquisition of an asset and the incurrence of an obligation by the company. Under this method of accounting for leases, the asset is amortized on a straight-line basis and the obligation, including interest thereon, is liquidated over the life of the lease. Net

earnings for the period were not materially affected by this change in accounting policy. Rents on non-capital leases and all leases entered into before December 31, 1978 are expensed as incurred.

Had the policy been applied to leases in effect prior to December 31, 1978, fixed assets would have been increased by \$827,000, and obligations under capital leases by \$1,070,000. The effect on net earnings for the period would not have been material.

2. INVESTMENTS AND LONG-TERM RECEIVABLES

	1979	1978
	<i>(in thousands of dollars)</i>	
United Oilseed Products Ltd. (33 1/3% owned)		
Shares, at cost	\$2,600	\$2,600
Mar Fishing Company, Inc. (30% owned)		
Shares, at cost	203	203
	<u>2,803</u>	<u>2,803</u>
Less company's share of operating results, net of dividends received	540	1,720
	<u>2,263</u>	1,083
Other items	668	814
	<u>\$2,931</u>	<u>\$1,897</u>

3. LONG-TERM DEBT

	1979	1978
	<i>(in thousands of dollars)</i>	
Term bank loan, due October 2 1982, bearing interest at 1/2% above prime lending rate	\$6,000	\$ 8,000
First mortgage bonds		
Series 'B'—6 1/2% sinking fund bonds due May 1, 1982 (U.S. \$1,125)	1,324	2,206
Series 'C'—6 1/2% sinking fund bonds due May 1, 1982 (U.S. \$375)	441	735
Other long-term debt	—	257
	<u>7,765</u>	11,198
Less current portion	2,588	3,209
	<u>\$5,177</u>	<u>\$7,989</u>

Principal instalments payable in the next three years are:

1980	\$2,588,000
1981	2,588,000
1982	2,589,000
	<u>\$7,765,000</u>

The first mortgage bonds are secured by a specific mortgage on the company's Imperial Plant/Head Office complex located in Steveston, B.C.

The provisions of the Deeds of Trust and Mortgage contain certain restrictions including the prohibition of dividends if consolidated net working capital (as defined) is less than \$14,000,000 immediately after declaration or payment.

4. OTHER INFORMATION

No remuneration was paid to the thirteen directors of the company as directors. Aggregate remuneration of \$1,281,075 was paid to seventeen officers of the company, seven of whom are also directors.

5. COMMITMENTS AND CONTINGENT LIABILITIES

(a) Future lease commitments, including obligations under capital leases, are:

For the year 1980	\$ 666,000
1981	573,000
1982	465,000
1983	300,000
1984	141,000
Thereafter to 2002	<u>1,100,000</u>
	<u>\$3,245,000</u>

(b) Commitments and contingent liabilities relating mainly to bills under discount, amount to approximately \$11,175,000. In addition, the company has guaranteed one-third of a \$4 million bank line of credit granted to United Oilseed Products Ltd. and is contingently liable with respect to one-third of an issue of \$16,000,000 First Preferred Shares issued by that company.

(c) The present value of the unfunded past service pension liability is estimated to be \$1,272,000 at December 30, 1979, which sum will be funded by company contributions during future years.

(d) A U.S. subsidiary is a defendant in four lawsuits alleging that it, together with other commercial packers in the Bristol Bay area of Alaska, violated the U.S. federal anti-trust laws relating to the purchase price of salmon during the 1970-1977 seasons.

The trial of these cases is scheduled to commence in the fall of 1980. The discovery phase of these suits has not yet been completed and legal counsel advise that it is not possible at this time to determine the exposure, if any, the subsidiary might have for damages and what legal fees and costs will be incurred in the litigation.

The company is of the opinion that any liabilities which might arise in these actions will not materially affect the consolidated financial position as at December 30, 1979.

AUDITORS' REPORT

To the Shareholders of
British Columbia Packers Limited

We have examined the consolidated balance sheet of British Columbia Packers Limited as at December 30, 1979 and the consolidated statements of earnings, retained earnings and changes in financial position for the 52 weeks then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these consolidated financial statements present fairly the financial position of the company as at December 30, 1979 and the results of its operations and the changes in its financial position for the period then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding period.

Vancouver, Canada
February 15, 1980

Thorne Riddell & Co.
Chartered Accountants.

Five Year Review

British Columbia Packers Limited

(in thousands of dollars)

SALES AND EARNINGS	1979	1978	1977	1976	1975
Sales	\$265,626	\$248,532	\$213,293	\$177,172	\$144,943
Depreciation	3,909	2,971	2,722	2,904	3,130
Interest	6,563	4,061	3,840	4,377	4,365
Taxes on income	2,169	8,572	5,489	3,248	25
Earnings before extraordinary items	6,494	11,711	8,037	3,501	30
per issued share	10.92	19.69	13.52	5.89	.05
Extraordinary items	—	825	259	88	—
Net earnings	6,494	12,536	8,296	3,589	30
per issued share	10.92	21.08	13.95	6.04	.05
DIVIDENDS	2,060	1,325	1,178	593	592
Class 'A' shares	.75	.75	.75	.75	.75
Class 'B' shares	3.50	2.25	2.00	1.00	1.00
FINANCIAL POSITION					
Current assets	109,866	94,617	82,156	85,427	70,318
Current liabilities	72,155	52,664	45,767	53,358	52,983
Working capital	37,711	41,953	36,389	32,069	17,335
Fixed assets—net	35,472	27,728	24,199	23,397	25,322
Long-term debt	5,177	7,989	10,897	13,445	4,198
Shareholders' equity	62,097	57,663	46,452	39,334	36,338
Total assets	148,269	124,242	107,735	110,106	96,916

*Pinkut Creek Spawning Channel, Babine Lake,
British Columbia. (E. Wilson)*



The salmonid enhancement program

The vital factor affecting the health of the British Columbia fishing industry is the abundance of the salmon resource. In order to expand the existing resource, the Government of Canada and the Province of British Columbia have commenced a "Salmonid* Enhancement Program" designed to greatly increase future salmon runs.

The Basic Salmon Resource

Historically, British Columbia's salmon resource could have generated catches twice as large as those currently produced. A detailed study has concluded that the five species of Pacific Salmon in British Columbia could have a productive capacity of between 300 and 360 million pounds a year.

These historic levels are difficult to document because catches recorded in the early commercial fishery do not reflect the magnitude of all stocks. As would be expected, in the early years of the fishery, the industry concentrated heavily on the most valuable species in the most accessible areas, often over-harvesting some stocks and under-harvesting others. When one species or area declined in productivity, the intensity of fishing would shift to another area or another species. It was not until 1930 that the industry had seriously fished on all species in all areas.

By this time the abundance of most stocks was well below previous levels; the average annual catch was 180 million pounds, and declining. The decline continued through the ensuing years, and reached an average level of 140 million pounds for the ten-year period 1970-1979.

These declines have occurred in spite of an estimated increase of some 10% in the natural stocks as a result of various enhancement projects, and in spite of a more precise management of the fishery.

It has been established that the main causes of decline have been environmental degradation and overfishing, but a close study of these causes shows that they are now operating in a very different manner than they were in the early days of the fishery.

In those early days, occasional natural disasters caused catastrophic changes to the salmon's environment. Now, thousands of small industrial and urban development projects each cause fractional losses that are difficult to document and control. Similarly, overfishing no longer damages large runs of fish, but small marginal stocks are sometimes lost as a result of pressure from a dramatically increased fishing intensity on target stocks.

Fortunately, techniques are available which will compensate for these unavoidable sources of decline.

The Environmental Potential

Historically the fresh and salt water environment of British Columbia has supported more than twice the present abundance of salmonids.



Sockeye Salmon crowd a stream in their rush to the spawning grounds. (Rollie Ostermick)

*The family name of a group of fish that includes Pacific Salmon, Steelhead, and certain other Trout.

Without enhancement, which increases survival during the fresh water life stages, the fresh water systems could not now support these historic levels of abundance.

With enhancement technology the potential for increase is largely dependent upon the number of suitable sites for facilities. Investigations to date show that there is a large number of these sites, possibly enough to triple present production. Environmental potential therefore becomes a question of the rearing capacity of the coastal estuaries and the open ocean.

Many estuaries have been disturbed by man. They have been filled, dredged and had toxic wastes dumped in them—all of which has reduced their productive capacity. On the other hand, the addition of large quantities of nutrient material in some estuaries has increased their productive capacity. On balance however, there has been a loss of carrying capacity in estuaries and although techniques are being developed for enhancing estuaries, they are not yet available for general application. In the summer of 1980, studies will be carried out on certain estuaries in Masset Inlet, Queen Charlotte Islands, to determine the economics of an enrichment program.

Ocean rearing capacity, a key component in salmonid production, is a function of such factors as climate, food organisms, competitors and predators. Scientific evidence indicates that climate is changing toward that experienced at the turn of the century, when salmon abundance was at its historical maximum. Observations of fish food organisms in the salmon rearing area in the Gulf of Alaska between 1957 and 1976 suggest little or no net trend in abundance, although marked fluctuations were detected. A striking feature of the

waters of the Gulf of Alaska and the British Columbia coast is the decrease in the number of competitors, such as whales, ocean perch, hake, pollock, herring and halibut, that has occurred since the high levels of salmon abundance near the turn of the century. Recent increases in potential predators such as fur and harbour seals have occurred but historical stocks of salmon probably co-existed with larger numbers of fur seals, prior to the period of heavy seal exploitation. Ocean rearing capacity is therefore unlikely to limit the doubling of salmonid production.

The Enhancement Technology

The fish culture technology that has developed over the last few decades has now been proven and is ready for full-scale application. These enhancement techniques are available to increase salmon stocks to their historic levels of abundance if improved habitat protection and stock management regimes are applied concurrently to protect the natural base level of salmonid production. These enhancement techniques are all designed to improve survival at one or more stages of the life cycle of the salmon.

If the fresh water needs of salmon are assured, their production can be enhanced. This is a form of semi-cultivation where controlled or improved



Big Qualicum Hatchery on Vancouver Island, British Columbia. Selective breeding improves the characteristics of salmon races. (A. Lill)

conditions provide high survival in the early hazardous stages of the salmon's life. Increased numbers of healthier young salmon migrate from the fresh water rivers and streams to feed on the rich pasture of the ocean, then return in one to five years.

Techniques have been developed that can achieve substantial increases in the fresh water production of young salmon. The most promising of these is undoubtedly the enrichment of the salmon's environment with fertilizers. Other techniques make use of spawning channels, hatcheries and fishways.

Spawning channels are artificial streams designed to provide the optimum conditions for spawning and incubation. They provide egg-to-fry survivals four to eight times as great as the average in natural streams. Channels are especially useful in producing pink and chum salmon, which go immediately to salt water to feed. They are also useful for sockeye whose spawning streams do not produce enough fry to utilize the capacity of the lakes in which they must feed and rear for a year.

Hatcheries are used to "short-circuit" the fresh water life of the salmon. The key to this technique

is that it provides not only for the incubation of eggs, but also for the rearing and feeding of juveniles. Hatcheries are especially useful for chinook, which spend from three months to a year in fresh water streams, and for coho and steelhead, which spend at least a full year in fresh water.

Fishways provide access for all species to upstream areas that are unutilized because of natural or man-made barriers in streams.

All of these techniques have gone through the experimental, pilot and production-size stages successfully. Spawning channels for chum salmon at Qualicum River, for pink salmon at Seton Creek and for sockeye at Weaver Creek, Pitt River and Gates Creek are production-sized facilities that are now providing benefits in each production year equal to the original capital costs of construction.

Hatcheries for Pacific Salmon have been in use in Washington and Oregon since the turn of the century. Only in the last 15 years however, has success been achieved, and this has been only with chinook and coho. The breakthrough came as a result of intensified research on nutrition, disease control, feeding techniques, water quality and timing of fry release. The 21 State and Federal hatcheries on the Columbia River were recently evaluated and showed benefit: cost ratios for coho at 7:1 and fall chinook salmon at 3:1. The



Little Qualicum Spawning Channel completed in 1979. Artificial spawning channels successfully provide optimum spawning and rearing conditions for salmon. (A. Lill)



Meziadin Fishway on the Nass River, built in 1966, has enabled good numbers of fish to move beyond the blockages to the upper reaches of the river. (F. Dickson)

performance of the 12 Washington State hatcheries in Puget Sound is considered to be equal or greater. Canada followed this program and developed an experimental chinook and coho hatchery at the Qualicum River in 1968 where studies showed that United States results could be repeated in Canada. The first production hatchery was completed in 1971 on the Capilano River at a cost of \$3 million, and early returns support the conclusion that production efficiencies will exceed those achieved in the United States. A second and larger hatchery costing \$5.2 million is now coming into full operation at the Quinsam River near Campbell River.

Of the 20 Fishways that have been built in the Pacific Region since 1954, only two have not justified their costs. The four fishways on the Fraser River (including Hell's Gate) have returned salmon with a total catch value of \$60 million in the first 20 years for a capital outlay of \$2.3 million in the late 1940's. The Meziadin Fishway on the Nass River built at a capital cost of \$750,000 in 1966 provided an average annual additional catch value of \$815,000 in its first three years of full operation. The value of other smaller fishways was not economically quantified but with minor exceptions they were considered successful in that the spawning runs of fish were able to move in good numbers beyond the falls or blockage to the upper reaches of the streams.

Enrichment

The selective application of fertilizer to lakes can expand the food supply and increase the growth and survival rate of young sockeye salmon. The first large-scale application of the technique was to Great Central Lake on Vancouver Island. Sockeye runs there increased \$5 million in average annual value at an annual cost of \$50,000.

A number of other coastal lakes have now been enriched, and similarly spectacular results are

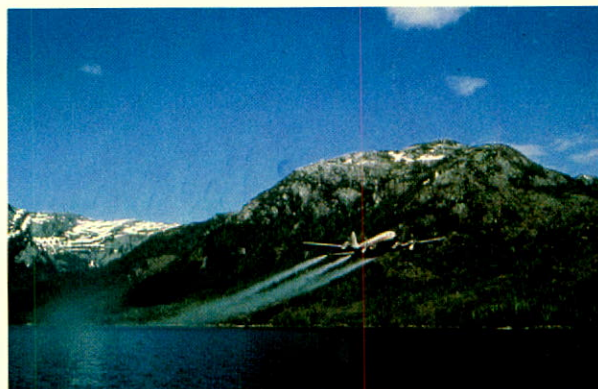
anticipated. The greatest potential for this technique however, lies in the Fraser River System. Regrettably, it has been the policy of the Government not to enhance Fraser River salmon stocks until a new division of catch has been agreed upon with the United States.

Benefits and Costs

As indicated, the returns to enhancement projects in economic terms have been good. The benefit: cost ratios have been highly favourable. In addition, the program has had and will continue to have substantial ancillary benefits, including improved regional and Native employment, as well as a general improvement in the quality of the environment.

In spite of best intentions, implementation of the Salmonid Enhancement Program is dragging. Cut-backs in funding, and short-sighted policies on enhancing Fraser River stocks have delayed the program for the recovery of British Columbia's priceless salmon resource. It is important to Canada that these obstacles be overcome, and that the Program proceed vigorously to a successful conclusion.

Reference: *The Salmonid Enhancement Program*
Department of Fisheries and the Environment
Vancouver, B.C.; January, 1978.



Agricultural fertilizer is sprayed on Great Central Lake on Vancouver Island. In a three-year period, Salmon runs doubled.
(M. Trim)

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